

# Automated Energy Distribution and Reliability System Status Report

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*Subcontract Report*  
**NREL/SR-581-42265**  
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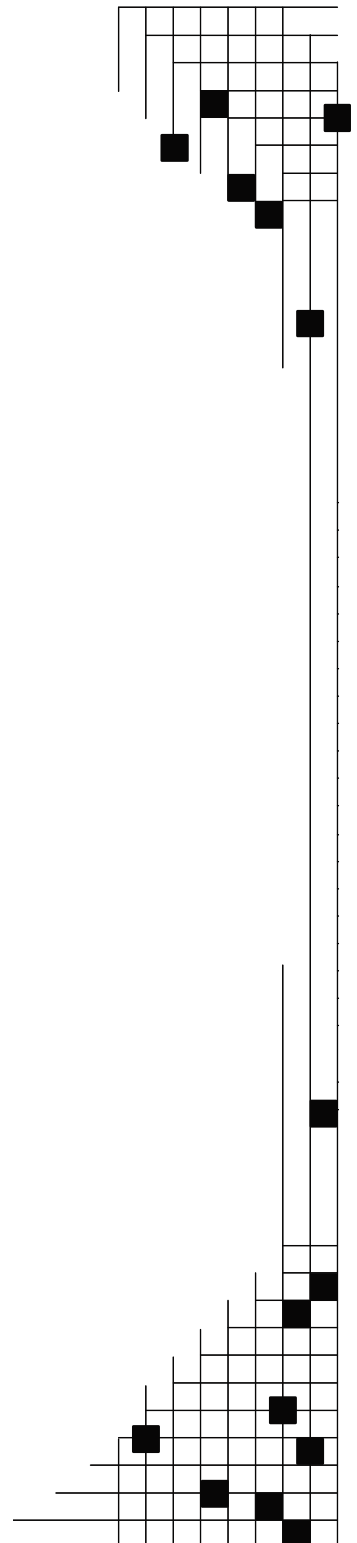
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## **Preface**

In 1998, the Department of Energy (DOE) established the Distributed Power Program to address systems integration issues and market barriers that may prohibit the widespread deployment of distributed power technologies. Initial efforts under the program involved creating national technical interconnection standards, establishing research and development programs to address system integration technologies documenting regulatory and institutional market barriers, and working with industry and state and federal policymakers to remove barriers. At that time, the National Renewable Energy Laboratory (NREL) led these research activities for the DOE. Under this subcontract, Northern Indiana Public Service Company (NIPSCO), a NiSource, Inc. Company, has developed a modernized Automated Energy Distribution and Reliability System (AEDR) based on geographical information system (GIS) technology. This integrated geographical database serves to enhance energy supply reliability and security by improving the integrity and accessibility of location data, while fostering public safety through sharing of utility location information with authorized government entities and other organizations. This modernization of the gas & electric infrastructure helps to assure safe, reliable, and affordable service to homes and businesses.

This report details the efforts undertaken to implement the AEDR at NIPSCO and provides the interim status of the subcontract work. A future final status report will complete the documentation for this subcontract. While specific to NIPSCO's requirements, there is sufficient information to provide individuals in the initial stages of their own GIS project with a conceptual strategy, answers to some common questions and enable the re-use of some of the materials provided.

NIPSCO wishes to express sincerest gratitude for the funding assistance provided by the Department of Energy and the technical support received by the National Renewable Energy Laboratory. This project would not have been possible without their support.

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# 1 Introduction

This report describes the NIPSCO project efforts and status of their Automated Energy Distribution and Reliability (AEDR) system. A future final status report will complete the documentation.

## 1.1 Background and Expectations

Modernizing the electric-gas utility infrastructure by implementing a Geographic Information System (GIS) technology results in a number of benefits for both the utility as well as its customers. Traditionally residing partly in an AutoCAD-based system and partly in a relational database system, NIPSCO facility information (gas, electric and land) was served by distinct and not readily interoperable technologies. Thus it was time consuming and sometimes cumbersome to readily maintain the integrity of the data and disseminate facility information to those requiring it. These technical inadequacies could be significantly improved by the implementation of a Geographic Information System (GIS) technology.

The purpose of this project was to implement a database-driven GIS solution that would manage all of NIPSCO's gas, electric and landbase objects (Figure 1-1).

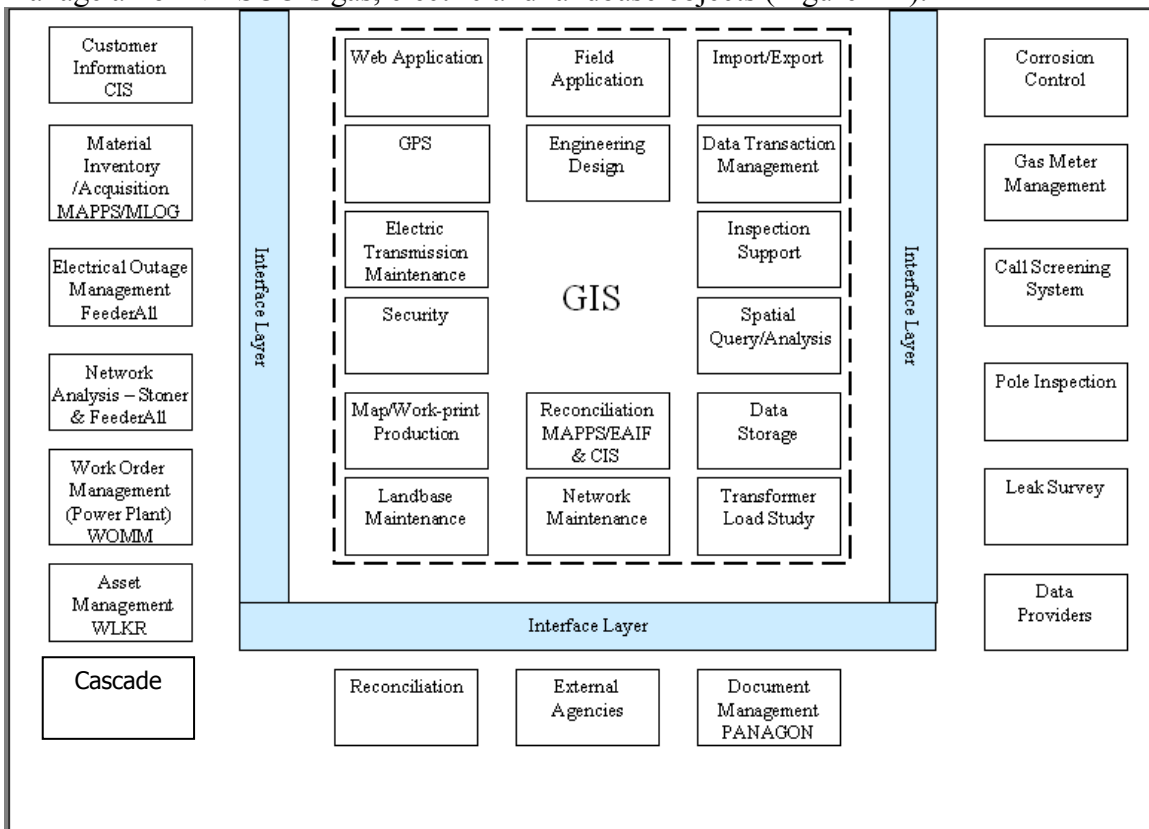


Figure 1-1. NIPSCO GIS approach to AEDR

The goals of this project included:

- Elimination of redundant data and systems
- Implementation of a business rule-driven application to manage GIS data
- Improvement of data quality and integrity
- Gas and electric load study integration
- Establishment of improved and integrated information to satisfy external entities' needs and identify opportunities such as
  1. Identification of critical habitats of threatened or endangered species
  2. Exploration of alternative energies, such as wind energy, combined heat and power (CHP) units and distributed resources/generation (DR/DG)
  3. Impact future installation of facilities located near the Indiana Dunes National Lakeshore to enable environmentally sound decisions.
- Gather and provide information to, and support participation in IEEE standards development work groups.

## **1.2 AEDR Project Structure and Status Summary**

Each section within this report details the effort undertaken to implement the AEDR at NIPSCO.

The Environmental Systems Research Institute (ESRI)'s GIS technology platform was selected to replace NIPSCO's legacy systems, and the Automated Energy Distribution and Reliability (AEDR) system was born. The AEDR problem and solution domain are presented in the following graphic (Figure 1-2).

The problem of	A limited automated mapping application that does not provide all of the data all of the time
Affects	Records, Engineering, Corrosion Control, Gas Meter Management, Gas Systems Engineering, Locate Screening, Field Crews, Analysis Engineering and Maps & Records
The impact of which is	Business decisions made on questionable or insufficient data and the length of time it takes to perform key operational activities.
A successful solution would	Promote safety, enable sound business decisions, increase efficiencies, increase the visibility of data, increase the user base and compliance with governmental requirements.

**Figure 1-2. The NIPSCO AEDR problem-solution domain**

Spatial analysis capabilities that were limited in the legacy environment became available and redundant data and systems were eliminated. Further, there was a focused effort on data accuracy improvement and insertion of business rules to maintain the improved data resulting in significant improvements in data integrity and the ability to access the data.

The capacity to conduct spatial analysis of NIPSCO facilities and service territory directly provides organized information on which to base sound business decisions and supports enhanced physical safety for both NIPSCO employees and the general public.

Gas load information has been provided in a manner that truly supports gas load studies. By re-routing the method in which the ABB application, FeederAll receives data, additional and critical information will be provided to enhance electric load studies. When the project is completed, all users of the AEDR such as Corrosion Control, Gas Meter Management, Field Crews, Rate Department, Engineering, Maps & Records, Electric System and Services Operations, Gas Operations Integration, External Contractors, Facility Locators, Government entities, etc. will be provided with all of the information they require from the AEDR system. And, the wind energy study undertaken in partnership with the National Renewable Energy Laboratory will provide NIPSCO management with the feasibility of producing clean energy in proximity to NIPSCO's grid.

The project is governed by the subcontract Statement of Work (SOW) consisting of seven tasks. The project was structured for completion in three phases:

- The Preliminary Phase includes “Task 1 – Selection of GIS Software Platform” and “Task 2 – GIS Project Definition and Demonstration of Integration”
- Phase I includes “Task 3 – Immediate Conceptual Architecture Implementation”
- Phase II includes “Task 4 – Future Conceptual Architecture Implementation”  
“Task 5 – AEDR Studies”

“Task 6 – Post Implementation Review of AEDR” will be conducted at the close of Phase II.

“Task 7 – Standards Development and Implementation” was conducted throughout Phase I by active participation in the standards development process that resulted in publication of the IEEE Std 1547.3™ (2007) Guide for Monitoring, Information Exchange and Control of Distributed Resources Interconnected with Electric Power Systems. That standards process work included attending meetings, gathering information, developing, reviewing and providing feedback on the draft IEEE 1547.3 standard that is one in the series related to the IEEE Std 1547™ (2003) Standard for Interconnecting Distributed Resources with Electric Power Systems.

The Preliminary Phase Tasks 1 and 2 have been completed and the focus for this report is Phase I and Task 3 Immediate Conceptual Architecture Implementation. The Preliminary Phase material has been included in Section Three and in Appendix A-1. Future reports will include the remaining Tasks governed by the SOW.

Phase I was successfully implemented into production use on June 12, 2006. In summary, Phase I involved implementing the “Immediate Conceptual Architecture” according to NIPSCO requirements and criteria. The Phase I implementation objectives were:

- Implement a database-driven GIS solution that will manage all of NIPSCO’s gas, electric and land-base objects
- Replace the core mapping maintenance product (Outfield), merge the Electric Distribution Facility Services (EDFS) data into the new GIS and maintain or improve the existing interfaces to the Customer Information System (CIS), Engineering Accounts Information File (EAIF), Material Accounts Payable and Purchasing System (MAPPS), Advantica Gas SynerGEE and ABB CADOPS
- Correct positional inaccuracies through a data rectification process
- Develop a stable system environment in which to develop and test the system
- Migrate the data to the new GIS platform
- Configure the software.
- Customize the software as needed to improve user interaction
- Ensure adequate system performance
- Generate user-friendly help documentation
- Train the users, and
- Implement the Immediate Conceptual Architecture into the production environment rendering it useful to all.

## **2 Project Management**

### **2.1 Overview**

As with any successful large-scale implementation, the AEDR project required highly organized project management skills, strength in project sponsorship and adherence to system development industry standards. Some of the items that enabled the success of this project are: Project scope and critical path components were monitored, project budget and timeline were maintained, quality assurance was of prime focus especially on the externally contracted data migration and rectification processes, detailed test cases were thoroughly exercised for every application, and risks were managed throughout the project. Problems were tracked and resolved as timely as possible and resources were assigned team lead roles to ensure ownership.

### **2.2 Project Resource Organization**

The AEDR development project team was composed of a combination of external vendors and internal NIPSCO employees.

Project sponsors, a project manager, GIS developers, GIS analysts, GIS migration vendors, IT database support, IT server support and subject matter experts in Maps & Records, Engineering and individuals responsible for interfacing systems all participated in the development of various components of the AEDR system.

#### **2.2.1 Project Resource Responsibilities**

##### **2.2.1.1 Project Sponsor**

As a member of the steering committee, the project sponsors set the direction for the project, approved the scope and objectives and communicated the priorities. The project sponsors actively monitored project progress and provided cross-department/enterprise conflict resolution and served as a reporting mechanism to executive management.

##### **2.2.1.2 Project Manager**

At a high level, the project manager was responsible for development of the project definition and scope as defined in the Vision document, project budget estimation, creation and maintenance of the project plan to ensure that all project tasks were completed on time and within budget and that milestones and deliverables were met. Project management responsibilities also included project guidance, managing project resources, licensing agreements, vendor contracts, project budget maintenance, identification and management of project risks, change control, and communicating project status to the project sponsor, NREL and the project team. The project manager maintains similar responsibilities throughout all phases of the project.

### 2.2.1.3 Team Lead

Under the direction of the project manager, the team lead coordinated the tasks needed to complete the work for a particular area of the project. The team lead reported status and issues to the project manager. Team leads were assigned to the following areas:

- **ArcFM Configuration:** Annotation, AU assignments, Connectivity, Display Fields, Favorites, Map Templates, Model Names & Symbology
- **ArcFM Customization:** Customization candidate list, component specifications, coding, code reviews and code standards.
- **Data Migration and Rectification:** Migration, Rectification, Data vendor management, Data Matrix, Sample data, Migrated Data, Rectification and Migration QA Procedures, Rectification Rules, Scoring Spreadsheets
- **Data Modeling:** Build NIPSCO's data model in accordance with the data model procedures and guidelines.
- **Development, Testing, and Production Environments:** Environment setup and administration, software installs, software patches, server setup, SDE admin, FTP server
- **Documentation & Training**
  - **System Documentation:** Administrator guide documentation
  - **User Documentation:** Typical editing scenarios, user guides, Quick Start Guide, on-line help
  - **Training:** Create training materials, training plan, conduct training
- **Elementool Support:** Configuration, daily backups, security administration
- **Interface Development:** Requirements, design, implementation, testing and documentation for the following interfaces/components:
  - **CADOPS/Feederall**
  - **CIS/EAIF (Inc. EDFS)**
  - **Facility Browser**
  - **Field Browser**
  - **GIS to DXF**
  - **MLOG**
  - **General Ledger**
  - **SynerGEE**
- **Source Safe Administration:** Create new Source Safe directories, security administration
- **System Architecture:** Architecture discussions, system context diagram
- **Testing / QA / QC:** Test plan, write test cases, perform test cases, document results, report testing metrics

At AEDR implementation, a Help Desk was established to assist users with the transition to the new system, provide future Help Desk support and ensure quality control.

## **2.3 Project Methodology**

The Rational Unified Process (RUP) was recommended by a vendor project team member who reportedly used it successfully on other projects. The RUP methodology was implemented, however it was soon determined to be an unwieldy methodology and abandoned in favor of the traditional waterfall methodology. This explains the references to RUP and the iterative process throughout the first half of the project.

### **2.3.1 Project Activities and Schedule Development**

Project activities and schedules were governed by the Project Plan. Project tasks and their associated target dates were defined using Microsoft Project. Project team meetings were held weekly (at a minimum) during which the project team members contributed to the creation and maintenance of the project tasks and schedules. Three separate project plans were developed to manage the various Phases; Preliminary Phase: Inception and Elaboration Phase Project Plan (part of RUP and also known as Pre-Planning), Construction Phase I and Deployment Phase 1. The detailed Project Plans are shown in Appendices A-1, A-2 and A-3, respectively.

## **2.4 Cost Estimating**

Project costs were estimated during the Pre-Planning stage of the project. The various components and interfaces had been predefined during the analysis phase. Figure 2-1 was developed to assist with the estimating process. Vendor rates were averaged and contingency was added based on the confidence to estimate the total cost for each component.

## AEDR GIS Project Estimating Worksheet

<Name of Interface>

<Date>

### 1. Overview of Approach

Please provide an overall description of the technical approach that will be used. This should include a textual description, pros/cons of the approach, plus one or more diagrams that describe the proposed solution.

**Overall Description:** <insert text>

**Pros for this approach:** <insert text>

**Cons for this approach:** <insert text>

**Diagram for this approach:** <insert diagram(s) and supporting text>

**List of Assumptions:** <insert text>

### 2. Risks for this Approach

Please describe the technical risks that exist for the proposed solution. For each risk, describe the probability of this risk occurring (percentage) and the impact that would be expected if the risk actually occurs.

Risk	% Probability	Impact

### 3. Construction Tasks / Estimates / Confidence

Please describe the Construction Phase tasks, estimates, and confidence (%) for each of the estimates.

Construction Task (w/ Expertise Needed)	Duration (person hrs)	% Confidence
<b>TOTAL</b>	<Total estimate>	<Overall confidence>

**Figure 2-1. The overview, risks and percentage of confidence were factored in to the estimated costs for each component and interface**



## **2.5 Risk Management**

Project risks were identified, documented and managed throughout the system development lifecycle to help ensure a successful implementation. Weekly meetings were held and tasks assigned to address and resolve/mitigate each project risk. A simple spreadsheet was developed with a worksheet for Technical Project Risks and General Project Risks. All risks had a detailed description, impact, mitigation plan, ranking, severity code, indicators, probability factor and owner. Each owner was responsible for managing assigned risks until that risk was completely mitigated.

## **2.6 Software and Hardware Analysis**

### **2.6.1 Software Analysis**

Following the software vendor selection results, we requested trial licenses for a proof of concept activity before entering into a perpetual licensing arrangement. We were subsequently granted a trial license to conduct the activities detailed in the Inception and Elaboration Phase Project Plan located in Appendix A-1. The results of the Elaboration Phase provided sufficient proof of concept to continue the project.

### **2.6.2 Hardware Analysis**

Legacy system features were listed, counted and sized (in bytes), the projected user environment (Table 2-1) was documented and together with ESRI application architecture requirements, this information was used as a baseline for an initial hardware requirements study.

**Table 2-1. Projected User Environment**

Total number of CITRIX desktop clients	131
Total number of ArcMap desktop users	29
Total number of Web users	0
Total number of users	160
Estimated number of concurrent CITRIX desktop clients	50
Estimated number of concurrent ArcMap desktop users	18
Estimated number of concurrent Web users	0
Estimated number of total concurrent users	68

The following configurations were recommended:

**Table 2-2. ArcSDE Database Server Configuration**

No. of Servers	1
No. of CPUs	2
CPU type	Intel Xeon 3.06 GHz 512 MB L3 Cache
Memory	4 GB
SPECfp_rate2000	16.7

Performance testing was conducted at NIPSCO on Nov 19, 2003 with the current dual 3.06 GHz server. The testing showed that the ArcSDE/SQL Server 2000 server can provide optimal performance to 80 concurrent users. This exceeds the estimated concurrent user number of 68.

**Table 2-3. Storage requirements**

Type	Hardware based RAID
Data Storage	100GB
Application Storage	60MB for ArcSDE 200 MB for SQL Server 200

**Table 2-4. Application architecture**

Supported Operating Systems	Windows 2003 – Standard, Enterprise and Data Center Editions Windows 2000 – Server, Advanced Server and Data Center Editions Windows NT 4.0 Server with Service Pack 6a.
Supported Versions of SQL Server 2000	SQL Server 2000 Standard Edition SP2 or SP3 SQL Server 2000 Enterprise Edition SP2 or SP3
Supported Version of ArcSDE	ArcSDE 8.3 for SQL Server by ESRI, Inc.

**Table 2-5. Network requirements**

Protocol	TCP/IP
Bandwidth required per user	18-45KBS
Application Storage	60MB for ArcSDE 200 MB for SQL Server 200

Based on ESRI, Inc. sizing charts, a load of 50 concurrent users requires a cumulative SPECfp\_rate2000 value of 56 or higher.

**Table 2-6. CITRIX server farm configuration**

Operating System	Windows 2000 Terminal Server
Number of CPUs	2
CPU type	Intel Xeon 2.8 GHz, 1 MB L3 Cache
Memory	4 GB
SPECfp_rate2000	13.2

## **3 Vendor Selection**

### **3.1 Overview**

This section describes the methodology used by the GIS project team to arrive at the selection of GIS software.

A formal Request for Proposal (RFP) process was initiated on March 3, 2003 to begin searching for GIS software that would initially solve the redundant data issues, improve the mechanism for data integrity and integrate the SynerGEE gas model. The long-term goal is to build on these initial requirements using a software platform that is flexible enough to easily satisfy new user requirements and powerful enough to support a growing user community over time. The target to issue the RFP was March 30, 2003.

Previously, in the fall of 2001 this same process was started. User requirements were defined and two vendors demonstrated their products. At that time, the vendors were selected from a broad range of GIS providers based on the desire to preserve our Autodesk software, application, and data investment. Two months into the project, it was put on hold.

The methodology for this RFP process involved leveraging the 2001 user requirements, the RFP process and the engagement of consulting services to preserve the previous investment. The user requirements were re-validated and re-prioritized. The RFP process was updated as needed and included the use of a newer technology tool to support a more methodical selection process.

### **3.2 Scope**

A GIS project involves vendor software selection, data migration, conversion and clean-up, integration with interfacing applications and GIS software installation & configuration.

This RFP process phase was limited in scope to the selection of vendor software only. However, the above GIS project criteria were taken into consideration, to the degree possible to further validate the investment in this large-scale project.

### **3.3 Methodology**

The validation and reprioritization of the 2001 requirements produced the Immediate and Future Conceptual Architectures. The project team interviewed key users from Engineering, Records, Construction & Maintenance, Information Technology, Gas Systems Planning, Distribution Services, Distribution Reliability, Transmission, Operations and Corrosion Control. The user requirements gathered during these sessions were integrated into the Immediate and Future Conceptual Architectures and became the scope of requirements for the comprehensively constructed RFP.

Four candidate vendors were selected from a combination of GITA conference demonstrations, a technology report & summary of potential candidates provided by a consulting vendor and a desire to preserve our Autodesk investment if at all possible. The vendors were selected based on but not limited to:

- the potential to meet NIPSCO’s functional requirements
- having both a gas & electric data model
- open architecture
- experience in the gas/electric utility industry
- network modeling capabilities
- scalability

The RFP was delivered to four candidate vendors: one of which was Environmental Systems Research Institute (ESRI) on April 9, 2003. The vendors were given 26 calendar days in which to provide responses to the RFP. All four vendors responded.

Evaluation criteria was established (see Figure 3-1) and weighted (see Figure 3-2) by the project team using Expert Choice, decision support software to aid in a collective and justifiable software decision. The foundation of Expert Choice is the Analytic Hierarchy Process (AHP), “highly regarded and proven process designed to reflect the way people actually think”.

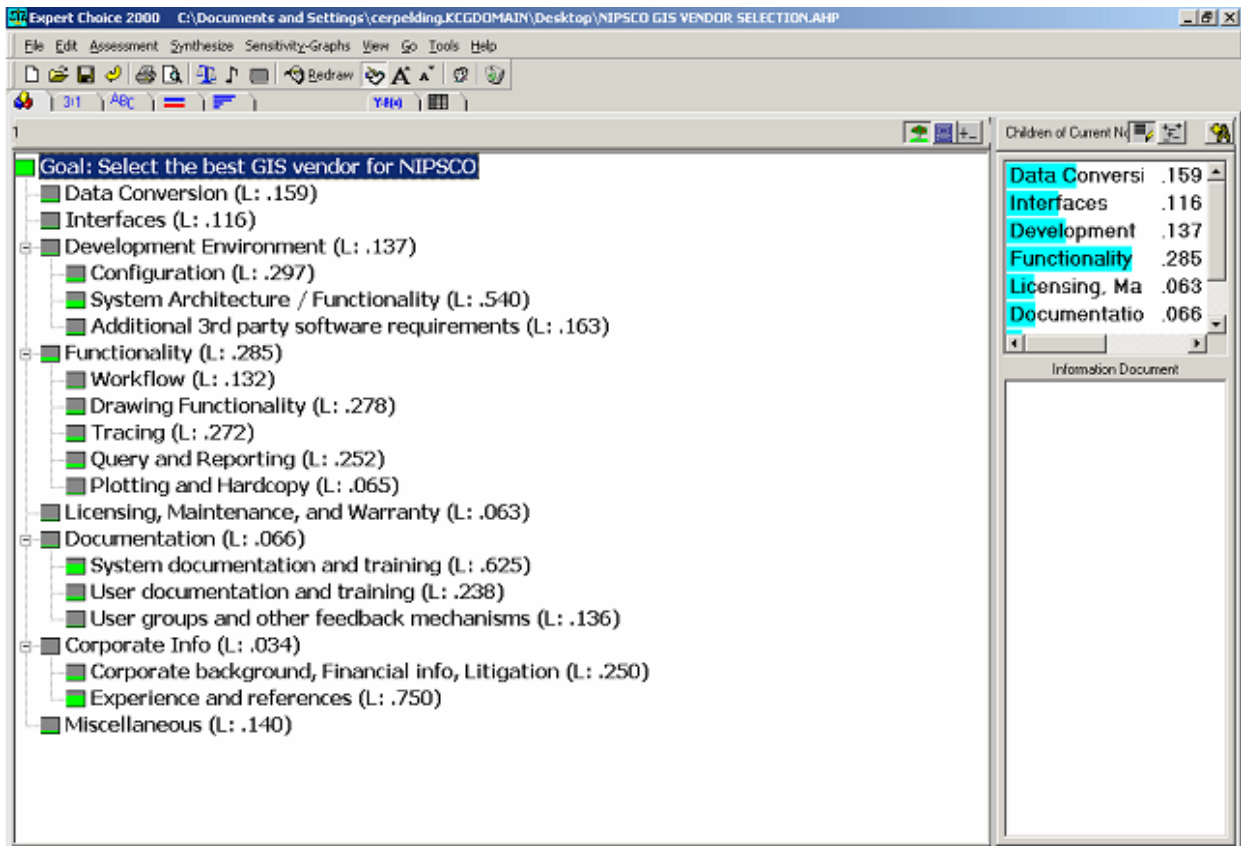


Figure 3-1.

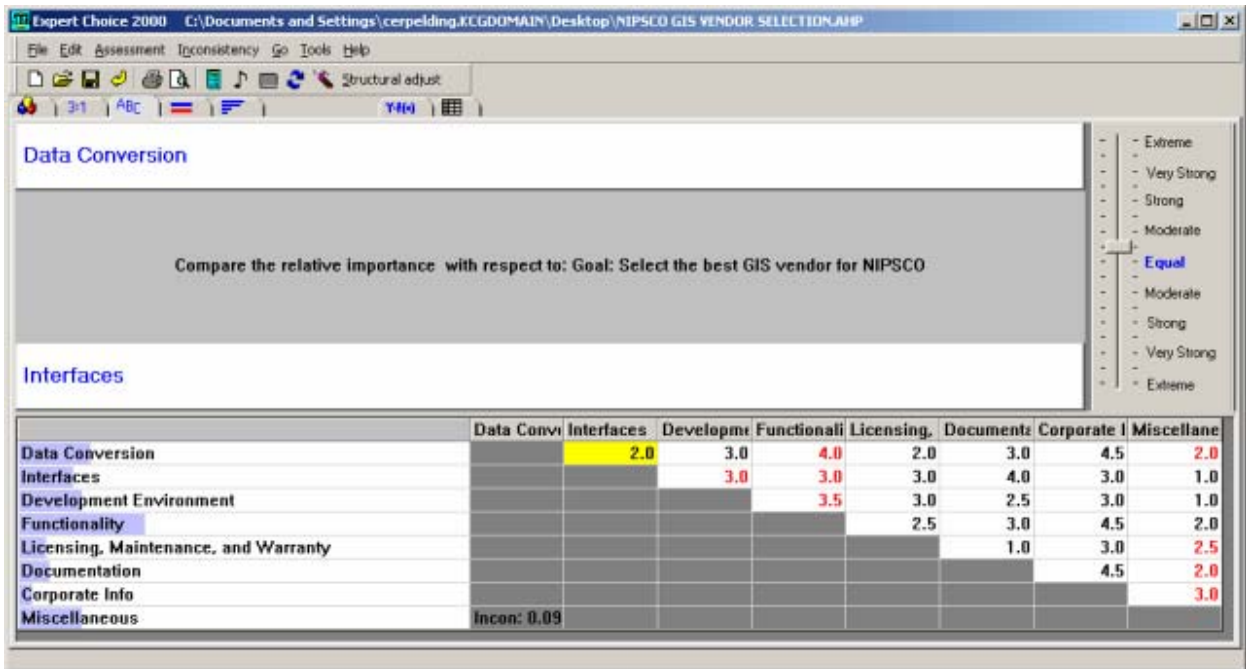


Figure 3-2.

Figure 3-3 shows the results of the pairwise comparisons that determined the most important criteria.

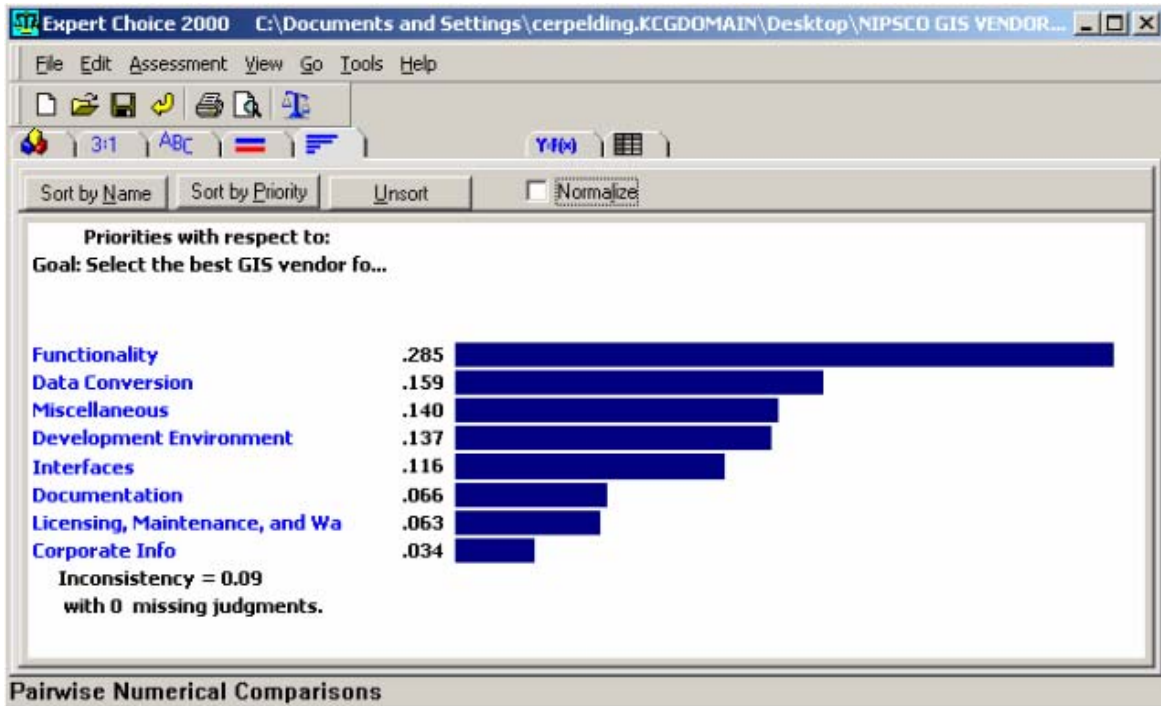


Figure 3-3.

Next, vendor software was compared using the same scoring scale as the evaluation criteria (see Figure 3-4). Prior to each scoring session, roundtable discussion helped to bring out the positive and negative points of each vendor’s software, which aided in the scoring process.

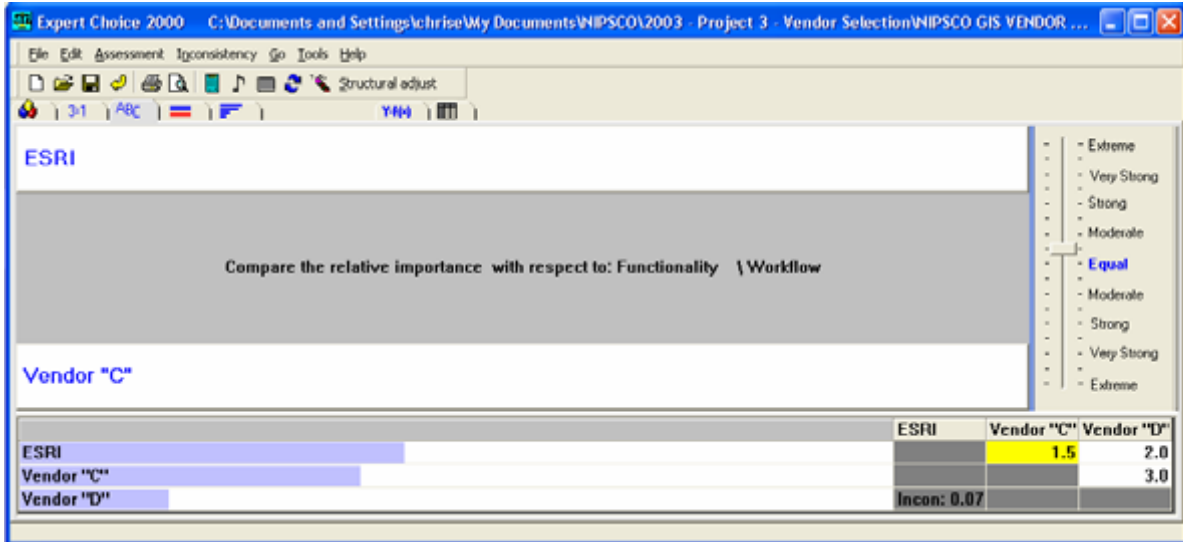


Figure 3-4.

The project team spent several days reviewing the responses and scoring the vendors and software. Scoring of criteria that was demonstration-specific was postponed until the vendors conducted the software demonstrations.

The project team reconvened after each vendor demonstration and, factoring in the feedback from the users who also attended the demonstrations, completed the scoring of the vendor software. In addition, a shortlist was established. Following the demonstration, it was made clear to the project team that Vendor “A” should be removed from the shortlist based on their response to the RFP and, finally the demonstration.

The graph in Figure 3-5 shows the performance of the remaining vendors based on the criteria.

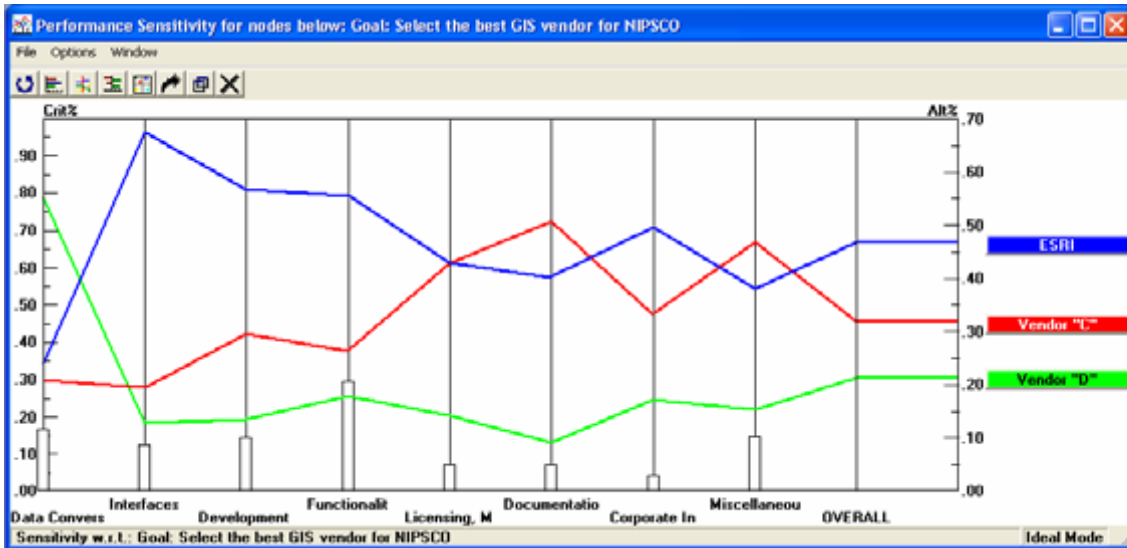


Figure 3-5.

Figure 3-6 represents the overall scoring percentage for each vendor. The weighted criteria are shown to the left.

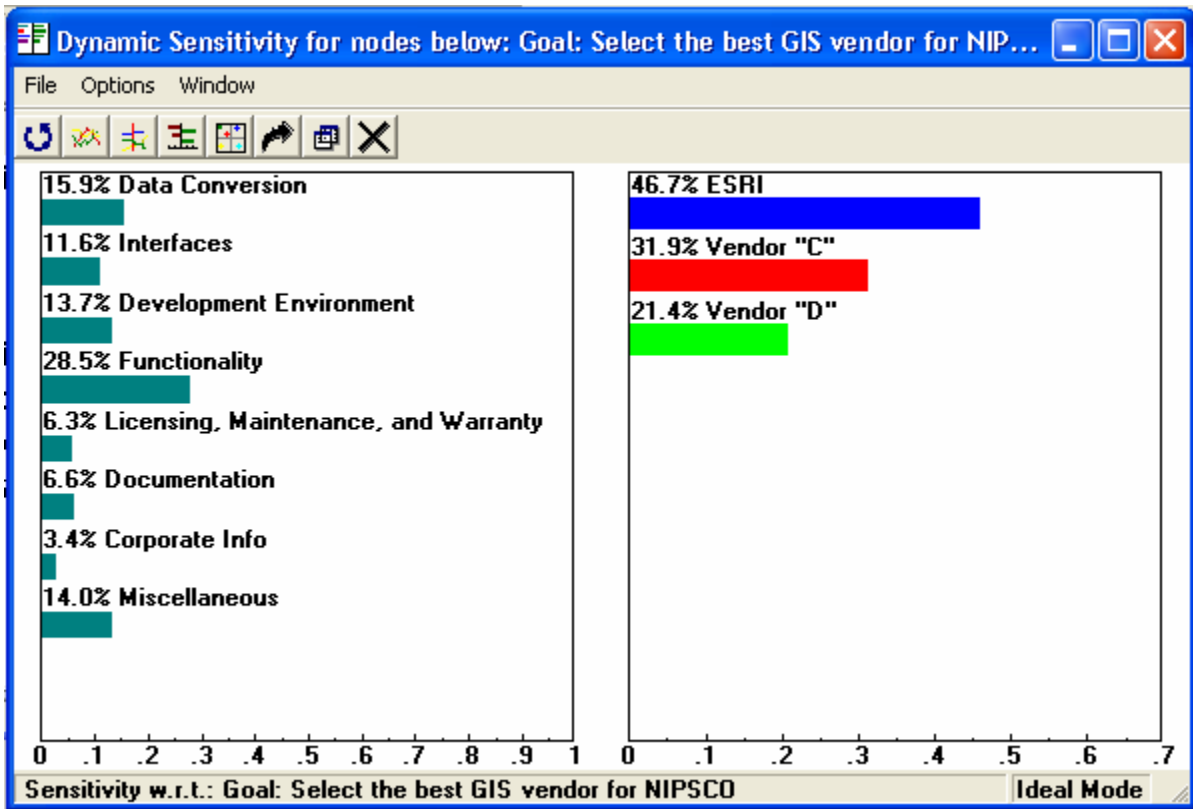


Figure 3-6.



Finally, a value-per-dollar analysis was performed which, over a 5 year period, shows how each vendor fared in providing the most value for the dollar (see Figure 3-7a & 3-7b).

	ESRI	Vendor "C"	Vendor "D"	Notes
Expert Choice Score	0.467	0.319	0.214	Higher value is better
Normalized Cost Ratio	0.926	1.000	0.860	Lower cost is better
Value per dollar ratio	0.504	0.319	0.249	Higher value per dollar is better
Dollars per value unit	\$1.90	\$3.13	\$4.02	Lower cost per value unit is better
How much more than the best value?	0.00%	58.15%	102.71%	Zero is the best value. The rest are xx% more expensive per value unit.
RANK	1	2	3	Which GIS Vendor is best for NIPSCO?

Figure 3-7a.

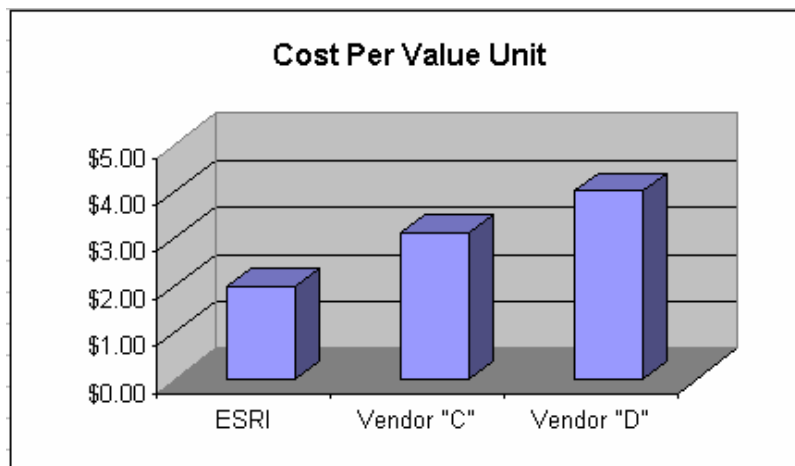


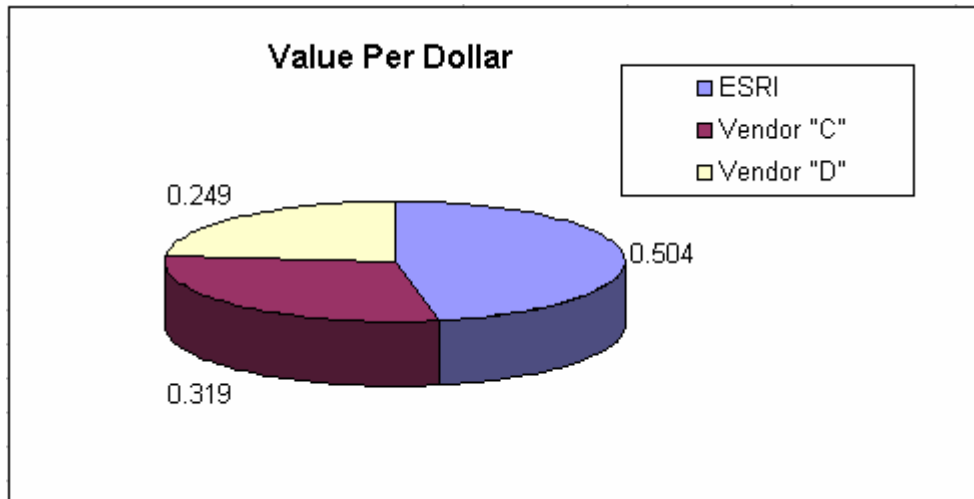
Figure 3-7b.

### 3.4 Conclusion

The GIS project team spent many hours:

- On user requirements, refining original user requirements, interviewing users for their updated requirements and designing an RFP that best describes NIPSCO's requirements
- Designing a demonstration script that allows the project team to accurately and fairly compare each vendor's product offering
- Reviewing and discussing responses to the RFP
- Attending and discussing vendor & software performance at the demonstrations
- Scoring each vendor against the evaluation criteria via a pairwise comparison

ESRI not only ranked the highest in pairwise comparisons, but also provides the highest value per dollar over a 5 year period. See (Figure 3-7c).



**Figure 3-7c.**

The project team has chosen ESRI as the preferred software vendor for all of the reasons described above.

The next steps were to negotiate a contract with ESRI; however should contract negotiations fail to adequately decrease the associated costs over time, Vendor "C" and Vendor "D" may have been revisited.

## 4 Immediate Conceptual Architecture (Phase I)

### 4.1 Detailed Functional Analysis

This section describes the objectives of the detailed functional analysis that was performed during the various stages of the project along with the process that was used to perform the analysis. Completion of detailed functional analysis is key to the overall success of any project including user acceptance and change management.

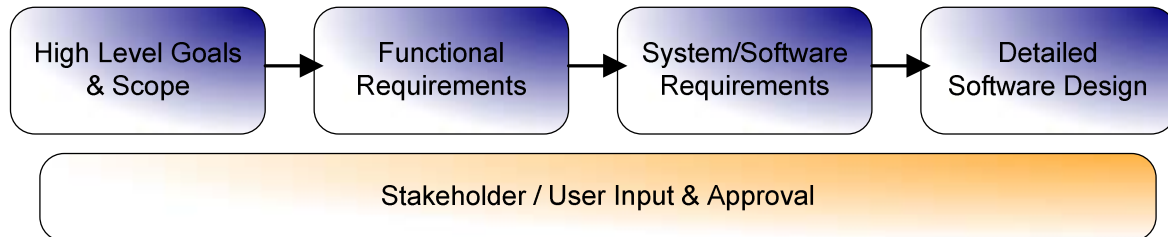
Functional analysis began with a broad look at the project goals and then refinement of each area within the project with additional detail, functional requirements, software requirements, and finally a functional software design. As the process surrounding each area of the project became more detailed, it was tied back to the higher level components to ensure consistency, scope, and coverage.

#### 4.1.1 Objectives of Functional Analysis

The objectives of performing functional analysis centered on defining what the new system will be and how it is expected to function to meet the requirements of the organization. The objectives of the AEDR functional analysis are defined as follows:

- *Define High Level Goals and Scope* – This high level vision serves as the core mission of the project and defines the true benefit of the project to upper management and the greater organization. The rest of the project initiatives ultimately contribute to meeting these goals and fit within this initial scope. These high level goals were developed based on input and agreement from the project sponsors and the key stakeholders/users.
- *Functional Requirements* – The high level goals and scope were broken down into functional areas. Each of these areas was defined by conducting workshops with the stakeholders and/or users that interact with the functional area. Many studies confirm that inadequate stakeholder/user involvement is a leading cause of failure in software projects. Getting the users involved at this early stage and keeping them involved throughout the development of software requirements was crucial.
- *System Requirements* – Depending on the functional area, this stage was often an exploratory activity. The core project team determined the required software functionality based on the documented functional requirements. Some requirements were met by out-of-the-box software while others required custom design and development. The proposed solutions were reviewed extensively with the stakeholders/users and refined as necessary. The end result was a well-rounded set of system requirements which defined the new system.
- *Detailed Software Design* – Once the software requirements were determined, refined, documented, and approved by both the users and the project team, the detailed software design process began. To the extent possible, the detailed design was created by the team member(s) with the most extensive knowledge of both the functional area and of the software technologies to be used. Each component

of the design was tied either directly or indirectly to a software requirement. The design documents the way the software will be used to meet the requirement and the custom work that was completed. The level of detail in the design was sufficient to communicate what the end result will look like and how it will operate.



**Figure 4.1-1. The diagram details the objectives of the detailed functional analysis**

Effective requirements definition enabled the team to determine the mix of product capabilities that best delivered end user value. Adequately exploring and crafting requirements into a set of product features and attributes and refining these during early project work, helped to ensure that the end user needs were met throughout the project lifecycle.

### 4.1.2 Project Scope

The scope of Phase I was defined as:

- Implement a database-driven GIS solution that will manage all of NIPSCO’s gas, electric and land-base objects
- Replace the core mapping maintenance product (Outfield), merge the Electric Distribution Facility Services (EDFS) data into the new GIS and maintain or improve the existing interfaces to the Customer Information System (CIS), Engineering Accounts Information File (EAIF), Material Accounts Payable and Purchasing System (MAPPS), Advantica Gas SynerGEE and ABB CADOPS
- Correct positional inaccuracies through a data rectification process
- Develop a stable system environment in which to develop and test the system
- Migrate the data to the new GIS platform
- Configure the software
- Customize the software as needed to improve user interaction
- Ensure adequate system performance
- Generate user-friendly help documentation
- Train the users, and
- Implement the Immediate Conceptual Architecture into the production environment rendering it useful to all.

### 4.1.3 Functional Requirements

The next phase of the functional analysis was to expand on the project goals and scope by identifying the functional areas that would be developed, conducting user and stakeholder interviews, and documenting functional requirements. The functional areas are listed with

their requirements in Appendix D. Note: The functional requirements were reviewed and fine-tuned as described in Section 4.1.4 System / Software Requirements.

### 4.1.3.1 Functional Requirements Summary

Extensive interviews were conducted with the identified stakeholders and/or users for all of the above areas. From the interviews, use cases were developed to define the desired workflow and interaction in each of these areas. This then drove the creation of functional requirements which were organized and documented into spreadsheets. An individual worksheet was used for each functional area and the requirements were documented in the standard “The application shall...” format. The requirements were purely functional and contained no implementation details. These requirements were entered into a product called System Architect which generated Figure 4.1-2, the functional system diagram.

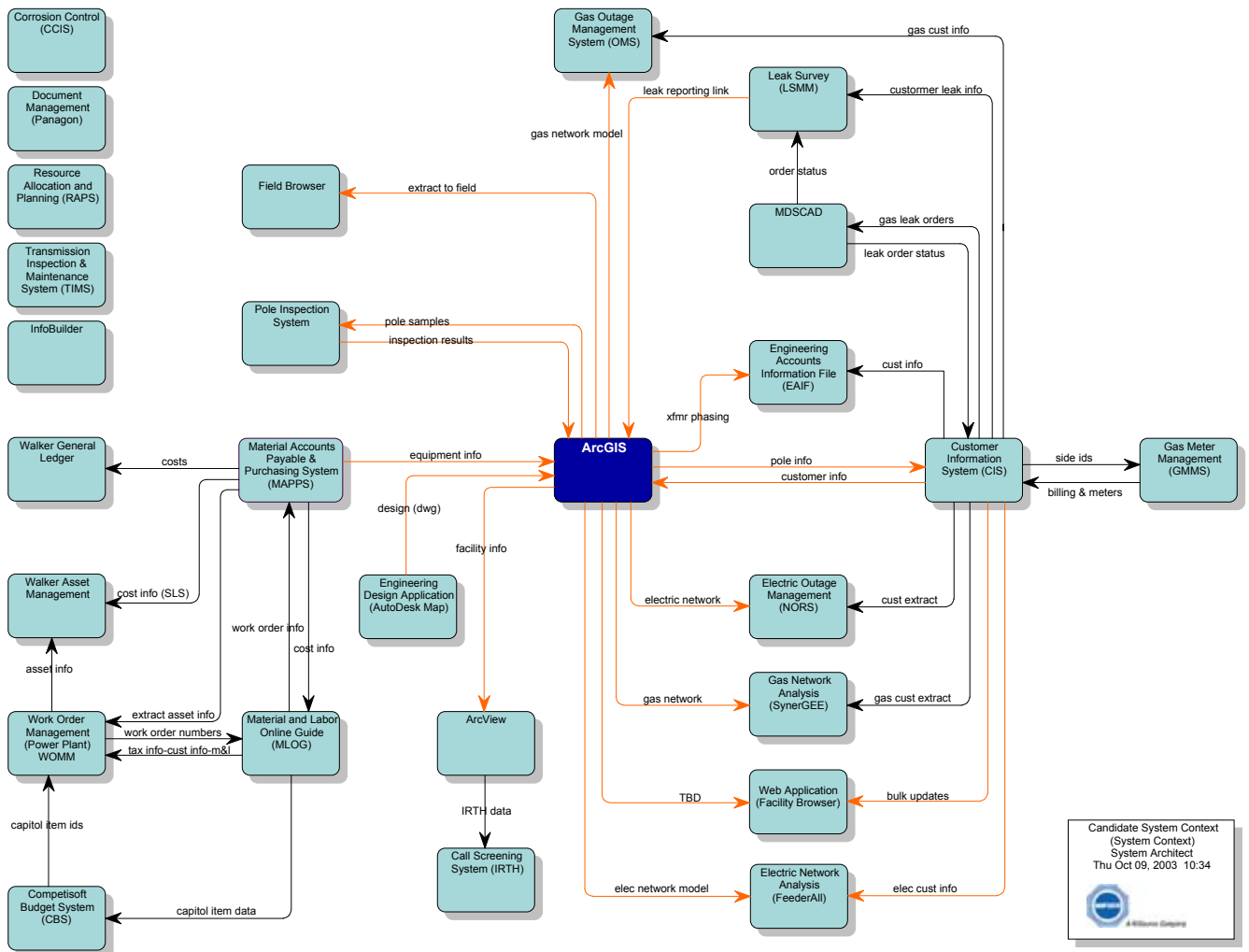


Figure 4.1-2. Functional requirements diagram

There are several systems listed on this diagram that are not included within the functional areas of this project. These are included to completely define the systems surrounding this project.

#### 4.1.4 System / Software Requirements

The process of defining the AEDR system requirements encompassed using the functional requirements to determine how a combination of out-of-the-box and custom software would meet those requirements. Several governing technology guidelines that had been established previously came into play at this point in the process:

- GIS Platform – ESRI (ArcGIS, ArcSDE, ArcIMS, etc)
- GIS Platform Extension for Utilities – Miner & Miner ArcFM
- DBMS – Microsoft SQL Server
- Primary Development Language: Microsoft C#.Net
- Gateway to Legacy Mainframe Systems: IBM DB2 Connect
- Application Deployment Environment: Citrix on Windows 2003 Server
- Web Server – Microsoft IIS

The various functional areas were broken up and a core project team member was assigned as the lead for each area. In some cases the system requirements were handled directly by the core project team while others were handled by third party vendors. In all cases, software-specific concepts were developed with input from the stakeholders / users and in the context of the above guidelines. Once agreed upon, these concepts provided the basis for the system requirements for each functional area which detailed how the system would operate, the intended user interaction, any custom development that was required, and which technological approaches would be used. Estimate documents were created for each task detailing a high level approach, the effort involved, pros, cons, and any risk areas. In some cases multiple estimate documents were created to present alternative approaches to satisfying the functional requirements.

The NIPSCO project team subsequently reviewed each of the estimate documents and made decisions as to how to proceed. The software construction tasks, including the creation of the detailed software design, were added to the project plan and assigned to the appropriate team members. The Table 4.1-1 defines the chosen system/software approach for each functional area:

**Table 4.1-1. This table describes the final approach for the development of the AEDR based on the functional requirements**

<i>Functional Area</i>	<i>Approach (determined from System Requirements)</i>
AutoCAD (Outfield)	ArcGIS and ArcFM will largely fulfill the mapping requirements from Outfield. Specific gaps have been identified and will be met by custom development of ArcFM Autoupdaters (AU's) and tools to be made available directly within the GIS.

EDFS Replacement	<p>ArcGIS and ArcFM will partially fulfill the asset management requirements of EDFs. The remaining requirements will be met by custom development in three different areas:</p> <ul style="list-style-type: none"> <li>• ArcFM Autoupdaters (AU's) and tools to be made available directly within the GIS.</li> <li>• A Standalone Geodatabase Editor (SAGE) website to allow for the editing, management, and reporting of asset data outside of the GIS.</li> <li>• A suite of nightly batch applications to handle GIS maintenance, processing, and interfaces with other systems.</li> </ul>
CADOPS (NORS)	A customized version of the ArcFM Network Adapter product will be used to export the electric network data from the GIS and to translate the data into the format expected by the CADOPS load processes.
FeederAll	A customized version of the ArcFM Network Adapter product will be used to export the electric network data from the GIS and to translate the data into the format expected by the FeederAll load processes.
EAIIF	The existing EAIIF application will remain unchanged. The new GIS must feed transformer installation data into the EAIIF data stores during a nightly interface between GIS SQL Server and EAIIF DB2.
SynerGEE	A custom gas network export application will be written to trace out a gas system based on specified parameters and to export the results in the format expected by SynerGEE Middlelink which is responsible for loading the data into SynerGEE. This custom export application replaces SynerGEE's DataPrep.
Facility Browser	A custom ESRI ArcIMS (Internet Mapping Server) web site will be developed to serve the GIS data via the NIPSCO intranet. The target functionality will be defined by the current Map Info Facility Browser and custom tools will be built as needed.
Field Browser	ESRI ArcReader will be used to display the NIPSCO data in a disconnected format. ArcReader is free software and can display map documents published directly from the back office ESRI GIS.
MAPPS Interface	<p>The new GIS will interface to MAPPS by passing data back and forth between GIS SQL Server and MAPPS DB2. The interface will include the following components:</p> <ul style="list-style-type: none"> <li>• Nightly synchronization and processing of MAPPS asset transactions by the new GIS.</li> <li>• Nightly synchronization of MAPPS Stores Item Number Descriptions into the GIS.</li> <li>• Near real-time synchronization of asset/unit data from the GIS into MAPPS.</li> </ul>
IRTH	ESRI ArcView will be used to provide full read-only access to the GIS data. This will allow the Facility Locate Screeners to utilize the data for their analysis requirements.

MLOG Interface	The new GIS will interface to MLOG on a nightly basis by synchronizing Assembly Compatible Unit information from MLOG DB2 into GIS SQL Server. ArcFM Autoupdaters (AU's) will be written to perform real time validation of assembly numbers within the GIS.
CIS Interface	The new GIS will interface to the CIS on a nightly basis by passing data back and forth between GIS SQL Server and CIS DB2. The interface will include the following components: <ul style="list-style-type: none"> <li>• Nightly synchronization of new and updated CIS Site data from CIS into GIS.</li> <li>• Nightly synchronization of new and updated CIS Installed Service data from CIS into GIS.</li> <li>• Nightly synchronization of new transformer installations and removals from the GIS into CIS.</li> <li>• Nightly synchronization of new and updated pole and pad data from the GIS into CIS.</li> <li>• Nightly synchronization of updated Installed Service X/Y coordinate data from the GIS into CIS.</li> </ul>
DXF Export for Design	The new GIS must be able to export AutoCAD DXF files with enough detail for the engineering department to complete its work design process.
Pipeline Integrity	The new GIS should handle the external mandated requirements of managing the integrity of NIPSCO's gas pipelines.

The chosen approach for each of the above components lead directly into the development of a detailed design. The detailed design for each of these components is defined later in this document within the appropriate area under the AEDR Customization and/or Interfaces sections.



## **4.2 Data Rectification**

### **4.2.1 Data Rectification Overview**

NIPSCO's objective in pursuing the data rectification project was to improve the positional accuracy of its AutoCAD data prior to implementing a new GIS.

The landbase data within NIPSCO's legacy AutoCAD files was converted from sources of moderate positional accuracy and variable currency. The facility data within NIPSCO's legacy AutoCAD files was converted over the originally converted landbase data. Since the initial conversion, NIPSCO updated and maintained the land and facility data through the use of a variety of sources. The resultant AutoCAD data was therefore of varying positional accuracy. Some landbase and facility feature positions were essentially correct, many land and facility feature positions were modestly incorrect when compared to more accurate sources, and some are more dramatically misplaced.

### **4.2.2 Imagery and Coordinate System**

NIPSCO examined a number of options with regard to obtaining a control target for the positional enhancement. In part because Digital Orthophoto Quarter Quadrangle (DOQQ) data provided for consistent comprehensive coverage of the NIPSCO service territory, DOQQ imagery was determined to be the most appropriate positional control source.

As part of the data rectification effort, the legacy source coordinate system and datum (Indiana State Plane West NAD27) was re-projected to the Indiana State Plane West NAD83 coordinate system.

### **4.2.3 NIPSCO's Data**

NIPSCO's AutoCAD datastore was (and still is) composed of AutoCAD Map DWG files. Each file covers an area approximately 3 Public Land Survey Section (PLSS) x 3 PLSS. Each DWG file is uniquely identified with a 5-character name. Within the name, the first 2 characters identify the grid, the third and fourth characters identify the quadrant within the grid, and the last character identifies the file as a land, gas, or electric file. For example, the file named BFSEL.dwg is the land file covering the southeast quadrant of grid area BF.

NIPSCO's land data is generally composed of road centerlines, approximated road Right of Ways (ROWs), street name annotation, bridges, easements, railroads, hydrography, political boundaries, political boundary annotation, company boundaries, company boundary annotation, a limited number of parcel/lot lines, and an assortment of miscellaneous lines, symbols and annotation for features such as power plants, shopping centers, schools, etc.

NIPSCO's land data is stored within ~1361 DWG files.

NIPSCO's gas data is generally composed of mains, valves, regulator stations, pipe change symbols, dead end symbols, and associated annotation.

NIPSCO's gas data is stored within 862 DWG files.

NIPSCO's electric data contains structures, transmission facilities, substations, overhead (OH) and underground (UG) primary facilities, UG secondary/streetlight/service conductors, OH primary facilities, and a subset of OH secondary/streetlight/service facilities.

NIPSCO's electric data is stored within 703 DWG files. In addition to the AutoCAD data, NIPSCO's electric facilities attribute data was stored within EDFs.

#### **4.2.4 Rectification Services**

A Request for Proposal (RFP) was developed to externally contract the effort of adjusting NIPSCO's data to achieve better positional accuracy. This RFP was a combined request for both data rectification and data migration services. Section 4.3 contains the migration process and services.

The size of this effort was significant in that NIPSCO did not have the manpower to achieve this task within the scope of this project and complete the implementation within the required timeframe. The rectification process was required to be completed prior to the data migration process. At different times during the rectification process, there were upwards of one hundred contracted personnel moving the data into better positional accuracy.

##### **4.2.4.1 Landbase Data Requirements**

NIPSCO's requirements for rectification of landbase data were as follows:

1. The delivered orthophoto imagery must be re-projected to the target projection, coordinate system, and datum.
2. All landbase features in the source data must be present in the deliverable rectified data.
3. Street intersections in the deliverable rectified landbase data shall be positioned such that the mathematical center of the vector-depicted intersection area is within 25' of the visual center of the street intersection as depicted within the re-projected DOQQ imagery.
4. Road Right of Way (ROWs) in the deliverable rectified landbase data shall be positioned such that at no point along the road, does more than 50% of the roadway, as depicted in the re-projected DOQQ imagery, appear outside of the vector ROW depiction. This result must be achieved without materially altering the depicted width of the vector road ROW.
5. Except as appropriate and based on industry-standard application of cartographic displacement rules, hydrography features in the delivered rectified landbase data

shall be positioned such that all feature vertices are located within 25' of the visible hydrography feature in the re-projected DOQQ imagery. This result must be achieved without materially reducing the number or vertices in the feature and without materially altering the location of vertices along the feature.

6. Except as appropriate and based on industry-standard application of cartographic displacement rules, railroad features in the delivered rectified landbase data shall be positioned such that all vertices are located within 25' of the visible railroad feature in the re-projected DOQQ imagery. This result must be achieved without inappropriately reducing the number or vertices in the feature and without inappropriately altering the location of vertices along the feature.
7. Rectified bridge locations shall be appropriately related to rectified locations for any associated road ROW, railroad (RR), and hydrographic features.
8. Political and company boundaries within the deliverable rectified landbase data shall be positioned such that any coincidence with planimetric or other boundary features in the source data is preserved in the deliverable data. In areas where political or company boundaries are not coincident with other features, rectification of the boundary locations shall be rationally consistent with the rectification of proximate planimetric features.
9. Rectified easement locations shall be appropriately related to rectified locations for any associated land and facility features.
10. Rectified miscellaneous landbase feature locations shall be appropriately related to rectified locations for any related or proximate landbase and facility features.
11. Within the deliverable rectified landbase data, annotation associated with any landbase feature shall be positioned such that its positional relationship to its associated feature is essentially the same as that in the source data. In cases where landbase annotation is not associated to a specific feature, its rectified position shall be rationally consistent with the rectification of proximate landbase features. Annotation that did not overstrike other features or annotation in the source data shall not overstrike features or annotation in the deliverable data.
12. The relative locations of discrepancy flags to their associated feature(s) shall be preserved in the rectified deliverable data.
13. All landbase feature and network connectivity in the source data, whether characterized by positional coincidence, network topology, or both, must be preserved in the deliverable data. This requirement includes preservation of graphic connectivity (snapping) at source Outfield/AutoCAD files edges.
14. All feature attribute values in the source data must be preserved in the deliverable data.

NIPSCO's requirements for rectification of facility data were as follows:

1. All facility features in the source data must be present in the deliverable rectified data.

2. Facility features located within any street intersection in the source data must be located within the same rectified street intersection in the deliverable data. Additionally, the logical configuration and relative positional relationships of all facilities within any street intersection must be preserved in the deliverable rectified data.
3. The positional relationships of facility features to land features in the source data must be preserved in the deliverable rectified data. Facility features located within a road ROW in the source data shall be located within the same road ROW in the deliverable rectified data. Facility features located outside the road ROW in the source data shall be located outside the ROW in the deliverable rectified data. Additionally, the logical location of facilities within or just outside of a road ROW shall be preserved within the deliverable rectified data. For example, pole symbols shown adjacent to the southern edge of a ROW in the source data shall be adjacent to the southern edge of the road ROW in the deliverable data, and gas mains shown running near the eastern edge of a road ROW in the source data shall run near the eastern edge of the road ROW in the deliverable rectified data. Further, facility features shown as proximate to a significant landbase feature in the source data must be similarly located in the deliverable rectified data. For example, a pole shown in the source data as being located at a significant curve in a road must be similarly depicted in the deliverable rectified data.
4. Facility features shown in the source data as located along a road but between two significant landbase features must be located in the deliverable rectified data based on the (+/- 10%) proportionate relationship of the source and target distances between the two closest significant landbase features.
5. The rectification of facility features which are not located within or along road ROWs shall be rationally consistent with the rectification of proximate planimetric and facility features.
6. Within the deliverable rectified facility data, annotation associated with any facility feature shall be positioned such that its positional relationship to its associated feature is essentially the same as that in the source data. In cases where facility annotation is not associated to a specific feature, its rectified position shall be rationally consistent with the rectification of proximate facility features. Annotation that did not overstrike other features or annotation in the source data shall not overstrike features or annotation in the deliverable data.
7. All facility feature and network connectivity in the source data, whether characterized by positional coincidence, network topology, or both, must be preserved in the deliverable data. This requirement includes preservation of graphic connectivity (snapping) at source AutoCAD files edges.
8. All feature attribute values in the source data must be preserved in the deliverable data.
9. In addition to complying with all facility data rectification requirements listed above, whenever any facility feature is clearly located incorrectly within an AutoCAD Map source DWG file (i.e. when a pole is located within a water body,

highway, or building), the Contractor will be required to use their best judgment in modifying the facility location to correct the problem, and to place a discrepancy flag.

#### **4.2.4.2 Pilot Project**

Prior to the initiation of full production data rectification work, the contractor was required to undertake and successfully complete a pilot data rectification effort. The objectives of the pilot project were as follows:

- To test the project's documented requirements and specifications and serve as a contained environment within which the requirements and specifications can be refined
- To prove the understandings and capabilities of the contractor
- To allow the contractor to refine its methodology and procedures prior to the initiation of full production work
- To allow both NIPSCO and the contractor to test the source and deliverable data processing procedures and to make any appropriate refinements
- To allow both NIPSCO and the contractor to test the project's administrative procedures and to make any appropriate refinements.

For the purposes of full production data rectification work, NIPSCO divided the source and deliverable data into a series of data batches. Each batch was composed of a contiguous area of land, gas, and electric data. NIPSCO utilized its twelve Local Operating Areas (LOAs) in the definition of data rectification batches.

Delivered rectified data was subjected to a series of automated and interactive quality acceptance tests. Acceptance or rejection of the delivered data was determined based upon the results of the acceptance tests. The testing regime combined 100% examination relative to certain acceptance criteria and examination of a random sample of the delivered data relative to certain other acceptance criteria.

NIPSCO utilized the following criteria in determining the acceptability of each data rectification delivery:

##### Criteria tested through 100% Verification

- Delivery Format Compliance – 100% Accuracy Required
- System Compatibility/Data Loadability – 100% Accuracy Required
- Delivery Completeness – 100% Accuracy Required
- Peripheral Deliverable Report Presence
- Data Delivery Extents

##### Criteria tested through Random Sample Verification

- Landbase Feature and Annotation Position – 98% Accuracy Required

- Gas Feature and Annotation Position – 98% Accuracy Required
- Electric Feature and Annotation Position – 98% Accuracy Required

#### **4.2.4.3 Data Rectification Process**

Project preparation began in June 2004. A three day workshop was held with the vendor for the purposes of vendor education. Throughout the next six months, rectification rules were refined, automated QA processes were developed and tested, QA procedures were established, the NIPSCO QA team was trained, ancillary issues were identified and processes established to manage the rectification process. Modifications to the preparation planning continued for the next six months.

The pilot project began three months into the project preparation phase. Refinements continued throughout the next two months until the pilot was completed.

Following the pilot project, the remainder of the rectification process commenced. Data was “frozen” in batches in the legacy production environment, rectified, QA’d and returned to the production datastore after passing the QA. This process continued until the entire NIPSCO AutoCAD DWG files were rectified and placed back into production. The details of the process are shown in Appendix A-2 under the Rectification Section.

#### **4.2.5 Data Rectification Conclusion**

The data rectification process was difficult, cumbersome and required a full-time resource committed to ensuring the contractor delivered quality data, delivered the data as defined within schedule and addressed the quality concerns.

Overall, NIPSCO’s data was re-projected to the correct coordinate system, and the positional accuracy has been much improved.

## **4.3 Data Migration**

### **4.3.1 Overview**

Data migration entails moving NIPSCO's source land, gas and electric data from the legacy format into NIPSCO's ArcGIS/ArcFM data model. More specifically, the migration of graphic and attribute data from the AutoCAD files, partially replicated Microsoft Access database and the EDFS database to NIPSCO's ArcGIS/ArcFM data model to support loading the data to NIPSCO's future ArcGIS/ArcFM system and the use of the data within that system. Additionally, the migrated data must comply with the ArcGIS/ArcFM system's symbology and topological and facility feature connectivity requirements.

NIPSCO worked with its software and service supplier partners to design, develop, and configure the ArcGIS/ArcFM system and the associated data model. Following completion of the data model development and ArcGIS/ArcFM configuration work, NIPSCO's existing source data was migrated to the ArcGIS/ArcFM geodatabase format.

The data migration and data rectification processes required significantly more effort than could be accomplished by the GIS project team developing AEDR, and therefore was packaged together as an external contracted data migration/data rectification component.

The fundamental deliverables associated with the data migration effort was land, electric, and gas data in ArcGIS/ArcFM geodatabase format. Since the data migration and data rectification tasks are closely linked, there is some overlap in some sections of this report. Section 4.2 describes the rectification effort.

### **4.3.2 The Data**

NIPSCO's source data was housed in the following datastores:

- AutoCAD DWG files
- Microsoft Access database – subset of the AutoCAD files (containing some of the same information but in an MS Access format)
- Electric Distribution Facilities System (EDFS) data stored in mainframe DB2 (relational database) format

The challenge was to determine which of the two data stores (AutoCAD/EDFS) contained the most accurate information, eliminate the duplicate data, report on mismatched information for future investigation and cleanup, and migrate the accurate data to the target.

The EDFS served as a consolidated and centralized repository for pole card data, transformer life record card data, underground electric facilities data, street light location and dusk-to-dawn lighting record cards. EDFS' ability to interface with the customer information, material and supply, material and labor estimating, wood pole treatment and

general ledger account validation systems eliminated numerous entries of duplicate information.

Operations as well as several user departments had access to this system for preparing monthly and/or annual property unit reports, transformer history and test data, pole treatment and reinforcement data and environmental documentation. User departments benefiting from EDFS include: Purchasing, Material Services, Environmental, Transformer Shop, Rate Base, General Accounting, Resource Planning and Engineering. EDFS data was used in conjunction with AutoCAD data in the migration of electric facilities data to the ArcGIS/ArcFM system.

#### **4.3.2.1 Land Data**

NIPSCO's land data is generally composed of road centerlines, approximated road ROWs, street name annotation, bridges, easements, railroads, hydrography, political boundaries, political boundary annotation, company boundaries, company boundary annotation, a limited number of parcel/lot lines, and an assortment of miscellaneous lines, symbols and annotation for features such as power plants, shopping centers, schools, etc.

The land data was stored within ~1361 DWG files within the AutoCAD system.

#### **4.3.2.2 Gas Data**

NIPSCO's gas data is generally composed of mains, valves, regulator stations, pipe change symbols, dead end symbols, and associated annotation.

The gas data was stored within ~862 DWG files within the AutoCAD system.

#### **4.3.2.3 Electric Data**

NIPSCO's electric data contains structures, transmission facilities, substations, OH and UG primary facilities, UG secondary/streetlight/service conductors, OH primary facilities, and a subset of OH secondary/streetlight/service facilities.

The electric data was stored within ~703 DWG files within the AutoCAD system. In addition to the AutoCAD data, NIPSCO's electric facilities attribute data is stored within EDFS.

### **4.3.3 The Data Migration Process**

Data migration specifications were developed using a migration matrix (spreadsheet) of source to target directions for the data. Finely detailed specifications were developed for derived data processes, that is those processes that were not simply a one for one move, but involved merging and or conversion of the data into a different format.

Miscellaneous migration specifications such as device edge splitting requirements, geometry alterations and secondary conductor migration were developed in addition to the migration matrix and included with each delivery of data to the migration vendor.



### 4.3.3.1 The Iterative Approach to Data Migration

The migration process followed the Rational Unified Process (RUP) iterative process methodology.

NIPSCO worked with the data migration vendor to refine and demonstrate the suitability of the data migration specifications and processes through the following iterative approach to data migration:

- The pilot was the first of several iterative demonstrations of the readiness of the data migration specifications and processes. The pilot data migration entailed the migration of a subset of significant land, gas and electric features and objects within a contained geographic area
- The second data migration iteration entailed the migration of all land, gas and electric feature and objects contained within a geographic area. The objectives of the second migration were to:
  1. demonstrate that any refinements to the specifications identified through iteration one have been incorporated in the migration
  2. provide migrated data of all feature and object types
  3. demonstrate the functionality of the full production data migration process and technology
  4. allow for the identification of necessary refinements to the migration specifications and technologies
- The third data migration iteration entailed the migration of all land, gas, and electric feature and object types within NIPSCO's complete service territory. The vendor was required to use the planned full migration process and technology solution in accomplishing iteration three data migration. The objectives of the third migration iteration:
  1. demonstrate that any refinements to the specifications identified through iteration two have been incorporated in the migration processes and technologies
  2. demonstrate the functionality and performance of the full production data migration process and technology
  3. allow for the identification of further requirements for refinement of the migration specifications and technologies
- The fourth data migration iteration entailed the migration of all land, gas and electric feature and object types within NIPSCO's complete service territory. The vendor was required to use the planned full migration process and technology solution in accomplishing iteration four data migration. The objectives of the fourth migration iteration were to:
  1. demonstrate that any refinements to the specifications identified through iteration three have been incorporated in the migration processes and technologies
  2. demonstrate the functionality and performance of the refined full production data migration process and technology
  3. allow for the identification of any final requirements for refinement of the migration specifications and technologies

- The final data migration iteration involved the migration of all NIPSCO land, gas and electric data from the AutoCAD/EDFS format to the ArcGIS/ArcFM geodatabase format. The effort was not to commence until the following conditions were met:
  1. development of the ArcGIS/ArcFM system and its interfaces have been appropriately completed
  2. the suitability of the data migration specifications and processes have been assured
  3. full production data rectification work has been completed.

#### **4.3.3.2 Acceptance Criteria**

Delivered migrated data was subjected to a series of automated and interactive quality acceptance tests. Acceptance or rejection of the delivered data was determined based upon the results of the acceptance tests. The testing regime was to combine 100% examination relative to certain delivery characteristics and examination of a random sample of the delivered data relative to certain other delivery characteristics.

Criteria used in the examination and acceptance testing of each of the iterative data migration deliveries was defined to be consistent with the stated and agreed objectives for the relevant iteration, with the recognition that the overall objective of the iterative approach was to confirm and demonstrate appropriate incremental improvement.

Iterative migration deliveries demonstrating a clear failure to meet the objectives of the relevant iteration were rejected.

Requirements for improvement of the migration process or technology that were identified through review of any preceding iterative delivery that were not demonstrated within a subsequent iterative delivery were rejected.

NIPSCO utilized the following criteria in determining the acceptability of the final full data migration delivery:

##### Criteria tested through 100% Verification

- Delivery Format Compliance – 100% Accuracy Required
- System Compatibility/Data Loadability – 100% Accuracy Required
- Delivery Completeness – 100% Accuracy Required
- Peripheral Deliverable Report Presence
- Data Delivery Extents
- Automated Integrity Verification – 100% Accuracy Required
- Feature and Object Quantities
- Attribute Validity
- Feature and Object Relationship Validity
- Topological and Facility Network Connectivity Validity

Criteria tested and scored separately for land, gas, and electric data, through Random Sample Verification

- Feature and Object Presence – 100% Accuracy Required
- Attribute Accuracy – 99.5% (of Features and Objects) Accuracy Required
- Feature and Object Relationship Accuracy – 99.5% (of Features and Object) Accuracy Required
- Connectivity Accuracy – 99.5% (of Features) Accuracy Required

#### **4.3.4 Data Migration Requirements**

NIPSCO's AutoCAD data served as the sole data source for the migration of landbase data to NIPSCO's ArcGIS/ArcFM system. The mapping of features, objects, and attributes between the AutoCAD landbase files and NIPSCO's ArcGIS/ArcFM data model was described within the Land Data Migration matrix. The matrix included source and target definitions as well as rules to be employed in the migration of the data. The vendor was advised that even though AutoCAD data is the only source to be used in the migration of landbase data, the vendor was required to deliver landbase data that fully complies with the structural, topological, and relational requirements of NIPSCO's ArcGIS/ArcFM system and data model. Given this requirement, the vendor was required to segment, aggregate, associate, and/or manipulate the landbase data in order to create appropriately segmented, joined, related, connected, and populated GIS features and objects.

##### **4.3.4.1 Landbase Data Migration**

NIPSCO's AutoCAD data served as the sole data source for the migration of landbase data to NIPSCO's ArcGIS/ArcFM system. The mapping of features, objects, and attributes between the AutoCAD landbase files and NIPSCO's ArcGIS/ArcFM data model was described within the Land Data Migration matrix. The matrix included source and target definitions as well as rules to be employed in the migration of the data. The vendor was advised that even though AutoCAD data is the only source to be used in the migration of landbase data, the vendor was required to deliver landbase data that fully complies with the structural, topological, and relational requirements of NIPSCO's ArcGIS/ArcFM system and data model. Given this requirement, the vendor was required to segment, aggregate, associate, and/or manipulate the landbase data in order to create appropriately segmented, joined, related, connected, and populated GIS features and objects.

##### **4.3.4.2 Gas Facilities Data Migration**

NIPSCO's AutoCAD data served as the sole data source for the migration of gas facilities data to NIPSCO's ArcGIS/ArcFM system. The mapping of features, objects, and attributes between the AutoCAD system gas files and NIPSCO's ArcGIS/ArcFM data model was described within the Gas Data Migration matrix. The matrix included source and target definitions as well as rules to be employed in the migration of the data. The vendor was advised that even though Outfield system data is the only source to be used in the migration of gas facility data, the vendor was required to deliver gas data that fully complies with the structural, topological, and relational requirements of NIPSCO's

ArcGIS/ArcFM system and data model. Given this requirement, the vendor was required to segment, aggregate, associate, and/or manipulate the gas facility data in order to create appropriately segmented, joined, related, connected, and populated GIS features and objects.

#### **4.3.4.3 Electric Facilities Data Migration**

NIPSCO's AutoCAD data and EDFS data served as the fundamental data sources for the migration of electric facilities data to NIPSCO's ArcGIS/ArcFM system.

The following principles describe the use of AutoCAD and EDFS data in the electric facilities data migration process:

- For active electric facilities, feature presence and location was migrated based exclusively on AutoCAD graphics.
- EDFS records for retired facilities served as the source for the migration of these retired facilities to the object class within the ArcGIS/ArcFM database.
- For active electric facilities, match-keys were used to associate AutoCAD and EDFS records. AutoCAD/EDFS mismatches were reported.
- Since retired facilities are recorded only in EDFS, no mismatch reporting related to retired facilities were required.
- Rules within the Electric Data Migration matrix were used to populate feature and object attributes, and to govern creation and population of child records and relationship attributes from AutoCAD and matched EDFS data sources.
- GIS Connectivity will be set based on AutoCAD connectivity and ArcGIS/ArcFM rules.

The mapping of features, objects, and attributes between the AutoCAD system electric files and NIPSCO's ArcGIS/ArcFM data model was described within the Electric Data Migration matrix. The matrix included source and target definitions as well as rules to be employed in the migration of the data.

The vendor was advised that in addition to using AutoCAD and EDFS data in the migration of electric facility data, the vendor was also be required to deliver electric data that fully complies with the structural, topological, and relational requirements of NIPSCO's ArcGIS/ArcFM system and data model. Given this requirement, the Contractor may be required to segment, aggregate, associate, and/or manipulate the electric facility data in order to create appropriately segmented, joined, related, connected, and populated GIS features and objects.

#### **4.3.4.4 AutoCAD-EDFS Match Keys and Mismatch Reporting**

The migration of electric facility data required the association and integration of data currently stored in NIPSCO's AutoCAD and EDFS systems. Both Match Keys and special relationships were used to associate individual electric facility features in

AutoCAD with each other, to associate individual records stored in EDFs with each other, and to associate features stored in AutoCAD with records stored in EDFs.

In addition to delivering migrated ArcGIS/ArcFM data, the vendor was required to deliver reports detailing feature-level mismatches between the AutoCAD and EDFs source data. These reports describe AutoCAD features that could not be matched to EDFs records and EDFs records (for active electric facilities) for which no corresponding AutoCAD feature was identified.

### **4.3.5 Data Migration Plan**

A highly detailed data migration plan was developed during migration delivery four and followed for each migration delivery thereafter. The project team was required to review and update the migration plan prior to its execution for each migration iteration. The Plan provided direction and helped to ensure that no steps were missed during the complex preparation of the data and environment for each migration delivery.

#### **4.3.5.1 QA (Quality Assurance) Process**

The Quality Assurance Plan Checklist in Appendix B was also developed during the fourth migration delivery that guided the QA process to ensure that no steps were missed and also served as a timing mechanism for each subsequent QA process as the timeframes were recorded on the QA Plan spreadsheet. QA team members were required to record their start and stop times and note any comments on the sheet. This Plan proved highly valuable in determining subsequent QA timeframes.

The following set of tracklists (in spreadsheet form) were developed to guide and document the QA process:

- Automated QA
- Connectivity QA
- Interactive QA
- Object Existence QA
- Ready for Review QA

#### **Automated QA**

A suite of automated test routines were developed to help quickly identify data anomalies such as null or un-populated fields, invalid data relationships, invalid or null domain fields, etc. All failed tests were loaded into the Automated QA tracklist, reviewed and commented on. Some failures result from unpopulated source data, others result from data not being populated correctly elsewhere such as in the relationships which may have an impact on multiple data fields. Others were valid failures and required attention.

#### **Connectivity QA**

For electric, all circuits were verified via “Trace All Feeders” and for gas, “Find Connected” and “Find Stopping Trace” were run to determine connectivity errors.

### **Interactive QA**

Interactive QA employs a visual inspection of a sample of the data. Data was migrated in batches by the vendor so the Interactive QA entailed a visual inspection of a sample of data from each batch. All features in the geodatabase were visually inspected and documented. A minimum of nineteen feature occurrences, one for each batch, were visually inspected.

### **Object Existence QA**

This high level QA commenced upon loading the data into NIPSCO's ArcGIS/ArcFM database and was typically the first QA process to be exercised. If the Object Existence QA contained any failures, the delivery was rejected on the basis that it did not meet the 100% presence criteria. The remainder of the QA effort for that delivery was subsequently cancelled until the vendor re-delivered a correctly migrated set of data.

### **Ready for Review QA**

Data migration corrections from past deliveries were immediately inspected following the passing of the Object Existence QA. All corrections requested from the vendor were documented and tested prior to moving on to the rest of the QA process.

## **4.3.6 Conclusions**

The third and fourth data migrations revealed that the migration process was not progressing as intended. During the third and fourth iteration, the QA routines had been significantly improved and it was realized that the vendor's migration process would require substantial refinement.

Data migration was very difficult from both the NIPSCO and vendor perspectives. Prior to the last migration delivery, it was determined that, the segmenting, aggregating, associating, and/or manipulation of the data in order to create appropriately segmented, joined, related, connected, and populated GIS features and objects along with some fairly simple migration proved too challenging for the migration vendor. In order to complete the migration and implement the AEDR, NIPSCO internal resources wrote in excess of forty migration routines that migrated NIPSCO's data where the migration vendor could not.

## **4.4 ArcFM / ESRI Configuration**

ArcFM and ESRI Configuration consisted of configuring a combination of the out-of-the-box and custom ArcFM Properties, ArcFM Snapping, ESRI Relationship Rules, and ESRI Connectivity Rules. While this exercise may seem trivial on the surface, the time invested in these tasks has an enormous impact on the end user experience as well as the quality and integrity of the data managed by the systems. The participants in the base configuration included core team members, end user representatives, and consulting and product vendors who had specialized knowledge in the conceptual and practical implementation of the configuration.

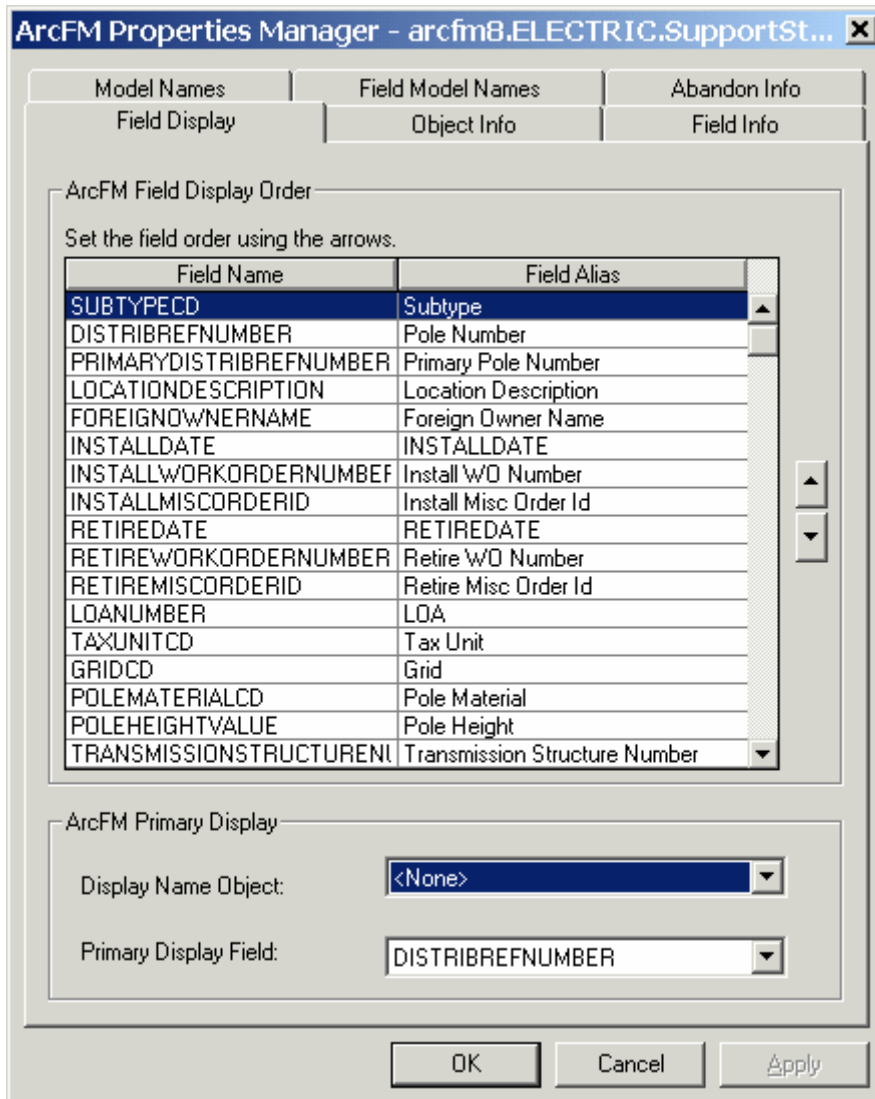
### **4.4.1 ArcFM Properties Manager**

#### **4.4.1.1 Overview**

ArcFM is highly configurable which allows the out of the box tools to be utilized on a variety of different data models. The configuration is achieved with an extension to the ESRI ArcCatalog application called ArcFM Properties Manager. The configurable components of the ArcFM Properties Manager are discussed briefly below.

##### **4.4.1.1.1 Field Display**

The Field Display tab is used to change the order of the attribute fields as they are seen on all of the ArcFM tools including the Attribute Viewer/Editor, Attribute Locator, etc. It is also used to assign a Display Name Object or to change the ArcFM Display Field. Both of these options control how the feature/object is represented in the ArcFM tools when only summary identification is shown.



**Figure 4.4-1. On Support Structure, the DistribRefNumber (pole number) is shown**



#### 4.4.1.1.2 Object Info

The Object Info tab shown in Figure 4.4-2 configures AutoUpdaters, Edit Tasks and Validation Rules for both the feature and object classes. These components can be configured at either the feature class or at a subtype level. Configuring at the subtype level allows different code components to be used for different types of the class. For example, an overhead transformer has certain components while an underground transformer has others.

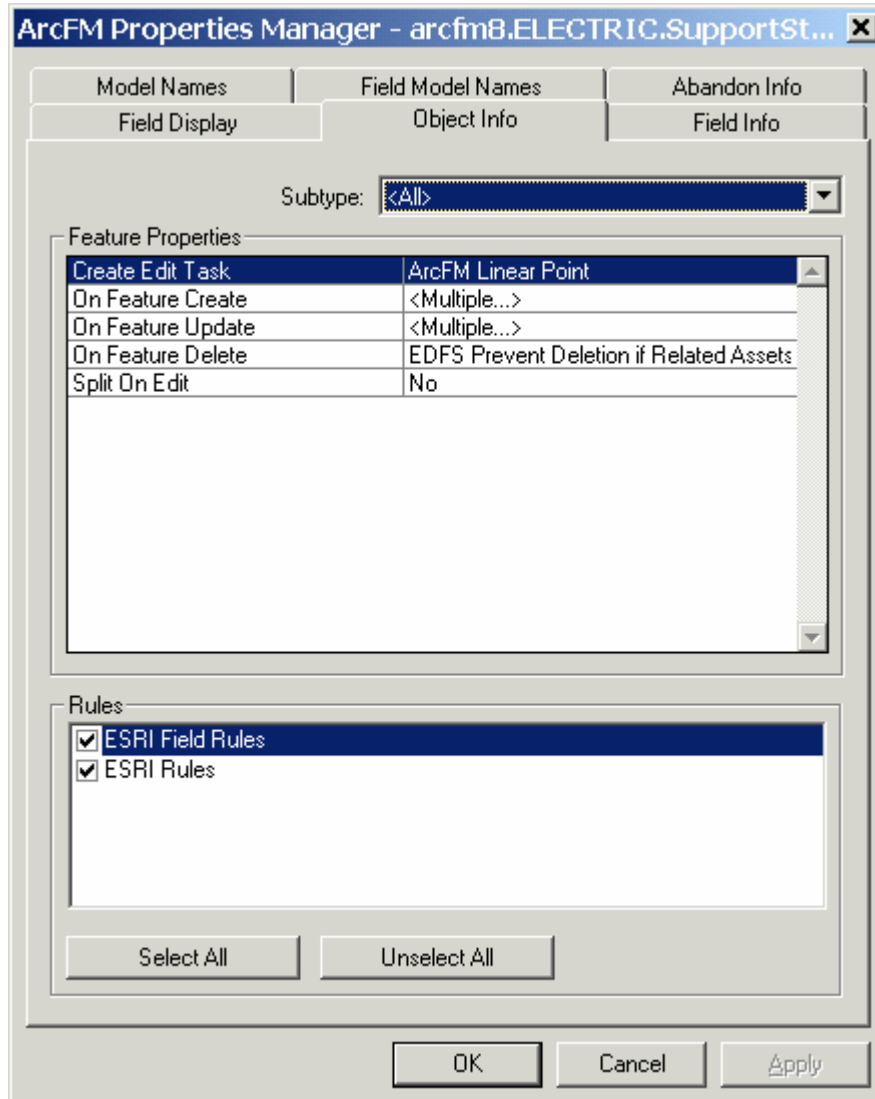


Figure 4.4-2.

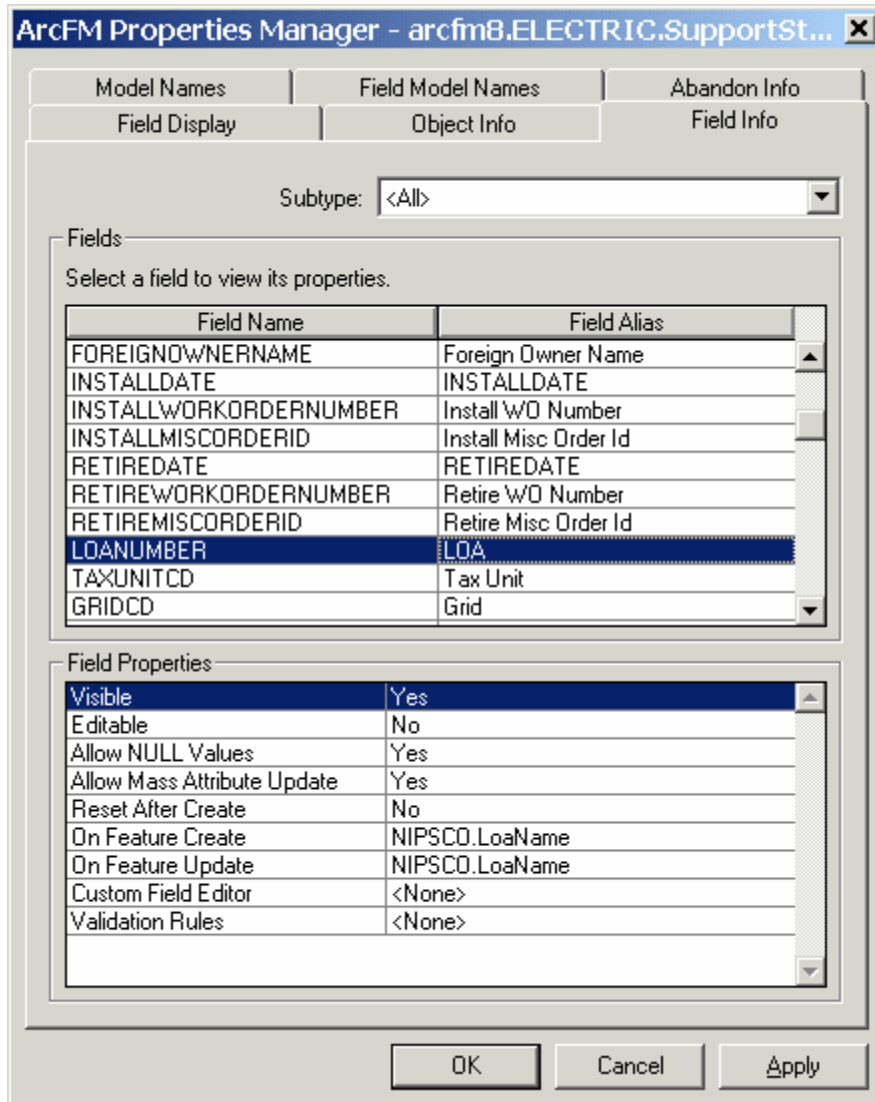
When “<Multiple...>” is shown for any of the event fields, it implies that there is more than one AutoUpdater configured for that event.

**Table 4.4-1. Descriptions of the feature properties available on the object info tab**

<b>Property</b>	<b>Function</b>
Create Edit Task	Supports user interaction when placing a feature.
On Feature Create	Assign AutoUpdaters to perform action when feature is created.
On Feature Update	Assign AutoUpdaters to perform action when feature is edited.
On Feature Delete	Assign AutoUpdaters to perform action when feature is deleted.
Before Feature Split	Only available on linear features. Assign AutoUpdaters to perform action before the feature is split.
On Feature Split	Only available on linear features. Assign AutoUpdaters to perform action when the feature is split.
After Feature Split	Only available on linear features. Assign AutoUpdaters to perform action after the feature is split.
Split on Edit	Only available on point features. When Yes is specified, the line is split first and then the point feature is placed (for improved performance).

#### **4.4.1.1.3 Field Info**

The Field Info tab adjusts the settings for a specific attribute field on a feature or object class.



**Figure 4.4-3. The settings can be applied to the entire feature class or a specific subtype of the feature class**

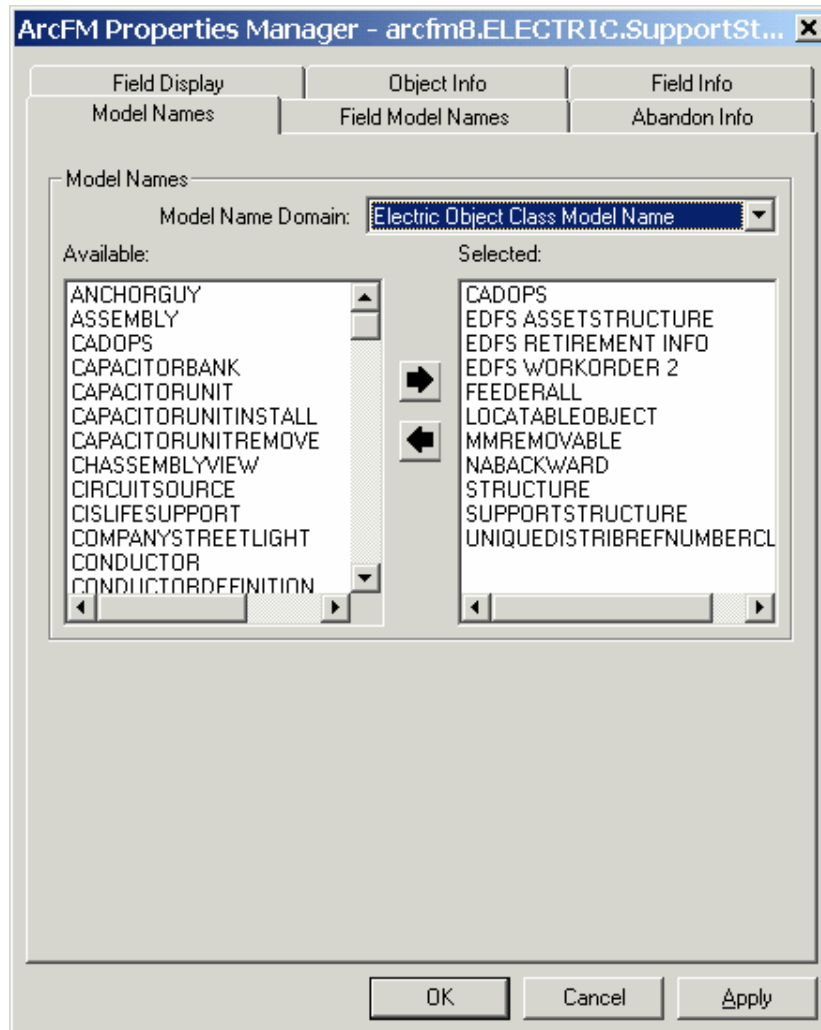
**Table 4.4-2. Definition of field properties that can be altered on this tab**

Property	Function
Visible	Controls the visibility of the field in all ArcFM controls. Allows system fields to be hidden from the user.
Editable	Controls whether a field is editable in all ArcFM controls.
Allow NULL Values	Controls whether or not a field will be required on all ArcFM controls. Allows a field to be defined as nullable at the database level but still be required by the application.
Allow Mass Attribute Update	Enables Mass Attribute Update for the field. If set to Yes, multiple features can be selected and this attribute updated on all features in one edit.

Reset After Create	Determines whether the value in the field is reset after the feature is created. After a feature is placed via the ArcFM Targets Tab this field will be nulled out forcing the user to input a new value.
On Feature Create, On Feature Update	Allows the configuration of field autoupdaters. ArcFM field autoupdaters automatically generate an attribute value at the onset of a create or an update event on the corresponding feature or object.
Custom Field Editors	Allows the configuration of a custom editor that will be used whenever the user edits this attribute field. An example would be a date/time picker control.
Validation Rules	Field Validation Rules can be configured to perform custom validation on the value of the attribute via the ArcFM QAQC application.

#### 4.4.1.1.4 Model Names

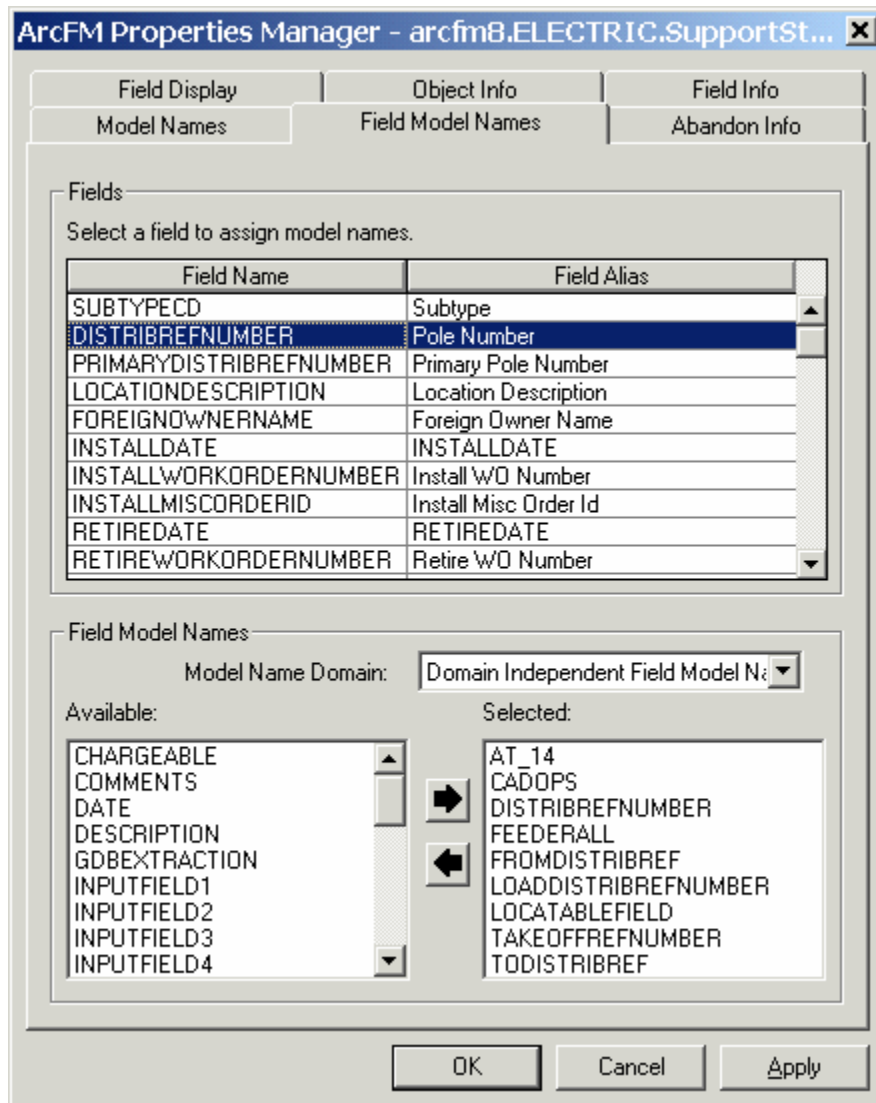
The Model Names tab allows the user to assign model names to feature and object classes. Class Model Names allow ArcFM to run on top of a data model without knowing the actual names of the classes.



**Figure 4.4-4. The Model Name Domain is used to choose the type of model name to apply which then filters the available list of model names**

#### 4.4.1.1.5 Field Model Names

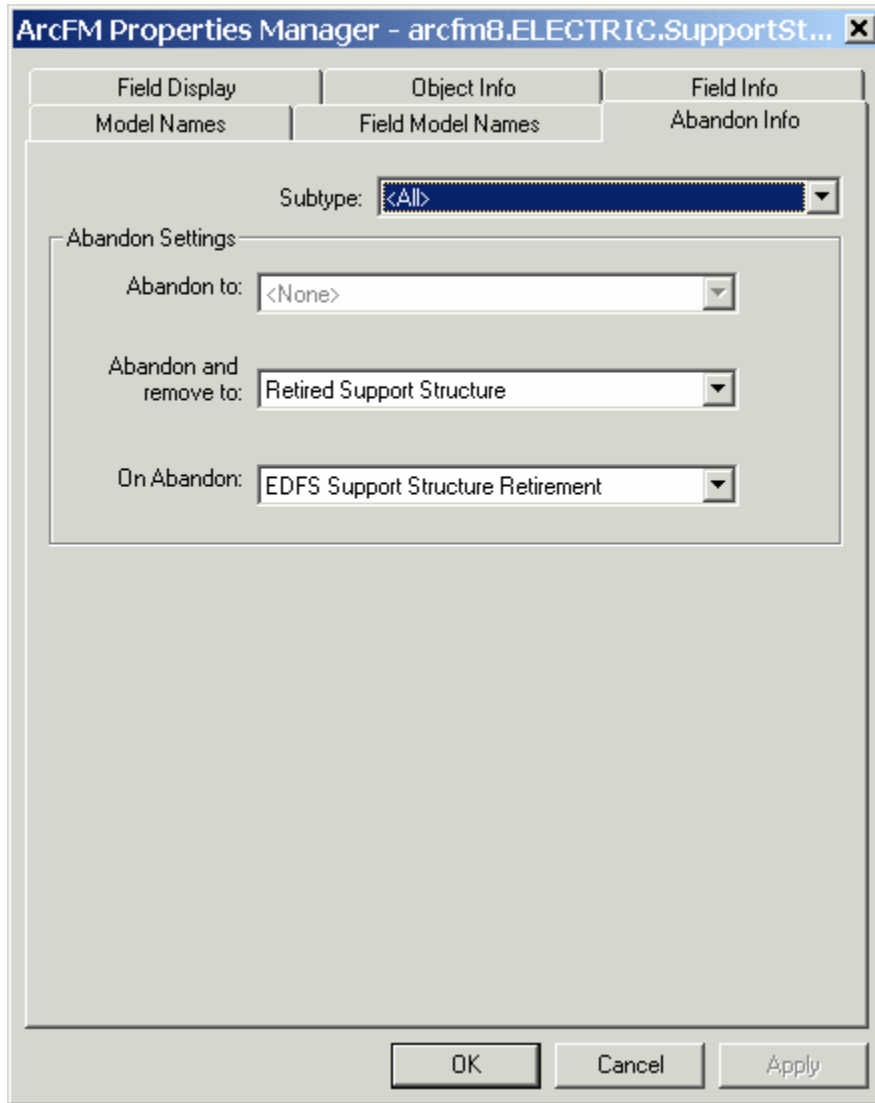
The Field Model Names tab allows the user to assign model names for the attribute fields of feature and object classes. Field Model Names allow ArcFM to run on top of a data model without knowing the actual names of the underlying fields.



**Figure 4.4-5. The Model Name Domain is used to choose the type of model name to apply which then filters the available list of model names**

### *Abandon Info*

The Abandon Info tab shown in Figure 4.4-6 is used to determine how a feature acts when it is abandoned (or abandoned and removed) via the ArcFM abandon tools.



**Figure 4.4-6. The abandonment can be defined at the class or at the subtype level**

The options are defined in Table 4.4-3.

Table 4.4-3.

Property	Function
Abandon to:	Configures a Feature class where the feature will be moved to upon retirement. The abandoned feature class includes the shape of the feature.
Abandon and remove to:	Configures an Object class where the feature will be moved to upon retirement. The shape field is not maintained in this case.
On Abandon:	Allows for the configuration of an AutoUpdater that will fire when the abandonment/retirement takes place.

#### 4.4.1.1.6 Relationship Information

ESRI Relationship classes have a different ArcFM Properties Manager interface. The Relationship interface is used to set AutoUpdaters for the create or delete event of the relationship class. In addition, the Validate Related Objects checkbox is checked to include the destination relationship class whenever the ArcFM QAQC application is run on an instance of the original relationship class.

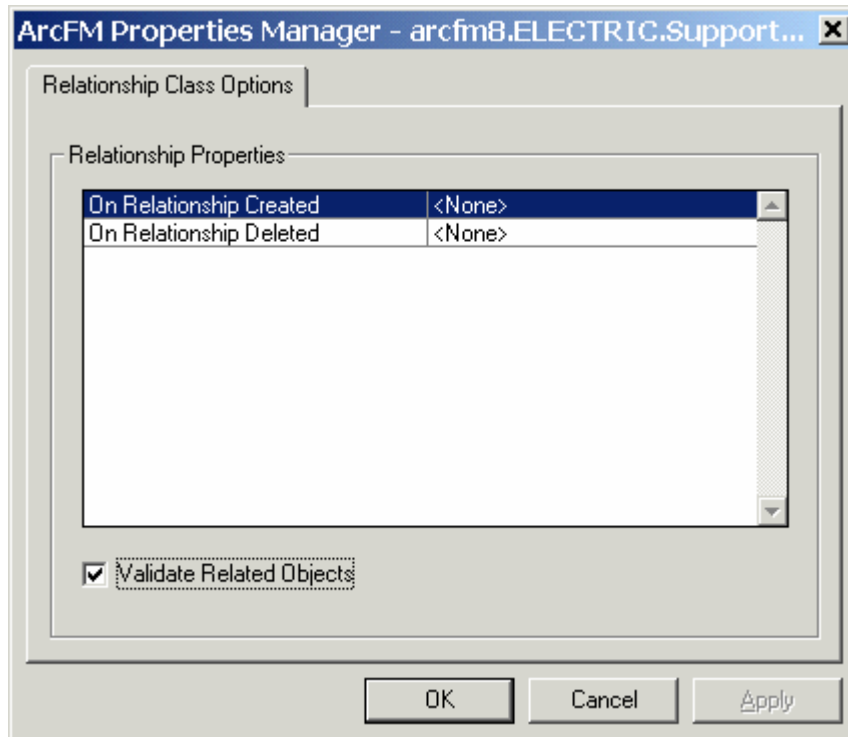


Figure 4.4-7.



#### **4.4.1.2 Requirements**

The baseline ArcFM Properties requirements were captured using a two step approach. First, the configuration that constituted end user preferences were captured during a series of interview sessions with key end users. This configuration included items such as primary display field, order of fields, and basic AutoUpdater assignment. The second set of baseline configuration included configuring the out-of-the-box ArcFM tools and AutoUpdaters to run on the NIPSCO data model. This was accomplished by using the published ArcFM configuration help files.

In both instances, the configuration was entered directly into the ArcFM Properties Manager during the sessions as this is the easiest way to capture and retain this information. Once captured, this information was exported and saved in standard XML files. These XML files were maintained in Visual SourceSafe. When needed, XSLT is applied to the XML files to format them into an easy to read format.

## **4.5 Custom ArcFM Configuration**

Once the base configuration is complete, the configuration for all custom software components must also be applied to the geodatabase via the ArcFM Properties. Each of the custom installations includes some form of an Operations Guide which details the custom configuration for both the Model Names and the component assignment. These are applied in the same manner as the base configuration using the ArcFM Properties tools described above.

### **4.5.1 Electric ArcFM Properties**

Tables E-1 and E-2 in Appendix E detail the core ArcFM Properties of all Electric features and tables. For brevity, only the default configuration has been displayed (no subtype-specific configuration is included). The table includes both the base configuration as well as the custom configuration. Any ArcFM component assignments reference out-of-the-box tools while both NIPSCO and EDFs component assignments reference custom tools. More information is provided on the custom tools in the later sections of this document.

### **4.5.2 Electric Model Names**

The model names allow the software components to access the database without any knowledge of the underlying table or column naming conventions. Many model names indicate their use. For example, the “CADOPS” model name indicates that the class/field is used by CADOPS. Any “AT\_\*” model names are used for the ArcFM Abandon / Retirement mapping. Other model names simply indicate the class or field name to the software. Model name assignments for both the base and custom configuration can be found in Table E-3 in Appendix E.

### **4.5.3 Gas ArcFM Properties**

Table E-4 in Appendix E details the core ArcFM Properties of all Gas features and tables. For brevity, only the default configuration has been displayed (no subtype-specific configuration is included). The table includes both the base configuration as well as the custom configuration. Any ArcFM component assignments reference out-of-the-box tools while both NIPSCO and EDFs component assignments reference custom tools. More information is provided on the custom tools in the later sections of this document.

### **4.5.4 Gas Model Names**

The model names allow the software components to access the database without any knowledge of the underlying table or column naming conventions. Many model names indicate their use. Any “AT\_\*” model names are used for the ArcFM Abandon / Retirement mapping. Other model names simply indicate the class or field name to the software.

## 4.5.5 Land ArcFM Properties

Table E-6 in Appendix E details the core ArcFM Properties of all Land features and tables. For brevity, only the default configuration has been displayed (no subtype-specific configuration is included). The table includes both the base configuration as well as the custom configuration. Any ArcFM component assignments reference out-of-the-box tools while both NIPSCO and EDFs component assignments reference custom tools. More information is provided on the custom tools in the later sections of this document.

## 4.5.6 Land Model Names

The model names allow the software components to access the database without any knowledge of the underlying table or column naming conventions. Many model names indicate their use. Other model names simply indicate the class or field name to the software. Table E-7 in Appendix E contains the model name assignments for Land

## 4.5.7 ArcFM Snapping Manager

### 4.5.7.1 Overview

The ArcFM base configuration also includes the configuration of the default snapping rules. As shown in Figure 4.5-1, ESRI typically requires the user to select the snapping rules manually when a feature is being created. ArcFM extends this functionality by allowing each feature class to have a configured list of snapping preferences. Subsequently, when a user places a feature, the snapping preferences are automatically loaded and applied.

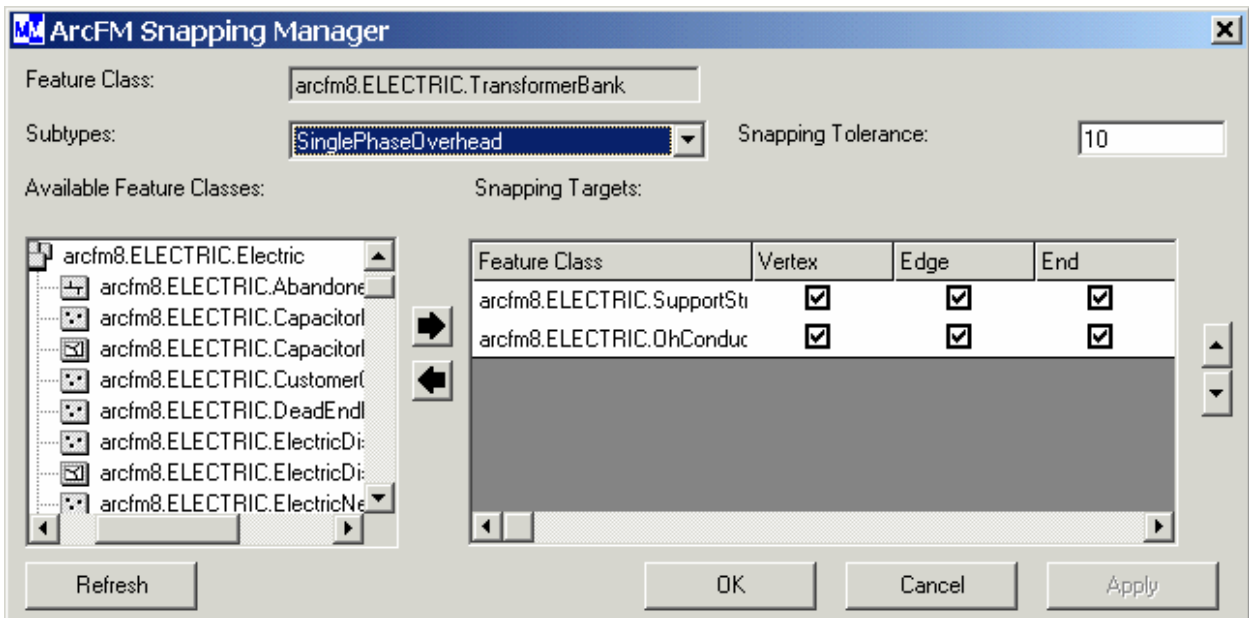


Figure 4.5-1. The snapping manager interface

Snapping is configured at the subtype level. This means that each subtype can snap to a different set of features with different options and tolerance. The snapping tolerance defines how close the user's mouse must be to the target feature before it will snap to the feature. The snapping targets can be any feature class in the database. The order they are listed in the display box is the order in which they will be snapped to if two snapping targets are found at the exact same distance from the user's mouse.

The snapping configuration must only be performed once but will greatly streamline a user's interaction with the system when they are placing/creating new features.

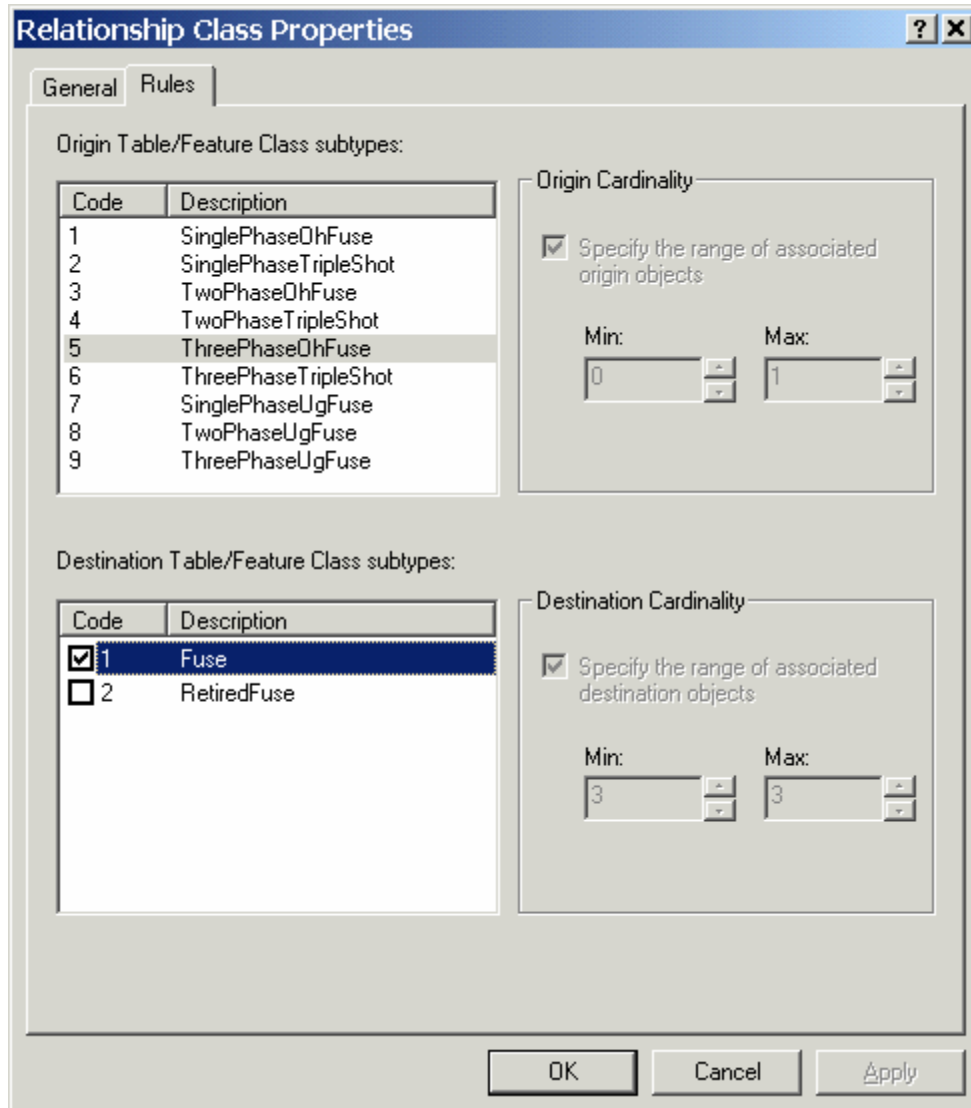
#### **4.5.7.2 Snapping Requirements**

The snapping requirements were initially compiled by the core project team. They were then later reviewed with key end users to confirm any issues or gaps. The initial snapping was input directly into the ArcFM Snapping Manager and was maintained there throughout the project. The ArcFM XML Export utility was used to export the snapping settings into an XML file which was managed in SourceSafe. An XSLT template can be applied to the XML to display the snapping settings in an easy to read format. The snapping properties are detailed in Appendix E: Electric Snapping Configuration – Table E-8; Gas Snapping Configuration – Table E-9; and Land Snapping Configuration – Table E-10.

#### **4.5.8 Relationship Rules**

##### **4.5.8.1 Overview**

Relationship rules are defined for each relationship class in the database. Though these rules are optional, when implemented they are used with the ArcFM QAQC application to strengthen the integrity of the data.



**Figure 4.5-2. The relationship rules are defined by ESRI in the properties dialog on the rules tab for all relationship classes**

The rules are defined at the subtype level and determine which subtypes on the origin class can be related to which subtypes of the destination class. The cardinality of the relationship can then be explicitly defined. In the above screenshot from the FuseCutouBank\_FuseUnit relationship, a FuseCutouBank.ThreePhaseOhFuse is related to a FuseUnit.Fuse (cannot be related to the RetiredFuse subtype). Further, a single ThreePhaseOhFuse is related to a mandatory three Fuse units and a single FuseUnit can only be related to a single ThreePhaseOhFuse. These rules will then raise QAQC errors if a ThreePhaseOhFuse is only related to a single Fuse unit.

#### 4.5.8.2 Relationship Requirements

The relationship rules were established by the core team members at the beginning of the project and were refined as the project progressed. They were documented in a spreadsheet that was managed in SourceSafe.

D	Relationship Class Name	Origin Subtype	Valid?	Destination Subtype	Origin Min Cardinality	Origin Max Cardinality	Destination Min Card.	Destination Max Card.
1	SupportStruct_CapacitorBank	1..1						
		1 - Pole	<input checked="" type="checkbox"/>	1 - Capacitor	0	1	0	1
		2 - Tower	<input checked="" type="checkbox"/>	1 - Capacitor	0	1	0	1
		3 - Hframe	<input type="checkbox"/>	1 - Capacitor				
		4 - PushPole	<input type="checkbox"/>	1 - Capacitor				
2	SupportStruct_RecloserBank	1..1						
		1 - Pole	<input checked="" type="checkbox"/>	1 - SinglePhase Recloser	0	1	0	1
		1 - Pole	<input checked="" type="checkbox"/>	2 - ThreePhase Recloser	0	1	0	1
		1 - Pole	<input checked="" type="checkbox"/>	3 - HybridPhase Recloser	0	1	0	1
		2 - Tower	<input type="checkbox"/>	1 - SinglePhase Recloser				
		2 - Tower	<input type="checkbox"/>	2 - ThreePhase Recloser				
		2 - Tower	<input type="checkbox"/>	3 - HybridPhase Recloser				
		3 - Hframe	<input type="checkbox"/>	1 - SinglePhase Recloser				
		3 - Hframe	<input type="checkbox"/>	2 - ThreePhase Recloser				
		3 - Hframe	<input type="checkbox"/>	3 - HybridPhase Recloser				
		4 - PushPole	<input type="checkbox"/>	1 - SinglePhase Recloser				
		4 - PushPole	<input type="checkbox"/>	2 - ThreePhase Recloser				
		4 - PushPole	<input type="checkbox"/>	3 - HybridPhase Recloser				

Figure 4.5-3. Example format of how the requirements were captured

These rules were then maintained in the geodatabase on a regular basis. In production the rules are easily exported and viewed using the ESRI Geodatabase Designer tool. The current rules are detailed in the following sections.

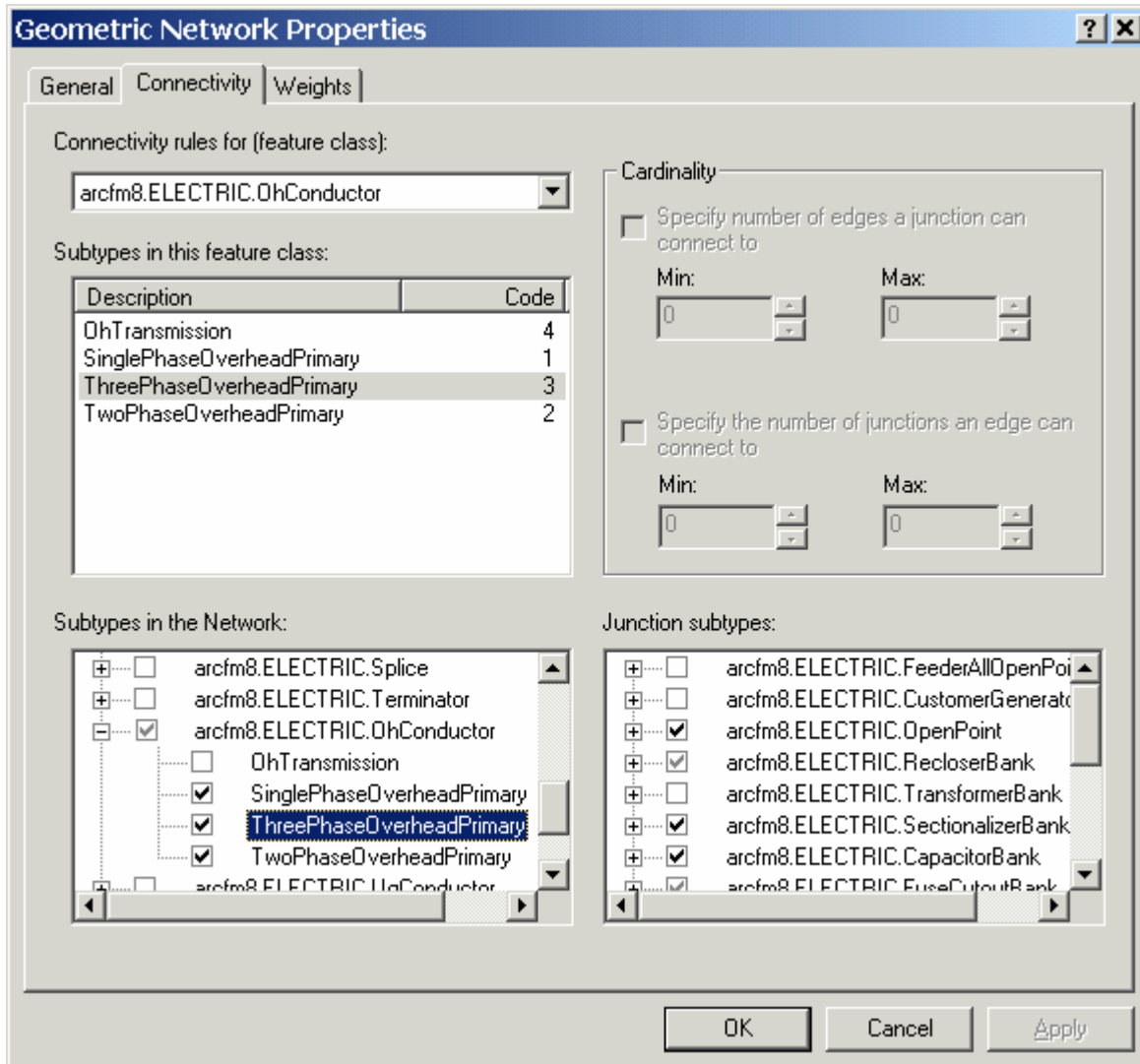
### 4.5.8.3 Electric Relationship Rules

Table E-11 in Appendix E shows only the electric relationships where relationship rules have been defined in the production AEDR geodatabase.

## 4.5.9 Connectivity Rules

### 4.5.9.1 Overview

Connectivity rules are defined for all networked features in the geodatabase. These rules are also optional but when implemented they are used with the ArcFM QAQC application to strengthen the integrity of the data.



**Figure 4.5-4. The connectivity rules are defined by ESRI in the geometric network properties dialog on the connectivity tab**

The rules are defined at the subtype-to-subtype level and include both edge-edge rules as well as edge-junction rules. When defining edge-edge rules (as in the example above), the configuration specifies which junctions are used to connect two edges. When defining edge-junction rules, the minimum and maximum cardinality is configured. This allows the user to specify how many edge connections can be connected to a single junction and vice versa. This extensive configuration is labor intensive but provides great value to the integrity of the data.

#### 4.5.9.2 Connectivity Requirements

The connectivity rules requirements were gathered at the beginning of the project and were subsequently refined during the rest of the project. They were documented in a spreadsheet that was maintained in SourceSafe.

Edge-Junction Rules			Edges to Connect to		Junctions to Connect to		Snapping (by Feature Class)					Notes	
Junction Type	Edge Type	OK?	J-E Min	J-E Max	E-J Min	E-J Max	Vertex	Edge	End	Tolerance	Split?		
Junction Subtype	Edge Subtype												
Fuse Cutout Bank OH Fuse	BusBar	No											
	Switchgear Bus	No											
	Substation Bus	No											
	Overhead Primary						✓	✓	✓	5	✓		
	Single Phase OH Pri	✓	0	2	0	2							
	Two Phase OH Pri	✓	0	2	0	2							
	Three Phase OH Pri	✓	0	2	0	2							
	Overhead Transmission												
	Overhead Transmission	No											
	Tie Wire							✓	✓	✓	5	✓	
Tie Wire	✓	0	2	0	1						See Data Migration Procedures		
Underground Primary													
Single Phase OH Pri	No												
Two Phase OH Pri	No												
Three Phase OH Pri	No												
Underground Trans.													
UG Transmission	No												

Figure 4.5-5. Spreadsheet format for edge-junction rules

Edge-Edge Rules		Connects to...	Through	Snaps at... (by target Feature Class)							Notes
Edge Feature Class	Edge Class	Edge Subtype	Junction Class	Def?	OK?	Vertex	Edge	End	Tolerance	Split?	
Overhead Primary	Overhead Primary	Overhead Primary	Generic Junction	✓	✓	✓	✓	✓	5	✓	
Single Phase Primary	Single Phase Primary	Single Phase Primary	Capacitor Bank								
			Capacitor								
			Customer Generator								
			Generator								
			Fuse Cutout Bank								
			OH Fuse								
			Triple Shot								
			Primary Meter								
			Overhead								
			Primary Open Point								
			Open Point								
			Recloser Bank								
			Single Phase Recloser								
			Sectionalizer								
			Sectionalizer								
			Splice								
			UGSplice								
			Substation Breaker								
			Distribution Breaker								
			Switch								
			Hook Switch								
			Loadbreak Switch								
			DistributionAutomationSwitch								
			Terminator								
			Pole Terminator								
			Transformer Bank								
			Single Phase Overhead								
			Step								
			Voltage Regulator								
			Single Phase								

Figure 4.5-6. Spreadsheet format for edge-edge rules



These rules were then maintained in the geodatabase on a regular basis. In production the rules can be easily exported and viewed using the ESRI Geodatabase Designer tool. The current rules are detailed in Appendix E, Tables E-13, E-14, E-15 and E-16.

## **4.6 AEDR System / Project Environment**

### **4.6.1 Server**

This section details the specifications that are in use for the various server components within the AEDR system. The two major server components include the database server and the Citrix server farm. The database server hosts the actual data stores for the project as well as the ArcSDE server components that provide spatial access to the data stores. The Citrix servers exist as application service providers that allow the end users to harness the power of a server while using the thick client GIS applications. This section also includes a review of the various server environments that were employed during the construction phase of the AEDR project.

#### **4.6.1.1 Database**

Microsoft SQL Server was chosen as the underlying RDBMS. ESRI ArcSDE sits on top of the database and manages all GIS interaction with the database. The following subsections detail the installation, configuration, and use of the database components of the AEDR project.

##### **4.6.1.1.1 Target Database Environment**

The following specifications define the target database server environment for the AEDR project:

- Software Config:
  - i. Windows Server 2003
  - ii. SQL Server 2000 Enterprise Edition Sp3a
  - iii. ArcSDE 8.3 for SQL Server Sp1 (Includes ArcSDE for SQL Server Performance Patch)
- Databases
  - i. SDE: Manages all ArcSDE database components and the M&M system components
    1. Initial Size: 100 MB
    2. recovery model: full
    3. Datafile: e:\program files\Microsoft SQL Server\MSSQL\data\sdedata.mdf
  - ii. ARCFM8: Contains all Electric, Gas, Land, and CIS data tables
    1. Initial Size: 400 MB
    2. recovery model: full
    3. Datafile: e:\program files\Microsoft SQL Server\MSSQL\data\arcfm8data.mdf
  - iii. PX: Contains all Session Manager data and administration tables
    1. Initial Size: 100 MB
    2. recovery model: full
    3. Datafile: e:\program files\Microsoft SQL Server\MSSQL\data\pxdata.mdf

- iv. RASTER: Contains spatial imagery tables
  1. Initial Size: 1 GB
  2. recovery model: simple
  3. Datafile: e:\program files\Microsoft SQL Server\MSSQL\data\rasterdata.mdf
- v. NIPSCOSage: Contains all system and authorization tables for the SAGE application
  1. Initial Size: 100 MB
  2. recovery model: full
  3. Datafile: e:\program files\Microsoft SQL Server\MSSQL\data\sagedata.mdf
- ArcSDE Configuration
  - i. Installation
    1. Location: E:\arcgis\arcsde\sqlxe
  - ii. Server Configuration
    1. Port: 9999
    2. Service name: esri\_sde
  - iii. Service Packs and Patches
    1. ArcSDE 8.3 SQL Server Service Pack 1
    2. ArcSDE 8.3 SQL Server Performance Patch

#### **4.6.1.1.2 Database Permissions**

The following section outlines the strategy that was taken in defining the database privileges for the AEDR project:

##### **4.6.1.1.2.1 Database Privilege Strategy**

All users requiring access to the GIS system must have permissions set on each database object.

- Users to the system have to be identified by their NiSource domain user ID. All components of the AEDR system use windows authentication so that the end user is never required to type a password. Windows authentication allows the applications to use the credentials of the user that logged onto the computer where the application is being used.
- Roles for the system have been identified and are identified in the next section.
- For all Roles created within the database, permissions can be set on Roles within ArcCatalog. This is the preferred approach when dealing with a versioned database because ESRI handles assigning the permissions on all 'add', 'delete', and other system tables. In addition, for each versioned feature class there often exist several related tables that require permissions. By assigning permissions via ArcCatalog, these other related tables automatically receive the proper permission settings. This not only saves time, but ensures consistent permissions are set on underlying objects.

- Once the Users and Roles have been identified and created, the Users must be assigned the appropriate Role(s). The standard assignment of roles is detailed in a below section.

#### 4.6.1.1.2.2 User Accounts and Roles

- SQL Server User Accounts
  - SDE: Key system user that owns the SDE database and has permissions across the GIS tables
  - SAGE: Owns all NIPSCOSAGE tables and stored procedures
  - Electric: Owns all electric tables
  - Gas: Owns all gas tables
  - Landbase: Owns all land tables
  - CIS owns all CIS tables.
- SQL Server Roles
  - SDE Database
    - ArcFM\_user – Grants appropriate access to Miner & Miner tables for ArcFM users
    - ArcFM\_admin – Grants read/write access to all Miner & Miner tables in the SDE database.
  - ArcFM8Database
    - Electric\_viewer – Grants read-only access to electric data
    - Gas\_viewer – Grants read-only access to gas data
    - Landbase\_viewer – Grants read-only access to Landbase data
    - CIS\_viewer – Grants read-only access to CIS data
    - Electric\_editor – Grants read/write access to Electric data
    - Gas\_editor – Grants read/write access to Gas data
    - Landbase\_editor – Grants read/write access to Landbase data
    - Cis\_editor – Grants read/write access to CIS data
  - PX Database
    - SM\_User – Grants read/write access to all session management tables
  - Raster Database
    - viewer – Grants read-only access to raster data
  - NIPSCOSage
    - N/A – only the SAGE user has access to the NIPSCOSage objects.

#### 4.6.1.1.2.3 Standard User Permissions

- Standard Record Clerk: Responsible for the input and maintenance of all electric and gas GIS data per work orders and work design.
  - ArcFM8 Database
    - Electric\_Editor
    - Gas\_Editor
    - Landbase\_Viewer
    - CIS\_Viewer
  - SDE Database

- ArcFM\_User
    - Db\_ddladmin – system role granted temporarily to allow the ArcSDE process to create individual log and transaction tables for each user when they first log into the system. This permission is revoked after the user has logged in at least once.
  - PX Database
    - SM\_User
- Land Record Clerk: Responsible for the input and maintenance of all land GIS data as well as rectifying electric and gas data to match the landbase.
  - ArcFM8 Database
    - Electric\_Editor
    - Gas\_Editor
    - Landbase\_Editor
    - CIS\_Viewer
  - SDE Database
    - ArcFM\_User
    - Db\_ddladmin – system role granted temporarily to allow the ArcSDE process to create individual log and transaction tables for each user when they first log into the system. This permission is revoked after the user has logged in at least once.
  - PX Database
    - SM\_User
- ArcView Users: A varied group of users who need view only access into the GIS data. This includes call screening, design engineers, outage management, etc.
  - ArcFM8 Database
    - Electric\_Viewer
    - Gas\_Viewer
    - Landbase\_Viewer
    - CIS\_Viewer
  - SDE Database
    - ArcFM\_User
    - Db\_ddladmin – system role granted temporarily to allow the ArcSDE process to create individual log and transaction tables for each user when they first log into the system. This permission is revoked after the user has logged in at least once.
- CIS Editors: A small group of individuals responsible for the updating of CIS Installed Service locations. They do not manage their work via Session Manager and therefore have no permissions in the PX database.
  - ArcFM8 Database:
    - Electric\_Viewer
    - Gas\_Viewer
    - Landbase\_Viewer
    - CIS\_Editor
  - SDE Database

- ArcFM\_User
  - Db\_ddladmin – system role granted temporarily to allow the ArcSDE process to create individual log and transaction tables for each user when they first log into the system. This permission is revoked after the user has logged in at least once.
- GIS Administrators: Members within the GIS department who are responsible for general maintenance within the system as well as data analysis for varied external parties.
  - ArcFM8 Database:
    - Electric\_Editor
    - Gas\_Editor
    - Landbase\_Editor
    - CIS\_Editor
  - SDE Database
    - ArcFM\_Admin
    - Db\_ddladmin – system role granted temporarily to allow the ArcSDE process to create individual log and transaction tables for each user when they first log into the system. This permission is revoked after the user has logged in at least once.
  - PX Database
    - SM\_User

#### **4.6.1.2 Citrix**

Windows Terminal Server (WTS) is a multi-user server operating system that provides the ability to host multiple simultaneous thin-client sessions on remote client devices. All client processing is performed locally at the Terminal Server and only display, keystroke, and mouse commands are transmitted over the network to the client device. Citrix MetaFrame is a Windows Terminal Server add-on that significantly enhances the functionality, manageability, and ease of deployment of Terminal Server solutions. MetaFrame relies on the Independent Computing Architecture (ICA) protocol. One of the key aspects of ICA is that it allows non-Windows clients to access Terminal Server. Therefore, ICA allows for the efficient use of existing hardware in a heterogeneous environment.

Windows Terminal Server and Citrix implementations have a number of advantages:

- Applications and data access are moved to the computer room, reducing network bandwidth requirements
- Relieves the need to regularly upgrade client workstations to keep up with increasing software system demand
- Administration is centralized resulting in a reduction in administration costs
- Ability to rapidly deploy applications, including Web based deployment options
- Since the applications run on a powerful central server, end-client performance increases are often observed
- Provides a secure computing environment since all data can be protected in the server room while only displays are sent to the client device.

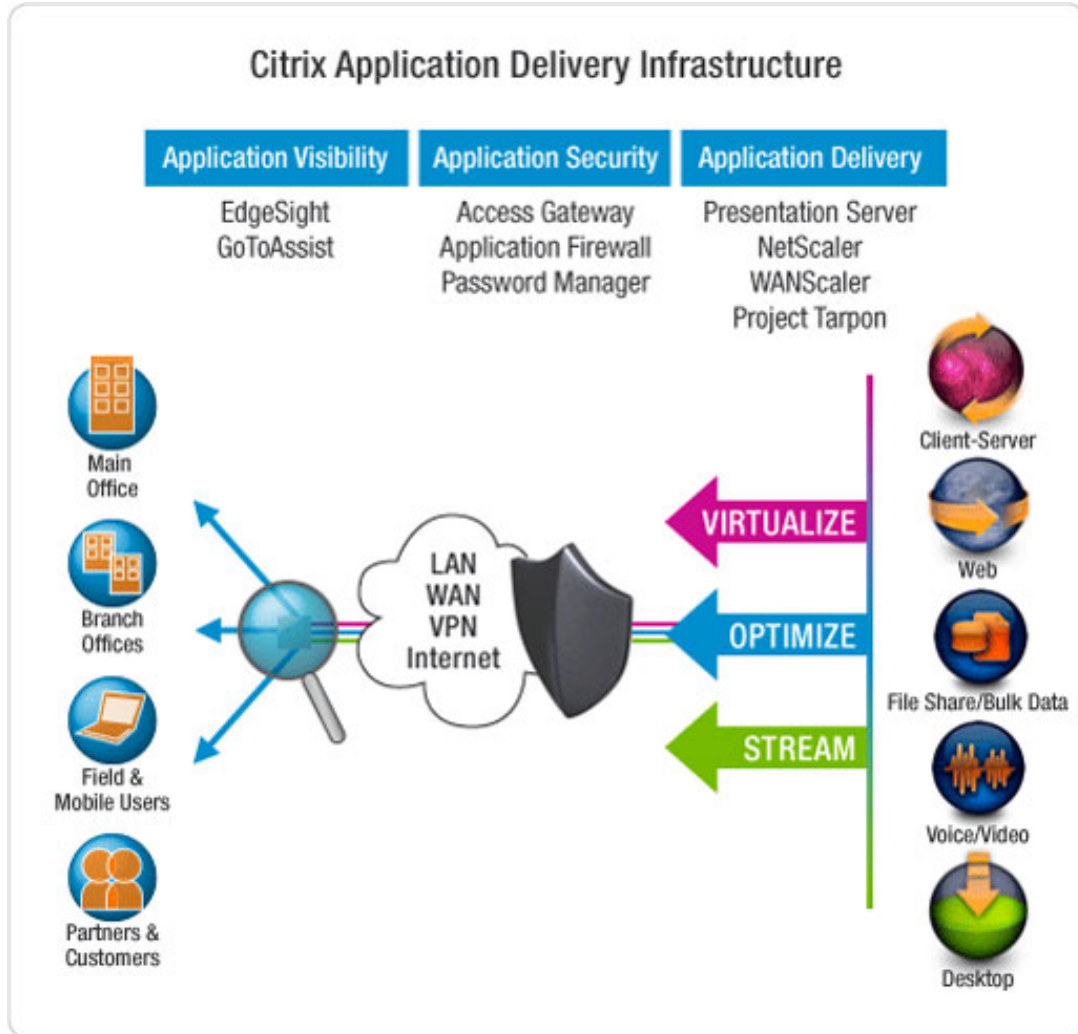


Figure 4.6-1. Diagram illustrates the Citrix infrastructure

#### 4.6.1.2.1 Citrix Application Components

The AEDR project utilizes a production Citrix farm including 4 Windows 2003 servers as well as a single development / test Citrix server. These Citrix machines are loaded with all of the end user software installs as detailed below:

- *Microsoft Internet Explorer 6.0 Service Pack 1*
  - Used for accessing any of the AEDR help systems as well as SAGE and Facility Browser.
- *ESRI ArcGIS 8.3 Service Pack 3*
  - This is the core ESRI GIS software.
- *ESRI ArcObjects Developer Kit*
  - This installation includes Microsoft .Net wrappers for all ESRI programming objects and is required to support ArcFM on top of ArcGIS.

- *Microsoft .Net Framework*
  - The .Net framework version 1.1 was used in the development of all custom code for the AEDR project and it must be installed prior to installing any custom components.
- *Miner & Miner ArcFM 9.01 Service Pack 2*
  - This is the core ArcFM GIS software.
- *NIPSCO ArcLauncher:*
  - This application was defined specifically for the Citrix environment and it allows the same published Citrix applications to be used by groups with differing permissions.
- *NIPSCO Custom Components*
  - This installation contains custom functionality to allow ArcGIS to match the effectiveness of AutoCAD / Outfield.
- *NIPSCO EDFS Tools*
  - This installation provides all GIS replacement components for the legacy EDFS mainframe system.
- *NIPSCO Font File*
  - This font is used to display all of the GIS symbols.
- *NIPSCO AutoUpdaters*
  - This installation contains upgrades to core Miner & Miner AutoUpdaters that are required for their use at NIPSCO.
- *NIPSCO Custom Login*
  - This installation allows ArcGIS, ArcFM, and Session Manager to all be used with Microsoft Windows Authentication thereby eliminating the need for the user to ever log into the system as long as they have logged onto the Citrix server with an authorized domain account.
- *NIPSCO Tools*
  - This installation contains additional GIS tools that will be used in the day to day management and QAQC of the work being performed.

With these application components in place, the Citrix machines allow the NIPSCO users all the benefits of a high powered end user terminal.

#### **4.6.1.2.2 Citrix User Groups**

Three groups of Citrix users were defined with varying access. The groups were defined as Windows Active Directory Groups and were then used to set the access level for each of the published Citrix applications. This ensures that only authorized users can access each application with each defined permission level. The same applications are made available to more than one group but the permission level is changed depending on the authorization of the user. The permissions can be altered for both ESRI and Miner & Miner applications by changing the license available to the user.

The ESRI license can be updated by setting an environment variable as follows:

- ArcView: ESRI\_SOFTWARE\_CLASS = Viewer
- ArcEditor: ESRI\_SOFTWARE\_CLASS = Editor
- ArcInfo: ESRI\_SOFTWARE\_CLASS = Professional



The Miner & Miner license can be updated by setting specific registry keys as follows:

- ArcFM Viewer: HKEY\_CURRENT\_USER\Software\Miner and Miner\Desktop Manager\Products\ArcFM Viewer = 1
- ArcFM: HKEY\_CURRENT\_USER\Software\Miner and Miner\Desktop Manager\Products\ArcFM = 1

Both of these license changes are automated via the NIPSCO ArcLauncher application. It is a command line application that accepts parameters for the application to be run (i.e. ArcMap, ArcCatalog, etc) and the license level to be used. It then sets both the ESRI license environment variable and the Miner & Miner registry keys appropriately before starting the application.

Within this context, the following three Citrix user groups have been established:

- i. Viewer
  - a. ArcMap with ArcView and ArcFM Viewer
- ii. Clerk / Editor
  - a. ArcMap with ArcEditor and ArcFM
- iii. Administrator / Manager
  - a. ArcMap with ArcEditor/ArcInfo and ArcFM
  - b. ArcCatalog with ArcFM

All AEDR Citrix users are assigned into one of these groups and the respective permissions along with the user's database roles effectively limit their access into the application and data.

### **4.6.1.3 Management of the Server Environment**

This section defines the use and management of the server environment during AEDR data migration, application development, and testing. Six SQL Server instances split out over two database servers were utilized to create well-defined separation between the project initiatives. This allowed the project team to manage database and application updates and testing in a methodical manner while allowing multiple major initiatives to be pursued in parallel.

#### **4.6.1.3.1 ArcSDE Environment Descriptions**

##### **4.6.1.3.1.1 Delta ArcSDE Environment**

This environment is used for the initial creation of the physical ArcFM8 and SDE databases from the master physical Visio data model. This environment will never contain any actual data (i.e. only contains the latest database schema). The ArcFM8 and SDE databases will be deleted and recreated via the XMI export tools available in Visio and ArcCatalog.

**Table 4.6-1. Delta instance**

<b>SQL Server/SDE Server Name</b>	aedrmappgis01
<b>SQL Server Instance Name</b>	aedrmappgis01
<b>ArcSDE Instance Name</b>	999A
<b>ArcSDE Instance Port</b>	9991
<b>Physical drive location</b>	e:\arcgis\arcsde\sqllexe\bin\giomgr.exe

**4.6.1.3.1.2 Migration ArcSDE Environment**

This environment is a repository for the data returned from the data migration vendor. This instance will be populated from a SQL back-up file (\*.bak) received from the data migration vendor. This instance will not have any changes made to it other than re-linking users. It will also serve as the environment that automated migration validation routines are run against. Each subsequent migration delivery will over write the schema and data from the previous restore.

**Table 4.6-2. Migration instance**

<b>SQL Server/SDE Server Name</b>	aedrmappgis01
<b>SQL Server Instance Name</b>	aedrmappgis01\mig
<b>ArcSDE Instance Name</b>	999B_mig
<b>ArcSDE Instance Port</b>	9992
<b>Physical drive location</b>	e:\arcgis\arcsde\sqllexe_mig\bin\giomgr.exe

**4.6.1.3.1.3 Development ArcSDE Environment**

This environment is for the development and initial installation of all custom configuration, schema changes, and code development. The application code changes and unit testing takes place on a “thick” client machine and may reside on several machines as necessary. SDE/SQL configuration and data model changes are allowed in this environment to support the code development. Any changes that need to be made permanent are rolled back into the appropriate Visio or XML configuration files so that they are not lost when this environment is loaded with an updated version of the data. This environment is typically loaded with data from the Migration environment after the data has gone through the QAQC process. Once loaded, the latest configuration files (ArcFM Model Names, Properties, etc) are applied before development is resumed. The users of this environment are limited to the ongoing development and configuration tasks.

**Table 4.6-3. Development instance**

<b>SQL Server/SDE Server Name</b>	aedrmappgis01
<b>SQL Server Instance Name</b>	aedrmappgis01\dev
<b>ArcSDE Instance Name</b>	999C_dev
<b>ArcSDE Instance Port</b>	9993
<b>Physical drive location</b>	e:\arcgis\arcsde\sqllexe_dev\bin\giomgr.exe

#### 4.6.1.3.1.4 Test ArcSDE Environment (Test Server)

This environment is used for the next level of testing and incorporates all the changes in custom code as well as the data model changes that have been approved to be promoted from the Development environment. In addition, the custom code and OOTB applications are tested in the “thin” Citrix environment against this environment. The Citrix test environment closely models the production hardware and software environment.

**Table 4.6-4. Test instance on the test server**

<b>SQL Server/SDE Server Name</b>	aedrmappgis01
<b>SQL Server Instance Name</b>	aedrmappgis01\test
<b>ArcSDE Instance Name</b>	999D_test
<b>ArcSDE Instance Port</b>	9994
<b>Physical drive location</b>	e:\arcgis\arcsde\sqlxe_test\bin\giomgr.exe

#### 4.6.1.3.1.5 Test ArcSDE Environment (Production Server)

This environment was used for additional testing and typically matched the Test environment on aedrmappgis01. This test environment existed on the production server machine and was disabled before the system was taken into production to ensure that all system resources are made available to the production SDE environment.

**Table 4.6-5. Temporary test instance on the production server**

<b>SQL Server/SDE Server Name</b>	aedrmdbsqlp01
<b>SQL Server Instance Name</b>	aedrmdbsqlp01\test
<b>ArcSDE Instance Name</b>	999E_test
<b>ArcSDE Instance Port</b>	9995
<b>Physical drive location</b>	e:\arcgis\arcsde\sqlxe_test\bin\giomgr.exe

#### 4.6.1.3.1.6 Production ArcSDE Environment

This is the full production environment. When the system was rolled into production, the SQL/SDE database server and the Citrix server became solely dedicated for production use. Before production, this environment was used for miscellaneous other tasks including an additional load environment for migration data. Only fully tested and approved cuts from the Test environment are promoted into the Production environment.

**Table 4.6-6. Production instance on the production server**

<b>SQL Server/SDE Server Name</b>	aedrmdbsqlp01
<b>SQL Server Instance Name</b>	aedrmdbsqlp01
<b>ArcSDE Instance Name</b>	esri_sde
<b>ArcSDE Instance Port</b>	9996
<b>Physical drive location</b>	e:\arcgis\arcsde\sqlxe\bin\giomgr.exe

### 4.6.1.3.2 Citrix Server Environments

The following Citrix machines will be used for the application test environment:

1. aedrmapcrx01

The following Citrix machines will be used for the application production environment:

2. aedrmapcrx02
3. aedrmapcrx03
4. aedrmapcrx04
5. aedrmapcrx05

### 4.6.1.3.3 Data Workflow

This section details the ideal ArcSDE workflow beginning with the Visio data model and ending with the rollout of the data into the production environment. Figure 4.6-2 illustrates this process including the workflow steps that occur within each environment and the steps to move the data between the environments. The processes are noted at a high level. More detail is provided in later sections.

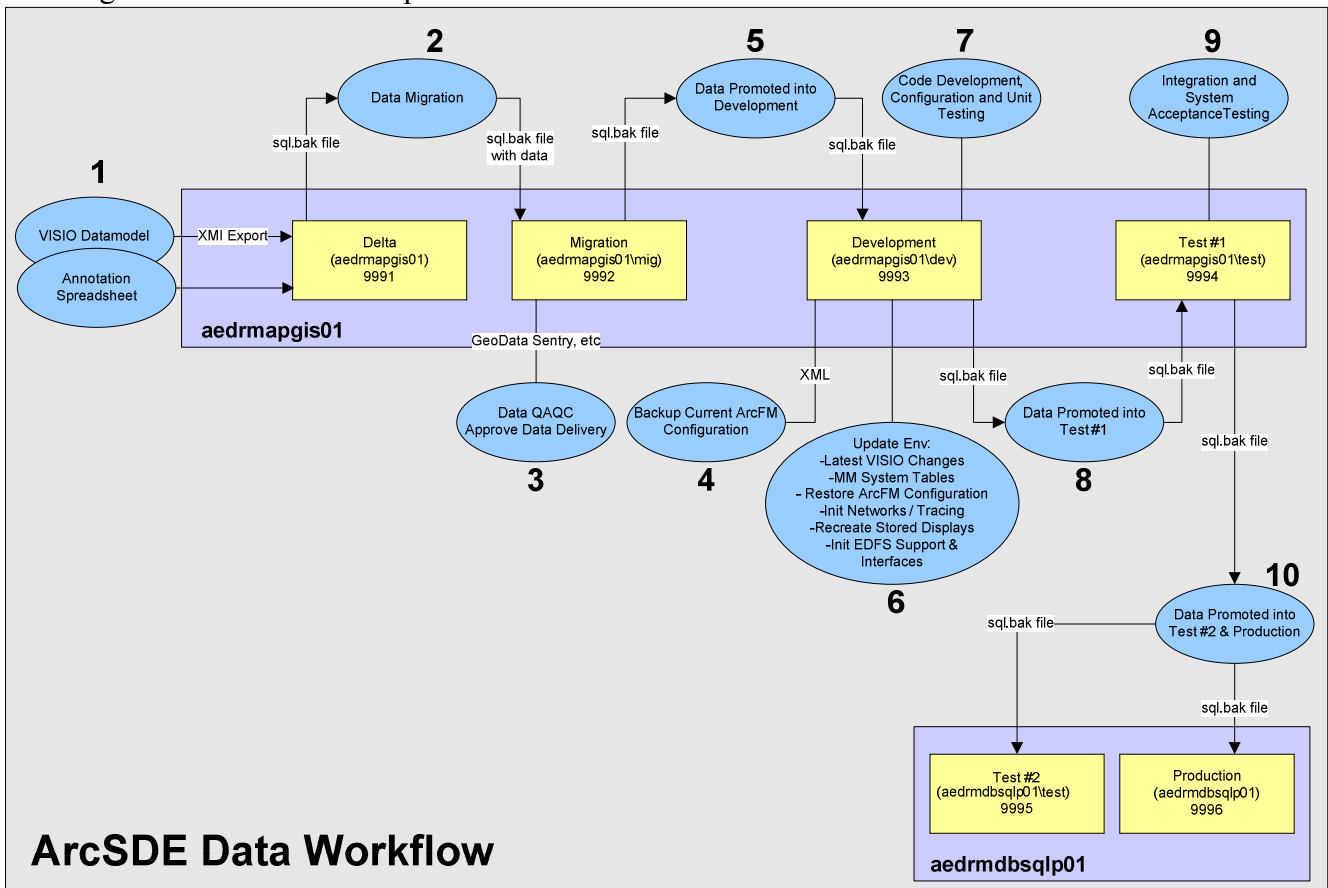


Figure 4.6-2.

#### **4.6.1.3.4 Environment Procedures**

This section details various procedures for creating/loading/configuring data within the various environments.

##### **4.6.1.3.4.1 Environment Status Log**

Whenever any update is made to an environment (including restoring data, configuration, development, testing, etc) the update is added to the “NIPSCO Database Instance Status Log.xls” spreadsheet (stored within SourceSafe under “\$\Administrative Documents\ArcSDE\”). This document contains a worksheet for each database environment and is used as a team-wide tool for tracking and identifying the status of any given environment at any point in time. This document is also referenced before any significant change is made to an environment to ensure that the change will not adversely affect another process that might be running against that environment.

##### **4.6.1.3.4.2 Creating a Clean Model – Delta Environment**

1. Stop SDE on the Delta instance. Have the responsible DBA drop and recreate the SDE and ArcFM8 databases and their users.
2. Run a reinstall of the SDE tables and data tables following the naming convention by using ArcSDE for Microsoft SQL server Post Installation located in programs on the SDE server. Choose the custom installation and click “next”. Un-check the create ArcSDE Service and click “next”
3. Import the Visio XMI exports (electric, gas, and electric) into the SQL instance. Logon as the user Electric to import the electric.xml, Gas to import the Gas.xml and Landbase to import the Landbase.xml
4. Import the Annotation spreadsheet into the SQL instance. Logon as the user Electric to import electric annotation, Gas for Gas, and Land for Land.
5. Set SQL Server roles as described in SQL Server User Roles.

##### **4.6.1.3.4.3 Configuration Steps – Migration Environment**

1. Download the latest ArcFM8 and SDE SQL backup files from the data migration vendor website and put them in a folder named as the delivery date on server aedrmapi01 physical drive E:\SQL Backup deliveries from the data migration vendor.
2. Fill out a DBA request form for the responsible DBA to do a restore to the migration instance aedrmapi01\mig specifying the file locations and names.
3. The DBA will need to run E:\ArcGis\ArcSDE\SSUserRelink.sql in Query analyzer to re-link the user accounts.
4. Set SQL Server roles as documented in user role matrix.xls.
5. If there is a dbtune view in the restored ArcFM8 table, delete it.

##### **4.6.1.3.4.4 Configuration Steps – Development Environment**

1. Do a backup of the ArcFm8 and SDE databases in the Migration instance.
2. Export the current Development environment ArcFM configuration into XML files and save.

3. Restore the bak created in step one into the Development environment.
4. Re-link the users with the SSUserRelink.sql.
5. Import the latest Visio XML exports into the SQL instance. Logon as the user Electric to import the Electric.xml, Gas to import the Gas.xml and Landbase to import the Landbase.xml. This will ensure that any schema changes that have occurred since the start of the current data migration iteration are included in the development environment.
6. Create MM system tables.
7. Convert to ArcFM objects.
8. Set SQL Server roles as documented in user role matrix.xls.
9. Initialize users on the system.
10. Revoke ddladmin access after for each user after step 8 is complete.
11. Import the ArcFM XML configuration files back into the Development environment.
12. Initialize Feeder Manager and Gas Tracing which includes initializing the circuit source table, initializing trace weights, re-building the electric and gas geometric networks, etc.
13. Recreate standard Stored Displays from the mxd files.
14. Initialize EDFS Data Schema Support via EDFS Operations Guide (views, procs, SAGE db, Inteface Tables, etc).

#### **4.6.1.3.4.5 Configuration Steps – Test (aedrhamgis01) Environment**

1. Do a backup of the ArcFm8 and SDE databases in the Development instance.
2. Restore the bak created in step one into the Test environment.
3. Re-link the users with the SSUserRelink.sql.
4. Set SQL Server roles as documented in user role matrix.xls.
5. Initialize users on the system.
6. Revoke ddladmin access for each user.

#### **4.6.1.3.4.6 Configuration Steps – Test (aedrdbsqlp01)**

1. Do a backup of the ArcFm8 and SDE databases in the Test instance.
2. Restore the bak created in step one into the Production environment.
3. Re-link the users with the SSUserRelink.sql.
4. Set SQL Server roles as documented in user role matrix.xls.
5. Initialize users on the system.
6. Revoke ddladmin access for each user.

## **4.6.2 Elementool**

The AEDR project team determined that a centralized issue tracking system was needed to track design questions, software bugs, enhancements, and other software or data issues. After considering several options, the web-based product ‘Elementool’ was selected to fill this requirement. Elementool provides its service for a monthly subscription fee and offers several advantages over other comparable tools in a similar price range:

- No software or hardware is required: Elementool hosts its bug tracking application on its website. By using Elementool, NIPSCO did not need to install a database server, web server or client application to manage issues.
- Web based: Elementool is fully web based which was an important feature to support the offsite contractors that were/are involved on the AEDR project.
- Unlimited Users: There is no limit to the number of users who can access the NIPSCO Elementool account. This allowed the project team to include all aspects of the project in the system.
- Fully customizable: Elementool is a fully customizable system, which enabled the NIPSCO GIS project team to fully customize the forms and reports to meet specific needs.
- Downloadable database for self-backup: A Microsoft Access database is downloaded daily as a backup of the system/account.
- Email Notification: Automatic email messages are sent to different account users, informing them about Issues that are assigned to them.
- Advanced Reports: Enables searching the Issue list for different words and phrases, creates focused reports with only the Issues of interest (using AND/OR/NOT), set the fields that should be included in the Report Query and set the fields that should be displayed on the Issue Report.
- File Attachments: Enables file attachment such as screenshots, images and text documents to issues. The attached files provide other users with a better description of the specific issue.
- History Trail: Tracks and displays changes made by users in each issue throughout its life cycle.

The following procedures detail the life cycle of an Elementool issue from the time the issue is discovered to the time the issue has been resolved. These procedures ensure that all issues are entered into Elementool with the appropriate detail and each issue is addressed by the appropriate resources.

#### **4.6.2.1 Discovering / Researching an Issue**

During the initial phase of the life cycle the analyst / tester first becomes aware of an issue or problem with the GIS System. The analyst / tester should spend some time gathering adequate details concerning the problem and perform a search in Elementool to determine if an existing issue record already covers the problem.

If the analyst / tester finds an existing issue, any new details are added to the existing Elementool record. Or the analyst / tester can create a new record that lists related records as Links. If no issue has been logged the analyst / tester should create a new record and add all information collected so far.

#### 4.6.2.1.1 Creating a New Issue

**New Issue** Submit

Title:

Description:

Steps to Reproduce:

English  Check Spelling

Component\*:  Please Resolve By:  Frequency:

Status\*: Submitted  Type\*:  Assigned to:

Priority\*:  Dataset Name:  Reported by: sperry

Severity:  Estimated Hours:  CC: bdozier    
bward    
csizemore

Found In Release: AEDR 1.1 (8/4/06)  Percent Complete:  NIMS Error Log\*: No

Resolved by:   Resolved In Release:

Resolution Description:

Linked Issues:

Attach:

\* - required fields Submit

**Figure 4.6-3.** Image shows the form used to create a new issue

The following procedures were developed by the NIPSCO GIS project team for submitting a new issue:

1. Fill out the Title field with a high level summary of the problem. Try to limit the text to 80 characters for readability. If the issue relates to a specific table/attribute, make sure to include the table and attribute name to allow for easier search-ability.
2. Add details to the Description field that outlines the history and circumstance surrounding the occurrence of the issue. This field can hold a lot of text so the more details the better.



3. In the Steps to Reproduce section add step by step instructions that describe how to make the problem occur again. This will also help the tester ensure that the problem has been resolved.
4. Select the option under the Component drop down list that best describes the area in which the issue was discovered.
5. Leave the Status field set to Submitted.
6. Choose an appropriate Priority, for example select Immediate if this issue is a showstopper that prevents the project from moving forward. On the other hand, select Low if the issue has little impact on functionality or progress of the project. If you select Immediate, notify the team leader assigned to that area right away about the issue.
7. Do not select anything for Severity. The Severity will be determined during the daily team review.
8. Select the project phase in which the issue was discovered. This will help as time goes by to know what state the system was in when the issue was discovered.
9. For the Type field select Question if you think the issue may not be a problem but simply requires clarification or may lead to a problem in the future. Select Bug if the issue adversely affects the performance of system and if the issue is related to a coding / configuration defect. Select Data Model Change if the issue requests that a Data Model Change be made. Do not select Enhancement when submitting an issue. The analyst who reviews the issue record will set the Type to Enhancement if the issue requests functionality that is beyond the scope of the project. Select AutoUpdater if the issue is related to an AutoUpdater. Select Data as the type if the issue is related to source data issue (i.e., data cleanup will be required).
10. Select the appropriate data set from the Dataset Name field.
11. Leave the Assigned to field blank. This issue will be assigned to a daily team review process.
12. Uncheck any of the mail boxes on the right hand side of the screen.
13. Click the Submit button.

#### ***4.6.2.1.2 Assigning an Issue***

Each morning, the Elementool team leader, and any other appropriate resources will discuss new issues that have been logged into Elementool but have not been assigned. An analyst will be selected to work on each unassigned issue. The Elementool team leader will make the changes to the Elementool Assigned to field. The new Elementool issues will be added to the project plan with the assigned analyst and an initial hours estimate.

#### ***4.6.2.1.3 Reviewing an Issue***

1. An analyst will be notified that they have had an issue assigned to them
2. The analyst will visit the issue record in Elementool that same day.
3. While in Elementool set the Status field to In Progress.
4. Ensure that all fields are set, including Found in Release, Severity, and Frequency.
5. Read over all the information in the issue record to ensure the issue has been properly assigned and that adequate details exist in the record.

6. If the issue has not been assigned correctly set the Status field to Need to Re-Assign. Provide a short description of why a re-assignment is required in the Solution Description field.
7. Perform an Elementool search to ensure that no duplicate records have been entered. If a duplicate record is found, set the Status field of the new record to Duplicate and enter the ID number of the original issue record in the Links field.
8. Review the Vision Document to make sure that the changes requested or required by the issue are within the scope of the project. If the request is out of scope, set the status field to Out of Scope and the type field to Enhancement.
9. Click the Update button.

#### ***4.6.2.1.4 Resolving and Issue***

1. Add all details involving the solution of the issue in the Resolution Description field.
2. Set the status field to Resolved.

#### ***4.6.2.1.5 Re-Assigning an Issue***

An analyst may find that a problem can only be partially resolved within their particular area of expertise. In this case the analyst cannot resolve the issue because additional work is required by someone else working on the project. The analyst should set the Status to In Progress and set the Assigned to field to the appropriate name. Notify the analyst that the new issue has been assigned. Be careful about delegating work to project resources, some work may require approval from the project manager. If in doubt, verify that the issue should be re-assigned first.

A change to the data model must be carried through each step of the data model change path. The issue cannot be marked as resolved until all steps in the path are complete. The data model change path is outlined below.

1. Alter the physical model and validate via Semantics Checker.
2. Alter the logical model to match the physical model.
3. Import the physical model changes into the sample data set.
4. Alter the data migration matrix spreadsheets to match the changes to the physical model.
5. Update ArcFM settings, connectivity rules, and symbology settings where necessary.
6. Update any Autoupdater or customer code impacted by the changes.

An analyst should complete all steps of the path that fall within their realm of responsibility. A note indicating that the step has been completed should be added as a Resolution Description on the issue record. Once these are complete, set the Status to Need to Re-Assign. The issue will be re-assigned the following morning.

#### ***4.6.2.1.6 Review and Rework***

The “In Review”, “Ready for Review”, and “Needs Rework” status settings are used for issues that are worked on by multiple resources. The example below demonstrates how these status settings might work.

1. A team member identifies a bug in the GIS Tool.
2. The team member searches Elementool for existing issues related to the problem.
3. When no matching issues are found, a new Elementool issue is entered.
4. The Elementool team lead assigns an initial resource to the issue and sets the issue Status field to “Assigned”.
5. The analyst assigned to work on the task sets the “Status” field to “In Progress”, researches the problem, and identifies a solution.
6. The analyst implements the solution, sets the issue Status field to “Ready for Review”, and sets the “Assigned to” field to the name of a reviewer.
7. The reviewer opens the issue, sets the “Status” field to “In Review”, and checks that the solution resolves the problem stated in the issue.
8. If the solution is good, the “Status” field is marked as Resolved. However, if the solution does not resolve the problem, the “Status” field is set to “Needs Rework” and notes are added about how the solution falls short of resolving the problem.
9. The original analyst sets the “Status” field back to “In Progress” and continues work on the issue. The process repeats until the issue has been resolved.

#### **4.6.2.1.7 Reporting**

A report of all issues having a Status of Submitted or Need to Re-Assign will be generated each morning. This report will be reviewed and all issues will be appropriately assigned.

### **4.6.3 Microsoft Visual SourceSafe**

Version control systems are a means of tracking various versions of a set of *files*. It was determined early on that the AEDR project required a system to track both software development materials and project documentation. Microsoft Visual SourceSafe was chosen because it is the standard among Microsoft based development groups. SourceSafe deals with the issue of interaction between developers and other project members.

SourceSafe operates in the following manner:

- First, a database must be set up on a centralized server.
- Next files will be added to the centralized database. This is the *Add* operation.
- Once files exist in the database, they are available for modification. This is accomplished via the *Checkout* operation. Using the *Checkout* operation stores a copy of the file on a users’ local drive and prevents other users from attempting to checkout the file for modification.
- The *Undo Checkout* command reverts to the last state of the file.
- The *Checkin* operation copies the updated file back in to the database, removes the lock and the file is once again made available for *Checkout*.
- The *Get* operation allows retrieval of older versions of a file or groups of files.
- *Rename and Delete* operations allow file management.

- Version control systems can generate various useful reports about files. These are the *Difference*, *History*, *Properties* and *Status* operations.

## **4.7 AEDR Customization**

### **4.7.1 EDFS (Electric Distribution Facility Services) Integration - Including EDFS Data Modeling**

This section describes the plan that was used to integrate the NIPSCO EDFS functionality into the new ArcGIS/ArcFM environment. The implementation was accomplished with a blend of data model and database updates, customization to ArcFM, and a custom Stand Alone Geodatabase Editor (SAGE), which exists independently of the GIS applications. The goals of this implementation include both the replacement of the EDFS functionality as well as the enhancement of both the technology and the business processes to provide a more efficient and effective solution for all concerned users of the system. There was a significant amount of documentation from the time when the EDFS system was originally implemented in 1986. Much of the specific application data management documentation still applied to the AEDR and was used whenever possible. This document provides EDFS documentation reference IDs whenever possible to allow for the easy location of the original documents.

This section details the following components that were used to implement the EDFS functionality within the new AEDR/ArcFM system:

- GIS Data model changes
- EDFS Data Migration
- ArcFM Auto Updaters
- Batch Data Management and Reporting Applications
- External System Interfaces
- SAGE Architecture
- SAGE Authentication and Authorization
- SAGE Data Model
- SAGE Screen Design
- SAGE Reports

#### **4.7.1.1 EDFS Integration Objectives**

Create functionality in the new ArcGIS/ArcFM system to satisfy all business needs related to the current EDFS system:

- Lifecycle management of Units of Property including Transformers, Regulators, and Capacitors
- Lifecycle management of all other standard overhead and underground assets including Poles, Pads, Vaults, Assemblies, Protective Devices, Conductor, and Lighting
- Current and legacy reporting on assets for both internal and external entities
- Interfaces to other NIPSCO systems including MAPPS (Materials, Purchasing and Accounts Payable), MLOG (Compatible Units), General Ledger, CIS (Customer Information System), and Tax Department.

To improve the efficiency and effectiveness of the manner in which the data is accessed:

- Integrating asset data storage into the GIS
- Integrating asset data management into ArcFM (installation, removal, retirement, etc)
- Providing non-GIS data access to users who do not rely on the spatial aspect of the data
- Removal of unnecessary batch reporting while maintaining business value
- Improving workflow of targeted users by making data updates more efficient and straightforward by leveraging more modern technologies.

#### **4.7.1.2 EDFS Background**

The NIPSCO Electric Distribution Facilities System (EDFS) was a stand-alone asset management application that managed the utility's electric assets including transformers, regulators, capacitors, primary, secondary, and service conductor, poles, pads, streetlights, traffic lights, and miscellaneous data surrounding these assets.

EDFS was responsible for managing the life cycle of these assets from the time of their acquisition through retirement or scrapping. This life cycle can include multiple installations, retirement, condemnation, sale, and/or lease. In addition to managing these assets, EDFS was responsible for generating many reports based on the current and/or historical states of the assets. These reports are used by management for the assessment of the current assets as well as tax reporting purposes.

EDFS was built using the mainframe COBOL programming language and runs on top of a mainframe Customer Information Control System (CICS). It utilized standard COBOL text-based screens to interact with the user and utilizes SQL to read and write to the underlying DB2 database. There was no integration between EDFS and NIPSCO's mapping tool, a custom CAD-based application called Outfield. EDFS data records were manually matched to Outfield geographical records based on unique IDs including Company Number.

#### **4.7.1.3 EDFS GIS Data Model Changes**

The old EDFS system ran on top of a mainframe DB2 database that was completely separate from the Outfield graphics system. In the AEDR, this data structure was integrated directly into the GIS database. To accomplish this, the GIS data model was significantly updated to handle the EDFS data. These changes are primarily centered on the unit and conductor info object classes within the model but also included a few feature classes including support structure, pads, and switchgears. In addition, many edits to the relationships were required.

An extensive review of the proposed NIPSCO data model was conducted to identify the changes that were required to implement the EDFS functionality within the AEDR. The EDFS data model changes have been systematically detailed below. Appendix F provides the step-by-step edits that were made to the current proposed data model to allow it to handle the migration of the data including both abstract and concrete classes.

While these recommended changes handled 95% of the needed changes for the EDFS functionality, there were minor additional changes that arose during development. These minor changes were documented during the development phase within Elementool and were presented to NIPSCO at the completion of the development phase. These minor changes did not affect data migration. Appendix F details out the changes by asset area.

The rest of the EDFS section refers to the functionality built on top of a data model that included all of the recommended changes.

#### **4.7.1.4 EDFS AutoUpdaters**

Much of the EDFS functionality was handled by out-of-the-box (OOTB) ArcFM tools within the AEDR including the ArcFM Attribute Editor. This tool allows the users to update the various EDFS records within the AEDR but does not handle any custom validation and/or field population. To accomplish these automated tasks, several simple ArcFM Auto Updaters (AUs) were created. These AUs are detailed in the following sections. When appropriate, the related EDFS screen number has been included in the description to provide additional background on the functionality that was created.

##### **4.7.1.4.1 OnCreate – ReplicateSinkVA**

ArcFM contains OOTB functionality to update the Transformer Bank KVA based on a summation of all child unit KVA values. For this to work correctly, model names must be set correctly on both the TransformerBank feature class and the related unit object class. In the NIPSCO model, the TransformerUnitInstall object class represents the unit object class that has relationships to the TransformerBank. NIPSCO uses a Stores Item Number (SIN) lookup table, and TransformerRegulatorStoresItem to manage standard KVA values for transformer units. The TransformerRegulatorStoresItem table is related to the TransformerUnit table which in turn is related to the TransformerUnitInstall table. For the OOTB ArcFM AU to work correctly, the SIN standard KVA values were required to be replicated directly on the TransformerUnitInstall record. This AU handles this replication and was configured to execute before the “ArcFM Update Transformer Bank Rated KVA” AU.

###### **4.7.1.4.1.1 Assign to Class**

TransformerUnitInstall

###### **4.7.1.4.1.2 Use Case**

Upon receiving a transformer install ticket back from the field, the user locates an existing TransformerUnit record by searching on the company number and then creates a new related TransformerUnitInstall record with the field installation data. When the new record has been created and saved the KvaValue field is automatically populated. The user can traverse the relationships from TransformerUnitInstall to TransformerUnit to TransformerRegulatorStoresItem to verify that the KvaValue on the TransformerUnitInstall record matches the value in the related TransformerRegulatorStoresItem table.

#### **4.7.1.4.1.3 Design**

The following actions are performed upon the creation of a TransformerUnitInstall record:

1. Use the appropriate relationship classes to trace the relationship from the TransformerUnitInstall table to the TransformerUnit table to the TransformerRegulatorStoresItem table.
2. Read the value from the TransformerRegulatorStoresItem.KvaValue field.
3. Insert this value into the TransformerUnitInstall.KvaValue field.

#### **4.7.1.4.2 OnUpdate – UpdateSinKva**

Per the section above, if the SIN value on a TransformerUnit is updated to a new value, the related KVA values may need to be updated on any related TransformerUnitInstall records. Because each unique transformer SIN entry in the TransformerRegulatorStoresItem table has an assigned KVA value, these values must be replicated whenever the SIN is updated.

##### **4.7.1.4.2.1 Assign to Classes**

TransformerUnit

##### **4.7.1.4.2.2 Use Case**

The user locates an existing TransformerUnit record that has existing TransformerUnitInstall records. The user manually validates the current value of the TransformerUnitInstall.KvaValue field. The user then updates the TransformerUnit.RelStoresItemNumber field either manually or by using “ArcFM Locate and Relate” functionality. Once this update has been saved, the user should look at the related TransformerUnitInstall records once again and should validate that the KvaValue field has been updated and matches the value in the related TransformerRegulatorStoresItem.KvaValue field.

##### **4.7.1.4.2.3 Design**

The following actions are performed upon the update of a TransformerUnit record:

1. Determine if the RelStoresItemNumber field has been updated.
2. If an update has been made, use the appropriate relationship class to trace from the TransformerUnit table to the TransformerRegulatorStoresItem table.
3. Read the value from the TransformerRegulatorStoresItem.KvaValue field.
4. Use the appropriate relationship class to trace from the TransformerUnit table to all related TransformerUnitInstall records.
5. Update the TransformerUnitInstall.KvaValue field of each related record with the value from TransformerRegulatorStoresItem.KvaValue.



#### **4.7.1.4.3 OnUpdate – Asset Removal**

This functionality was derived from the screen ED43 specifications. When an installation unit is disassociated from a bank, it constitutes a removal of the asset. There are several actions that need to happen when this occurs. A removal record should be created that captures the removal date, the material ticket number, and the removal reason code. A new stock record should be created and the status on the unit table (TransformerUnit, Regulator Unit) should be set to “in stock”. The related FeederId, structure Distribution Reference Number, Local Operating Area (LOA) Number, Tax Unit Code, and Grid Code is recorded on the UnitInstall record so the information is available going forward in a historical context. And finally, a removal transaction record needs to be recorded in the GisMappsTransactionQueue table so that it can be matched to a MAPPS transaction during the nightly batch processing. A custom AU was created to automate this process as much as possible.

##### **4.7.1.4.3.1 Assign to Classes**

- TransformerUnitInstall
- RegulatorUnitInstall

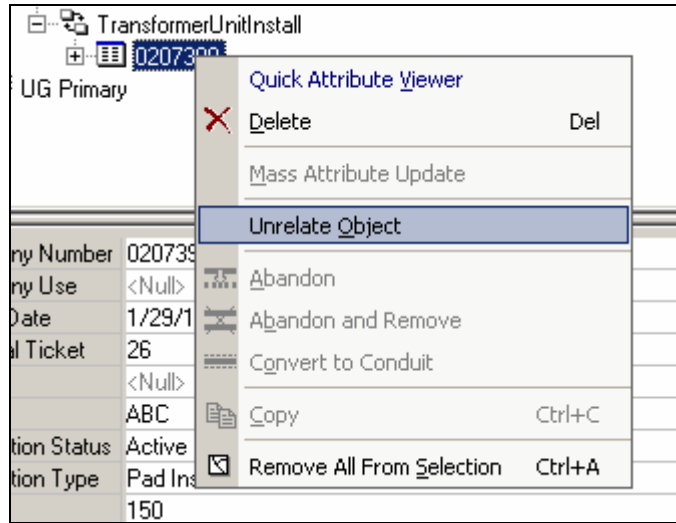
##### **4.7.1.4.3.2 Use Case**

The user locates a TransformerBank or VoltageRegulator feature that has a unit that needs to be removed or retired. The user selects the related TransformerUnitInstall or RegulatorUnitInstall record, right-clicks, and selects the “Unrelate” menu option. The user is then prompted with a form that asks for the Removal Date, the Material Ticket Number, and a removal Reason Code. The user enters the requested information and clicks OK. The install record is then disassociated from the feature, a new removal record is created, a new stock record is created, the status on the unit record is set to “S - In Stock”, the circuit number, distribution reference number, and LOA Number on the install record are updated correctly, and a new transactional record is created to be matched to MAPPS. The user also has a cancel button on the form that prevents the disassociation operation from being completed.

##### **4.7.1.4.3.3 Design**

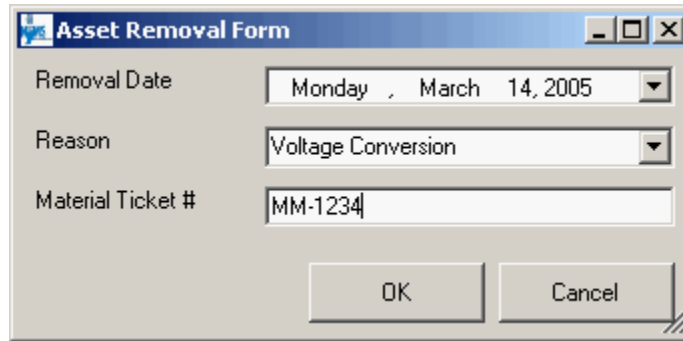
The following actions are performed upon the update of a TransformerUnitInstall and RegulatorUnitInstall record:

1. Determine if the TransformerUnitInstall.RelTransformerBankObjectId or RegulatorUnitInstall.RelVoltageRegulatorObjectId has been updated from a valid long value to null, which would indicate a disassociation from the feature:



**Figure 4.7-1. Unrelate transformer/regulator**

2. Present the user with a custom form that prompts them for a Removal Date (using a date picker control), the material ticket number, and the reason code (drop down with valid domain for Transformer and Regulator).



**Figure 4.7-2. Remove the transformer/regulator**

3. The user enters the information and clicks OK to continue with the operation or clicks Cancel to roll back the operation.
4. A new TransformerUnitRemove or RegulatorUnitRemove record is created and populated with the above gathered information. The RemovalTimestamp field is also populated with the system date and the CompanyNumber is populated from the CompanyNumber field of the install record.
5. A new TransformerUnitStock or RegulatorUnitStock is created. The StockTimestamp should match the RemovalTimestamp and the StockDate should match the RemovalDate. The CompanyNumber should be set from the installation record and the RelStoreRoomNumber should be set to the installation record's LoaNumber value.
6. The related TransformerUnit or RegulatorUnit record's StatusCd field should be set to "S" (in-stock) and the StatusTimestamp should be set equal to the RemovalTimestamp.

7. Use the appropriate relationship classes to trace from the UnitInstall record to the TransformerBank or the VoltageRegulator feature. Retrieve the FeederId and insert this value into the UnitInstall.CircuitNumber field.
8. Use the appropriate relationship classes to trace from the UnitInstall record to the TransformerBank or VoltageRegulator feature to the SupportStructure or Pad feature. Retrieve the DistribRefNumber, LoaNumber, TaxUnitCd, and GridCd and insert these values into the UnitInstall.DistribRefNumber, UnitInstall.Loanumber, UnitInstall.TaxUnitCd, and UnitInstall.GridCd respectively.
9. Insert a new record into GisMappsTransactionQueue with the following structure: insert into GisMappsTransactionQueue (CompanyNumber, TransactionType, LoaNumber, StoresItemNumber, TransasctionDate) values ([UnitInstall.CompanyNumber], "RMV", [UnitInstall.Loanumber], [Unit.StoresItemNumber], [user-entered Removal Date]).

#### **4.7.1.4.4 OnUpdate – Capacitor Removal**

This functionality was derived from the screen ED32 specifications. When an installation unit is disassociated from a capacitor bank it constitutes a removal of the asset. There are several actions that happen when this occurs. A removal record is created that captures the removal date, the Work Order Number or the Miscellaneous Order Id, and the removal reason code. Because capacitors can no longer be installed more than once, a new stock record will **not** be created. Finally, the related FeederId and Support Structure Distribution Reference Number, LOA Number, Tax Unit Code, and Grid Code are recorded on the CapacitorUnitInstall record so the information is available going forward in a historical context. A custom AU was created to automate this process as much as possible.

##### **4.7.1.4.4.1 Assign to Classes**

CapacitorUnitInstall

##### **4.7.1.4.4.2 Use Case**

The user locates a CapacitorBank feature that has a unit that needs to be retired. The user selects the related CapacitorUnitInstall record, right-clicks, and selects the "Unrelate" menu option. The user is then prompted with a form that asks for the Removal Date, the Work Order Number OR the Miscellaneous Order ID, and a removal Reason Code. The user enters the requested information and clicks OK. The install record is then disassociated from the feature, a new removal record is created, the status on the unit record is set to "C – Out of Service", if the removal reason code was "B - Sold/Exchanged REMC" or "E - Lost/Stolen", the unit record disposition code should be set to "C - Conveyed to REMC" or "L - Lost or Stolen" respectively, and the circuit number, distribution reference number, LOA Number, Tax Unit Code, and Grid Code on the install record are updated correctly. The user should also have a cancel button on the form that prevents the disassociation operation from being completed.

#### 4.7.1.4.4.3 Design

The following actions are performed upon the update of a CapacitorUnitInstall record:

1. Determine if the CapacitorUnitInstall.RelCapacitorBankObjectId has been updated from a valid long value to null, which would indicate a disassociation from the feature:

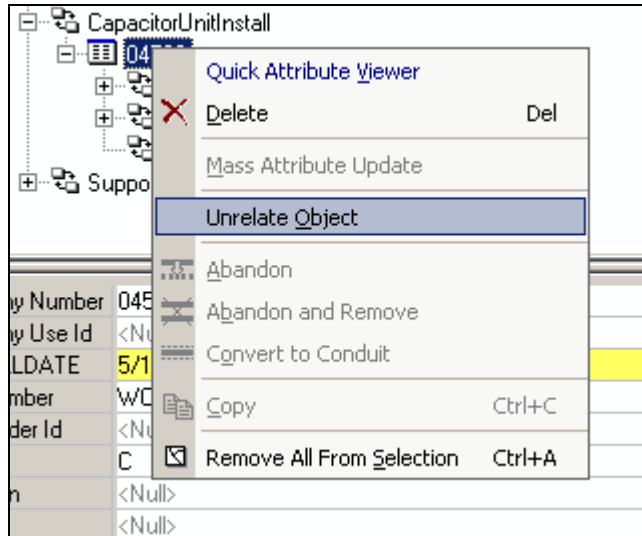


Figure 4.7-3. Unrelate the Capacitor

2. Present the user with a custom form that prompts them for a Removal Date (using a date picker control), the Work Order Number OR the Miscellaneous Order Id (an either/or choice, must begin with “WO” or “MO” respectively), and the reason code (drop down with valid domain for Capacitors):

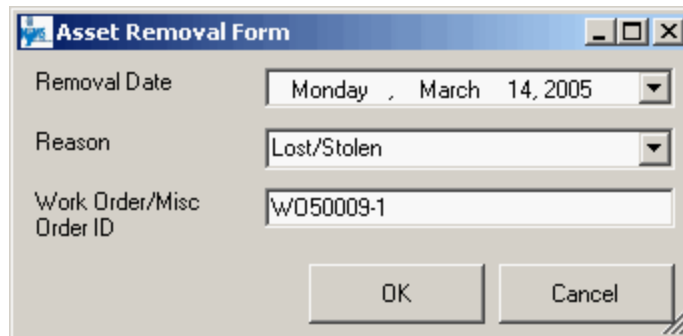


Figure 4.7-4. Remove the capacitor

3. The user enters the information and clicks OK to continue with the operation or clicks Cancel to roll back the operation.
4. A new CapacitorUnitRemove record is created and populated with the above gathered information. The RemovalTimestamp field is also populated with the system date and the CompanyNumber is populated from the CompanyNumber field of the install record.

5. The related CapacitorUnit record's StatusCd field should be set to "C" (Out of Service) and the StatusTimestamp should be set equal to the RemovalTimestamp.
6. If the removal reason code was "B - Sold/Echanged REMC" or "E - Lost/Stolen", the unit record disposition code should be set to "C - Conveyed to REMC" or "L - Lost or Stolen" respectively.
7. Use the appropriate relationship classes to trace from the CapacitorUnitInstall record to the CapacitorBank feature. Retrieve the FeederId and insert this value into the UnitInstall.CircuitNumber field.
8. Use the appropriate relationship classes to trace from the CapacitorUnitInstall record to the CapacitorBank feature to the SupportStructure feature. Retrieve the DistribRefNumber, LoaNumber, TaxUnitCd, and GridCd and insert these values into the CapacitorUnitInstall.DistribRefNumber, CapacitorUnitInstall.LoaNumber, CapacitorUnitInstall.TaxUnitCd, and CapacitorUnitInstall.GridCd respectively.

#### **4.7.1.4.5 OnDelete – ResetAssetToStock**

When a UnitInstall record is deleted, the status and timestamp of the corresponding Unit record must be updated so that it shows as being back in stock.

##### **4.7.1.4.5.1 Assign to Classes**

- TransformerUnitInstall
- RegulatorUnitInstall
- CapacitorUnitInstall

##### **4.7.1.4.5.2 Use Case**

The user locates a UnitInstall record that needs to be deleted, right-clicks it, and selects delete. When the record is deleted from the database, the related Unit record's status is updated from "I – Installed" to "S – In Stock" and the status timestamp is updated to be equal to the stock timestamp on the most recent stock record.

##### **4.7.1.4.5.3 Design**

The following actions are performed upon the delete of any of the above-mentioned records:

1. Update the related Unit record (TransformerUnit, RegulatorUnit, CapacitorUnit), setting the StatusCd = "S – Stock".
2. Query the UnitStock table (TransformerUnitStock, RegulatorUnitStock, CapacitorUnitStock) for the timestamp of the most recent stock record (i.e. select max(StockTimeStamp) from UnitStock where CompanyNumber=[Unit.CompanyNumber]).
3. Set the StatusTimestamp of the Unit record equal to the value found in step 2.

#### **4.7.1.4.6 OnDelete – ResetAssetToInstalled**

When a UnitRemove record is deleted, the status and timestamp of the corresponding Unit record must be updated so that it shows as being back installed. The corresponding UnitStock record (which was added during the removal operation) must also be deleted.

##### **4.7.1.4.6.1 Assign to Classes**

- TransformerUnitRemove
- RegulatorUnitRemove
- CapacitorUnitRemove

##### **4.7.1.4.6.2 Use Case**

The user locates a UnitRemove record that needs to be deleted, right-clicks it, and selects delete. When the record is deleted from the database, the related Unit record's status is updated to "I – Installed" and the status timestamp is updated to be equal to the install timestamp on the most recent UnitInstall record. The most recent UnitStock record is also deleted.

##### **4.7.1.4.6.3 Design**

The following actions are performed upon the delete of any of the above-mentioned records:

1. Update the related Unit record (TransformerUnit, RegulatorUnit, CapacitorUnit), setting the StatusCd = "I – Installed".
2. Delete the most recent UnitStock (TransformerUnitStock, RegulatorUnitStock) record, which has a StockTimestamp equal to the RemovalTimestamp of the UnitRemove record that is being deleted. NOTE: This step only applies to Transformers and Regulators.
3. Query the UnitInstall table (TransformerUnitInstall, RegulatorUnitInstall, CapacitorUnitInstall) for the timestamp of the most recent stock record (i.e. select max(InstallTimeStamps) from UnitInstall where CompanyNumber=[Unit.CompanyNumber]).
4. Set the StatusTimestamp of the Unit record equal to the value found in step 3.

#### **4.7.1.4.7 OnCreate, OnUpdate – ValidateWorkOrderNumber**

This functionality was derived from the screen ED20 specifications. This AU first validates the format of the entered Work Order Number of Miscellaneous Order Id. The AEDR has a real time interface to the General Ledger system that provides this AU with the ability to verify that a user-entered work order number exists within the General Ledger system (see details in the interface section of this document). There is no validation for Miscellaneous Order Ids. Because both the Work Order and Miscellaneous Order Id fields are mandatory fields, they must both contain values even if only one has a valid Id. If the user enters a valid entry in the Work Order field, they should enter a value of "WO" in the Miscellaneous Order Id field. If the user enters a valid entry in the Miscellaneous Order Id field, they should enter "MO" in the Work Order field. This AU does not attempt to validate values of "MO" against the General Ledger system.

#### 4.7.1.4.7.1 Assign to Classes

- CapacitorUnitInstall
- CapacitorUnitRemove
- OhConductorInfo
- UgConductorInfo
- SecondaryConductorInfo
- LegacyOhConductorInfo
- LegacyUgConductorInfo
- LegacySecondaryConductorInfo
- ServiceConductorInfo
- CompanyStreetlight
- StreetLightSwitch
- SectionalizerUnit
- SwitchUnit
- RecloserUnit
- FuseUnit
- SupportStructure
- PadMount
- SwitchGear
- Pedestal
- RetiredSupportStructure
- RetiredPadMount
- RetiredSwitchGear

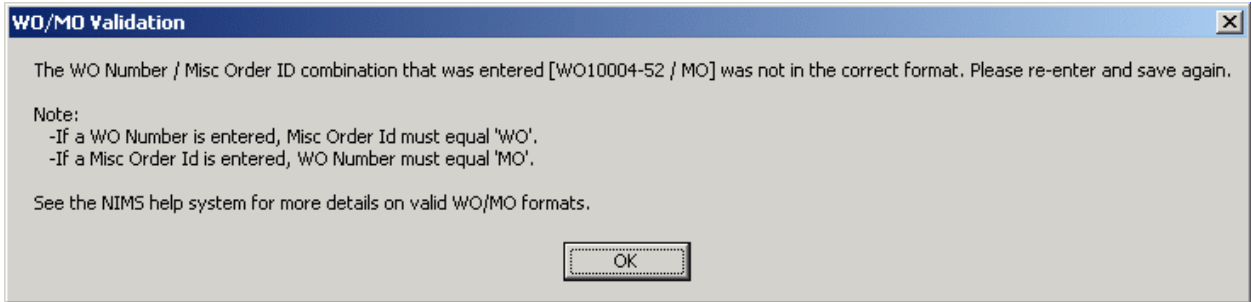
#### 4.7.1.4.7.2 Use Case

The user enters a value into the Work Order field or the Miscellaneous Order Id on any of the above-listed classes. When the record is saved, the system verifies that the format of the entry is correct and then validates work order numbers against the General Ledger system. If the entered number is a valid number it will be accepted and the record will be saved. If it is not a valid number, the user should be warned and prompted to fix it. The user can then reenter a valid number.

#### 4.7.1.4.7.3 Design

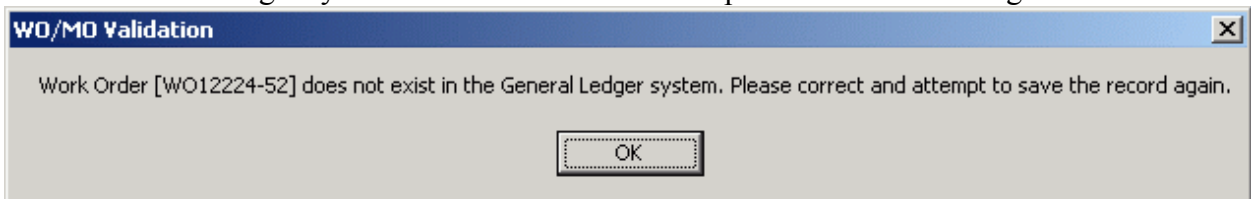
The following actions are performed upon the creation or update of any of the above mentioned records:

1. If a Work Order Number or Miscellaneous Order Id was entered by the user, verify the format is correct.
2. If the number is not in the correct format and is not equal to “MO” or “WO” respectively, warn the user with the message “The [Work Order Number / Miscellaneous Order ID] that was entered was not in the correct format. Please reenter the number and save again.”



**Figure 4.7-5. Work order validation error message**

3. Next, if the user entered a Work Order Number that is not equal to “MO”, query against the General Ledger database view to see if the number exists in the view (i.e. select count(\*) from GeneralLedgerView where WONumber=[user value]).
4. If the number exists in the General Ledger view, do nothing further and allow the record to be saved.
5. If the number does not exist in the General Ledger view, warn the user with the message “You have entered a Work Order Number that does not exist in the General Ledger system. Please correct and attempt to save the record again.”



**Figure 4.7-6. Work order validation error message**

6. The user can then reenter the Work Order number and then resave the record.

#### ***4.7.1.4.8 OnCreate, OnUpdate – ValidateAssemblyNumber***

This functionality was derived from the screen ED21 specifications. The AEDR has a real time interface to the MLOG system that provides this AU with the ability to verify that a user-entered assembly number exists within the MLOG system.

##### **4.7.1.4.8.1 Assign to Classes**

Assembly

##### **4.7.1.4.8.2 Use Case**

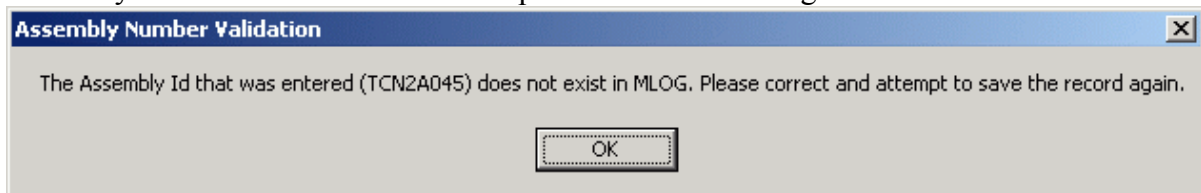
The user creates or updates an Assembly record with a new value in the AssemblyId field. When the record is saved, the AEDR system validates the AssemblyId against the MLOG system. If the entered id is valid, it will be accepted and the record will be saved. If it is not a valid number, the user should be warned and prompted to fix it. The user can then reenter a valid number.

##### **4.7.1.4.8.3 Design**

The following actions are performed upon the creation or update of an Assembly record:



1. If the AssemblyId field was populated or edited, query against the MLOG database view to see if the number exists in the view (i.e. select count(\*) from MLOGAssemblyView where AssemblyId=[user value]).
2. If the number exists in the MLOG database view, do nothing further and allow the record to be saved.
3. If the number does not exist in the MLOG database view, warn the user with the message “You have entered an Assembly Id that does not exist in the MLOG system. Please correct and attempt to save the record again.”



**Figure 4.7-7. Assembly ID validation error message**

4. The user can then reenter the AssemblyId number and then resave the record.

#### ***4.7.1.4.9 OnCreate, OnUpdate – Validate Referenced Assembly***

When a company streetlight is created, it tracks an assembly for its mounting. This streetlight assembly is not added to the related pole in addition to the assemblies already tracked in the Assembly object class, but instead must reference one of the related assemblies from the Assembly object class that has already been associated to the pole. So, when an AssemblyId and AssemblyIdCount are added to a CompanyStreetlight record, they must already exist as valid Assembly records in the Assembly table that are related to the same pole as the CompanyStreetlight.

##### **4.7.1.4.9.1 Assign to Classes**

CompanyStreetlight

##### **4.7.1.4.9.2 Use Case**

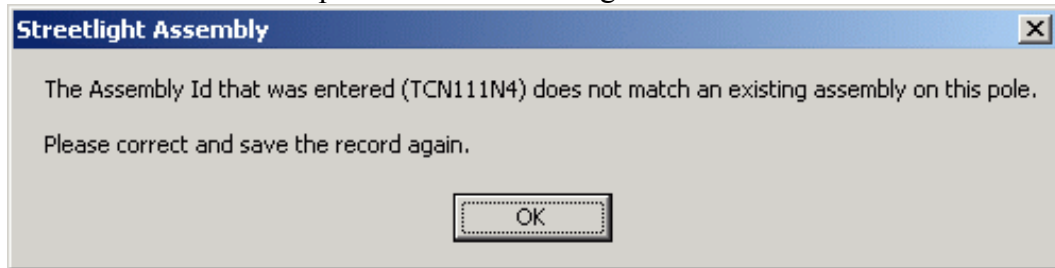
The user creates or updates a CompanyStreetlight record with new values in the AssemblyId and/or the AssemblyIdCount fields. When the record is saved, the AEDR system validates that the AssemblyId entered matches an existing Assembly record that is related to the pole that the CompanyStreetlight is mounted on. The system also verifies that the number entered in the AssemblyIdCount field is not greater than the available value in the Assembly.AssemblyCount field. If the values entered are valid, they will be accepted and the record will be saved. If either value does not match, then the user will be warned and prompted to fix the problem. The user can then reenter valid data.

##### **4.7.1.4.9.3 Design**

The following actions are performed upon the create or update of a CompanyStreetlight record:

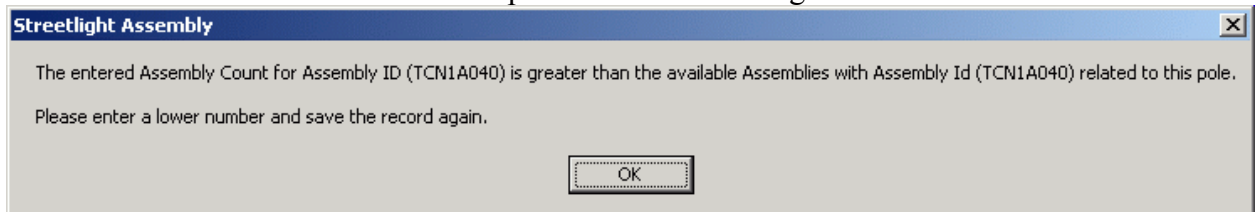
1. If the AssemblyId field or the AssemblyIdCount field was populated or edited, query against the Assembly table to verify that the values are valid (i.e. select AssemblyId, AssemblyCount from Assembly where RelSupportStructureObjectId

- = [CompanyStreetlight.RelSupportStructureObjectId] and AssemblyId=[user-entered AssemblyId]).
- If the AssemblyId is matched and the available Assembly.AssemblyCount is greater than or equal to the CompanyStreetlight.AssemblyIdCount, then do nothing further and allow the record to be saved.
  - If the AssemblyId field is not matched, warn the user with the message “The Assembly Id that was entered does not match an existing Assembly on this pole. Please correct and attempt to save the record again.”



**Figure 4.7-8. Assembly ID validation error message**

- If the AssemblyIdCount field is greater than the available AssemblyCount value, warn the user with the message “The chosen Assembly Count (QTY) is greater than the available Assemblies with Assembly Id \_\_\_\_ related to this pole. Please enter a lower number and attempt to save the record again.”



**Figure 4.7-9. Assembly ID validation error message**

- In either case, the user can reenter the AssemblyId or the AssemblyIdCount and attempt to resave the record.

#### **4.7.1.4.10 OnCreate, OnUpdate – ValidateConductorProperties**

When the conductor properties for wire size, material, and type are entered for a conductor, the properties are restricted by domains. This AU further validates the user’s entry by validating that the *combination* of these values is valid. The validation is made against a lookup table that is managed by the system coordinators.

##### **4.7.1.4.10.1 Assign to Classes**

- OhConductorInfo
- UgConductorInfo
- SecondaryConductorInfo
- ServiceConductorInfo

##### **LegacyOhConductorInfo**

- LegacyUgConductorInfo
- LegacySecondaryConductorInfo

#### 4.7.1.4.10.2 Use Case

The user enters the wire size, material, and type on any of the above-mentioned object classes and saves the record. The system validates the combination of these fields along with the values for OH/UG, and the category (primary, secondary, or service) against the ConductorDefinition table. If the combination is valid, the record is saved successfully. If the combination is **not** valid, the user is warned with a message and prompted to reenter the values. The user can then update the values and save again.

#### 4.7.1.4.10.3 Design

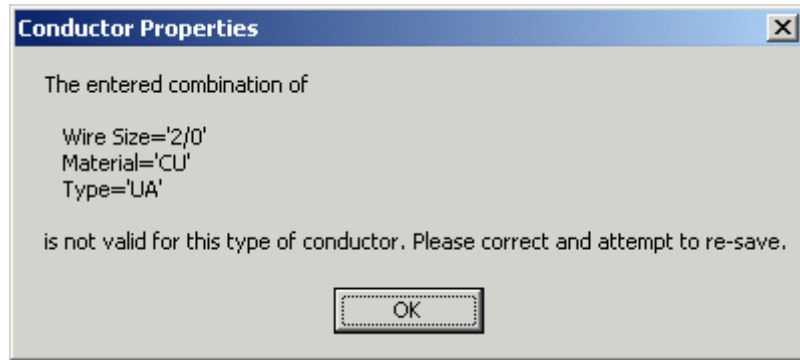
The following actions are performed upon the create or update of any of the above mentioned records:

1. The needed variables are gathered including wire size, material, and type, overhead vs. underground, and the category (primary, secondary, service – based on the object class).

ArcFM Create Related Object Tool	
Creating New: Ug Conductor Info	
Related To: Ug Conductor (8909)	
Subtype	UgConductor
Wire Size	2/0
Wire Material	Copper
Wire Type	Single Cable Concentric
In Conduit	No
INSTALLDATE	5/17/2006
Install WO Number	WO10004-52
Install Misc Order Id	WO
Related Ug Conductor Object	<Null>

Figure 4.7-10. Attribute entry

2. Query table ConductorDefinition with these variables to see if the combination is valid (i.e. select count(\*) from ConductorDefinition where LocationCd=[O/U] and CategoryCd=[1,2,S] and WireTypeCd=[user value] and WireSize=[user value] and WireMaterialCd=[user value]).
3. If the combination is valid, allow the edits to be saved to the database.
4. If the combination is not valid, warn the user with the message “The entered combination of wire size, material, and type is not valid. Please correct and attempt to resave.”



**Figure 4.7-11. Conductor attribute combination error message**

5. The user can then reenter the wire size, material, and type and then resave the record

#### **4.7.1.4.11 OnRetire, OnDelete – PreventDeletionRelatedAssets**

If a structure has any related Transformers, Regulators, or Capacitors OR if the pole has life support attached (from the CIS view), it cannot be retired or deleted. The devices must first be removed before the structure can be retired or deleted.

##### **4.7.1.4.11.1 Assign to Classes**

- SupportStructure
- PadMount
- Pedestal

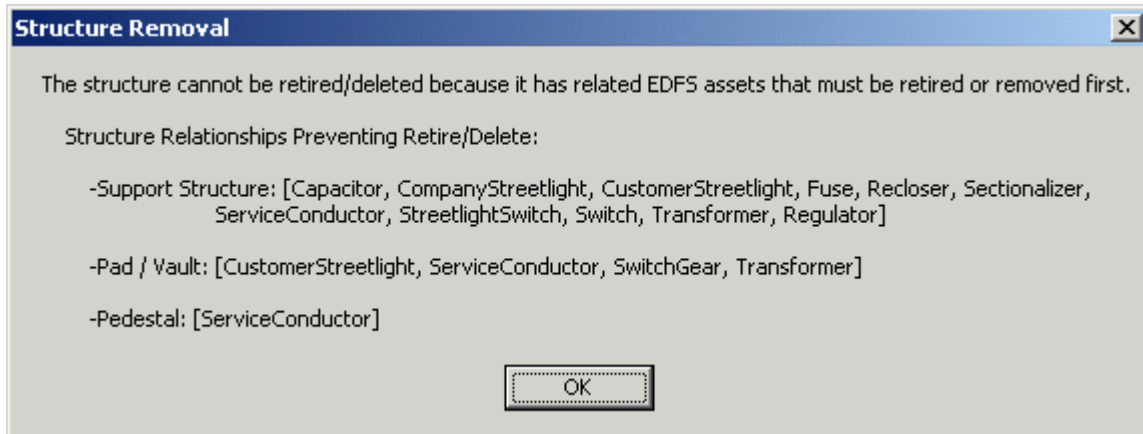
##### **4.7.1.4.11.2 Use Case**

The user selects a structure that has related Transformers, Regulators, or Capacitors OR that has life support attached to it. The user attempts to retire or delete the structure but a message is displayed to the user explaining why the structure cannot be retired or deleted and subsequently prevents the action from occurring. If the problem was that the structure had Transformers, Regulators, or Capacitors attached to it, these devices could be removed from service and subsequently the pole could be successfully retired or deleted.

##### **4.7.1.4.11.3 Design**

The following actions are performed upon the retire or delete of any of the above mentioned records:

1. Check the appropriate relationship classes to see if any Transformers, Regulators, or Capacitors are related to the structure.
2. Check the CIS view to determine if the selected Distribution Reference Number is marked as a life support structure.
3. If neither of the above cases proves to be true then allow the retirement or deletion to continue.
4. If either of the above cases proves to be true, display a message to the user indicating the problem: “The structure cannot be retired/deleted because it has related Transformers/Regulators/Capacitors that must first be removed.” Or “The structure cannot be retired/deleted because it has life support equipment attached to it.”



**Figure 4.7-12. SupportStructure relationship error message**

5. Prevent the edit from completing.

#### **4.7.1.4.12 OnRetire – SupportStructureRetirement**

When a pole is retired, several additional actions need to be taken. First, if the pole has any related JointUseAttachment records, the company name of those attachments needs to be captured in the appropriate RetiredSupportStructure fields (TelephoneCompanyCd, FirstCableCompanyCd, SecondCableCompanyCd, UtilityCompanyCd, FiberCompanyCd, OtherCompanyCd). Second, if the pole has any related, Assemblies, they need to be retired as well into RetiredPoleAssembly subtype of the Assembly object class.

##### **4.7.1.4.12.1 Assign to Classes**

SupportStructure

##### **4.7.1.4.12.2 Use Case**

The user selects a pole, right-clicks on it, and selects the retire option. If the pole has any related joint use attachments, their company names are captured in the appropriate fields on the RetiredSupportStructure object class. If the pole has any related Assemblies, they will be retired in the same operation.

##### **4.7.1.4.12.3 Design**

The following actions are performed upon the retire of a SupportStructure record:

1. Check to see if there are any related Assembly records.
2. If there are, initiate the retirement of the related Assemblies into the RetiredPoleAssembly subtype.
3. Check to see if there are any related JointUseAttachments.
4. If there are, assign the values from their AttachmentCompanyName field to the correct fields on the RetiredSupportStructure record that is created as follows:
  - a. First Attachment of subtype Telephone → TelephoneCompanyCd
  - b. First Attachment of subtype Cable → FirstCableCompanyCd
  - c. Second Attachment of subtype Cable → SecondCableCompanyCd
  - d. First Attachment of subtype Utility → UtilityCompanyCd
  - e. First Attachment of subtype Fiber → FiberCompanyCd

- f. First Attachment of subtype Other → OtherCompanyCd
- 5. Delete any JointUseAttachments that were related to the SupportStructure because they do not exist on their own in a retired state.

**4.7.1.4.13 OnRetire – ReplicateRetirementData**

Many EDFS object classes have access to location and installation information by tracing through relationships to feature classes. For example, a SwitchUnit object can determine the circuit it is installed on by traversing to the related Switch feature and reading the FeederId field. The location and installation data is only available, however, while the EDFS object classes are “installed” and have an active relationship to a feature. When the EDFS object is retired, it is disassociated from the feature and loses the ability to reference the location and installation information. This AU captures the location and installation data that needs to be retained at the time of retirement by traversing relationships for various EDFS object classes. Some of this data acquisition has been documented within other AUs.

**4.7.1.4.13.1 Assign to Classes and Required Data**

**Table 4.7-1. Relationships to feature classes**

<b>Destination Class</b>	<b>Fields</b>	<b>Related Source Class</b>	<b>Fields</b>
SectionalizerUnit	CircuitNumber DistribRefNumber	SectionalizerBank SupportStructure/PadMount	FeederId DistribRefNum
SwitchUnit	CircuitNumber DistribRefNumber	Switch SupportStructure/PadMount	FeederId DistribRefNum
RecloserUnit	CircuitNumber DistribRefNumber	RecloserBank SupportStructure/PadMount	FeederId DistribRefNum
FuseUnit	CircuitNumber DistribRefNumber	FuseCutoutBank SupportStructure/PadMount	FeederId DistribRefNum
OhConductorInfo	CircuitNumber	OhConductor	FeederId
UgConductorInfo	CircuitNumber InConduitCd	UgConductor UgConductor	FeederId InConduitInd
ServiceConductorInfo	LoadDistribRef Number TakeOffRefNumber	SupportStructure/PadMount SupportStructure/PadMount/ Pedestal	DistribRefNumber DistribRefNumber
CompanyStreetlight	DistribRefNumber	SupportStructure	DistribRefNumber
StreetlightSwitch	DistribRefNumber	SupportStructure	DistribRefNumber
Assembly	DistribRefNumber	SupportStructure	DistribRefNumber

**4.7.1.4.13.2 Use Case**

The user locates any of the objects in 4.7-1, right clicks, and chooses the Abandon and Remove option. These objects will all be retired to subtypes within the same object class. When this occurs, the various fields mentioned above are automatically populated by traversing the relationships and retrieving the values from the related features.

**4.7.1.4.13.3 Design**

The following actions are performed upon the retire event of any of the above mentioned records:

1. Use the appropriate relationship classes to traverse from the object class to the related feature class.
2. Read the values as described in the above table.
3. Insert the values into the object class as described in the above table.

#### 4.7.1.4.14 *OnRetire – ReplicateSpatialData*

Many EDFS object classes have access to location and installation information by performing spatial searches based on their related feature classes. For example, a ConductorInfo object can determine the poles closest to its endpoints by traversing to the related Conductor feature and then doing a spatial buffer search against the support structure feature class based on the Conductor’s end points. This location and installation data is only available, however, while the EDFS object classes are “installed” and have an active relationship to a feature. When the EDFS object is retired, it is disassociated from the feature and loses the ability to reference the location and installation information via a spatial buffer search. This AU captures the location and installation data that needs to be retained at the time of retirement by performing a spatial buffer search.

##### 4.7.1.4.14.1 Assign to Classes and Required Data

**Table 4.7-2. Relationships**

<b>Destination Class</b>	<b>Fields</b>	<b>Related Source Class</b>	<b>Fields</b>
OhConductorInfo	FromDistribRefNumber ToDistribRefNumber	SupportStructure SupportStructure	DistribRefNum DistribRefNum
UgConductorInfo	FromDistribRefNumber ToDistribRefNumber	SupportStructure, PadMount, Pedestal SupportStructure, PadMount, Pedestal	DistribRefNum DistribRefNum
SecondaryConductorInfo	FromDistribRefNumber ToDistribRefNumber	SupportStructure, PadMount, Pedestal SupportStructure	DistribRefNum DistribRefNum

##### 4.7.1.4.14.2 Use Case

The user locates any of the above objects, right clicks, and chooses the Abandon and Remove option. These objects will all be retired to subtypes within the same object class. When this occurs, the various fields mentioned above are automatically populated by traversing the relationships to their corresponding features, performing a spatial buffer search to the source class, and retrieving the values from the source features.

##### 4.7.1.4.14.3 Design

The following actions are performed upon the retire event of any of the above mentioned records:

1. Use the appropriate relationship classes to traverse from the object class to the related feature class.
2. Perform a spatial buffer search against the source class.
3. Read the values as described in the above table.
4. Insert the values into the object class as described in the above table.

### 4.7.1.5 EDFS GIS Tools

This section defines additional ArcFM tools that have been developed to assist with the user's edits within the GIS.

#### 4.7.1.5.1 **SupportStructure and PadMount Replace Tool**

This tool allows the user to replace either a SupportStructure or PadMount feature in the AEDR without having to complete individual retire, create, and associate (transformers, regulators, etc) tasks. This functionality is derived from the screen ED21 and ED22 specs.

##### 4.7.1.5.1.1 Use Case

The user selects a pole, pad, or vault that they want to replace and clicks the replace tool button (which can be added to the ArcFM toolbar). The tool prompts the user for the replacement date, retires the selected structure, creates a new structure with identical attributes, and re-relates any attached devices, attachments, or assemblies to the new structure.

##### 4.7.1.5.1.2 Design

The following steps are executed when the user selects a SupportStructure or PadMount and clicks the Replace tool:

1. The process first validates that only a single SupportStructure or PadMount is selected.
2. The process then prompts the user with an input form that requests the replacement date (via a calendar date picker control).

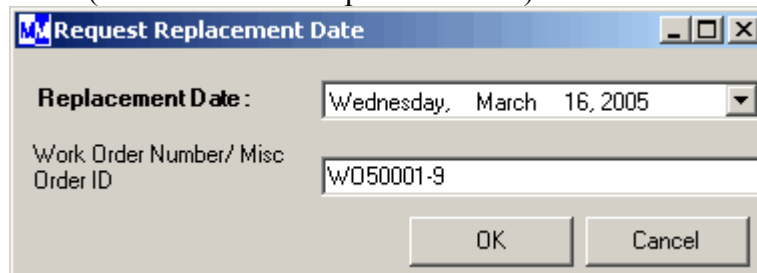


Figure 4.7-13.

3. The process un-relates any attached devices, service wire, or lighting records from the structure while retaining their object ids.
4. If the structure is a SupportStructure, the attribution of any related Assemblies or Joint Use Attachments are copied into memory.
5. The geometry of the selected structure is saved in memory.
6. The process sets the RetireDate on the structure to the date collected in step 2 above.
7. The ArcFM Retire function is called for the selected structure, which will effectively move it into the appropriate retired object class and fire any retirement AUs including "SupportStructureRetirement" (detailed in the AU section), which handles the retiring of the Assemblies and Joint Use Attachments for SupportStructures.



8. The process next creates a new structure using the geometry collected in step 5 above.
9. The attributes are set identical to the structure that was previously retired, the retire date is set to null, and the install date is set to the value collected in step 2 above.
10. If the structure is a SupportStructure, new Assembly and Joint Use Attachment records will be created and related to the structure based on the data collected in step 4.
11. Any devices, service wire, or lighting records that were previously related to the retired structure will be re-related to the new structure.

#### ***4.7.1.5.2 LegacyConductorInfo – Retirement / Migrate & Delete***

A set of tools were created to assist the users with managing the LegacyOhConductorInfo and LegacyUgConductorInfo records that were migrated from EDFs. These records must be handled during the retirement or spatial editing of a conductor feature that was originally migrated from Outfield. Because these legacy records are not related directly to conductor features that were migrated from Outfield, they would not be automatically updated when an edit is made to the OhConductor or UgConductor feature class. For this reason, these tools allow the user to easily locate the related legacy records based off of a spatial search against poles, pads, and pedestals via distribution reference number.

##### **4.7.1.5.2.1 Use Case**

Retirement of Legacy Conductor Info Records

1. The user selects a single OhConductor or UgConductor feature. A command button residing on the Conductor Info Utilities toolbar will enable, allowing the user to launch the retire legacy conductor info objects functionality.
2. The component performs a spatial search on support structure, pad mount, and pedestal features that are within a configured buffer distance of the selected conductor feature. The component obtains distribution reference numbers from the located features and uses these distribution reference numbers to query the legacy OH and UG conductor info tables.
3. The returned records are presented to the user in a grid format. The grid is sorted by the 'from' and 'to' distribution reference numbers. Records with the same 'from' and 'to' distribution reference numbers are colored alike to assist the user in visually identifying the records. Clicking on each record in the grid will flash the corresponding 'from' and 'to' structures in the GIS.
4. The grid includes a column of checkboxes that allow the user to indicate which legacy conductor info records should be retired.
5. From the graphical display of the attribute information, the user chooses which records will be retired by clicking a checkbox on the individual rows.
6. The user inputs values for retirement work order number or miscellaneous order id and the retirement date.
7. The user clicks an execute button.
8. The selected objects to be retired are updated to signify retirement via the subtype.

9. The user will then delete or abandon the OhConductor or UgConductor feature as needed based on business rules.

Migration of Legacy Conductor Info Records into ArcFM Conductor Info Records to Allow Spatial Editing of the related OhConductor/UgConductor features:

1. The user selects a single OhConductor or UgConductor feature. A command button residing on the Conductor Info Utilities toolbar enables, allowing the user to launch the migrate legacy conductor info objects functionality.
2. The component performs a spatial search on support structure, pad mount, and pedestal features that are within a configured buffer distance of the selected conductor feature. The component obtains distribution reference numbers from the located features and uses these distribution reference numbers to query the legacy OH and UG conductor info tables.
3. The returned records are presented to the user in a grid format. The grid is sorted by the 'from' and 'to' distribution reference numbers. Records with the same 'from' and 'to' distribution reference numbers are colored alike to assist the user in visually identifying the records. Clicking on each record in the grid flashes the corresponding 'from' and 'to' structures in the GIS.
4. If the attribution differs between adjacent groups of legacy conductor info records, a button is enabled to allow the user to split the conductor feature at all attribution changes. This tool can then be re-launched on the individual smaller conductor features.
5. The grid includes two columns of checkboxes that allow the user to indicate which legacy conductor info records should be migrated and which should be deleted after the migration.
6. Once the user has an acceptable set of legacy conductor info records in the grid, they select the records to be migrated into ArcFM conductor info records. Any migrated records should be deleted to avoid duplicate data. In addition, other legacy conductor info records can be deleted as well if they are not required to be migrated (in the case of duplicate data in the legacy tables).
7. The selected legacy conductor info records are migrated into the corresponding ArcFM conductor info table and the new ArcFM conductor info records will be related to the selected conductor feature.
8. Any legacy conductor info records that are marked for deletion will be permanently deleted from the legacy conductor info table(s).
9. The user can then edit the conductor feature using standard ArcFM tools and the new ArcFM conductor info records will be managed appropriately.

#### **4.7.1.5.2.2 Design**

This functionality consists of two user-forms designed to aid the user in retiring conductor units, and migrating conductor units preparing them for manipulation within the ArcFM toolset.

1. For retiring conductor information records, the tool presents the user with the appropriate related data, and offering checkboxes for each record returned. This

allows the user to determine which records shall be retired. The user also populates the retirement work order or miscellaneous order id and the retire date.

Clicking on a row will flash the corresponding 'from' and 'to' geometries in the map to assist the user in identifying the corresponding span.

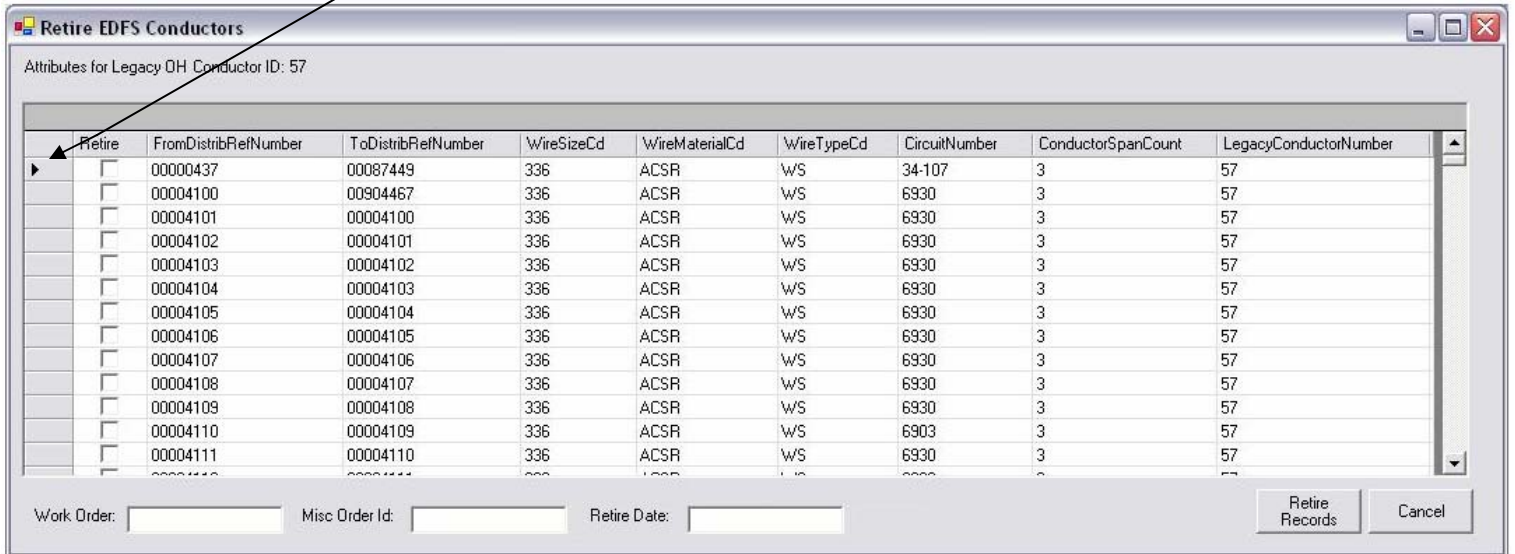


Figure 4.7-14. Retire EDFS conductor tool

- The second tool assists the user in manually migrating and deleting legacy conductor info records. When the tool is launched, the user is presented with a list of records returned from attributes gathered via the spatial search of Support Structure, Pad Mount, and Pedestal records. The user then is able to migrate and delete selected records. This interface additionally allows the user to split conductors by like info records, creating spans with like attribution.

Clicking on a row will flash the corresponding 'from' and 'to' geometries in the map to assist the user in identifying the corresponding span.

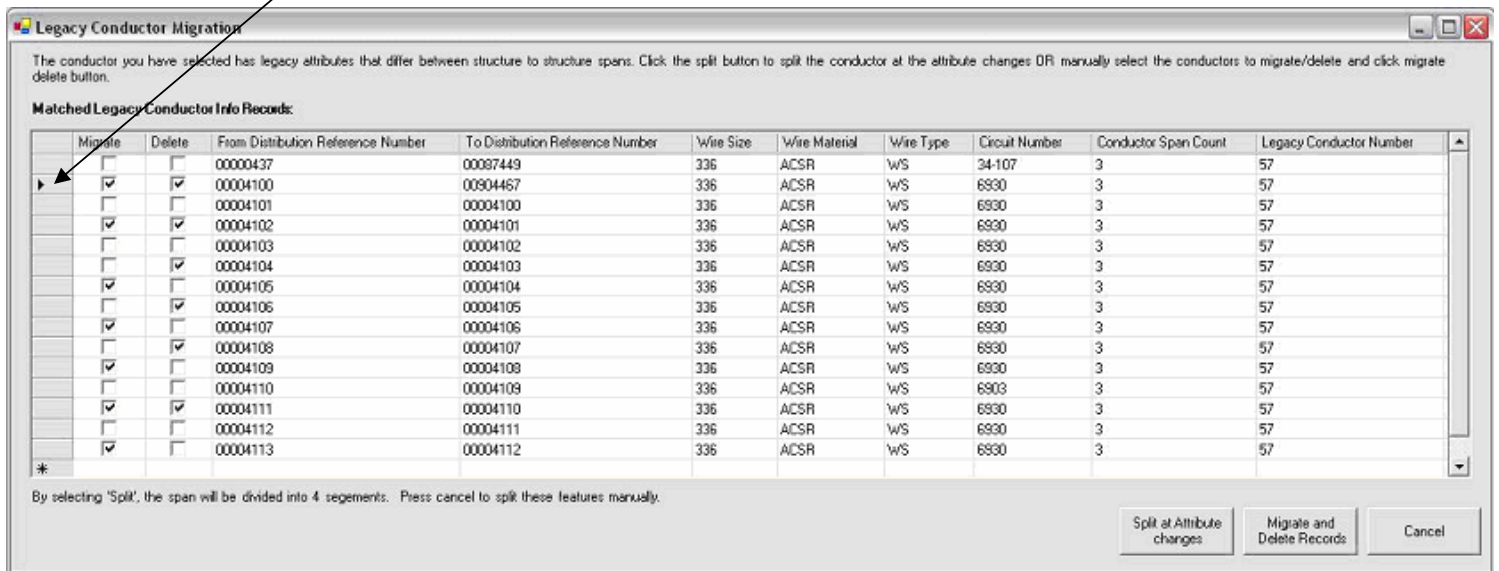


Figure 4.7-15. Migrate and delete legacy conductor info records

After Split is clicked, the selected span is split, creating several smaller spans all having similar attribution. The tool can then be re-run on each individual sub span.

#### 4.7.1.6 EDFs Batch Management and Reporting Applications

Several batch applications were written to manage the EDFs data. These applications were written as .Net applications that are scheduled to run via the Windows scheduler. The following sections describe the applications and how they interact with the database.

##### 4.7.1.6.1 MAPPS / GIS Transaction Processing

This functionality was derived from the screen EDB5050 and EDB5051 specifications. This application is responsible for processing the MAPPS transactions that are published to the AEDR system on a nightly basis. In the old EDFs system, these transactions were passed to the EDFs application in a flat file. In the AEDR system, the MAPPS system makes these transactions available via a database table view. This application reads these transactions, attempts to match them to AEDR transactions, and either handles them or moves them to a holding table where the processing will be attempted again the next

night. The results of this application are the basis for the information contained in the Coordinator Dashboard.

#### 4.7.1.6.1.1 Use Case

This application has been configured to run nightly. It reads in the new daily transactions from the MAPPS system, reads the new daily transactions from the AEDR system, combines them with any carried transactions from the previous night, and attempts to match and/or process the transactions. Various tables are updated with the results of the processed transactions.

#### 4.7.1.6.1.2 Design

The following steps are executed when this batch application is run:

1. The process first reads all carried transactions from the previous night from the table MAPPSCarriedTransaction within the SAGE database (Figure 4.7-16). These transactions are stored in memory.

<b>MAPPSCarriedTransaction</b>	
<b>PK TransactionId</b>	<b>NUMERIC</b>
CompanyNumber	VARCHAR(7)
TransactionType	VARCHAR(3)
Department	VARCHAR(3)
SystemCode	VARCHAR(1)
StoreItemNumber	VARCHAR(7)
TransactionDate	DATETIME
CondemnationNumber	VARCHAR(3)
TransferReceivingDepartment	VARCHAR(3)
TransferNumber	VARCHAR(7)
FailedGISArgument	VARCHAR(7)
ToBeDeleted	BIT
<i>FK RelRejectionCode</i>	<i>NUMERIC</i>

**Figure 4.7-16. MAPPS transactions and data types**

2. If the ToBeDeleted column or any of these rows is equal to 1 (yes) then this indicates that a coordinator has chosen to manually delete the record and it should be discarded at this time.
3. The process next reads all new MAPPS transactions from the InterfaceMAPPSTransactions table. Only transactions of type 47 (transfer), 69 (condemn), 60 (issue), and 40 (return) will be retained. All other transactions are discarded. These transactions are added to the list of carried transactions in memory.

<b>InterfaceMAPPSTransaction</b>	
<b>PK TransactionId</b>	<b>NUMERIC</b>
CompanyNumber	VARCHAR(7)
TransactionType	VARCHAR(3)
Department	VARCHAR(3)
SystemCode	VARCHAR(1)
StoresItemNumber	VARCHAR(7)
TransactionDate	DATETIME
TransferReceivingDepartment	VARCHAR(3)
TransferNumber	VARCHAR(7)
CondemnationNumber	VARCHAR(3)

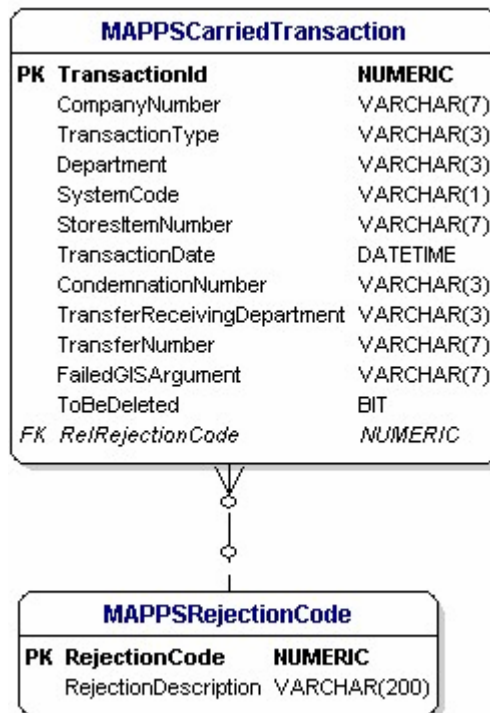
**Figure 4.7-17. MAPPS interface transactions database table**

4. The process next reads all new AEDR system transactions from the GISMappsTransactionQueue table within the GIS. These transactions are added to the list of carried transactions in memory.
5. The process sorts the list by the company number field, which is carried on all transactions from all systems.
6. The process attempts to process the transactions as follows:
  - a. 47 – Transfer: Follow details in step 1 of the logic section of EDB5051.
  - b. 69 – Condemn: Follow details in step 4 of the logic section of EDB5051.
  - c. 60 – Issue, INS/CI - Install: Attempt to match the MAPPS ‘60’ transaction to a GIS ‘INS’ or ‘CI’ transaction. If a match is made, both records can be considered complete. See details in step 5 of the logic section of EDB5051.
  - d. 40 – Return, RMV - Removal: Attempt to match the MAPPS ‘40’ transaction to a GIS ‘REM’ transaction. If a match is made, both records can be considered complete. See details in step 5 of the logic section of EDB5051.
7. Purge tables: MAPPSCarriedTransaction, InterfaceMAPPSTransactions, and GISMappsTransactionQueue.
8. For all transactions that were matched and/or completed, insert a corresponding record into MAPPSProcessedTransHistory recording all applicable fields.

<b>MAPPSProcessedTransHistory</b>	
<b>PK ProcessedTransactionId</b>	<b>NUMERIC</b>
ProcessedDate	DATETIME
CompanyNumber	VARCHAR(7)
TransactionType	VARCHAR(3)
Department	VARCHAR(3)
SystemCode	VARCHAR(1)
StoresItemNumber	VARCHAR(7)
TransactionDate	DATETIME
CondemnationNumber	VARCHAR(3)
TransferReceivingDepartment	VARCHAR(3)
TransferNumber	VARCHAR(7)

**Figure 4.7-18. Completed MAPPS transactions are inserted into the history file**

- In Figure 4.7-19, all transactions that were **not** matched and/or completed, a corresponding record is inserted into MAPPSCarriedTransaction including the appropriate rejected reason code so that an attempt will be made the next night to process the record.



**Figure 4.7-19. Incomplete MAPPS transactions are posted to the carry file**

- Insert a new record into MAPPSNightlyStatistics

<b>MAPPSNightlyStatistics</b>	
<b>PK TransactionDate</b>	<b>DATETIME</b>
CarryOverCount	INTEGER
ManualDeletions	INTEGER
NewMAPPSTransfers	INTEGER
NewMAPPSCondemnations	INTEGER
NewMAPPSSissues	INTEGER
NewMAPPSTransactions	INTEGER
TotalMAPPSTransactions	INTEGER
NewGISTRInstalls	INTEGER
NewGISTRRemovals	INTEGER
NewGISCapacitorInstalls	INTEGER
TotalGISTRTransactions	INTEGER
ProcessedTransfers	INTEGER
OutstandingTransfers	INTEGER
ProcessedCondemnations	INTEGER
OutstandingCondemnations	INTEGER
MatchedIssuesInstalls	INTEGER
MatchedReturnsRemovals	INTEGER
UnMatchedIssues	INTEGER
UnMatchedReturns	INTEGER
UnMatchedTRInstalls	INTEGER
UnMatchedTRRemovals	INTEGER
UnMatchedCapacitorInstalls	INTEGER
TotalProcessedSuccess	INTEGER
TotalOutstanding	INTEGER
TotalProcessed	INTEGER

**Figure 4.7-20. And the nightly statistics are updated**

Record the statistics from the processing that was performed including the following:

- a. TransactionDate: The system date when the process was run.
- b. CarryOverCount: The count of the records that was extracted from MAPPSCarriedTransaction in step 1.
- c. ManualDeletions: The count of records from MAPPSCarriedTransaction that were discarded due to the ToBeDeleted column being equal to 1 (step 2 above).
- d. NewMappsTransfers: The count of transfer records that was extracted from the MAPPSTransaction view in step 3.
- e. NewMappsCondemnations: The count of condemnation records that was extracted from the MAPPSTransaction view in step 3.
- f. NewMappsIssues: The count of issue records that was extracted from the MAPPSTransaction view in step 3.
- g. NewMappsReturns: The count of return records that was extracted from the MAPPSTransaction view in step 3.
- h. TotalMappsTransactions: The sum of the counts from d-g above.
- i. NewGISTRInstalls: The count of 'INS' records that was extracted from GISMappsTransactionQueue in step 4 above.



- j. NewGISTRRemovals: The count of ‘RMV’ records that was extracted from GISMappsTransactionQueue in step 4 above.
  - k. NewGISCapacitorInstalls: The count of ‘CI’ records that was extracted from GISMappsTransactionQueue in step 4 above.
  - l. TotalGISTransactions: The sum of the counts from i-k above.
  - m. ProcessedTransfers: The count of the transfer transactions that was completed and subsequently entered into MAPPSProcessedTransHistory in step 8.
  - n. OutstandingTransfers: The count of the transfer transactions that was **not** completed and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - o. ProcessedCondemnations: The count of the condemn transactions that was completed and subsequently entered into MAPPSProcessedTransHistory in step 8.
  - p. OutstandingCondemnations: The count of the condemn transactions that was **not** completed and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - q. MatchedIssuesInstalls: The count of the matched MAPPS issues and GIS installs (each match counts for two entries, one from MAPPS and one from GIS).
  - r. MatchedReturnsRemovals: The count of the matched MAPPS returns and GIS removals (each match counts for two entries, one from MAPPS and one from GIS).
  - s. UnmatchedIssues: The count of the issue transactions that was **not** matched and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - t. UnmatchedReturns: The count of the return transactions that was **not** matched and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - u. UnmatchedTRInstalls: The count of the GIS transformer and regulator install transactions that was **not** matched and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - v. UnmatchedTRRemovals: The count of the GIS transformer and regulator removal transactions that was **not** matched and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - w. UnmatchedCapacitorInstalls: The count of the GIS capacitor install transactions that was **not** matched and was subsequently entered into MAPPSCarriedTransaction in step 9.
  - x. TotalProcessedSuccess: The sum of the counts from m, o, q, and r above.
  - y. TotalOutstanding: The sum of the counts from n, p, s, t, u, v, and w above.
  - z. TotalProcessed:  $(x + y)$  and/or  $(b - c + h + l)$  from above. These two calculations should both be run to ensure that they match.
11. Finally, purge all records from MAPPSProcessedTransHistory where column TransactionDate < SystemDate – 6 months.

#### **4.7.1.6.2 Batch Report Generator**

The majority of the NIPSCO reports are generated in a batch fashion. This application allows the users to configure the reports to be run and spooled to a windows printer on a daily, weekly, monthly, or annual basis. The reports are created using XML and XSLT (see the “SAGE Reports” section for more detail). The batch creation of these reports is accomplished by having the application manage an html viewer where each report can be loaded and then spooled to a printer. Each report can be spooled to multiple printers as needed and certain reports are configurable so that only certain sections of the report will be spooled to certain printers. An example of this would be for report “EDB5045 – Transformers In Stock Inventory Report”. This report details the transformers that are currently in stock in the various LOAs. The desired functionality is to have the report sorted by LOA. Then only the stock records for each individual LOA are spooled to that respective LOA’s printer. Sub-reports may be run for each LOA that only contain the needed data. These sub-reports are then easily spooled to the correct printer at each LOA. It should also be noted that all printers that are used with this application are required to be registered as valid printers on the server where this application is run.

##### **4.7.1.6.2.1 Use Case**

The user configures the reports to be generated along with their frequency and their printer(s) via an XML application configuration file. The application is then run on a nightly basis. Based on the configuration, the application determines which reports need to be generated and printed and does so using an html viewer. The data source for the reports is the SAGE multi-versioned view of the “NIPSCO\_SAGE” version. The reports are available on the printers in the correct locations by the opening of business the following day.

##### **4.7.1.6.2.2 Design**

The following steps are executed when this batch application is run:

1. The application accesses the configuration file to determine which reports need to be generated and printed as follows:
  - a. Daily: The reports are generated every night.
  - b. Weekly: The reports are generated on each Sunday night.
  - c. Monthly: The reports are generated on the last night of each month.
  - d. Annually: The reports are generated on the last night of each year.
2. Each report that is scheduled for generation is loaded into an html viewer. Certain reports may require processing to be executed against the database as part of the report generation. This processing will occur at this time.
3. Once loaded, each report is spooled to the configured Windows printer(s).
4. An entry is made in the BatchReportLog table in the SAGE application database recording the date, report id, printer, success indicator (yes/no, 1/0), and the error if any occurred.

#### **4.7.1.6.3 Interface Management**

The AEDR system must maintain interfaces to many other NIPSCO systems. This section defines the application that manages and executes each of these interfaces on a nightly basis.

##### **4.7.1.6.3.1 Use Case**

The interface management is run on a nightly basis. It checks a configuration file for the specific interfaces that will be executed. Each interface is run, the results logged, and any errors sent to a list of configured parties.

##### **4.7.1.6.3.2 Design**

The following steps are executed when this batch application is run:

1. The application reads a list of interfaces to be executed from a configuration file. The configuration file contains assembly and class information so that each interface can be created and executed via reflection. This ensures that the interface management is completely configurable and extensible.
2. The application opens database connections to all required systems so that the connections can be shared between all of the interfaces. The database connections are maintained in a collection that can be easily passed to each interface.
3. Each configured interface is run. The specific interface defines the exact steps to be taken to complete the processing.
4. The application logs the start and stop times of each interface and catches and logs any errors if they occur.
5. If any errors occur within an interface, the error and any additional detail is e-mailed to a configured list of administrators. This ensures that the problem is fixed as soon as possible. The timing of many of these interfaces is critical.

#### **4.7.1.6.4 Structure to Conductor Join**

The Pole/Mounting Inquiry report requires the system to generate data on primary and secondary conductors based on the distribution reference number of a pole, pad, vault, or pedestal. Because there is only a spatial relationship between these structures and the conductors in the GIS, this data cannot be retrieved in the purely tabular manner that the SAGE and reporting tools require (there is a tabular join between the structures and the service wire, hence it is not included in this batch application). For this reason, this batch application was created to establish a tabular join between distribution reference numbers and conductors on a weekly basis. This relationship is not an explicit database relationship but instead captures the needed relational data in a table based in the SAGE database. This data is only used by the SAGE reports. It should be noted that this application was written with ArcObjects as it requires the ability to make spatial GIS queries.

##### **4.7.1.6.4.1 Use Case**

This report runs on a weekly basis over the weekend as it is relatively time consuming due to the number of spatial joins that are required. It loops through the structure features

containing distribution reference numbers including poles, pads, vaults, and pedestals. It conducts a spatial buffer search for each structure feature against the primary and secondary feature classes. It then creates join records in the StructureConductorJoin table capturing a tabular relationship between these features and the conductor. The reports then utilize this table when it is necessary to identify conductor records attached to the structure features.

#### 4.7.1.6.4.2 Design

The following steps are executed when this batch application is run:

1. The application purges the existing data from the StructureConductorJoin table.
2. The application connects to the Default version within the GIS database via ArcObjects.
3. The application loops through each feature within the SupportStructure, PadMount, and Pedestal feature class that has a valid distribution reference number.
4. For each feature, the application conducts a spatial buffer search against the OhConductor, UgConductor, and Secondary feature classes.
5. When a matching conductor feature is returned, the application traverses the appropriate relationship class to its related conductor info records.
6. A new record is created in StructureConductorJoin table (Figure 4.7-21) capturing the joined information between the distribution reference number and the conductor info record as follows:
  - a. DistribRefNum: Set to the Distribution Reference Number of the structure.
  - b. CategoryCd: This corresponds to 1 for Primary and 2 for Secondary.
  - c. LocationCd: This corresponds to O for Overhead and U for Underground.
  - d. ConductorObjectId: This corresponds to the object id of the conductor info record.

StructureConductorJoin	
DistribRefNum	VARCHAR(8)
CategoryCd	INTEGER
LocationCd	VARCHAR(1)
ConductorObjectId	INTEGER

**Figure 4.7-21.**

7. When the reporting applications need to access this data, they use the above information to determine how to locate the conductor info record as follows:
  - e. For CategoryCd=1, LocationCd=O, query OhConductorInfo with the ConductorObjectId.
  - f. For CategoryCd=1, LocationCd=U, query UgConductorInfo with the ConductorObjectId.
  - g. For CategoryCd=2, query SecondaryConductorInfo with the ConductorObjectId.

#### ***4.7.1.6.5 Release SDE Lock***

A large portion of the EDFS custom functionality utilizes ESRI multi-version views. A common problem when using multi-version views heavily from many different processes is that the view becomes locked if there is ever an error within any of the processes. In basic terms, each application opens the view for editing, performs its edits, and then closes the view. If the application does not close the view, then it is effectively locked and is not available to any other processes/applications. This application was created to ensure that the view is unlocked correctly during batch processing even if any errors occur. This ensures that an error in any one process will not cause the rest of the processes to fail as well.

##### **4.7.1.6.5.1 Use Case**

This batch application runs multiple times during the nightly batch run. It is scheduled in between all other significant applications that use multi-version views. It is responsible for unlocking the view using any and all database user accounts that ever access the multi-version view.

##### **4.7.1.6.5.2 Design**

The following steps are executed when this batch application is run:

1. The application attempts to open the multi-version view.
2. If any errors are raised due to the view being locked, the application will then unlock the view with all configured user accounts.

#### ***4.7.1.6.6 Domain Synchronization***

The SAGE application is an ASP.Net application that uses standard .Net controls to gather user input. In following standard .Net development concepts, these controls should be data-bound directly to a lookup table in the database. Unfortunately, ESRI stores its domain values in a binary format that cannot be directly bound to standard COM or .Net controls. So, this application has been written to synchronize configured ESRI domains into standard flat database tables on a nightly basis.

##### **4.7.1.6.6.1 Use Case**

Standard database lookup tables (ID and Description columns) have been established for all domains that are used by the SAGE application. This application synchronizes the values from the ESRI binary domain into these tables on a nightly basis to ensure that the lookup values match in both the GIS and SAGE.

##### **4.7.1.6.6.2 Design**

The following steps are executed when this batch application is run:

1. The application connects to the geodatabase using ArcObjects.
2. The application reads a list of the domains and their corresponding tables to be synched from a configuration file.
3. The application opens each domain within the geodatabase.
4. The application truncates each corresponding database table.

- The application writes each value found in the domain into the corresponding database table shown in Figure 4.7-22.

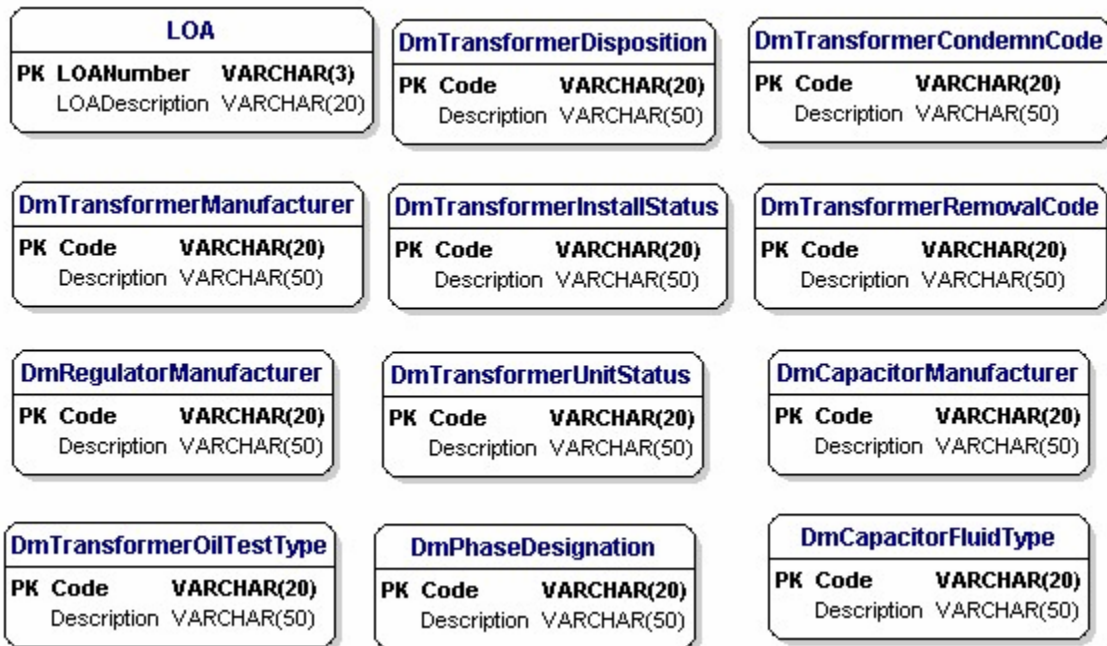


Figure 4.7-22. Database tables updated by Domain Synchronization

#### 4.7.1.6.7 Asset Statistics

SAGE administrator users can access the SAGE Coordinator Dashboard. This web page shows key statistics for the company’s capital assets (transformers, regulators, and capacitors). These statistics include the quantity, capacity, and install cost for each of the capital assets sub grouped by their status (in stock, installed, condemned).

##### 4.7.1.6.7.1 Use Case

Because these statistics are pulled via multi-versioned views and they touch on a wide range of tables, they take considerable time to execute. This batch application queries the data on a nightly basis and stores the results in a single summary table that can then be used by the SAGE application to display the data very quickly. The data is current as of the night before which is acceptable to the users.

##### 4.7.1.6.7.2 Design

The following steps are executed when this batch application is run:

- The application executes the SQL queries to gather the required asset statistics.
- The application removes the previous night’s statistics from the summary table.
- The application writes the statistics to the summary table.

#### 4.7.1.6.8 Session Reporter

The management of Maps & Records requires a nightly view capture of the work that is currently outstanding within the department. Work within the AEDR system is managed

within sessions. Therefore, a nightly report of all sessions and their details are generated to meet this requirement.

#### **4.7.1.6.8.1 Use Case**

This application queries the database for all active sessions, organizes the results into a report, and e-mails the report out to key users.

#### **4.7.1.6.8.2 Design**

The following steps are executed when this batch application is run:

1. The application executes SQL against the session manager database to gather key information on all active sessions.
2. The application organizes the sessions by those that have been outstanding more than 30 days, between 7 and 30 days, and those opened within the last 7 days.
3. The application creates a report containing the session name, the create user, the current user, and the status.
4. The application e-mails the report out to a list of key users configured in a configuration file.

#### **4.7.1.6.9 Batch Reconcile and Post**

Certain versions within the AEDR system are used only by system processes. These versions never need to be QAQC'd and are posted up to SDE.Default on a regular basis. A batch application reconciles and posts these system versions on a nightly basis.

#### **4.7.1.6.9.1 Use Case**

The application reconciles down all edits in SDE.Default and then posts up any system edits from a version.

#### **4.7.1.6.9.2 Design**

The following steps are executed when this batch application is run:

1. The application reads a list of configured versions to be reconciled and posted from a configuration file.
2. The application reconciles each version against SDE.Default.
3. If any conflicts are present, the application writes the details to a log file.
4. The application posts each version into SDE.Default.
5. The application writes the details of the process to a log file.

#### **4.7.1.6.10 Batch Reconcile and Compress**

System performance is typically a struggle in any enterprise level ESRI GIS. Performance is directly tied to the size of the ESRI state table which tracks outstanding edits across all versions. An application is required to reconcile all posted edits from SDE.Default down into ALL of the outstanding versions. This allows an SDE compress to be effective in minimizing the size of the ESRI state table.

#### **4.7.1.6.10.1 Use Case**

This application loops over all outstanding versions and attempts a reconcile against SDE.Default. If a successful reconcile cannot be achieved, the details are written to a log

file. Once all versions have been reconciled, a compress is performed to remove any unneeded records from the ESRI state table.

#### **4.7.1.6.10.2 Design**

The following steps are executed when this batch application is run:

1. The application retrieves a list of all versions from the SDE geodatabase.
2. The application attempts to reconcile each of the versions against SDE.Default.
3. If any errors OR conflicts are encountered for any version, the details are written to a log file.
4. The application checks a configuration file to see if a compress should be attempted. This is configurable because a compress performed via ArcObjects is much less stable than a compress performed via the SDE command line. The compress option was disabled after a command line job was scheduled on the server to compress the SDE database on a nightly basis.
5. All results are written to a log file.

#### **4.7.1.6.11 File Archiver**

The Request for Authority to Condemn / Reverse-Condemn batch report is run nightly and made available the following day under the batch reporting SAGE page. The clerks can then locate the report for their district and print out the report for signatures. Occasionally, a clerk has issues accessing SAGE or printing out the appropriate report. When this occurs, the report is overwritten the following night and the condemnation report is effectively lost. The File Archiver batch application was developed to archive the nightly condemnation reports for up to one week to account for any trouble accessing or printing the reports. The archived reports are also made available on the SAGE batch reports page.

##### **4.7.1.6.11.1 Use Case**

The File Archiver runs after the batch reports have been generated. It copies the current set of Request for Authority to Condemn / Reverse-Condemn reports to a configured archive folder. The archive folder is then published to a configured location on the webserver. Finally, the process deletes any archived reports that are over a week old.

##### **4.7.1.6.11.2 Design**

The following steps are executed when this batch application is run:

1. The application copies all of the current Request for Authority to Condemn / Reverse-Condemn reports from the configured reports directory into an archive subfolder named with the current date.
2. The application copies the entire archive folder to a configured UNC path on the webserver to make it available to SAGE users.
3. The application deletes any archive folders with a date greater than one week previous to the current date.

#### **4.7.1.6.12 Condemned Asset Cleanup**

It is possible for an installed Transformer or Regulator to be condemned. After the condemnation report is signed and the approved condemnation is sent back to the AEDR



system by MAPPS, the condemnation status on the asset is updated by the MAPPS Synchron batch process. The Condemned Asset Cleanup application is then responsible for dissolving any active relationships between the condemned asset record and any GIS feature (TransformerBank or VoltageRegulator respectively).

#### **4.7.1.6.12.1 Use Case**

The Condemned Asset Cleanup simply updates the system to null out any foreign keys between the asset tables and any active GIS feature classes.

#### **4.7.1.6.12.2 Design**

The following steps are executed when this batch application is run:

1. The application queries the database for any assets that are in the approved condemned state that are showing in the installed state and are related to a GIS feature class (TransformerUnitInstall → TransformerBank and RegulatorUnitInstall → VoltageRegulator).
2. The application then nulls out the foreign key on any install records that are returned by the above search (TransformerUnitInstall.RelTransformerBankObjectId or RegulatorUnitInstall.RelVoltageRegulatorObjectId respectively).
3. The application writes the results of the cleanup to a log file.

#### **4.7.1.6.13 On Demand Reports Cleanup**

The SAGE website allows users to interactively create three different on-demand reports (Session Inquiry, Pole/Pad Inquiry, and Padmount Inspections). These reports are generated as html files and are stored in a folder on the web server where SAGE is hosted. These reports are consumed by the user either by printing or saving the report after it has been generated. Over time, the number of these reports on the SAGE web server grows and the amount of disk space used becomes undesirable. The On Demand Reports Cleanup batch application was written to delete all on demand reports off of the web server after a specified number of days. This avoids any disk storage issues and maintains a much cleaner on-demand reports folder.

#### **4.7.1.6.13.1 Use Case**

The On Demand Reports Cleanup batch application deletes all on-demand reports from the configured web server directory that are older than a configured number of days.

#### **4.7.1.6.13.2 Design**

The following steps are executed when this batch application is run:

1. The application connects to the SAGE web server on-demand folder and query for all files that are older than a configured number of days.
2. The application then deletes any found files.

#### **4.7.1.6.14 Street Centerline Intersection Creator**

The record clerks manage street centerlines in the AEDR system by drawing the linear features and assigning the various road name attributes. Though a user could search on the street centerline features, they could not search on the spatial intersection of two

street centerline intersections which is a much more valuable search. The Street Centerline Intersection Creator batch application was created to process all existing street centerline features to locate their intersections and then create a street centerline intersection feature at the intersection attributed with both road names to allow for easy querying.

#### **4.7.1.6.14.1 Use Case**

The Street Centerline Intersection Creator application queries all street centerline features, locates their intersections, creates new point intersection features, and attributes the new features with both road names.

#### **4.7.1.6.14.2 Design**

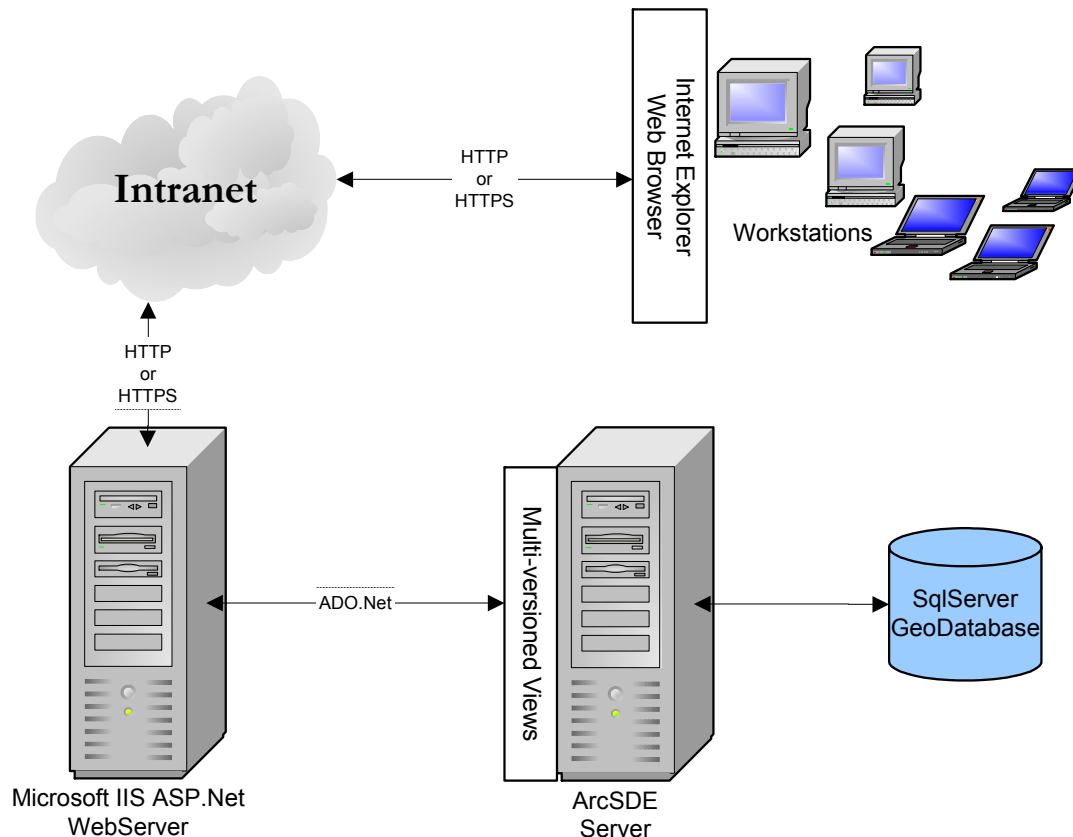
The following steps are executed when this batch application is run:

1. The application connects to the SDE database via ArcObjects.
2. The application truncates the StreetCenterlineIntersection table to purge all existing records.
3. The application then queries the StreetCenterline table for all centerline features.
4. The application parses through all of the StreetCenterline features performing spatial searches for coincident end points.
5. When a coincident end point is found, a new StreetCenterlineIntersection point feature is created at that location.
6. The new feature is attributed with the road names from both source StreetCenterline features (feature1 and feature2).
7. A second StreetCenterlineIntersection feature is then created at the same location with the road name attributes reversed (feature2 and feature1) to allow the user to search for the intersection in either order.
8. The StreetCenterlineIntersections are committed to the SDE database.

#### **4.7.1.7 SAGE Architecture**

The Stand Alone Geodatabase Editor (SAGE) tool allows for the updating of the versioned GIS data without running ArcFM/ArcGIS. This is accomplished via ActiveX Directory Object (ADO) database access and use of ESRI's multi-versioned views. The ESRI versioning structure for the SAGE tool includes a single "NIPSCO\_SAGE" version that exists under the SDE.DEFAULT version. This version is automatically reconciled and posted to DEFAULT on a nightly basis. All SAGE edits are non-spatial, asset-based edits and are made available to the enterprise in a relatively real-time fashion.

The SAGE application was written as a C#.Net ASP.Net Web Application. All of the SAGE functionality is run as a stand-alone application and is handled in a linked-form manner (as identified by the current COBOL implementation of EDFS). This functionality easily fits into the scope of a web application. With today's advancements in C#.Net Web Applications, we have the ability to provide a secure, feature-rich user interface in much the same manner as a fat-client client-server application. This is accomplished while retaining the major benefits of centralized access and maintenance. Figure 4.7-23 illustrates the architecture of the ASP.Net SAGE solution:



**Figure 4.7-23. SAGE architecture**

#### ***4.7.1.7.1 SAGE Multi-Versioned View Update Manager***

The SAGE website uses a single database connection string which connects it to a single ESRI multi-versioned view. When multiple users attempt to access the database at the same time, there can be locking problems at the version level (state IDs).

To avoid this issue, SAGE writes all insert, update, and delete SQL statements to a MVV Queue table and notifies the SAGE Multi-Versioned View (MVV) Update Manager windows service by writing a SAGE Generate Update (.sgu) file on the web server. The MVV Manager Web Service is installed on the web server and monitors a configured directory for .sgu files. When notified, the service executes the queued SQL and deletes the SGU file. With this in place, there is only one process that updates the MVV which ensures there are never any locking issues.

The processing includes the following steps:

1. The SAGE application checks all SQL executed against the database (MVV) for insert, update, or delete statements.
2. If found, SAGE inserts the SQL statements into a queue table, ArcFM8.Electric.MVVUpdateQueue, instead of actually executing them against the database. Each SQL statement is tagged with a unique connection id that is specific to the calling SAGE session.
3. SAGE then writes a SGU file to a configured directory on the web server.

4. The MVV Update Manager web service monitors the configured directory on the web server waiting for the creation of SGU files.
5. When a SGU file is created, the web service polls the MVVUpdateQueue table for all queued SQL statements. It then attains an edit lock on the MVV and executes each statement.
6. If a statement processes without error, the queued record is deleted from the MVVUpdateQueue table.
7. Once all queued statements have been executed, the windows service checks the configured for any additional SGU files.
8. If no additional SGU files are found, the edit lock is released on the MVV.
9. After initially creating the SGU file, the SAGE application monitors the MVVUpdateQueue table. Once all SQL statements tagged with the current connection id have been deleted from the table, the SAGE application assumes success and returns control to the user.

The above process executes in sub-second time and also handles the case where multiple users execute SAGE transactions at the same time. All SAGE transactions are then processed in the same edit lock.

#### **4.7.1.8 SAGE Authentication and Authorization**

The AEDR ArcFM/ArcGIS system use Windows Authentication to allow users to authenticate. This allows the users to utilize their NT username and password to connect to the system. The ASP.Net SAGE application uses the same authentication model by using .Net's built in Windows Authentication modules. This allows the users to connect to the web application without accessing a logon screen. The user's authentication credentials are read from the client machine via the connecting http request and the authentication transaction appears seamless to the user.

The user's username is extracted from the security credentials and is used to query the SAGE security tables to access the user's authorization role. The authorization role is used to grant or deny the user access to each area of functionality within the SAGE application.

Figure 4.7-24 details the SAGE security tables.

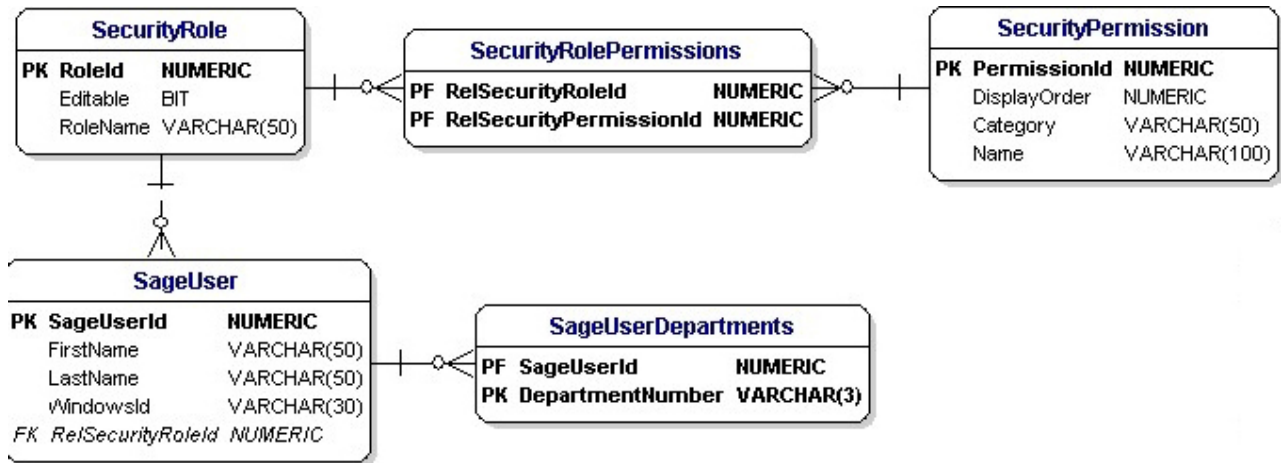


Figure 4.7-24. SAGE security tables

### 4.7.1.9 SAGE Data Model

The SAGE application requires a small database to manage the non-GIS data aspects of the application. These areas include the authorization model of the SAGE application, various tables relating to the nightly processing of the MAPPS transactions, and a join table that relates the distribution reference number of poles, pads, and pedestals to conductors (overhead and underground primary and secondary) for reporting purposes. This database is managed as a separate database within the same SQL Server instance as the GIS. This simplifies the management of this data as all of the tables are only accessed by SAGE applications and do not need to include the complexity of defining user permissions or GIS versioning. The data model for the SAGE application is detailed here:



#### **4.7.1.10 SAGE Reports**

The SAGE Reports are modeled after the EDFS reports in regard to the data they display and the layout. The data for the reports were gathered by using SQL queries against the SAGE multi-versioned view. The queries and logic for the reports were derived from the original EDFS design specifications. The data was converted into an XML format using .Net tools and then transformed into the desired format by using XSLT stylesheets.

##### **4.7.1.10.1 Use of XSLT**

An XSLT stylesheet can be used to transform an XML document into another form. In this implementation, the XML document was transformed into an HTML document, which can be easily displayed and/or printed from a web browser. XSLT stylesheets work as a series of templates, which produce the desired formatting effect each time a given element is encountered. XSLT can also control the order in which elements and attributes are displayed. XSLT is itself an implementation of XML

The stylesheets, or "transformation templates", are written primarily with declarative constructs though procedural techniques can be employed as needed. The stylesheet asserts the desired behavior of the XSLT processor based on conditions found in the source XML. It supplies examples of how each component of the result is formulated and indicates the conditions of the source that trigger which component is added to the result.

##### **4.7.1.10.2 Report Generation**

The reports can be generated in one of two ways. First, any of the batch reports can be configured to execute and print via the batch .Net process that was described in the "Batch Data Management and Reporting Applications" section of this document. In addition the reports can be generated in a real-time fashion via the SAGE tool. This approach allows the user to generate the report in a web browser. The report can then be spooled to any windows printer that is configured on the user's machine. Further, the report can be saved locally to the user's machine and can be attached to an email. For demonstration purposes, the following batch reports contain fictitious information. The batch reports that are available in the AEDR system include:

###### **4.7.1.10.2.1 Request for Authority to Condemn Transformers and Regulators**

Transformer and regulator condemnations are entered into SAGE (see the SAGE screen design section of this document for more detail). The following night, this batch report is generated. It contains the details for all condemnations or reverse-condemnations for each department. These reports are then printed the following day and submitted to management for approval signatures.

R/C	N. I. M.	COMPANY NUMBER	SERIAL NUMBER	KVA	AMPS	PURCH YEAR	INSTALL COST	*****STOREROOM JOURNAL*****			PROP RECORDED JOURNAL		
								S. I. M.	QUANTITY	KVA AMPS	YEAR	INSTALLS	
J	249999	9999999	XX-SERIALX-XX	10.0	0	1994	1287	249991	2	20.0	0	1994	22,807
J	249999	9999999	XX-SERIALX-XX	10.0	0	2004	1028	249992	2	20.0	0	2004	1,033
J	249999	9999999	XX-SERIALX-XX	18.0	0	1990	1142	249993	2	50.0	0	1990	2,286
J	249999	9999999	XX-SERIALX-XX	18.0	0	1990	1142	249994	1	50.0	0	1991	892
J	249999	9999999	XX-SERIALX-XX	28.0	0	1981	892	249995	5	750.0	0	1981	1,323
J	249999	9999999	XX-SERIALX-XX	28.0	0	1992	1222	249996	1	225.0	0	2003	1,499
J	249999	9999999	XX-SERIALX-XX	80.0	0	2002	1499	249997	1	225.0	0	1987	10,252
J	249999	9999999	XX-SERIALX-XX	100.0	0	1997	9417	249998	1	500.0	0	1988	6,922
J	249999	9999999	XX-SERIALX-XX	100.0	0	1995	6942					1990	12,228
J	249999	9999999	XX-SERIALX-XX	100.0	0	1997	10085		14	1,425.0		1995	16,561
J	249999	9999999	XX-SERIALX-XX	100.0	0	1994	10004						86,366
J	249999	9999999	XX-SERIALX-XX	100.0	0	1994	11487						
J	249999	9999999	XX-SERIALX-XX	225.0	0	1992	13228						
J	249999	9999999	XX-SERIALX-XX	300.0	0	1995	14841						

EXAMPLE

=====

MATERIAL SERVICES SUPVR \_\_\_\_\_ MANAGER MATERIAL SERVICES \_\_\_\_\_ M.T. NO. \_\_\_\_\_

MANAGER OF PROPERTY RECORDS \_\_\_\_\_ VICE PRESIDENT \_\_\_\_\_ ENTERED BY \_\_\_\_\_

DATE ENTERED \_\_\_\_\_

=====

LEGEND OF CONDEMNATION REASON CODES:

- |                         |                     |                          |                            |
|-------------------------|---------------------|--------------------------|----------------------------|
| A. PER CO. STD. ESI-699 | D. LOST/STOLEN      | G. RETURNED TO REMC      | J. NON-REPAIRABLE (SEALED) |
| B. PCB CONTAMINATED     | E. DESTROYED        | H. MECHANICAL/ELECTRICAL |                            |
| C. (TO BE) SOLD         | F. CONVEYED TO REMC | I. AGE/SIZE              |                            |

Figure 4.7-26. Detailed condemnation/reverse condemnation report



#### 4.7.1.10.2.2 Line-Transformer / Voltage-Regulator Company Use Report

This report is run monthly and details all company use installations of transformers and regulators during the previous month.

EDB5020-1 PRINTED 09/30/2006 @ 23:00:14 090ANGOLA		NORTHERN INDIAN& PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES LINE-TRANSFORMER/VOLTAGE-REGULATOR COMPANY USE REPORT SEPTEMBER, 2006							
<b>EXAMPLE</b>									
TAXING UNIT: TEX(SUBSTATION#: 1234)									
TOWN: SOMEWHERE									
COUNTY: SOMECOUNTY									
TOWNSHIP: 99999									
DESCRIPT: HELMER									
999									
MATERIAL TICKET#	COMPANY NUMBER	SERIAL NUMBER	KVA	AMPS	I/ R	PRCH YEAR	INSTALL COST		
999	1234567	XX-SERIAL-EX	250.0	328	I	1997	12888		
TAXING UNIT TOTALS:									
TRANSFORMERS INSTALLED			QUANTITY	INSTALL\$	TRANSFORMERS REMOVED			QUANTITY	INSTALL\$
REGULATORS INSTALLED			1	0	REGULATORS REMOVED			0	0
TOTAL			1	0	TOTAL			0	0

Figure 4.7-27. Line-Transformer / Voltage-Regulator Company Use report

#### 4.7.1.10.2.3 FERC For-1 Report of Line Transformers

This report shown in Figure 4.7-28 is run annually and provides a summary of all transformer and regulator additions and reductions for the previous year.

NORTHERN INDIANA PUBLIC SERVICE COMPANY  
ELECTRIC DISTRIBUTION FACILITIES  
FERC FORM-1 REPORT OF LINE TRANSFORMERS  
FOR THE YEAR 200X

	QUANTITY	TOTAL CAPACITY (KVA)
Number at Beginning of Year	XXX,XXX	X,XXX,XXX.X
Additions During the Year		
Purchases	2,308	112,178.8
Assoc. With Utility Plant	0	0.0
Reverse-Condemnsations:		
- Returned from REMC	2	47.5
- Previously Lost/Stolen	5	85.0
- Condemnation Cancelled	20	5,450.0
	-----	-----
TOTAL ADDITIONS	(+ ) 2,335	(+ ) 117,761.3
Reductions During the Year		
Retirements	2,121	88,744.6
Assoc. With Utility Plant	33	27,535.0
	-----	-----
TOTAL REDUCTIONS	(- ) 2,154	(- ) 116,279.6
NUMBER AT END OF THE YEAR	(- ) XXX,XXX	(- ) X,XXX,XXX.X

	QUANTITY	TOTAL CAPACITY (KVA)
IN STOCK	X,XXX	X,XXX
INACTIVE TRANSFORMERS IN CUSTOMER'S USE	XX	XX
ACTIVE TRANSFORMERS IN CUSTOMER'S USE	XXX,XXX	XXX,XXX
INACTIVE TRANSFORMERS IN COMPANY'S USE	X	X
ACTIVE TRANSFORMERS IN COMPANY'S USE	X	X
	-----	-----
TOTAL END OF YEAR (AS ABOVE)	XXX,XXX	XXX,XXX

END-OF-REPORT

**Figure 4.7-28. FERC Form-1 report of line transformers**

#### 4.7.1.10.2.4 Report Showing Transformers and Poles

This report shown in Figure 4.7-29 is run annually and shows details for the installation of transformers, streetlight switches, and poles for the previous year. It is used by the engineering department.

EDB5033		NORTHERN INDIANA PUBLIC SERVICE COMPANY	
PRINTED 03/03/2005 @ 15:16:46		ELECTRIC DISTRIBUTION FACILITIES	
010HAMMOND		REPORT SHOWING TRANSFORMERS AND POLES	
		FOR THE YEAR - 2005	
TRANSFORMERS:	QUANTITY	TOTAL	
OVERHEAD	X,XXX	XXX,XXX.X	KVA
PADMOUNT	XX,XXX	XXX,XXX.X	KVA
		-----	
TOTAL	XX,XXX	XXX,XXX.X	KVA
STREETLIGHT SWITCHES:	QUANTITY	CAPACITY	
MULTIPLE OIL RELAY SWITCH	X	X.X	AMPS
OIL CONTROLLER SWITCH	X	X.X	AMPS
		-----	
TOTAL	X	X.X	AMPS
POLES:	QUANTITY		
NIPSCO	XX,XXX		
		-----	
TOTAL	XX,XXX		
END-OF-REPORT			
GENERAL ENGINEERING REPORT - 03/03/2005			

Figure 4.7-29. Annual report of transformers and poles

**4.7.1.10.2.5 Annual Count of Transformers**

This report is run nightly and reports on up to date statistics of installed transformers in both company use and customer use. Figure 4.7-30 is grouped by department and sorted by taxing unit.

EDB5034-1 PRINTED 10/23/2006 @ 23:20:21 XXX SOMEDISTRICT		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES ANNUAL COUNTS - 2006		
TRANSFORMERS IN COMPANY USE:				
TAXING UNIT	KVA	INSTALL\$	QUANTITY	
ZZ1	25.0	1,315	1	
ZZ2	185.0	11,610	6	
ZZ3	1,347.5	47,656	21	
ZZ4	1,095.0	42,923	17	
ZZ5	4,475.0	206,777	62	
ZZ6	1,201.0	38,803	16	
ZZ7	1,847.5	60,860	15	
ZZ8	165.0	9,489	2	
ZZ9	1,562.0	61,352	25	
ZZ1	175.0	6,670	4	
DISTRICT TOTALS:		12,078.0	487,455	169
EDB5034-1 PRINTED 10/23/2006 @ 23:20:21 XXX SOMEDISTRICT		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES ANNUAL COUNTS - 2006		
TRANSFORMERS IN CUSTOMER USE:				
TAXING UNIT	KVA	INSTALL\$	QUANTITY	
ZZ1	50.0	775	1	
ZZ2	25.0	1,579	1	
ZZ3	6,132.5	155,708	123	
ZZ4	59,815.5	2,475,000	1,242	
ZZ5	25.0	1,793	1	
ZZ6	142,527.5	3,504,362	1,915	
ZZ7	10.0	1,095	1	
ZZ8	66,042.5	2,136,178	1,292	
ZZ9	341,751.5	8,538,282	5,549	
ZZ1	109,882.0	3,214,849	2,027	
ZZ2	50.0	1,702	1	
ZZ3	122,317.5	3,727,146	1,811	
ZZ4	8,470.0	291,500	319	
ZZ5	146,735.5	5,973,367	2,594	
ZZ6	15,504.5	368,101	309	
ZZ7	25.0	2,200	1	
ZZ8	15.0	271	1	
ZZ9	810.5	19,348	15	
DISTRICT TOTALS:		1,020,189.5	30,413,256	17,203

**Figure 4.7-30. Annual count of transformers**

**4.7.1.10.2.6 Annual Count of Transformers by County**

Figure 4.7-31 report is run nightly and returns up to date statistics of installed transformers in both company use and customer use. It is grouped by county and sorted by taxing unit.

EDB5036-1 PRINTED 10/23/2006 @ 23:20:28 COUNTY: SOME COUNTY1	NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES ANNUAL COUNTS BY COUNTY - 2006			
TRANSFORMERS IN CUSTOMER USE:				
	TAXING UNIT	KVA	INSTALL\$	QUANTITY
	XX1	50.0	775	1
	COMPANY TOTALS:	50.0	775	1
EDB5036-1 PRINTED 10/23/2006 @ 23:20:28 COUNTY: SOME COUNTY2	NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES ANNUAL COUNTS BY COUNTY - 2006			
TRANSFORMERS IN CUSTOMER USE:				
	TAXING UNIT	KVA	INSTALL\$	QUANTITY
	YY1	600.0	13,915	15
	COMPANY TOTALS:	600.0	13,915	15
EDB5036-1 PRINTED 10/23/2006 @ 23:20:28 COUNTY: SOME COUNTY3	NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES ANNUAL COUNTS BY COUNTY - 2006			
TRANSFORMERS IN CUSTOMER USE:				
	TAXING UNIT	KVA	INSTALL\$	QUANTITY
	ZZ1	562.5	18,617	26
	ZZ2	3,518.5	101,548	102
	ZZ3	3,286.0	114,408	97
	ZZ4	1,755.0	51,854	70
	ZZ5	9,338.5	273,222	270
	ZZ6	505.0	24,987	23
	ZZ7	1,117.0	35,233	46
	ZZ8	1,307.5	35,686	24
	ZZ9	700.0	40,122	42
	ZZ1	840.0	35,650	38
	ZZ2	175.0	11,208	13
	ZZ3	615.0	19,191	19
	COMPANY TOTALS:	23,720.0	761,726	770

**Figure 4.7-31. Annual count of transformers by county**

#### 4.7.1.10.2.7 Transformer Failure Report

This report is run annually and provides a summary of transformer and regulator failures for the previous year. It presents the data in several different formats.

EDS5035-1 PRINTED 03/03/200x @ 12:39:55		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES TRANSFORMER FAILURE REPORT FOR THE YEAR 200x												
NUMBER OF TRANSFORMER REMOVALS BY MONTH														
POLE:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	
<b>EXTERNAL DAMAGE</b>														
CRACKED BUSHING	0	0	1	1	2	2	2	4	1	1	6	1	21	
OIL LEAK	1	7	1	0	1	3	14	26	11	10	2	2	78	
ACCIDENT/VANDALISM	2	1	3	1	3	0	1	6	1	2	7	5	32	
ANIMALS	0	6	0	0	0	1	0	0	0	0	1	0	8	
STORM (WIND/RAIN/ICE)	4	0	0	3	0	6	12	9	5	3	6	0	48	
<b>INTERNAL DAMAGE</b>														
LIGHTNING	0	1	1	9	17	30	49	69	26	5	8	1	216	
OVERLOADED	1	0	3	0	0	3	0	10	1	0	2	1	21	
SECONDARY SHORT	1	0	3	3	5	3	6	9	3	1	5	3	42	
UNKNOWN	15	34	28	49	38	18	53	50	55	40	35	21	436	
TOTAL.....	24	49	40	66	66	66	137	139	109	62	72	34	902	
<b>PADMOUNT:</b>														
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL		
<b>EXTERNAL DAMAGE</b>														
CRACKED BUSHING	1	1	0	1	1	0	0	2	2	2	0	1	11	
OIL LEAK	0	1	1	1	4	1	3	1	2	0	0	0	14	
ACCIDENT/VANDALISM	2	1	1	0	2	0	2	0	2	1	0	1	12	
ANIMALS	0	0	0	0	0	0	0	0	1	0	0	0	1	
STORM (WIND/RAIN/ICE)	2	0	0	0	0	0	1	0	0	0	0	0	3	
<b>INTERNAL DAMAGE</b>														
LIGHTNING	0	0	0	1	0	1	2	3	1	0	1	0	9	
OVERLOADED	0	0	0	0	1	1	0	1	0	0	0	0	3	
SECONDARY SHORT	0	0	0	0	0	0	0	2	0	0	0	0	2	
UNKNOWN	2	2	3	13	11	2	5	2	5	2	2	2	51	
TOTAL.....	7	5	5	16	19	5	13	11	13	5	3	4	106	

Figure 4.7-32. Transformer failure report. The first page is formatted with failures by month

NORTHERN INDIANA PUBLIC SERVICE COMPANY  
 ELECTRIC DISTRIBUTION FACILITIES  
 TRANSFORMER FAILURE REPORT FOR THE YEAR 200X

NUMBER OF TRANSFORMER REMOVALS BY DISTRICT

POLE:

	010	030	040	050	060	070	080	090	100	110	120	150	160	180	220	TOTAL
<b>EXTERNAL DAMAGE</b>																
CRACKED BUSHING	4	2	0	0	4	3	0	1	1	1	0	6	1	0	0	23
OIL LEAK	2	4	0	0	3	3	0	2	1	56	0	8	3	0	0	82
ACCIDENT/VANDALISM	0	8	0	0	0	2	0	1	4	9	0	4	5	0	0	33
ANIMALS	6	0	0	0	1	2	0	1	0	1	0	0	0	0	0	11
STORM (WIND/RAIN/ICE)	3	0	0	0	5	3	0	2	5	16	1	8	9	0	0	52
<b>INTERNAL DAMAGE</b>																
LIGHTNING	12	39	0	0	20	21	0	17	31	60	0	15	21	0	0	236
OVERLOADED	2	0	0	0	6	0	0	1	3	6	0	3	1	0	0	22
SECONDARY SHORT	7	4	0	0	5	6	0	0	0	13	0	9	2	0	0	46
UNKNOWN	72	35	4	0	29	127	0	14	19	14	0	61	86	0	0	461
TOTAL.....	108	92	4	73	0	167	0	39	64	176	1	114	128	0	0	966

EXAMPLE

PADMOUNT:

	010	030	040	050	060	070	080	090	100	110	120	150	160	180	220	TOTAL
<b>EXTERNAL DAMAGE</b>																
CRACKED BUSHING	3	1	0	0	4	0	0	0	0	1	0	1	1	0	0	11
OIL LEAK	2	1	0	0	2	2	0	1	0	4	0	3	1	0	0	16
ACCIDENT/VANDALISM	1	5	0	0	2	2	0	0	0	1	0	1	1	0	0	13
ANIMALS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
STORM (WIND/RAIN/ICE)	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
<b>INTERNAL DAMAGE</b>																
LIGHTNING	0	0	1	0	0	1	0	0	3	3	0	2	1	0	0	11
OVERLOADED	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	3
SECONDARY SHORT	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	4
UNKNOWN	16	6	0	0	4	3	0	1	1	0	0	7	16	0	0	54
TOTAL.....	23	13	1	17	0	8	0	2	5	11	0	16	20	0	0	116

Figure 4.7-33. Transformer failure report. The second page is formatted with failures by department/district





4.7.1.10.2.8

Temporary and Inactive Transformer and Regulator Installations – Aged Three Months  
 This report is run nightly and reports on transformer and regulator installations that were marked as temporary and/or inactive that have been in the field for over three months.  
 This helps NIPSCO in ensuring that these types of installations are not abandoned or lost in the field.

NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES TEMPORARY AND INACTIVE TRANSFORMER/REGULATOR INSTALLATIONS (OVER 3 MONTHS OLD)									
EDB5043-1 PRINTED 10/23/2006 @ 23:20:40 010HAMMOND									
TEMPORARY:									
MATERIAL TICKET NUMBER	COMPANY#	TAX UNIT	POLE/ MOUNTING	INSTALLED	PHASE	CIRCUIT	KVA	AMPS	
130	9999999	M15	11111111	06/22/1994	B	12-111	25.0	25	
999	9999999	M15	11111111	01/14/1997	B	12-111	25.0	25	
331	9999999	M22	11111111	12/17/1993	C	12-111	50.0	50	
039	9999999	M22	11111111	02/13/1996	B	12-111	50.0	50	
325	9999999	M22	11111111	01/02/1997	C	12-111	75.0	75	
19	9999999	M22	11111111	01/29/1999	A	12-111	15.0	15	
72	9999999	M24	11111111	04/09/1999	B	12-111	10.0	10	
327	9999999	M34	11111111	12/09/1998	B	12-111	37.5	38	
999	9999999	M34	11111111	09/19/1996	C	12-111	10.0	10	
194	9999999	M34	11111111	09/09/1998	C	12-111	10.0	10	
213	9999999	M34	11111111	08/06/1992	C	12-111	10.0	10	
265	9999999	M34	11111111	07/14/1989	A	12-111	25.0	25	
302	9999999	M37	11111111	09/10/1991	A	12-111	37.5	38	
999	9999999	M17	11111111	02/26/1997	A	12-111	25.0	25	
38	9999999	M22	11111111	02/23/1995	ABC	12-111	75.0	75	
38	9999999	M22	11111111	02/23/1995	ABC	12-111	75.0	75	
38	9999999	M22	11111111	02/23/1995	ABC	12-111	75.0	75	
TOTAL TEMPORARY INSTALLATIONS: 17									
INACTIVE:									
MATERIAL TICKET NUMBER	COMPANY#	TAX UNIT	POLE/ MOUNTING	INSTALLED	PHASE	CIRCUIT	KVA	AMPS	
331	9999999	M22	11111111	12/17/1993	C	12-111	50.0	50	
TOTAL INACTIVE INSTALLATIONS: 1									
TEMPORARY AND INACTIVE:									
MATERIAL TICKET NUMBER	COMPANY#	TAX UNIT	POLE/ MOUNTING	INSTALLED	PHASE	CIRCUIT	KVA	AMPS	
130	9999999	M15	11111111	06/22/1994	B	12-111	25.0	25	
999	9999999	M15	11111111	01/14/1997	B	12-111	25.0	25	
TOTAL TEMPORARY AND INACTIVE INSTALLATIONS: 2									
END-OF-REPORT									

Figure 4.7-35. Temporary and inactive transformer and regulator installations aged 3 months

#### 4.7.1.10.2.9 Transformer & Regulator Stores Item Number Description Report

This report is run nightly and shows the key details for all transformer and regulator stores item numbers. This is a useful report for anyone referencing these numbers.

EDB5044-1 PRINTED 10/23/2006 @ 2006		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES TRANSFORMER/REGULATOR STORES ITEM NUMBER DESCRIPTION REPORT					
S.I.N.	TYPE	KVA	AMPS	PHASE	PRIMARY VOLTAGE	SECONDARY VOLTAGE	
2666661	T	4.0	0	1	2400	120/240	
2666662	T	1.5	0	1	2400	120/240	
2666663	T	2.0	0	1	2400	120/240	
2666664	T	3.0	0	1	2400	120/240	
2666665	T	5.0	0	1	2400	120/240	
2666666	T	7.5	0	1	2400	120/240	
2666667	T	10.0	0	1	2400	120/240	
2666668	T	15.0	0	1	2400	120/240	
2666669	T	25.0	0	1	2400	120/240	
2666670	T	37.5	0	1	2400	120/240	
2666671	T	50.0	0	1	2400	120/240	
2666672	T	75.0	0	1	2400	120/240	
2666673	T	100.0	0	1	2400	120/240	
2666674	T	150.0	0	1	2400	120/240	
2666675	T	200.0	0	1	2400	120/240	
2666676	T	167.0	0	1	2400	120/240	
2666677	T	250.0	0	1	2400	120/240	
2666678	T	333.0	0	1	2400	120/240	
2666679	T	5.0	0	1	2400	240/480	
2666680	T	7.5	0	1	2400	240/480	
2666681	T	10.0	0	1	2400	240/480	
2666682	T	15.0	0	1	2400	240/480	
2666683	T	25.0	0	1	2400	240/480	
2666684	T	37.5	0	1	2400	240/480	
2666685	T	50.0	0	1	2400	240/480	
2666686	T	75.0	0	1	2400	240/480	
2666687	T	100.0	0	1	2400	240/480	
2666688	T	150.0	0	1	2400	240/480	
2666689	T	167.0	0	1	2400	240/480	
2666690	T	250.0	0	1	2400	240/480	
2666691	T	333.0	0	1	2400	240/480	
2666692	T	500.0	0	1	2400	240/480	
2666693	T	50.0	0	1	2400	277/480	
2666694	T	75.0	0	1	2400	277/480	
2666695	T	100.0	0	1	2400	277/480	
2666696	T	167.0	0	1	2400	277/480	
2666697	T	250.0	0	1	2400	277/480	
2666698	T	333.0	0	1	2400	277/480	
2666699	T	500.0	0	1	2400	277/480	
2666700	T	25.0	0	1	2400	120/240	
2666701	T	50.0	0	1	2400	120/240	
2666702	T	75.0	0	1	2400	120/240	
2666703	T	100.0	0	1	2400	120/240	
2666704	T	200.0	0	3	4000	2300	
2666705	T	167.0	0	1	2400	120/240	
2666706	T	75.0	0	3	4160/2400	120/208	
2666707	T	150.0	0	3	4160/2400	120/208	
2666708	T	225.0	0	3	4160/2400	120/208	
2666709	T	300.0	0	3	4160/2400	120/208	
2666710	T	500.0	0	3	4160/2400	120/208	
2666711	T	750.0	0	3	4160/2400	120/208	
2666712	T	1000.0	0	3	4160/2400	120/208	
2666713	T	225.0	0	3	4160/2400	277/480	
2666714	T	500.0	0	3	4160/2400	277/480	
2666715	T	750.0	0	3	4160/2400	277/480	
2666716	T	1000.0	0	3	4160/2400	277/480	
2666717	T	1500.0	0	3	4160/2400	277/480	
2666718	T	264.0	0	3	4160/2400	XXXXXXX	
2666719	T	75.0	0	3	12.5/7.2X4/2.4	120/208	
2666720	T	150.0	0	3	12.5/7.2X4/2.4	120/208	
2666721	T	225.0	0	3	12.5/7.2X4/2.4	120/208	

Figure 4.7-36. Transformer and regulator stores item numbers report showing voltage

#### 4.7.1.10.2.10 Transformers In Stock Inventory Report

This report is run nightly and reports on all transformers and regulators that are in stock on that particular date.

EDBS045-1 PRINTED 10/23/2006 @ 23:20:44 010HAMMOND		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES TRANSFORMERS IN STOCK REPORT		
S.I.N.	COMPANY NUMBER	IMPEDANCE	DISPOSITION CODE	
277777	1111111	1.90		
277777	1111111	2.90		
277777	1111111	1.50		
277777	1111111	1.90	R	
277777	1111111	1.70		
277777	1111111	1.70		
277777	1111111	1.70		
TOTAL S.I.N. QUANTITY = 7				
277778	1111111	1.70		
277778	1111111	1.70		
277778	1111111	2.70		
277778	1111111	1.70		
277778	1111111	1.50	R	
277778	1111111	2.00		
277778	1111111	1.70		
277778	1111111	1.80		
TOTAL S.I.N. QUANTITY = 8				
277779	1111111	1.50		
277779	1111111	1.80		
277779	1111111	1.50		
277779	1111111	1.90		
277779	1111111	1.70		
277779	1111111	1.90		
277779	1111111	1.90		
277779	1111111	1.90		
277779	1111111	1.40	R	
277779	1111111	2.20		
277779	1111111	2.20		
TOTAL S.I.N. QUANTITY = 11				
277799	1111111	1.80		
277799	1111111	1.70		
277799	1111111	2.20		
277799	1111111	2.30		
TOTAL S.I.N. QUANTITY = 4				
277799	1111111	1.90		
277799	1111111	1.60		
277799	1111111	1.60		
277799	1111111	1.60		
277799	1111111	1.90		
277799	1111111	2.00		
277799	1111111	1.40		
277799	1111111	1.90		
277799	1111111	1.50		

Figure 4.7-37. The Transformers in stock report is a widely used report by storeroom workers, accounting departments, and management

#### 4.7.1.10.2.11 Annual Count of Capacitors

This report is run nightly and reports on up to date statistics of installed capacitors in both company use and customer use.

CAPACITORS IN COMPANY USE:		SUB ID	SUB DESCRIPTION	KVAR	QUANTITY
TAXING UNIT					
ZZ1		1111	SOMESUB	34,500.0	115
ZZ2		1112	SOMESUB	16,800.0	56
ZZ3		1113	SOMESUB	14,400.0	48
ZZ4		1114	SOMESUB	21,600.0	72
ZZ5		1115	SOMESUB	14,400.0	48
DISTRICT TOTALS:				101,700.0	339

CAPACITORS IN CUSTOMER USE:		KVAR	QUANTITY
TAXING UNIT			
ZZ1		600.0	6
ZZ2		2,100.0	21
ZZ3		3,700.0	23
ZZ4		3,300.0	24
ZZ5		1,000.0	10
ZZ6		900.0	9
ZZ7		9,000.0	48
DISTRICT TOTALS:		20,600.0	141

Figure 4.7-38. The annual count of capacitors report is grouped by department and sorted by taxing unit

#### 4.7.1.10.2.12 Capacitor Failure Report

This report is run annually and provides a summary of capacitor failures for the previous year. It presents the data in several different formats.

EDB5235-1 PRINTED 03/03/200X @ 14:26:22		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES CAPACITOR FAILURE REPORT FOR THE YEAR 200X											
NUMBER OF CAPACITOR REMOVALS BY MONTH													
POLE:													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
EXTERNAL DAMAGE													
CRACKED BUSHING	0	0	0	0	0	0	0	0	0	0	0	0	0
OIL LEAK	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENT/VANDALISM	0	0	0	0	0	0	0	0	0	0	0	0	0
ANIMALS	0	0	0	0	0	0	0	0	0	0	0	0	0
STORM (WIND/RAIN/ICE)	0	0	0	0	0	0	0	0	0	0	0	0	0
INTERNAL DAMAGE													
LIGHTNING	0	0	0	0	0	0	0	0	0	0	0	0	0
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL.....	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBSTATION:													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
EXTERNAL DAMAGE													
CRACKED BUSHING	0	0	0	0	0	0	0	0	0	0	0	0	0
OIL LEAK	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENT/VANDALISM	0	0	0	0	0	0	0	0	0	0	0	0	0
ANIMALS	0	0	0	0	0	0	0	0	0	0	0	0	0
STORM (WIND/RAIN/ICE)	0	0	0	0	0	0	0	0	0	0	0	0	0
INTERNAL DAMAGE													
LIGHTNING	0	0	0	0	0	0	0	0	0	0	0	0	0
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL.....	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4.7-39. Capacitor failure report. The first page is formatted with failures by month

NUMBER OF CAPACITOR REMOVALS BY DISTRICT

POLE:	010	030	040	050	060	070	080	090	100	110	120	150	160	180	220	TOTAL
<b>EXTERNAL DAMAGE</b>																
CRACKED BUSHING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OIL LEAK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENT/VANDALISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANIMALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STORM(WIND/RAIN/ICE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>INTERNAL DAMAGE</b>																
LIGHTNING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNENOWN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SUBSTATION:	010	030	040	050	060	070	080	090	100	110	120	150	160	180	220	TOTAL
<b>EXTERNAL DAMAGE</b>																
CRACKED BUSHING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OIL LEAK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENT/VANDALISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANIMALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STORM(WIND/RAIN/ICE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>INTERNAL DAMAGE</b>																
LIGHTNING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNENOWN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4.7-40. The second page of the capacitor failure report is formatted with failures by department/district

EDB5235-1  
 PRINTED 03/03/200X @ 14:26:22

NORTHERN INDIANA PUBLIC SERVICE COMPANY  
 ELECTRIC DISTRIBUTION FACILITIES  
 CAPACITOR FAILURE REPORT FOR THE YEAR 200X

NUMBER OF CAPACITOR REMOVALS BY DISTRICT

POLE MANUFACTURER	EXTERNAL DAMAGE					INTERNAL DAMAGE			TOTAL	IN-SERVICE *
	CRACKED BUSHING	OIL LEAK	ACCIDENT/ VANDALISM	ANIMALS	STORM	LIGHTNING	UNKNOWN	TOTAL REMOVED		
TOTAL.....	0	0	0	0	0	0	0	0	0	0

EXAMPLE

EDB5235-1  
 PRINTED 03/03/2005 @ 14:26:22

NORTHERN INDIANA PUBLIC SERVICE COMPANY  
 ELECTRIC DISTRIBUTION FACILITIES  
 CAPACITOR FAILURE REPORT FOR THE YEAR 2005

NUMBER OF CAPACITOR REMOVALS BY DISTRICT

SUBSTATION MANUFACTURER	EXTERNAL DAMAGE					INTERNAL DAMAGE			TOTAL	IN-SERVICE *
	CRACKED BUSHING	OIL LEAK	ACCIDENT/ VANDALISM	ANIMALS	STORM	LIGHTNING	UNKNOWN	TOTAL REMOVED		
TOTAL.....	0	0	0	0	0	0	0	0	0	0

Figure 4.7-41. The third page of the capacitor failure report is formatted with failures by manufacturer

#### 4.7.1.10.2.13 Capacitor Stores Item Number Description Report

This report is run nightly and shows the key details for all capacitor stores item numbers.

EDB5244-1 PRINTED 10/23/2006 @ 2006		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES CAPACITOR STORES ITEM NUMBER DESCRIPTION REPORT			
S.I.N.	KVAR	KV	BUSHINGS		
777777	50.0	2.40	2		
777777	100.0	2.40	2		
777777	150.0	21.60	1		
777777	200.0	21.60	1		
777777	300.0	21.60	1		
777777	300.0	7.20	2		
777777	50.0	7.20	2		
777777	100.0	7.20	2		
777777	150.0	7.20	2		
777777	200.0	7.20	2		
777777	150.0	19.92	1		
777777	300.0	19.92	1		
777777	50.0	7.62	2		
777777	100.0	7.62	2		
777777	150.0	7.62	2		
777777	200.0	7.62	2		
777777	300.0	7.62	2		
777777	200.0	19.92	1		

EXAMPLE

EDB5244-2 PRINTED 10/23/2006 @ 2006		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES CAPACITOR STORES ITEM NUMBER DESCRIPTION REPORT			
KVAR	KV	BUSHINGS	S.I.N.		
50.0	2.40	2	777777		
50.0	7.20	2	777777		
50.0	7.62	2	777777		
100.0	2.40	2	777777		
100.0	7.20	2	777777		
100.0	7.62	2	777777		
150.0	7.20	2	777777		
150.0	7.62	2	777777		
150.0	19.92	1	777777		
150.0	21.60	1	777777		
200.0	7.20	2	777777		
200.0	7.62	2	777777		
200.0	19.92	1	777777		
200.0	21.60	1	777777		
300.0	7.20	2	777777		
300.0	7.62	2	777777		
300.0	19.92	1	777777		
300.0	21.60	1	777777		

Figure 4.7-42. The capacitor stores item description report is a useful report for anyone referencing these numbers



#### 4.7.1.10.2.14 Capacitors In Stock Inventory Report

This report is run nightly and reports on all capacitors that are in stock on that particular date.

ED55245 PRINTED 10/23/2006 @ 23:20:48 050 VALPARAISO		NORTHERN INDIANA PUBLIC SERVICE COMPANY ELECTRIC DISTRIBUTION FACILITIES CAPACITORS IN STOCK REPORT		
S. I. N.	COMPANY NUMBER	KVAR	VOLTAGE	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
777777	11111	100.0	7.20	
TOTAL S. I. N. QUANTITY = 8				
777778	11111	200.0	7.62	
777778	11111	200.0	7.62	
777778	11111	200.0	7.62	
777778	11111	200.0	7.62	
777778	11111	200.0	7.62	
777778	11111	200.0	7.62	
TOTAL S. I. N. QUANTITY = 6				

Figure 4.7-43. Capacitors in stock inventory report is a widely used report by storeroom workers, accounting departments, and management

#### 4.7.1.10.2.15 Securities and Exchange Commission Form 10K (EDB5032)

This report is run annually and is submitted to the federal government.

INSTALLED DISTRIBUTION CIRCUIT MILES:		2005	2004
OVERHEAD PRIMARY		XX.X	XX.X
OVERHEAD SECONDARY		XX.X	XX.X
OVERHEAD TOTAL		----- XX.X	----- XX.X
UNDERGROUND PRIMARY		XX.X	XX.X
UNDERGROUND SECONDARY		XX.X	XX.X
UNDERGROUND TOTAL		----- XX.X	----- XX.X
TOTAL CIRCUIT MILES		----- XX.X	----- XX.X
EXAMPLE			
INSTALLED POLES:		2005	2004
NIPSCO OWNED		X,XXX	X,XXX
OWNED BY OTHER UTILITIES		0	0
OTHER OWNERSHIP		0	0
TOTAL OF INSTALLED POLES		----- X,XXX	----- X,XXX
		2005	2004
INSTALLED DISTRIBUTION TRANSFORMERS:		XXX,XXX.X KVA	XXX,XXX.X KVA
END-OF-REPORT			

Figure 4.7-44. The Securities and Exchange Commission Form 10k captures high level statistics on the quantity of installed conductor, poles, and transformers over the previous year

#### 4.7.1.11 SAGE Screen Design

The SAGE screen design is organized into functional areas and is driven by the drop down menus at the top of the screen.

##### 4.7.1.11.1 Transformer / Regulator Screens

Most screens for Transformers and Regulators have the exact same design and layout. Therefore, only the transformer screens are shown here. Any notable differences are explained in their respective sections.

##### 4.7.1.11.1.1 Add New Transformer / Regulator

Figure 4.7-45 allows the central storerooms to add newly purchased assets into the system including manufacturer and warranty data.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The main window is titled "Add Transformer Manufacturer and Warranty Data" and includes a "Department: Choose..." dropdown. The form contains the following fields and sections:

- Company Number (text input)
- S.I.N. (text input with dropdown arrow)
- Date Received (calendar icon)
- Manufacturer (dropdown menu, currently showing "A.B. Chance")
- Impedance (text input with "." and "%" symbols)
- Potarity (dropdown menu)
- P.O. # (text input)
- Install Cost (text input)
- Serial (text input)
- Gallons of Oil (text input)
- Weight (text input)
- Warranty Description (text area)
- S.I.N. Standard Data section containing:
  - kVA (text input)
  - Phase (text input)
  - Voltages: Primary (text input)
  - Secondary (text input)
  - Description (text area)

At the bottom of the form is an "Add Transformer" button. The interface also features a left sidebar with "ArcFM Connection" status (Online), user information (Date: 10/30/2006, User: Gloyd Perry, Id: #999999, Role: Coordinator), and a list of "Authorized Depts" including HAMMOND, CROWNPOINT, MICHIGAN CITY, VALPARAISO, SOUTH BEND, PLYMOUTH, ELKHART, ANGOLA, MONTICELLO, GOSHEN, WARSAW, GARY, LA PORTE, WABASH VALLEY, FORT WAYNE, Central Stores, and Service Center. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The footer includes the ArcFM SOLUTION logo and the text "A Miner & Miner Solution - Copyright © 2005 NIPSCO. All rights reserved."

Figure 4.7-45. Add Transformer Manufacturer and Warranty Data Screen

##### 4.7.1.11.1.2 Query by company Number / Serial Number

Figure 4.7-46 allows users to query for assets based on the company number and/or serial number. Depending on the user's permissions they can then perform various operations

on the asset including edit, install, removal, delete, property transfer, status, or replace. These operations are described in more detail in the following sections.



Figure 4.7-46. Query Transformer by company number / serial number screen

#### 4.7.1.11.1.3 Query by Location

Figure 4.7-47 allows users to query for assets based on the pole/pad number or company use location id. Depending on the user's permissions they can then perform various operations on the asset including edit, install, removal, delete, property transfer, status, or replace. These operations are described in more detail in the following sections.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes the SAGE logo, the text "StandAlone GeoDatabase Editor", and a menu with items: Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The NIPSCO logo and "A NiSource Company" are in the top right corner. A link for "- SAGE Home : Search for Transformer -" is also present.

On the left side, under "ArcFM Connection:", the status is "Online". User information includes "Date: 10/31/2006", "User: Skye Perry", "Id: #999999", and "Role: Coordinator". A list of "Authorized Depts:" includes: 010 - HAMMOND, 030 - CROWNPOINT, 040 - MICHIGAN CITY, 050 - VALPARAISO, 060 - SOUTH BEND, 070 - PLYMOUTH, 080 - ELKHART, 090 - ANGOLA, 100 - MONTICELLO, 110 - GOSHEN, 120 - WARSAW, 150 - GARY, 160 - LA PORTE, 180 - WABASH VALLEY, 220 - FORT WAYNE, 940 - Central Stores, and 941 - Service Center. The ArcFM SOLUTION logo is at the bottom left.

The main content area features a "Query Transformer" dialog box with the instruction: "Search for the Transformer to Query (use \"%\" as wildcard character):". It contains two input fields: "Company Number" and "Serial Number", separated by "and / or". A "Locate Transformer" button is positioned below the input fields.

The footer of the interface reads: "A Miner & Miner Solution - Copyright © 2005 NIPSCO. All rights reserved."

Figure 4.7-47. Query for a transformer by location

#### 4.7.1.11.1.4 Edit Existing Transformer Manufacturer and Warranty Data

Figure 4.7-48 allows the central storeroom clerks to update core manufacturer and warranty data as well as to enter function and oil test data.

**SAGE StandAlone GeoDatabase Editor** | Transformer | Regulator | Capacitor | Structure Spans | Reports | Coordinator | SAGE Help | **NIPSCO** A NiSource Company

- SAGE Home : Search for Transformer to Edit : Edit Transformer -

**ArcFM Connection:**  
 Online  
 Date: 10/31/2006  
 User: Skye Perry  
 Id: #999999  
 Role: Coordinator

**Authorized Depts:**  
 010 - HAMMOND  
 030 - CROWNPOINT  
 040 - MICHIGAN CITY  
 050 - VALPARAISO  
 060 - SOUTH BEND  
 070 - PLYMOUTH  
 080 - ELKHART  
 090 - ANGOLA  
 100 - MONTICELLO  
 110 - GOSHEN  
 120 - WARSAW  
 150 - GARY  
 160 - LA PORTE  
 180 - WABASH VALLEY  
 220 - FORT WAYNE  
 940 - Central Stores  
 941 - Service Center

**Edit Transformer Manufacturer and Warranty Data** | Department: 010 - HAMMOND

(x) Company Number: 111111 | Current Status: In Stock (status history)  
 (x) S.I.N.: 222222 | (x) P.O. #: -1011  
 (x) Date Received: 12/1/1981 | (x) Install Cost: 425  
 (x) Manufacturer: Allis Chalmers | (x) Serial: 333333333  
 (x) Impedance: 2 . 4 % | (x) Gallons of Oil: 16  
 (x) Polarity: + | (x) Weight: 315

(x) Warranty Description: X

(x) S.I.N. Standard Data:  
 KVA: 15.00 | Phase: 1  
 Voltages: Primary: 7200X2400 | Secondary: 120/240  
 Description: TRANSFORMER,POLE MOUNT,15 KVA,

Update Transformer

**Transfer Transformer**  
 Transfer this Transformer to the following department: [Dropdown]  
 Transfer Date: [Calendar] | Transfer Transformer

**Transformer Tests**

Tests: **Actions** | **Test Date**  
 [Calendar] | Add Test

Oil Tests: **Actions** | **Test Date** | **Test Type** | **PPM**  
 [Calendar] | Lab Test | [Dropdown] | Add Test

ArcFM SOLUTION

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Figure 4.7-48. The edit existing transformer manufacturer and warranty data also allows users with the administrator role to transfer assets

#### 4.7.1.11.1.5 Transformer Installation

Figure 4.7-49 allows a record clerk to enter the installation information from a ticket. This is performed before work prints are returned from the field and captures all key tabular data about the installation.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Search for Transformer to Install : Install Transformer -

ArcFM Connector:  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

Authorized Depts:  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Install Transformer** Department: 010 - HAMMOND

Company Number 111111

(X) Install Date  must be >= last status date of 10/17/2006

Material Ticket #

Pole/Mounting

Company Use Location Id

(X) Taxing Unit  Phase

(X) Map #  Inactive N

Circuit  Temporary N

Install Transformer

ArcFM SOLUTION

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Figure 4.7-49. Install transformer screen

#### 4.7.1.11.1.6 Transformer Removal

Figure 4.7-50 allows a record clerk to remove assets that are currently installed but are not related to a GIS feature. This occurs regularly in company use / substation installations.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Search for Transformer : Remove Transformer -

ArcFM Connection:  
● Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

Authorized Depts:  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Remove Transformer** Department: 110 - GOSHEN

Company Number: 111111

(x) Removal Date: [ ] must be >= last status date of 9/12/1997

(x) Material Ticket #: [ ]

(x) Reason: A - Inactive

Remove Transformer

ArcFM SOLUTION

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Figure 4.7-50. Transformer removal screen. Assets that are related to a GIS feature are removed within the GIS



#### 4.7.1.11.1.7 Transformer Deletion

Figure 4.7-51 allows the central storeroom clerks to remove all asset data from AEDR if an asset was entered in error.

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

- SAGE Home : Delete Transformer -

ArcFM Connection:  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

Authorized Depts:  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Delete Transformer**

Matching Transformers with CompanyNumber = '0087685'

Action	Dept	Company #	Serial #
X	110	1111111	9999AAA

Search for Another

Microsoft Internet Explorer

Are you sure you want to delete this Transformer and all of its related history records (stock, install, retirement, etc)?

NOTE: Once an asset is deleted, it cannot be recovered.

OK Cancel

ArcFM SOLUTION

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Figure 4.7-51. Delete transformer screen

#### 4.7.1.11.1.8 Property Transfer

Figure 4.7-52 allows an admin clerk to transfer installed assets from one department (LOA), company use location, tax district, and/or map number to another.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Skye Perry, a Coordinator, with the role of Coordinator. The interface shows the 'Property Transfer Transformer' form for Department 110 - GOSHEN. The form contains the following fields:

- Company Number: 111111
- Department: 110 - GOSHEN (dropdown menu)
- Company Use Location Id: (dropdown menu)
- Taxing Unit: K37 (dropdown menu)
- Map #: PG17A

An 'Update Transformer' button is located at the bottom of the form. The left sidebar lists authorized departments, including Hammond, Crownpoint, Michigan City, Valparaiso, South Bend, Plymouth, Elkhart, Angola, Monticello, Goshen, Warsaw, Gary, La Porte, Wabash Valley, Fort Wayne, Central Stores, and Service Center. The ArcFM Solution logo is visible in the bottom left corner.

Figure 4.7-52. The property transfer (transformer) is used when district lines are updated, re-organized, etc.

#### 4.7.1.11.1.9 Transformer Status

Figure 4.7-53 allows a record clerk to view the entire life cycle of an asset.

SAGE

[Transformer](#) [Regulator](#) [Capacitor](#) [Structure Spans](#) [Reports](#) [Coordinator](#) [SAGE Help](#)

**NIPSCO**  
A NiSource Company

StandAlone GeoDatabase Editor

- SAGE Home : Search for Transformer Status : Transformer Status -

**ArcFM Connection:**  
 Online

Date: 10/31/2006

User: Skye Perry

Id: #999999

Role: Coordinator

**Authorized Depts:**

- 010 - HAMMOND
- 030 - CROWNPOINT
- 040 - MICHIGAN CITY
- 050 - VALPARAISO
- 060 - SOUTH BEND
- 070 - PLYMOUTH
- 080 - ELKHART
- 090 - ANGOLA
- 100 - MONTICELLO
- 110 - GOSHEN
- 120 - WARSAW
- 150 - GARY
- 160 - LA PORTE
- 180 - WABASH VALLEY
- 220 - FORT WAYNE
- 940 - Central Stores
- 941 - Service Center

Transformer Status for 1111111

Current Status - Installed

Date	Status	Dept.	Distrib. Ref#	Co. Use Loc.	Notes
3/21/1980	In Stock	160	-	-	Transfer #
12/26/1984	Installed	160	00001234	-	Material Ticket # 05-160
7/2/1998	Removed	-	-	-	Material Ticket # 211-160, Reason Code: N
7/2/1998	In Stock	160	-	-	Transfer #
7/10/1998	In Stock	940	-	-	Transfer # 7080959
7/24/1998	In Stock	160	-	-	Transfer # 1917761
8/20/1998	Installed	160	00001234	-	Material Ticket # 269-160
5/4/2001	Removed	-	-	-	Material Ticket # 99-160, Reason Code: N
5/4/2001	In Stock	160	-	-	Transfer #
5/18/2001	In Stock	940	-	-	Transfer # 5080840
9/28/2001	Condemned	-	-	-	Condemnation # 086, Reason Code: J, Approved: Y
10/23/2001	Reverse-Condemned	-	-	-	Condemnation # 086, Reason Code: 3, Approved: Y
4/2/2003	In Stock	160	-	-	Transfer # 4020932
5/16/2003	Installed	160	00001234	-	Material Ticket # 123-16
8/20/2003	Removed	-	-	-	Material Ticket # 236-16, Reason Code: N
8/20/2003	In Stock	160	-	-	Transfer #
8/26/2003	Installed	160	00001234	-	Material Ticket # 242

**Update Status**

Choose the status to add/edit:

(x) Date

(x) Reason Code

(x) Condemnation Number

(x) Sold To Name

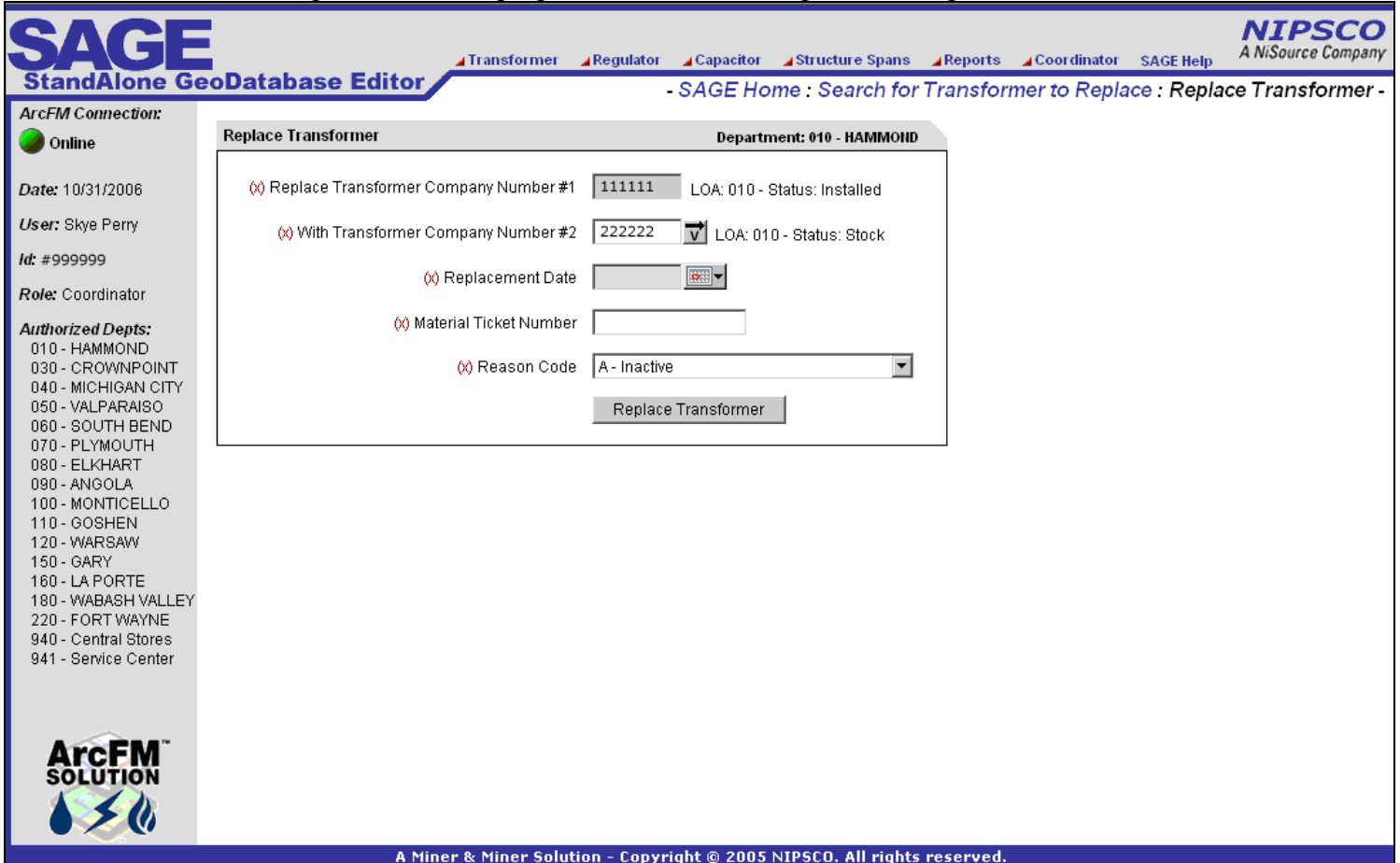
(x) Job Order Number

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**Figure 4.7-53. The transformer status screen also enables processing of condemnations, reverse-condemnations, sales, and leases**

#### 4.7.1.11.1.10 Replace a Transformer

Figure 4.7-54 allows a record clerk to replace a transformer install with a new transformer. The first transformer is removed back into stock and the new transformer is installed and updated with all properties and relationships of the original transformer.



**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Search for Transformer to Replace : Replace Transformer -

ArcFM Connection:  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

Authorized Depts:  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

Replace Transformer Department: 010 - HAMMOND

(x) Replace Transformer Company Number #1 111111 LOA: 010 - Status: Installed

(x) With Transformer Company Number #2 222222 LOA: 010 - Status: Stock

(x) Replacement Date

(x) Material Ticket Number

(x) Reason Code A - Inactive

Replace Transformer

ArcFM SOLUTION

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Figure 4.7-54. The replace transformer screen is only available for transformers

#### 4.7.1.11.2 Capacitor Screens

Capacitors are treated somewhat differently than transformers and regulators because they can only be installed once whereas transformers and regulators can be installed and removed many times throughout their life cycle. Therefore, the capacitor functionality is more limited than the transformer and regulators.

##### 4.7.1.11.2.1 Add New Capacitor

Figure 4.7-55 allows the central storerooms to add newly purchased assets into the system including manufacturer and warranty data.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

**NIPSCO**  
A NiSource Company

- SAGE Home : Add New Capacitor -

ArcFM Connection:  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**ArcFM SOLUTION**

**Add Capacitor Manufacturer and Warranty Data** Department: Choose...

(X) Company Number

(X) S.I.N.

(X) Date Received

(X) Manufacturer: Cooper Powerhouse Systems

(X) Fluid Type: Liquid

(X) P.O. #

(X) Serial

(X) Warranty Description

(X) S.I.N. Standard Data

KVAR  KV  Bushings

Description

Add Capacitor

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Figure 4.7-55. Add new capacitor screen

#### 4.7.1.11.2.2 Query By Company Number / Serial Number

Figure 4.7-56 allows users to query for assets based on the company number and/or serial number. Depending on the user's permissions, they can perform various operations on the asset including edit, install, removal, delete, or property transfer. These operations are described in more detail in the following sections.

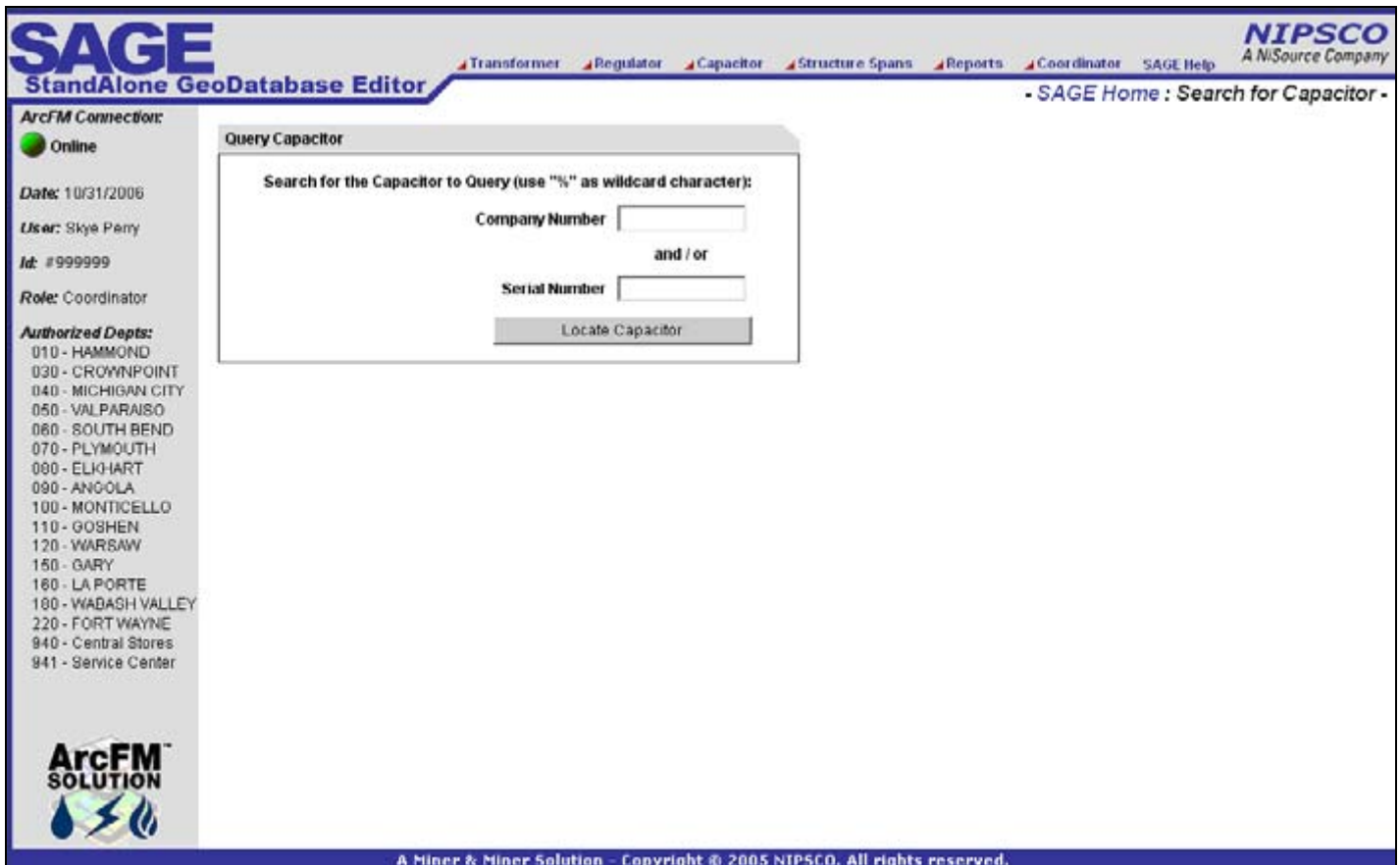


Figure 4.7-56. Query the capacitor screen

### 4.7.1.11.2.3 Query by Location

Figure 4.7-57 allows users to query for assets based on the pole/pad number or company use location id. Depending on the user's permissions, they can perform various operations on the asset including edit, install, removal, delete, or property transfer. These operations are described in more detail in the following sections.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Search for Capacitor -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**ArcFM SOLUTION**

**Query Capacitor**

Search for the Capacitor to Query (use "%" as wildcard character):

Pole/Pad Number

and / or

Company Use Location Id

Locate Capacitor

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Figure 4.7-57. Query the capacitor by location screen

#### 4.7.1.11.2.4 Edit Existing Capacitor Manufacturer and Warranty Data

Figure 4.7-58 allows the central storeroom clerks to update core manufacturer and warranty data.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

**NIPSCO**  
A NiSource Company

- SAGE Home : Search for Capacitor to Edit : Edit Capacitor -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**ArcFM SOLUTION**

**Edit Capacitor Manufacturer and Warranty Data** Department: 050 - VALPARAISO

(x) Company Number: 11111 Current Status: In Stock  
(x) S.I.N.: 731575 (x) P.O. #: X  
(x) Date Received: 12/21/1992  
(x) Manufacturer: McGraw Edison (x) Serial: SERIAL111  
(x) Fluid Type: Liquid  
(x) Warranty Description: X  
(x) S.I.N. Standard Data: KVAR: 100 KV: 7.20 Bushings: 2  
Description: CAPACITOR,SHUNT,OUTDOOR,100,7200V

Update Capacitor

**Transfer Capacitor**

Transfer this capacitor to the following department: [dropdown]  
Transfer Date: [calendar]  
Transfer Capacitor

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Figure 4.7-58. The edit capacitor manufacturer and warranty screen also allows users with the administrator role to transfer assets



#### 4.7.1.11.2.5 Capacitor Installation

Figure 4.7-59 allows a record clerk to enter the installation information from a ticket. This is performed before work prints are returned from the field and captures all key tabular data about the installation.

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

- SAGE Home : Search for Capacitor to Install : Install Capacitor -

**ArcFM Connector:**  
Online  
Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Install Capacitor** Department: 050 - VALPARAISO

Company Number: 11111

(X) Install Date: [ ] must be >= last status date of 12/21/1992

(X) Install Order Number:  Work Order # WVO  
 Misc. Order ID

(X) Install Type:  Pole  
 Substation

Pole #: [ ]  
Tasing Unit: [ ] Phase: [ ]  
Map #: [ ] Inactive: N  
Circuit: [ ] Oil Switch: N

Install Capacitor

ArcFM SOLUTION

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Figure 4.7-59. Install capacitor screen

#### 4.7.1.11.2.6 Capacitor Removal

Figure 4.7-60 allows a record clerk to remove assets that are currently installed but are not related to a GIS feature. This occurs regularly in company use / substation installations.

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

- SAGE Home : Search for Capacitor : Remove Capacitor -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Remove Capacitor** Department: 090 - ANGLA

Company Number 11111

(X) Removal Date [Calendar Icon] must be >= last status date of 7/23/1992

(X) Work Order/Misc Order ID [Text Box]

(X) Reason A - Inactive

Remove Capacitor

**ArcFM SOLUTION**

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**Figure 4.7-60. Remove capacitor screen. Assets that ARE related to a GIS feature are removed within the GIS**

#### 4.7.1.11.2.7 Capacitor Deletion

Figure 4.7-61 allows the central storeroom clerks to remove all asset data from AEDR if an asset was entered in error.

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

- SAGE Home : Delete Capacitor -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Delete Capacitor**

Matching Capacitors with CompanyNumber = '04246'

Action	Dept	Company #	Serial #
<input checked="" type="checkbox"/>	090	11111	SER123

Search for Another

**Microsoft Internet Explorer**

Are you sure you want to delete this Capacitor and all of its related history records (stock, install, retirement, etc)?  
NOTE: Once an asset is deleted, it cannot be recovered.

OK Cancel

**ArcFM SOLUTION**

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Figure 4.7-61. Capacitor removal screen

#### 4.7.1.11.2.8 Capacitor Property Transfer

Figure 4.7-62 allows an admin clerk to transfer installed assets from one department (LOA), company use location, tax district, and/or map number to another.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Search for Capacitor : Property Transfer Capacitor -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Property Transfer Capacitor** Department: 090 - ANGOLA

Company Number: 11111  
(x) Department: 090 - ANGOLA  
Company Use Location Id: 0301  
(x) Taxing Unit: S13  
(x) Map #: SD02B

Update Capacitor

ArcFM SOLUTION

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**Figure 4.7-62. Property transfer for capacitor screen. Capacitors are transferred when district lines are updated, re-organized, etc.**

#### 4.7.1.11.3 Structure Span Screens

The structure span screens manage the field distances between various structures. The distances can then be used to determine how much conductor is in the field in a particular location. This data is tracked in a flat tabular manner as opposed to the GIS for two reasons. First, most conductor in the GIS is drawn as super spans (spans multiple poles) and does not track the length of conductor between the interior poles. And second, the GIS map length is not accurate enough for the analysis that this data is used for. Actual field lengths based on returned work orders is required.

### 4.7.1.11.3.1 Structure Span Lengths Add / Edit / Delete

Figure 4.7-63 allows a record clerk to manage the captured WO lengths between any two structures (poles/pads/pedestals/terminals) in the field.

The screenshot shows the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Siye Perry, a Coordinator, with a date of 10/31/2006. The main window is titled 'Add / Edit / Delete Structure to Structure Span Lengths'. It contains a form for entering distribution reference numbers and a search results table.

**Search Results (3)**

Action	Dist. Ref. #1	Dist. Ref. #2	Span Length
X / [edit]	00054321	00027512	150
X / [edit]	00084936	00054321	154
X / [edit]	00101870	00054321	60

Figure 4.7-63. The add / edit / delete structure to structure span lengths screen allows AEDR to track actual distances between structures outside of the conductor features which are often drawn as super spans

#### 4.7.1.11.3.2 Structure Span Lengths Query

Figure 4.7-64 allows all users to query the structure span lengths by querying on any structure ID.

The screenshot shows the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Skye Perry, a Coordinator, on 10/31/2006. The search form is titled "Query Structure to Structure Span Lengths" and prompts the user to enter one or two Distribution Reference Numbers. The first field is populated with "00054321". A "Search" button is located below the input fields. The search results are displayed in a table with three columns: Dist. Ref. #1, Dist. Ref. #2, and Span Length. The results show three entries.

Dist. Ref. #1	Dist. Ref. #2	Span Length
00054321	00027512	150
00084936	00054321	154
00101070	00054321	60

Figure 4.7-64. Structure to structure span length query screen

#### 4.7.1.11.4 Reports Screen

The SAGE reports section is the main portal for all of NIPSCO to access asset management reports. It consists of both on demand reports that are generated based on user input as well as links to the batch reports that are generated by the EDFS batch suite on a nightly, monthly, or annual basis. All of the batch reports have been detailed in the batch suite section of this document. This section details the SAGE on demand reports as well as the access to the batch reports.

#### 4.7.1.11.4.1 Sessions Inquiry Report

Figure 4.7-65 allows an admin user to dynamically create a session manager query to display a report on a group of sessions by user/dates, status, etc.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Skye Perry, a Coordinator, on 10/31/2006. The interface features a sidebar with 'Authorized Depts' and a main window titled 'Session Inquiry Report'. This window allows users to select sessions from an 'Available' list to a 'Selected' list, sort the results, and generate a report.

**SAGE StandAlone GeoDatabase Editor** | Transformer | Regulator | Capacitor | Structure Spans | Reports | Coordinator | SAGE Help | NIPSCO A NiSource Company

- SAGE Home : Session Inquiry Report -

**Session Inquiry Report**

Report on Sessions for These:

Available	Selected
NA\123456 - Jane Doe 1	NA\123456 - Jane Doe 12
NA\123456 - Jane Doe 2	NA\123456 - Jane Doe 13
NA\123456 - Jane Doe 3	NA\123456 - Jane Doe 14
NA\123456 - Jane Doe 4	NA\123456 - Jane Doe 15
NA\123456 - Jane Doe 5	NA\123456 - Jane Doe 16
NA\123456 - Jane Doe 6	
NA\123456 - Jane Doe 7	
NA\123456 - Jane Doe 8	
NA\123456 - Jane Doe 9	
NA\123456 - Jane Doe 10	
NA\123456 - Jane Doe 11	

Sort By #1:   
#2:   
#3:   
#4:

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Figure 4.7-65. The session inquiry report is considered an on demand report because it is generated based on user input values

Clicking the Generate Report button dynamically queries the session manager database and creates a report similar to Figure 4.7-66.

Session Inquiry Report - Count [14]			Generated 10/31/2006 10:11:37 AM		
Create Date	ID	Name	Created By	Current Owner	Status
10/30/2006	4150	W0G 3382-050 Shenandoah Springs	Jane Doe 1	Supervisor 1	Pending Approval
10/30/2006	4162	W0 43477-5 Center Minor Sub	Jane Doe 2	Supervisor 1	Pending Approval
10/30/2006	4167	W043490-5 288 S CR 368 E	Jane Doe 3	Supervisor 1	Pending Approval
10/31/2006	4177	W0 43583-5 Olde Towne Square	Jane Doe 4	Supervisor 1	Pending Approval
10/31/2006	4183	W0 53499-5 NICTD - East Tamarack	Jane Doe 5	Supervisor 1	Pending Approval
10/19/2006	3924	W049037-59 & W043507-16	Jane Doe 6	Supervisor 1	Pending Approval
10/30/2006	4166	W0# 43428-6 ARS 10/30/06	Jane Doe 7	Jane Doe 7	In Progress
10/16/2006	3843	W0 53769-3 Summit Crossings	Jane Doe 8	Jane Doe 8	In Progress
10/16/2006	3830	W0 53985-15 E-Law Building - HOLD 10/16/2006	Jane Doe 9	Jane Doe 9	In Progress
10/31/2006	4185	W053558-16 Lifestyle Homes	Jane Doe 10	Jane Doe 10	In Progress
10/30/2006	4176	Carlson Estates	Jane Doe 11	Jane Doe 11	In Progress
10/25/2006	4060	W053520-11 / kp / 10-25-06	Jane Doe 12	Jane Doe 12	In Progress
10/26/2006	4104	W050619-5 / kp / 10-26-06	Jane Doe 13	Jane Doe 13	In Progress
10/31/2006	4186	W043551-5	Jane Doe 14	Jane Doe 14	In Progress

Figure 4.7-66. Session inquiry report



#### 4.7.1.11.4.2 Capital Assets for Sale Report

Figure 4.7-67 allows a business group within NIPSCO to generate a specific formatted report on company numbers of assets that will be potentially sold to other utilities/organizations. The report accepts up to 500 company numbers at once and the resulting report can be dumped into Excel very easily.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user information on the left includes: ArcFM Connection: Online, Date: 10/31/2006, User: Skye Perry, Id: #999999, Role: Coordinator, and a list of Authorized Depts. The main window is titled 'Assets for Sale Inquiry Report' and contains the following elements:

- Instruction: Enter up to 500 company numbers below separated by commas:
- Asset Type: Transformer (dropdown menu)
- Company Numbers: A text area containing a list of 13 company numbers: 1111111, 1111112, 1111113, 1111114, 1111115, 1111116, 1111117, 1111118, 1111119, 1111110, 1111111, 1111112, 1111113.
- Generate Report button

The footer of the application reads: A Miner & Miner Solution - Copyright © 2005 NIPSCO. All rights reserved.

Figure 4.7-67. The assets for sale inquiry report is considered an on demand report because it is generated based on user input values

Clicking the Generate Report button will dynamically query the asset tables and create a report similar to Figure 4.7-68.

PRINTED 10/31/2006		NORTHERN INDIANA PUBLIC SERVICE COMPANY										
@ 10:17:21		CAPITAL ASSETS FOR SALE REPORT										
SORTED BY COMPANY NUMBER (count=12)												
COMPANY#	ITEM#	TYPE	KVA	PRIMARY	SECONDARY	PHASE	IOP	MANUFACTURER	SERIAL#	RCVD DATE	PCB PPM	PCB TEST
1111111	000000	POLE MOUNT	15.00	7200X2400	120/240	1	2.40	Allis Chalmers	999999	07/01/1961		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	2.40	Allis Chalmers	999999	12/01/1961		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	2.10	ETE Corporation	999999	04/01/1962		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	09/12/1962		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	000000	09/01/1963		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	2.70	Allis Chalmers	999999	01/01/1963	49	02/03/1992
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	01/01/1963		
1111111	000000	POLE MOUNT	15.00	7200X2400	120/240	1	2.00	ETE Corporation	999999	12/09/1959		
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.50	McGraw Edison	999999	01/01/1974	49	00/23/1997
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	2.00	General Electric	999999	02/27/1975	49	03/15/1997
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	11/09/1972	1	12/27/2000
1111111	999999	POLE MOUNT	15.00	7200X2400	120/240	1	1.00	ETE Corporation	000000	03/07/1977	1	06/26/2001
SORTED BY STORES ITEM NUMBER (count=12)												
ITEM#	COMPANY#	TYPE	KVA	PRIMARY	SECONDARY	PHASE	IOP	MANUFACTURER	SERIAL#	RCVD DATE	PCB PPM	PCB TEST
<u>SIN: 999999 - 12 records:</u>												
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.40	Allis Chalmers	999999	07/01/1961		
000000	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.40	Allis Chalmers	999999	12/01/1961		
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.10	ETE Corporation	999999	04/01/1962		
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	09/12/1962		
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	09/01/1963		
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.70	Allis Chalmers	999999	01/01/1963	49	02/03/1992
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	01/01/1963		
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.00	ETE Corporation	999999	12/09/1959		
000000	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.50	McGraw Edison	999999	01/01/1974	49	00/23/1997
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	2.00	General Electric	999999	02/27/1975	49	03/15/1997
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.70	ETE Corporation	999999	11/09/1972	1	12/27/2000
999999	1111111	POLE MOUNT	15.00	7200X2400	120/240	1	1.00	ETE Corporation	999999	03/07/1977	1	06/26/2001

Figure 4.7-68. Capital assets for sale report

This data can then be copy and pasted directly into Excel which is the preferred format of the NIPSCO business unit that uses this report.

The screenshot shows a Microsoft Excel spreadsheet titled "Microsoft Excel - Book1". The spreadsheet contains data for capital assets for sale. The data is organized into two main sections, each sorted by COMPANY NUMBER (count=12) and then STORES ITEM NUMBER (count=12).

**Section 1: Sorted by COMPANY NUMBER (count=12)**

COMPANY#	ITEM#	TYPE	KVA	PRIMARY	SECONDARY	PHASE	IMP	MANUFACTURER	SERIAL#	RCVD DATE	PCB PPM	PCB TEST
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2.4	Allis Chalmers	SER1234	07091961		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2.4	Allis Chalmers	SER1234	12091961		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2.1	RTE Corporation	SER1234	04091962		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09121962		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09091963		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2.7	Allis Chalmers	SER1234	09091961	49	02031992
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09091963		
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2	RTE Corporation	SER1234	12091959		
9999999	111111	POLE MOUNT	333.00	7200	2771490	1	2	McGraw Edison	SER1234	09091969	1	05061990
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	2	General Electric	SER1234	02271975	49	03191997
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	19091972	1	12272000
9999999	111111	POLE MOUNT	15.00	7200X2400	120X240	1	1.8	RTE Corporation	SER1234	03071977	1	06262001

**Section 2: Sorted by STORES ITEM NUMBER (count=12)**

ITEM#	COMPANY#	TYPE	KVA	PRIMARY	SECONDARY	PHASE	IMP	MANUFACTURER	SERIAL#	RCVD DATE	PCB PPM	PCB TEST
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2.4	Allis Chalmers	SER1234	07091961		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2.4	Allis Chalmers	SER1234	12091961		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2.1	RTE Corporation	SER1234	04091962		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09121962		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09091963		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2.7	Allis Chalmers	SER1234	09091961	49	02031992
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	09091963		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2	RTE Corporation	SER1234	12091959		
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	2	General Electric	SER1234	02271975	49	03191997
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	1.7	RTE Corporation	SER1234	19091972	1	12272000
111111	9999999	POLE MOUNT	15.00	7200X2400	120X240	1	1.8	RTE Corporation	SER1234	03071977	1	06262001

Figure 4.7-69. Capital assets for sale spreadsheet formatting is maintained from the html report into Excel

#### 4.7.1.11.4.3 Pole / Pad Mounting Inquiry Report

Figure 4.7-70 allows all users to run a pole/pad card report which presents a comprehensive view of all the details of a pole/pad/pedestal including all related conductor, devices, services, CIS records, etc. This report is used heavily throughout NIPSCO.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Skye Perry, a Coordinator, with a date of 10/31/2006. The interface features a sidebar with a list of authorized departments and a main content area for the Pole / Mounting Inquiry Report. The report form includes a dropdown menu for Structure Type (set to Pole) and a text input for Distribution Reference Number (54321). A Generate Report button is present, along with a red note stating 'Leading zeros are no longer required.'

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

- SAGE Home : Pole / Mounting Inquiry Report -

**ArcFM Connection:**  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

**Authorized Depts:**  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
100 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**ArcFM SOLUTION**

**Pole / Mounting Inquiry Report**

Enter the Structure Query Information Below:

Structure Type: Pole

Distribution Reference Number: 54321

Generate Report

Leading zeros are no longer required.

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Figure 4.7-70. The pole / pad mounting inquiry report is considered an on demand report because it is generated based on user input values

Clicking the Generate Report button will dynamically query the asset tables and will return a report similar to Figure 4.7-71.

EDB5041		NORTHERN INDIANA PUBLIC SERVICE COMPANY		POLE/MTG#: 9999999						
PRINTED 10/24/2006 @ 17:34:48		ELECTRIC DISTRIBUTION FACILITIES								
010HAMMOND		POLE/MOUNTING INQUIRY REPORT								
INSTALLED:	07/06/2001	LOCATION:		ASSEMBLIES						
TAXING UNIT:	XXX	TOWN:		ASSEMBLY#	NO DESCRIPTION					
MAP#:	GGGG	COUNTY:			T16 W #6 CU GRD, S1 CLAMP, 10'-6PS					
POLE TYPE:	WD	ATTACHMENTS:	ATT, _____, _____, _____		3 CLX 1CL-12"					
POLE SIZE:	55	PRIMARY POLE:		CUST OWNED LIGHTS (SERV POINT)						
POLE CLASS:	3	LOADS:	9999999, _____, _____	ACCOUNT NAME	ACCOUNT # POLE LUM QTY WATTS INV DT					
WOOD TYPE:	WC	PRINT #:								
WOOD SETTING:	DRY	PADTYPE:								
TREATMENT:	-04	COMPANY OWNED:		STREETLIGHTS						
PRIMARY-METER:	N	SWITCHGEAR:	OPERATION: FRONT KIND: KV:	ACCOUNT #	ASSEMBLY QTY CND INSTALLED : KW/AMPS INST VOLTS					
OWNER:	NIP	COMPARTMENT COUNT:		: R.O.						
INSPECTED:				: MR						
REJECTED:				: OIL						
SERVICE POINT:	N			:						
TRANSFORMERS / REGULATORS / CAPACITORS										
CO-NUM	PHS	KVA	CIRCUIT	PRIMARY VOLT	2NDRY VOLT	INS				
	B	10.0	12-594	7200	120/240	05/05/1977				
PRIMARY AND SECONDARY										
CRCUIT/2NDVOLT	POLE/MTG PED/TRML	P/S	TYP	NO.	SIZE	KIND	CON-DUIT	INST		
12-594		P	WS	3	336	ACSR	N	04/01/1978		
12-594		P	WS	3	336	ACSR	N	04/01/1978		
6957		P	WS	3	2/0	CU	N	01/01/1954		
6957		P	WSS	1	80	ACSR	N	01/01/1954		
6957		P	WS	3	2/0	CU	N	01/01/1954		
6957		P	WSS	1	80	ACSR	N	01/01/1954		
MS	See Map	S	C	1	2	AA	N	01/01/1989		
LOAD POLE/MTG SERVICE DATA										
LOAD#:	00054321	SERVICE								
SERVICE ADDRESSES		POLE/MTG	TYP	NO	SIZE	KIND	SPN	TOTAL	INST	CON
1125 MAIN ST	N		C	1	2	AA	75	75	05/05/1977	N
			C	1	2	AA	75	75	05/05/1977	N
SERVICE POLE/MTG SERVICE DATA										
LOAD#	TYP	NO	SIZE	KIND	SPN	TOTAL	INST	CON		
	C	1	2	AA	75	75	05/05/1977	N		
CIRCUIT PROTECTION										
INSTALLATION INFO										
W.O. NUMBER	J.O. NUMBER	DATE								
W05549	WO	07/06/2001								
TRAFFIC LIGHT DEMAND										
INVENTORY DATE	DEMAND (WATTS)									
ADJACENT STRUCTURE SPAN LENGTHS										
ADJ POLE/MTG/PED	SPAN LENGTH									
	150									
	154									
	60									
*NOTE: Duplicate entries with differing lengths may occur in this section due to legacy data. This data is being cleaned up on an ongoing basis.										

Figure 4.7-71. Pole / mounting inquiry report

#### 4.7.1.11.4.4 Padmount Inspection Form Report

Figure 4.7-72 allows all users to query the system for all pad-mounted transformers or switchgears based on grid information and device size. The report returns a formatted ready to print template for field inspections of all of these devices.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The NIPSCO logo and 'A NiSource Company' are in the top right. The page title is '- SAGE Home : Pad Mount Inspection Form -'. On the left, the user's profile is shown: ArcFM Connection: Online, Date: 10/31/2006, User: Skye Perry, Id: #999999, Role: Coordinator, and a list of Authorized Depts. The main content area is titled 'Pad Mount Inspection Form Creation' and contains a form with the following fields: 'Enter the Pad Mount Query Information Below:', 'Inspection Type' with radio buttons for '2 yr (1000 KVA and above)', '5 yr (750 KVA and below)' (selected), and 'Specific Pad #' with an input field; 'Tax Unit Code' with a dropdown menu showing 'M14'; 'Map Grid Code' with an input field showing 'CE05D'; and a 'Generate Form(s)' button. The ArcFM SOLUTION logo is in the bottom left, and a copyright notice 'A Miner & Miner Solution - Copyright © 2005 NIPSCO. All rights reserved.' is at the bottom.

Figure 4.7-72. The pad mount inspection form creation report is considered an on demand report because it is generated based on user input values

Clicking the Generate Form(s) will dynamically query the asset tables and will return a matching inspection form similar to Figure 4.7-73.

EDB5040	CROWNPOINT PADMOUNT TRANSFORMER INSPECTIONS	PAD#: TAX UNIT: MAP NUMBER#:																					
<p>COMPANY NUMBER: SERIAL NUMBER: LOCATION: DATE: ___/___/___</p> <p>INSPECTOR: _____</p> <p>SUPERVISOR: _____</p> <p>SIN DESCRIPTION: TRANSFORMER, PAD MOUNT, 75 KVA,</p>	<p>KVA: 75.0      AMPS: 0      PHASE: 3</p> <p>PRIMARY VOLTAGE: 12.5/7.2X4/2.4</p> <p>SECONDARY VOLTAGE: 120/208</p>																						
<p>USE ABBREVIATIONS WITH REFERENCE NUMBERS TO EXPLAIN CONDITIONS. N.F. - NOT FOUND AT LOCATIONS    N.W. - NEEDS WORK EXAMPLE: 5NW - METERING NEEDS WORK</p>																							
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">1. LOCK</td> <td style="width: 25%;">5. METERING</td> <td style="width: 25%;">9. INSULATIONS</td> <td style="width: 25%;">13. PHASE MARKING</td> </tr> <tr> <td>2. PAINT</td> <td>6. ARRESTORS</td> <td>10. SEC. WIRES &amp; CONN</td> <td>14. PRINT</td> </tr> <tr> <td>3. PAD</td> <td>7. FUSES</td> <td>11. STENCILING</td> <td>15. ELBOW TERMINATORS</td> </tr> <tr> <td>4. TRANSF. CASE</td> <td>8. PRI. CABLE &amp; TERM</td> <td>12. GROUNDING</td> <td>16. _____</td> </tr> </table>			1. LOCK	5. METERING	9. INSULATIONS	13. PHASE MARKING	2. PAINT	6. ARRESTORS	10. SEC. WIRES & CONN	14. PRINT	3. PAD	7. FUSES	11. STENCILING	15. ELBOW TERMINATORS	4. TRANSF. CASE	8. PRI. CABLE & TERM	12. GROUNDING	16. _____					
1. LOCK	5. METERING	9. INSULATIONS	13. PHASE MARKING																				
2. PAINT	6. ARRESTORS	10. SEC. WIRES & CONN	14. PRINT																				
3. PAD	7. FUSES	11. STENCILING	15. ELBOW TERMINATORS																				
4. TRANSF. CASE	8. PRI. CABLE & TERM	12. GROUNDING	16. _____																				
<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 15%;">ABBREV.</th> <th style="width: 40%;">CONDITION AS FOUND</th> <th style="width: 45%;">CONDITION AS LEFT</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td></tr> </tbody> </table>			ABBREV.	CONDITION AS FOUND	CONDITION AS LEFT	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
ABBREV.	CONDITION AS FOUND	CONDITION AS LEFT																					
_____	_____	_____																					
_____	_____	_____																					
_____	_____	_____																					
_____	_____	_____																					
_____	_____	_____																					
_____	_____	_____																					
<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;">WORK WHICH STILL NEEDS COMPLETION</th> <th style="width: 30%;">COMPLETED BY &amp; ANY COMMENTS</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> <tr><td>_____</td><td>_____</td><td>___/___/___</td></tr> </tbody> </table>			WORK WHICH STILL NEEDS COMPLETION	COMPLETED BY & ANY COMMENTS	DATE	_____	_____	___/___/___	_____	_____	___/___/___	_____	_____	___/___/___	_____	_____	___/___/___	_____	_____	___/___/___	_____	_____	___/___/___
WORK WHICH STILL NEEDS COMPLETION	COMPLETED BY & ANY COMMENTS	DATE																					
_____	_____	___/___/___																					
_____	_____	___/___/___																					
_____	_____	___/___/___																					
_____	_____	___/___/___																					
_____	_____	___/___/___																					
_____	_____	___/___/___																					

Figure 4.7-73. Padmount transformer inspections form

#### 4.7.1.11.4.5 Batch Reports Screen

Figure 4.7-74 allows all users to view the batch reports: Condemnations Needing Approval (including archives), XFR/VR Company Use Report, FERC XFR/VR Report, Annual XFR/VR & Pole Report, Annual Count of XFR/VR/CAPs, Annual Count of XFR/VRs by County, XFR/VR/CAP Failure Report, Temporary & Inactive XFR/VR installation report, SIN Report, In Stock XFR/VR/CAP by LOA Report, SEC Form 10K Report.

**SAGE**  
StandAlone GeoDatabase Editor

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

NIPSCO  
A NiSource Company

- SAGE Home : Run Batch Reports -

ArcFM Connection:  
Online

Date: 10/31/2006  
User: Skye Perry  
Id: #999999  
Role: Coordinator

Authorized Depts:  
010 - HAMMOND  
030 - CROWNPOINT  
040 - MICHIGAN CITY  
050 - VALPARAISO  
060 - SOUTH BEND  
070 - PLYMOUTH  
080 - ELKHART  
090 - ANGOLA  
100 - MONTICELLO  
110 - GOSHEN  
120 - WARSAW  
150 - GARY  
160 - LA PORTE  
180 - WABASH VALLEY  
220 - FORT WAYNE  
940 - Central Stores  
941 - Service Center

**Run Batch Reports**

Click on any of the below batch reports to generate them in a separate window:

☐ Transformer & Regulator Reports

- EDB5011 - Request for Authority to Condemn Transformers and Regulators (Printed Last Night)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941  
☒ View EDB5011 Archives (up to one week)
- EDB5020 - Line-Transformer / Voltage-Regulator Company Use Report (For Previous Month)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941
- EDB5031 - FERC Form-1 Report of Line Transformers (For Previous Year)
- EDB5033 - Report Showing Transformers and Poles (For Previous Year)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941
- EDB5034 - Annual Count of Transformers (As of Last Night)
- EDB5036 - Annual Count of Transformers by County (As of Last Night)
- EDB5035 - Transformer Failure Report (For Previous Year)
- EDB5043 - Temporary and Inactive T&R Installations - Over 3 Months (As of Last Night)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941
- EDB5044 - T&R Stores Item Number Description Report
- EDB5045 - Transformers In Stock Inventory Report (As of Last Night)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941

☐ Capacitor Reports

- EDB5234 - Annual Count of Capacitors (As of Last Night)
- EDB5235 - Capacitor Failure Report (For Previous Year)
- EDB5244 - Capacitor Stores Item Number Description Report
- EDB5245 - Capacitors In Stock Inventory Report (As of Last Night)  
Load by department: 010, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120, 150, 160, 180, 220, 940, 941

☐ Misc OHUG Reports

- EDB5032 - Securities and Exchange Commission Form 10K (For Previous Year)

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Figure 4.7-74. Batch reports screen



## 4.7.1.11.5 Coordinator Screens

### 4.7.1.11.5.1 Coordinator Dashboard

- Viewing of KPI capital asset statistics
- View details of MAPPS/AEDR Synch (transfers, Condemns, issues, Returns)
- Allows management of outstanding MAPPS/AEDR Synch transactions
- Allows querying of processed MAPPS/AEDR Synch transactions

SAGE

[Transformer](#)
[Regulator](#)
[Capacitor](#)
[Structure Spans](#)
[Reports](#)
[Coordinator](#)
[SAGE Help](#)

**NIPSCO**  
A NiSource Company

**ArcFM Connection:**

● Online

Date: 10/30/2006


User: Sloyer Perry

Id: #999999

Role: Coordinator

**Authorized Depts:**

010 - HAMMOND  
 030 - CROWNPOINT  
 040 - MICHIGAN CITY  
 050 - VALPARAISO  
 060 - SOUTH BEND  
 070 - PLYMOUTH  
 080 - ELKHART  
 090 - ANGOLA  
 100 - MONTICELLO  
 110 - GOSHEN  
 120 - WARSAW  
 150 - GARY  
 160 - LA PORTE  
 180 - WABASH VALLEY  
 220 - FORT WAYNE  
 940 - Central Stores  
 941 - Service Center



Transaction Counts		
<b>Carry Over From Previous Night:</b>		651
Less Manual Deletions:	0	
<b>Net Manual Transactions:</b>		(0)
New MAPPS Transfers:	8	
New MAPPS Condemns:	0	
New MAPPS Issues:	10	
New MAPPS Returns:	4	
<b>Total MAPPS Transactions:</b>		22
New GIS Trans/Reg Installs:	12	
New GIS Trans/Reg Removals:	9	
New GIS Capacitor Installs:	0	
<b>Total GIS Transactions:</b>		21
<b>Transactions To Be Processed: 694</b>		

Run Statistics	Processed	Outstanding
MAPPS Transfers:	8	1
MAPPS Condemns:	0	0
Matched Issues/Installs:	24	-
Matched Returns/Removals:	18	-
UnMatched Issues:	-	355
UnMatched Returns:	-	237
UnMatched Trans/Reg Installs:	-	21
UnMatched Trans/Reg Removals:	-	30
UnMatched Capacitor Installs:	-	0
<b>Total:</b>	<b>50</b>	<b>644</b>
<b>Total Transactions Processed: 694</b>		

Transformers	Quantity	Total Capacity	Install Cost
In Stock	XX,XXX	XX,XXX	XX,XXX
Installed	XX,XXX	XX,XXX	XX,XXX
Condemned	XX,XXX	XX,XXX	XX,XXX
<b>Total:</b>	<b>XX,XXX</b>	<b>XX,XXX</b>	<b>XX,XXX</b>

Regulators	Quantity	Total Capacity	Install Cost
In Stock	XX,XXX	XX,XXX	XX,XXX
Installed	XX,XXX	XX,XXX	XX,XXX
Condemned	XX,XXX	XX,XXX	XX,XXX
<b>Total:</b>	<b>XX,XXX</b>	<b>XX,XXX</b>	<b>XX,XXX</b>

Capacitors	Quantity	Total Capacity
In Stock	XX,XXX	XX,XXX
Installed	XX,XXX	XX,XXX
<b>Total:</b>	<b>XX,XXX</b>	<b>XX,XXX</b>

\*Installed: Installed, Leased, Sold (Pending Approval)  
 \*In Stock: In Stock, Condemned (Pending Approval)  
 \*Condemned: Sold (with Approval), Condemned (with Approval), Reverse Condemned (Pending Approval)

**Query Processed Transaction History (up to 6 months)**

Company #:

Date:

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Figure 4.7-75. Coordinator dashboard

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### 4.7.1.11.5.2 SAGE Security Report

Figure 4.7-76 provides a comprehensive view of all SAGE users, their assigned roles, etc.

**SAGE StandAlone GeoDatabase Editor** NIPSCO A NiSource Company

- Coordinator Dashboard : Security Management -

**ArcFM Connection:**  
 Online  
**Date:** 10/30/2006  
**User:** Skye Perry  
**Id:** #999999  
**Role:** Coordinator

**Authorized Depts:**  
 010 - HAMMOND  
 030 - CROWNPOINT  
 040 - MICHIGAN CITY  
 050 - VALPARAISO  
 060 - SOUTH BEND  
 070 - PLYMOUTH  
 080 - ELKHART  
 090 - ANGOLA  
 100 - MONTICELLO  
 110 - GOSHEN  
 120 - WARSAW  
 150 - GARY  
 160 - LA PORTE  
 180 - WABASH VALLEY  
 220 - FORT WAYNE  
 940 - Central Stores  
 941 - Service Center

**SAGE Users** Add New User || Manage Roles

Action	Last Name	First Name	Windows Id	Access Role
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	RC + PropTransfer
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Record Clerk
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Record Clerk
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Record Clerk
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access
X   P	Doe	Jane	NA\999999	Query Access

Figure 4.7-76. Sage security management on the coordinator's dashboard

### 4.7.1.11.5.3 Add New SAGE User

Figure 4.7-77 shows that an administrator user is provided functionality to add a new SAGE user account, to specify the permissions role, and specify which LOAs the user is authorized to access.

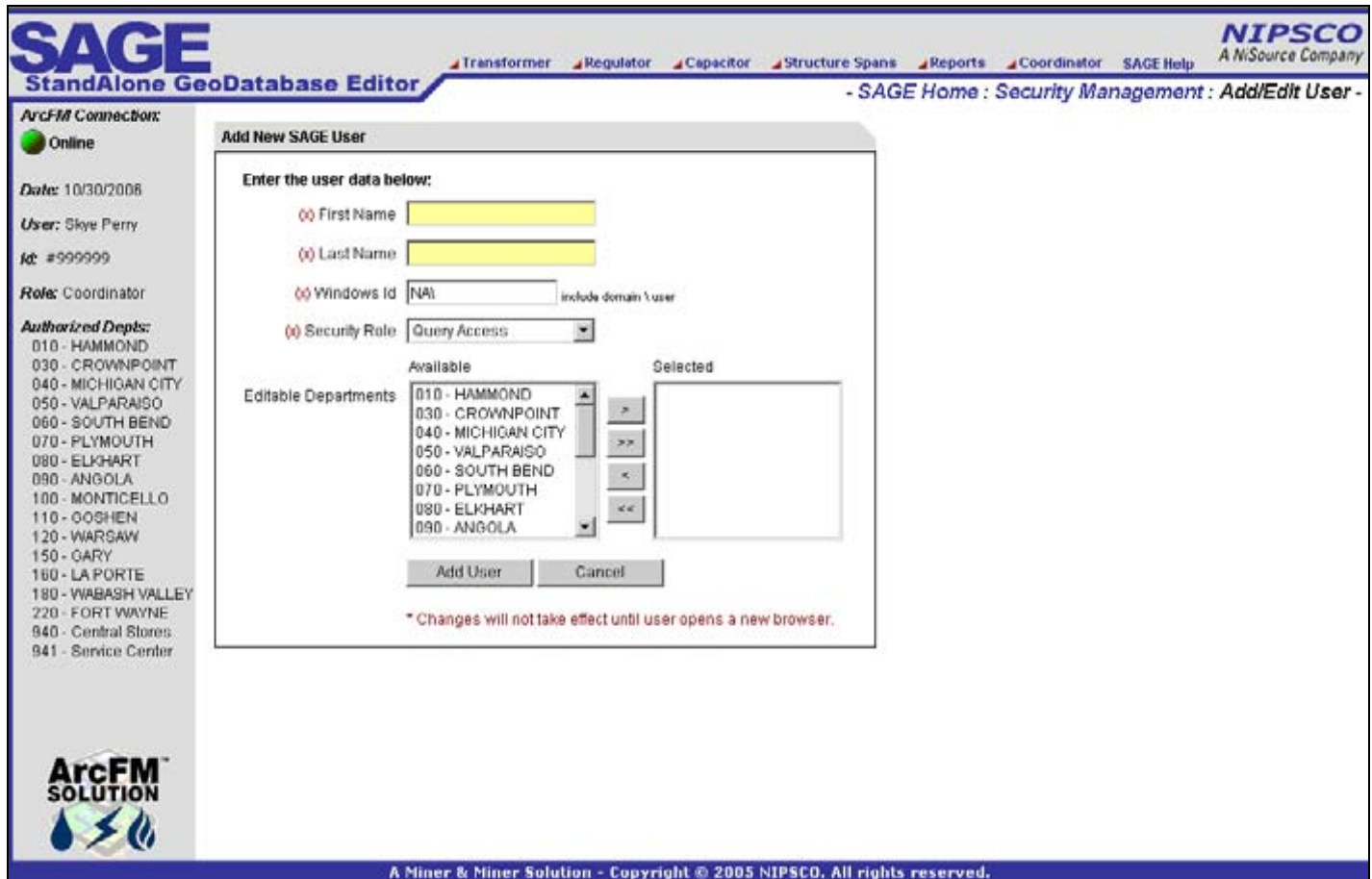


Figure 4.7-77. Add new SAGE user screen

#### 4.7.1.11.5.4 Manage SAGE Roles

Administrator user will add, update, and delete SAGE system roles as shown in Figure 4.7-78. A role contains a defined list of SAGE permissions. Several system roles exist as well including Coordinator, Record Clerk, Stores Clerk, Query User, etc.

**SAGE**  
StandAlone GeoDatabase Editor

**NIPSCO**  
A NiSource Company

Transformer Regulator Capacitor Structure Spans Reports Coordinator SAGE Help

- SAGE Home : Security Management : Manage Security Roles -

**SAGE Security Roles** Add New Role

Action	Role	Permissions
	Central Stores	Transformer: Add New, Delete, Edit Existing, Query, Status Regulator: Add New, Delete, Edit Existing, Query, Status Capacitor: Add New, Delete, Edit Existing, Query Reports: Query
	Coordinator	Transformer: Add New, Delete, Edit Existing, Install, Query, Remove, Replace, Status Regulator: Add New, Delete, Edit Existing, Install, Query, Remove, Status Capacitor: Add New, Delete, Edit Existing, Install, Query, Remove Reports: Query Coordinator: Coordinator Dashboard, Property Transfer, Reset Condemnations, Security Management, Session Reporting, Transfer Assets Structure Spans: Add / Edit / Delete, Query
	Query Access	Transformer: Query Regulator: Query Capacitor: Query Reports: Query Structure Spans: Query
	Record Clerk	Transformer: Delete, Install, Query, Remove, Replace, Status Regulator: Install, Query, Remove, Status Capacitor: Install, Query, Remove Reports: Query Structure Spans: Add / Edit / Delete, Query
	Stores Clerk	Transformer: Edit Existing, Query, Status Regulator: Edit Existing, Query, Status Capacitor: Edit Existing, Query Reports: Query Structure Spans: Query
	RC + PropTransfer	Transformer: Delete, Install, Query, Remove, Replace, Status Regulator: Install, Query, Remove, Status Capacitor: Delete, Install, Query, Remove Reports: Query Coordinator: Property Transfer Structure Spans: Add / Edit / Delete, Query

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Figure 4.7-78. SAGE security roles screen

#### 4.7.1.11.5.5 Unique Distribution Reference Administration

The AEDR GIS code contains functionality to prevent a user from entering a pole, pad, or primary pedestal with a duplicate distribution reference number. This SAGE admin application allows an administrator user to add, update, or delete entries from the unique table which is used by the GIS to determine if a number has been used.

The screenshot shows the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The user is logged in as Skye Perry, a Coordinator, with the role of Coordinator. The main content area is titled "Unique Distribution Reference Number Admin" and features an "Add New Number" field with an "Add" button, a search section with "Search Existing Numbers" and a "Search" button, and a "Search Results (7)" table. The table lists distribution reference numbers with associated actions (delete and edit icons).















Action	Dist. Ref. #
 	00054321
 	00543213
 	00543218
 	00654321
 	00854321
 	00954321
 	01054321

Figure 4.7-79. Unique distribution reference number administrator screen

#### 4.7.1.11.5.6 Reset Condemnations

If there is ever a problem with a printer or a user is not able to print a condemnation report for approval signatures, the condemnations can be reset so they are added to the report again on the next nights run.

The screenshot displays the SAGE StandAlone GeoDatabase Editor interface. The top navigation bar includes links for Transformer, Regulator, Capacitor, Structure Spans, Reports, Coordinator, and SAGE Help. The NIPSCO logo and 'A NiSource Company' are in the top right. The main title is '- SAGE Home : Reset Condemnations For Printing -'. On the left, the 'ArcFM Connection' status is 'Online'. User information includes Date: 10/30/2006, User: Skye Perry, Id: #999999, and Role: Coordinator. A list of 'Authorized Depts' is provided, ranging from 010 - HAMMOND to 941 - Service Center. The central form, titled 'Reset Condemnations for Printing', contains the following text: 'Using this form will reset the approval code on all condemnations with the chosen number so that they will be printed for approval during the next batch report run.' Below this text are two input fields: 'Condemnation Number' (a text box) and 'Condemnation Date' (a date picker). A 'Reset Condemnations for Printing' button is located at the bottom of the form. The ArcFM SOLUTION logo is in the bottom left, and the footer text reads 'A Miner & Miner Solution - Copyright © 2005 NIPSCO. All rights reserved.'

Figure 4.7-80. Reset condemnations for printing report accepts a date and condemnation number parameters

#### 4.7.1.11.5.7 Repair SDE Lock

ESRI multi versioned views are used for the SAGE application. In the past, there have been issues where a MVV version becomes locked by the system. This functionality runs the admin code to unlock a locked version. There is no screen for this page.

## **4.7.2 Non-EDFS GIS Functionality**

Various software requirements were gathered to enhance the ArcGIS / ArcFM functionality to make it better meet the needs of the NIPSCO end users. Much of this was driven from the review of required functionality within the previous AutoCAD Outfield system. Other areas were implemented to streamline the user's interaction with the system, ensure data integrity, or to auto-populate data required by a new system interface. This section outlines all AutoUpdaters, Edit Tasks, Subtasks, and tools that were created outside the scope of the EDFS replacement.

### **4.7.2.1 Core GIS and Outfield Replacement**

#### **4.7.2.1.1 Copy Value to Related Object**

The goal was to create an AU that copies a source value from one feature over to the target field of a related feature. This occurs on either the create or update event of the source feature. The source feature is determined by the class the component is assigned to. The source field, target class and target field are all determined using model names.

This AU originated from the specific case of a Gas Valve and a related Emergency Valve Marker. When an EmergencyValveMarker feature originally is created, via the 'CreateRelateRotateEmergencyValveMarkerAU' assigned to the GasValve feature class, the valve number from the GasValve feature is copied to the newly created EmergencyValveMarker feature. Therefore, this document only addresses the situation where a GasValve's valve number is updated. This AU is generic and will only work if the source and destination field data types match. As well, the target class must be related to the object to which is AU is assigned. In essence, we are copying a value from the parent to all children with assigned model names and appropriate data type.

##### **4.7.2.1.1.1 Assign to Classes**

- GasValve
- CapacitorBank
- TransformerBank
- VoltageRegulator

##### **4.7.2.1.1.2 Use Case**

This is an example use case. The same functionality is able to be configured anywhere a value must be duplicated to a related object. A user updates the 'valve number' attribute on a GasValve feature. Once this occurs, any related EmergencyValveMarker features have their 'label text' attribute updated with the name value.

##### **4.7.2.1.1.3 Design**

The following actions are performed upon the update of any of the above-mentioned records:

1. Select a GasValve feature which has a related EmergencyGasValve feature.

If none can be found, change an existing GasValve 'emergencyvalveind' field to 'yes'. This will create a related EmergencyValveMarker for you (assuming configuration has been completed for this functionality).

2. Update the 'valvenumber' attribute on the GasValve feature
3. Check to see that the 'labeltext' value on all related EmergencyValveMarker feature is the same as the 'valvenumber' value on the GasValve.

#### **4.7.2.1.2 Cross Over Arc**

The goal was to create an Edit Task that automatically alters the shape of Line (OHConductor, UGConductor, GasMain) features at the point at which they cross over other Line features.

The requirements can be summarized as follows:

- An AU that alters the shape of a Line as it passes over another Line
- The alteration of the shape must occur automatically, without the intervention of the user.
- The alteration must occur when a Line is placed over another Line.
- Users can use ArcMap editing tools to adjust the humps in those cases where adjacent humps do not line up or similar cartographic esthetics are not met by the automatic placement.

This component works for the majority of situations. In situations where a line crosses several lines at once, or where an arc cannot be created due to limited space, this component may not be able to create a crossover arc as desired. If a situation arises where arcs are not created as desired, end user can manually adjust shapes to give the desired appearance.

##### **4.7.2.1.2.1 Assign to Classes**

- OhConductor
- UgConductor
- GasMain

##### **4.7.2.1.2.2 Use Case**

A user places a Line feature that crosses over another Line (using standard ArcMap/ArcFM tools). At the point in which the two lines cross, the newly added Line has its shape altered to resemble an arc.



#### 4.7.2.1.2.3 Design

Figure 4.7-81 shows an example of a cross over arc indicating the conductors are not connected:

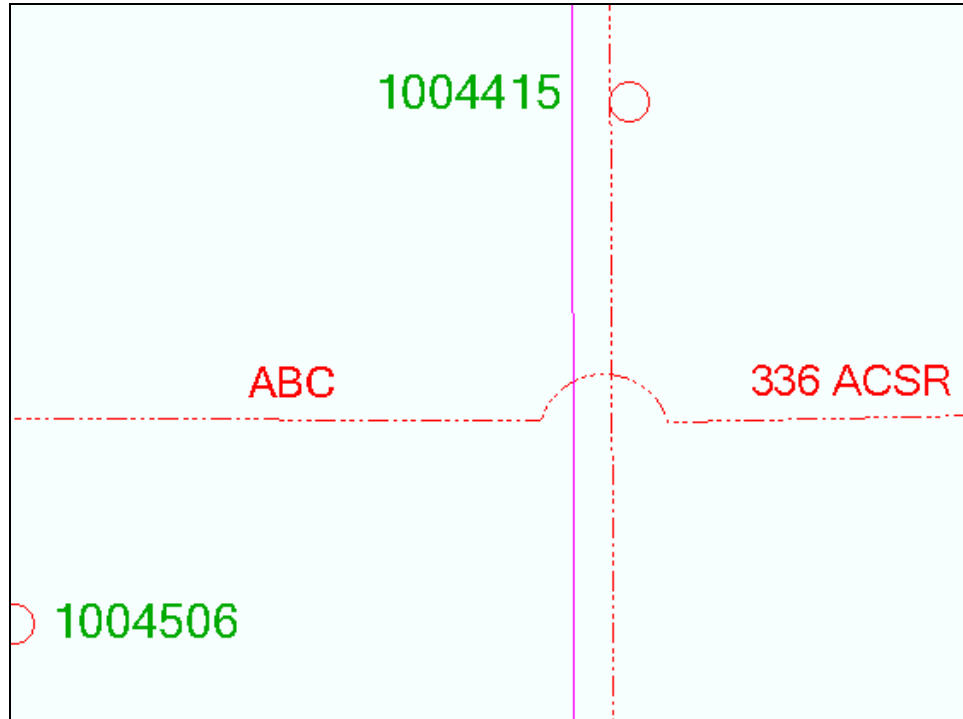


Figure 4.7-81. Conductor is not connected at the crossover arc

#### 4.7.2.1.3 Session Manager Do Not Post Subtask

This component prevents features with a model name of DoNotPost from being posted to the parent version. Although this is a generic component, it was initially being developed for the ReferenceLine feature class and ReferencePoint feature class.

The requirements are summarized as follows:

- Create a component that prevents configured features from being posted.
- Enable the component to be configured for use on any feature and/or object class.
- Invoke the component before a Session is posted.

##### 4.7.2.1.3.1 Assign to Classes

This is a custom subtask that was configured as part of the process framework. It is applied to the following classes:

- ReferenceLine
- ReferencePoint

##### 4.7.2.1.3.2 Use Case

A user approves/posts a version using the MM Session Manager tool. Before the post, all non- postable features are removed. The Session is then posted to its parent without non-postable features.

#### **4.7.2.1.3.3 Design**

1. Create a Session.
2. Start Editing.
3. Add one or more non postable features, such as a ReferenceLine or ReferencePoint feature.
4. Save your edits.
5. Submit your Session.
6. Have the Session Approved.
7. Reconcile the Session.
8. Post the Session.
9. Open the Sessions parent version and search for the non postable feature created above. None should be present.

#### **4.7.2.1.4 Field Concatenation AU**

A generic AU was created that is used to take a variable number of fields, concatenate their values and enter the result into an output field. If a field has an associated domain, the domain value will be used versus its description.

The fields designated as input fields have been identified by model names such as InputField1, InputField2, InputField3, etc. The fields are concatenated in the order in which they are numbered. The output field is identified by the model name OutputField.

Whoever uses this AU must be aware of the different combination of values generated and configure accordingly. Of course, improper assignment of model names, changes in domains, domain values, etc, are handled manually via configuration versus updating of code.

This change was needed to allow for the concatenation of values within a feature class on any number of fields. This AU is also reusable across several feature classes due to its dependence on configuration versus code.

##### **4.7.2.1.4.1 Assign to Classes**

GasValve

##### **4.7.2.1.4.2 Use Case**

Since this AU is used on a variety of feature classes, the outcome of using this AU is dependant on upon configuration. Each feature class that uses this AU has a configuration document containing the following:

- The input fields that make up the concatenated output value
- The output field
- All possible combinations of input field values and their resulting value

Based on an individual feature class configuration document, a user creates a feature and then is able to observe if the resulting value is correct.

#### **4.7.2.1.4.3 Design**

1. Create a feature that has this generic AU assigned.
2. The output value should correspond to the documentation for the feature class in question.

#### **4.7.2.1.5 LOA Number AU**

This AU populates an LoaName field with the name of the LOA that it resides within. If a feature resides within more than one LOA, the field will be populated with only one LOA name. This change was needed to fully alleviate the user from manually entering this information. Ultimately this information is required for tax reasons.

The requirements can be summarized as follows. Take the shape of the feature being added, spatially determine which LOA polygon features it resides within, capture the LoaName and persist this information in the field that the AU is associated with. Fields that are designed to hold LoaName information have a length of 3. If a feature resides within more than one LOA feature the code will not concatenate the LoaNames together. Currently this AU will only return the first LOAName on the first LOA feature it finds. If requirements change in the future, code will need to be updated.

##### **4.7.2.1.5.1 Assign to Classes**

All electric and gas feature classes that carry the LOANumber field

##### **4.7.2.1.5.2 Use Case**

GIS End User creates and/or updates a feature as they are performing their daily tasks. All fields that have the LoaNameAU assigned to them become populated with the LoaName of the LOA Feature it resides within. No user intervention is required.

##### **4.7.2.1.5.3 Design**

1. Assigned the AU to a field as noted above.
2. Add or update a feature in question.
3. Observe the LoaName that was populated within the field the AU is assigned to.
4. Add the LOA feature class to your map.
5. Select the identify tool.
6. Click the feature that you added/updated.
7. A form will pop up. Select the LOA feature and note its LoaName.
8. This number should be the same as the one populated within the features attribute.
9. An update that triggers Feeder Manager should be run to verify that this AU is not triggered by only an attribute update.

#### **4.7.2.1.6 Network Edge Split at Tap Point**

AU that allows a network edge feature (including OhConductor, UgConductor, TieBus and GasMain) to split another network edge feature(s) at the to/from tap point(s). This splitting occurs only where an end point does not currently exist, which is along a Network edge. A user may tap a network edge at both the start and end points of a newly

created Conductor or Gas Main (this would look like an H). At both tap points, the tapped Network edge is split. Note: Secondary is modeled as a feature class, but does not participate in the network. This feature will not be affected by this AU.

Once it's been determined that a Network edge is to be split, code must ensure data integrity. When a split occurs, the shape of the Network edge being split is altered to form one side of the split line. A new Network edge is created from the other side of the split line. After a Network edge is split we must ensure relationships are properly maintained. Custom code handles the maintenance of existing relationships and whether or not they are updated. This change is needed to ensure the network is maintained in a consistent manner and to support the network models of external interfaced applications including CADOPS and FeederAll.

The requirements are summarized as follows:

- To automate this functionality using an AU
- To have a network edge split at the point where another network edge taps off of it. This could occur only at the To/From points of a newly created network edge feature. When this is done, the network edge being tapped will have its shape changed so it represents one side of the split network edge. The other side of the split network edge is represented by a newly created network edge feature
- To retain the original attributes of the network edge being split and have them applied to each of two segments after the split occurs
- To ensure objects related to the tapped network edge are correctly re-related as deemed appropriate. Situations where the Network edge feature in the relationship is the destination feature class will be treated differently than if the Network edge is the origin feature class. In the case of the Network edge being the destination feature class, the related objects will retain their relationship with the original Network edge and also be related to the new Network edge. In the case of the Network edge being the origin feature class, the related objects will be queried to determine which Network edge they are closest to, the original or the new one. If it's the original, nothing is changed. If it's the new one, the relationship between the original Network edge is removed and a relationship to the new Network edge is created.

#### **4.7.2.1.6.1 Assign to Classes**

- OhConductor
- UgConductor
- TieBus
- GasMain

#### **4.7.2.1.6.2 Use Case**

- A user places a new Network edge. The From point resides on an existing end point and the To point ends at a generic junction. Since the From and To points do not tap off of an existing Network edge's edge, no split is made.
- A user places a new Network edge. The From point is placed on the edge of an existing Network edge and the To point ends at a generic junction. Since the

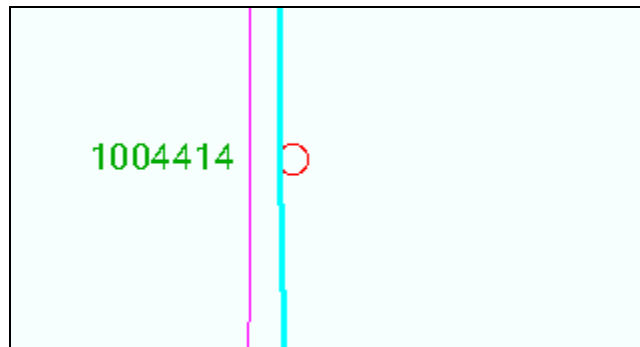
From point is placed on the edge of an existing Network edge, it is effectively tapping off of that Network edge. In this case, the Network edge being tapped must be split. Once the split is complete, all relationships that once existed must be evaluated and re-established if necessary.

- A user places a new Network edge. Both the From and To points are placed on the edge of an existing Network edge. Therefore, they are effectively tapping off of each Network edge. In this case, both Network edge's being tapped must be split. Once the split is complete, all relationships that once existed must be evaluated and re-established if necessary.

#### 4.7.2.1.6.3 Design

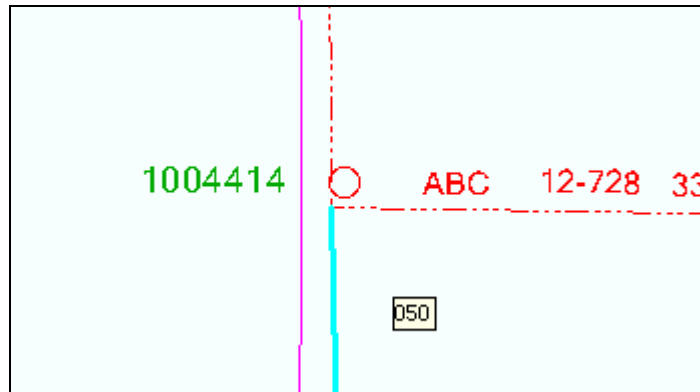
1. Place a new Network edge with it's From point on the edge of an existing Network edge and it's To point not connected to any other network feature
2. The Network edge being tapped should be split and all relationships maintained.
3. Place a new Network edge with it From and To points on the edge of an existing Network edge
4. Both Network edge being tapped should be split and all relationships maintained.
5. Place a new Network edge with it From point at the end of an existing Network edge and it's To point not connected to any other network.
6. This scenario should not cause any Network edge to be split and the edit should stand as is.

Figure 4.7-82 shows an example of an un-split conductor. The conductor is selected to show that it is not split at the pole:



**Figure 4.7-82. Conductor is not split at the pole**

Figure 4.7-83 shows the same area after a new conductor has been placed tapping off of the existing conductor at the pole. Note the original conductor has been automatically split:



**Figure 4.7-83. New conductor is tapped off existing conductor at the pole**

#### ***4.7.2.1.7 Normal Position Symbology AU***

An AU is required to populate the SymbologyConfigurationCode attribute of a feature class from which symbology will be driven. The code that is populated into this field is dependant upon the NormalStatus\_A, NormalStatus\_B and NormalStatus\_C fields. When a feature is created or updated, the AU fires and, based upon the combination of these attributes, determines the appropriate code to populate the field (1-Closed, 0-Open).

Code will look at the three NormalStatus fields. If all are set to 'Open', then the SymbologyConfigurationCode field would be set to 'Open'. If any of the of these fields are set to 'Closed' then the SymbologyConfigurationCode would be set to 'Closed'. Open is represented by a 0, while Closed is represented by a 1.

##### **4.7.2.1.7.1 Assign to Classes**

- FuseCutoutBank
- Switch
- SectionalizerBank
- RecloserBank
- OpenPoint
- CustomerGenerator

##### **4.7.2.1.7.2 Use Case**

- A user adds or updates a FuseCutoutBank feature and sets NormalPositionA, NormalPositionB or NormalPositionC fields to 'Open'. The AU fires and the SymbologyConfigurationCd field is updated to 'Open' (0).
- A user enters adds or updates a FuseCutoutBank feature and sets one or more of the NormalPositionA, NormalPositionB or NormalPositionC fields to 'Closed'. The AU fires and the SymbologyConfigurationCd field is updated to 'Closed' (1).

##### **4.7.2.1.7.3 Design**

1. Add a new FuseCutoutBank feature with the fields NormalPositionA, NormalPositionB and NormalPositionC set to 'Opened'.
2. The SymbologyConfigurationCd field should be set to 'Opened'.

3. Add a new FuseCutoutBank feature with one or more of the fields NormalPositionA, NormalPositionB and NormalPositionC set to 'Closed'.
  1. The SymbologyConfigurationCd field should be set to 'Closed'.

#### **4.7.2.1.8 Prevent Delete if Object has Related Objects**

This AU prevents a feature from being deleted if it has objects related to it.

##### **4.7.2.1.8.1 Assign to Classes**

- CapacitorBank
- VoltageRegulator
- TransformerBank
- OhConductor
- UgConductor
- FuseCutoutBank
- Switch
- Secondary
- RecloserBank
- SectionalizerBank

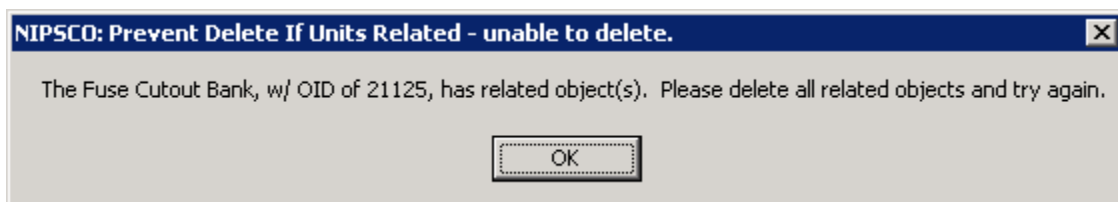
##### **4.7.2.1.8.2 Use Case**

A user attempts to delete a feature. If it has objects related to it, the user is warned and the deletion not allowed.

##### **4.7.2.1.8.3 Design**

1. Assign the AU to an object.
2. Delete a feature.
3. If the feature has related objects, a warning should appear and the edit not allowed.
4. If the feature does not have related objects, it should be deleted.

Figure 4.7-84 is an example of the message box that will be displayed.



**Figure 4.7-84. Warning message indicating related objects exist**

#### **4.7.2.1.9 Reference Features Remove Button**

A user selects an area on the map and clicks a button to remove all ReferencePoint and ReferenceLine features found within the current selection. ReferencePoint and ReferenceLine features only exist to aid in the creation of other features and therefore will not be posted to the parent version. Because of this, removing them from the active view has the effect of cleaning up the map, but has no impact on data itself.

The requirements can be summarized as follows:

1. To create a command button that can be placed within the ArcMap interface.
2. When this command button is selected, it goes out to the current selection set, finds all the ReferencePoint and ReferenceLine features and deletes them.

#### **4.7.2.1.9.1 Assign to Classes**

This is a command button that is available in the user interface. It operates on the following classes:

- ReferencePoint
- ReferenceLine

#### **4.7.2.1.9.2 Use Case**

- A user clicks the ReferenceFeaturesRemovalButton. Since no features are selected, nothing happens (i.e., no error messages come up).
- A user selects several features including some Reference Features(either line or point) and clicks the ReferenceFeaturesRemovalButton. All ReferenceLine and ReferencePoint features that are selected will be deleted.
- A user selects several features, none of which are Reference Features(either line or point) and clicks the ReferenceFeaturesRemovalButton. Nothing happens( i.e. no error messages come up) since no Reference Features are in the selection set.
- A user clicks the button and the ReferenceLine and ReferencePoint layers are not in the document. Nothing happens (i.e. no error messages come up).

#### **4.7.2.1.9.3 Design**

1. The interface consists of an ArcMap button with an icon of a lightning bolt. If this button does not currently exist on a toolbar, it must be manually placed there. All other GUIbuttons/tools are standard ArcMap or ArcFM tools.
2. No forms or message boxes are envisioned.
3. This button will always be enabled. The reason for this is it eliminates the need for code to continuously run behind the scenes to determine if it should/should not be enable. Also, if a button is disabled, the user may have no idea as to why it's in this disabled state. If a button is enabled and a user selects it when the state of the application is not set properly, the user will be informed of the problem and therefore be able to rectify the situation.

#### **4.7.2.1.10 Feature Offset Edit Task**

An edit was created to allow for a feature to be offset from a SupportStructure versus being created directly on top of it. A user snaps to a conductor then clicks on or close to the point they wish the feature to be placed. Code determines if a SupportStrucure feature is nearby. If so, the AU will place the feature 15 feet down the conductor from the SupportStructure. If a feature needs to be related to the nearest support structure, the ArcFM Structure Relate AU is applied to the feature class in question.

The requirements are summarized as follows:

- When a user snaps to a conductor and clicks to place a Feature, the Feature will be placed 15 feet off of the nearest SupportStructure



- A SupportStructure must exist within the vicinity (250 ft) of the point of placement.
- A Feature splits the conductor at the location it's placed. This functionality was tested with the feature configured to split the conductor as this is a requirement for NIPSCO. Split functionality is not provided by this AU, but by proper configuration of the database using ArcCatalog.

This edit task will also ensure offset features do not reside on top of each other. For example, if a capacitor is placed and offset from a pole, it will reside 15 feet down from the pole. If a switch is to be placed on the same side of the pole, it will be placed 30 feet down from the pole. In do this, it will ensure the integrity of the network.

#### **4.7.2.1.10.1 Assign to Classes**

- FuseCutoutBank (OH subtypes only)
- RecloserBank
- Switch (OH subtypes only)
- VoltageRegulator
- CapacitorBank

#### **4.7.2.1.10.2 Use Case**

- A user places a Feature by first selecting the feature from the Features tab. A user then places the cursor over the map and snaps to a conductor at a point that's near a SupportStructure. When the user clicks to place the feature, it's offset from the nearest SupportStructure by 15 feet and auto rotated.
- A user places a Feature before snapping to a conductor. In this case, the feature is not placed.
- A user places a Feature but at a distance not close to any SupportStructure. In this case, the feature is not placed.

#### **4.7.2.1.10.3 Design**

1. Start editing, select the Feature from the features tab, using the Targets tab set the features attributes, sketch the feature by snapping to a conductor at a position close to a SupportStructure.
2. The feature is added and offset a set distance from the pole.
3. Start editing, select the Feature from the features tab, using the Targets tab set the features attributes, sketch the feature without first snapping to a conductor.
4. A warning is given and the edit not allowed.
5. Start editing, select the Feature from the features tab, using the Targets tab set the features attributes, sketch the feature by snapping to a conductor at a position not close to a SupportStructure.
6. A warning is given and the edit not allowed.
7. In all cases, the placement of a Feature splits the conductor.

In Figure 4.7-85, the user would have clicked the conductor very close to the pole. The offset edit task then places the switch at a fixed distance up from the pole:

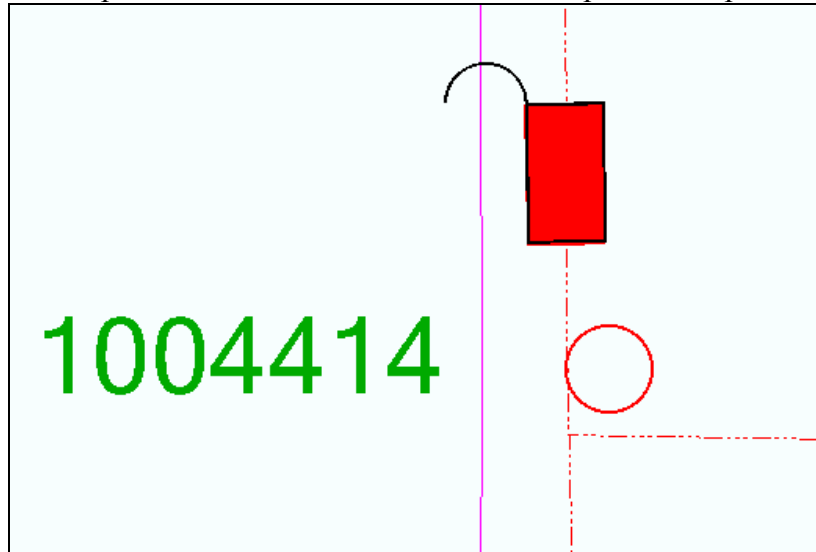


Figure 4.7-85. Feature offset

#### 4.7.2.1.11 *Unique Distribution Reference AU*

The AU developed is associated with the following feature classes; SupportStructure, Pedestal and Padmount.

When a user creates or updates any of the above listed features, the AU will determine if the DistribRefNumber is unique. If a DistribRefNumber is found to be a duplicate, the user will be warned and the edit disallowed.

Uniqueness of DistribRefNumbers is enforced on a company wide basis, therefore this component checks all versions on all appropriate feature classes to ensure uniqueness. Instead of performing this work each time a new DistribRefNumber is entered, the following approach is taken. An un-versioned table is created and populated with all DistribRefNumbers currently in the database. This table is checked to determine if newly entered DistribRefNumbers are duplicates. This table is updated with newly entered, unique DistribRefNumbers. A tool has been provided that allows for the manual editing of records in this table, if needed.

The requirements can be summarized as follows:

1. To provide a mechanism that generates and populates a table, 'UniqueDistribRefNumbers', with all DistribRefNumbers currently in the GDB. This is achieved via an admin command button within ArcCatalog. This tool gathers all existing DistribRefNumbers from the SupportStructure feature class, PadMount feature class, Pedestal feature class and RetiredSupportStructure object class.
2. To provide an AU, that pads all distribrefnumbers out to 8 digits.

3. To provide an AU, that when assigned to an object's oncreate or onupdate events, will check the UniqueDistribRefNumbers table for duplicates.
4. To prevent edits when duplicate DistribRefNumbers are entered
5. Before validation is done, this AU checks the feature to which it's assigned for a field with a model name of 'Owner'. If that field exists, the code checks the value in this field. If that valid is "C" (for customer) then the validation will not be performed. If no field with the model name of 'Owner' exists, or the field exists but the value is not set to 'C', validation to ensure a unique distribrefnumber will be performed. This requirement was intended to address the PadMount feature where the Owner model name would be assigned to the PadMound.OwnerInd field. This configuration could be applied to other features as well.
6. To update the unique UniqueDistribRefNumbers table when new DistribRefNumbers are entered

Since the UniqueDistribRefNumbers table is non-versioned, changes to it will not be rolled back in the cases where an edit to an object is undone/rolled back. Therefore, this AU must be assigned to fire last within the list of class level AU's assigned to any one object.

#### **4.7.2.1.11.1 Assign to Classes**

- SupportStructure
- PadMount
- Pedestal (only Primary Pedestal subtype)

#### **4.7.2.1.11.2 Use Case**

- A user creates a new feature (SupportStructure, Pedestal, Padmount) and enters a unique DistribRefNumber. The feature is successfully stored.
- A user creates a new feature (SupportStructure, Pedestal, Padmount) and enters a non unique DistribRefNumber. The user is presented with an error message explaining the error and the edit is disallowed. At this point it's up to the user to manually reenter the correct DistribRefNumber.
- A user enters a non unique DistribRefNumber for a Padmount feature. If the Padmount OwnerInd field is set to Customer, validation does not occur and the edit is allowed. If the OwnerInd field is not set to Customer, validation occurs and the edit is not allowed.
- A user executes the process that generates the UniqueDistribRefNumbers table. The table is generated and populated with all DistibRefNumbers currently in the GDB.

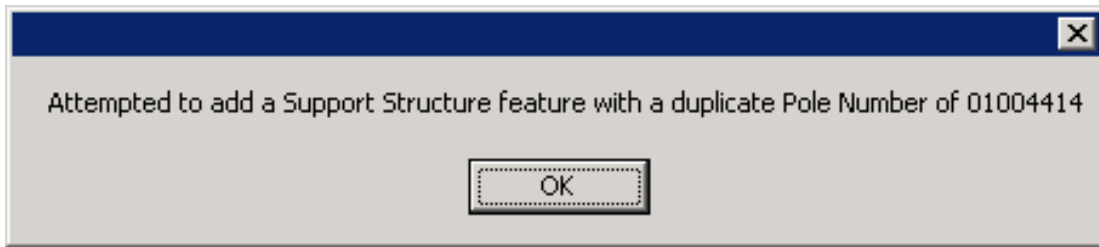
#### **4.7.2.1.11.3 Design**

This tool consists of three components, the AU assigned to DistribRefNumber attribute, a tool to generate the UniqueDistribRefNumbers table and a SAGE tool to allow for the alteration of the UniqueDistribRefNumbers table.

1. The AU does not provide an interface beyond a message to the user that a duplicate DistribRefNumber has been entered.

2. The code to generate the UniqueDistribRefNumbers table consists of a button within ArcCatalog or a stand alone executable. When successfully executed, a standard message box indicating success is shown.
3. The tool that allows for the editing of a UniqueDistribRefNumber (see the SAGE section of this document).

Figure 4.7-86 is an example of the message box that will be displayed when a duplicate pole number is input.



**Figure 4.7-86. Attempted use of a duplicate pole**

#### ***4.7.2.1.12 FeederAll Open Point Deletion AU***

A composite relationship does not exist between UgConductor and FeederAllOpenPoint. Because of this, deleting an UgConductor feature will leave any connected FeederAllOpenPoint features in place, or in effect orphaned. To prevent orphaned FeederAllOpenPoints from existing, this AU deletes them as part the deletion of an UgConductor deletion.

##### **4.7.2.1.12.1 Assign to Classes**

UGConductor

##### **4.7.2.1.12.2 Use Case**

A user deletes an UgConductor feature that has FeederAllOpenPoints connected to it. When the conductor is deleted, the FeederAllOpenPoints are also deleted.

##### **4.7.2.1.12.3 Design**

1. Add a FeederAllOpenPoint feature to an UgConductor.
2. The UgConductor is split by the FeederAllOpenPoint.
3. The FeederAllOpenPoint is created successfully.
4. Delete an UgConductor which has a FeederAllOpenPoint residing on it.
5. If, after the conductor is deleted, the FeederAllOpenPoint will also be deleted if no other UgConductor is connected to it.
6. If another UgConductor is connected to it then the FeederAllOpenPoint will not be deleted.

#### ***4.7.2.1.13 Transformer Lead Edit Task***

TransformerBank and OhConductor are connected via a TieBus (subtype TransformerLead). This provides connectivity within the Electric Network since OhConductor is being offset varying distances from poles (and therefore TransformerBanks). When a TransformerBank is placed, the edit task requires a user

click a second time on an OhConductor. Upon creation of the TransformerBank, the TieBus (TransformerLead) feature is also created, spanning from the TransformerBank to the selected OhConductor. Within the Stored Displays, the TransformerLeads themselves will not be visible.

The plan at NIPSCO was to have the Manual Angle Setter edit task applied to TransformerBanks. This edit task already requires two clicks from the user. The first to determine the location of the geometry and the second to determine the angle of rotation for the TransformerBank. Since this custom edit task will override this functionality and use the second click to establish the connection to an OhConductor, we made it three clicks. 1 – geometry, 2 – connection to a OhConductor and 3 – rotation angle.

It should also be noted that per the “Conductor Split at Tap Edit Task”, the transformer lead splits the OhConductor at the tap point therefore maintaining the electrical integrity of the network in regard to the ABB programs.

Note that TransformerLead features are not required for UgConductor/Transformer connectivity since the UgConductor is not being offset from its surface structure.

The requirements can be summarized as follows:

- Automatically create a TieBus (TransformerLead) feature when a new Overhead TransformerBank feature is placed.
- Require a 3 click edit sketch. The first click identifies where to place the TransformerBank, the second click indicates which OhConductor it’s connected to, and the third click is used to determine the rotation angle of the TransformerBank.
- Connect the TieBus from the TransformerBank feature to the selected OhConductor feature.
- Create the TieBus feature’s From/To points based upon the first and second click
- Set the TransformerBank’s SymbolRotationValue based upon the angle between the first and third click.
- Automatically populate the TieBus attributes (OnCreate only). Attributes are populated as follows:
  - OpenClosedStatusCd is set to Closed = 1
  - PrimaryOperatingVoltage is set to its default
  - PhaseDesignationCd matches that of the OHConductor to which it is connected.
  - SubtypeCd is set to 3 (TransformerLead)

All other attributes are populated automatically by other AUs, primarily Feeder Manager.

#### **4.7.2.1.13.1 Assign to Classes**

TransformerBank (OH Subtypes only)

#### **4.7.2.1.13.2 Use Case**

- A user places an Overhead TransformerBank. The first click is on a pole the TransformerBank is to be placed. The second click is on an OHConductor that the user intends the bank to be connect to. The third click determines the rotation

angle of the bank. After the third click, the TieBus feature is created, it's attributes populated and is then placed between the TransformerBank and the OHConductor. The bank is rotated according to the angle between the first and third click.

- A user places a TransformerBank. On the first click the user does not snap to a pole. The edit is cancelled.
- A user places a TransformerBank. On the second click, the user does not select an OHConductor. The edit is cancelled.
- A user places a TransformerBank. On the second click, the user selects an OHConductor at a point that is not near the first point clicked. The edit is cancelled.

#### **4.7.2.1.13.3 Design**

1. Place an OH TransformerBank by snapping/clicking on a pole, then snapping/clicking on an OHConductor and finally, clicking to set the TransformerBank's rotation angle.
2. The TransformerBank is created and rotated correctly.
3. A TieBus (subtype TransformerLead) feature is created and placed between the TransformerBank and the selected OHConductor.
4. The TieBus attributes are populated correctly.
5. Connectivity exists between the TransformerBank, TieBus and OHConductor.
6. Place an OH TransformerBank by first clicking somewhere other than on a pole.
7. The edit is cancelled since a pole was not snapped to.
8. Place an OH TransformerBank by first snapping/clicking on a pole, and second by clicking anywhere but on an OHConductor.
9. The edit is cancelled since an OHConductor was not snapped to.
10. Place an OH TransformerBank. Click the second time at a distance further than 250 feet from the first click.
11. The edit is cancelled since the distance between the two points is too far apart.
12. Place an UG TransformerBank by connecting it to UG conductor lines.
13. The TransformerBank is created correctly (no TransformerLead).

Figure 4.7-87 depicts an overhead transformer bank installation. The Transformer Lead is represented by the red line that connects the OH Primary conductor to the insertion point of the transformer which is at the center of the pole.

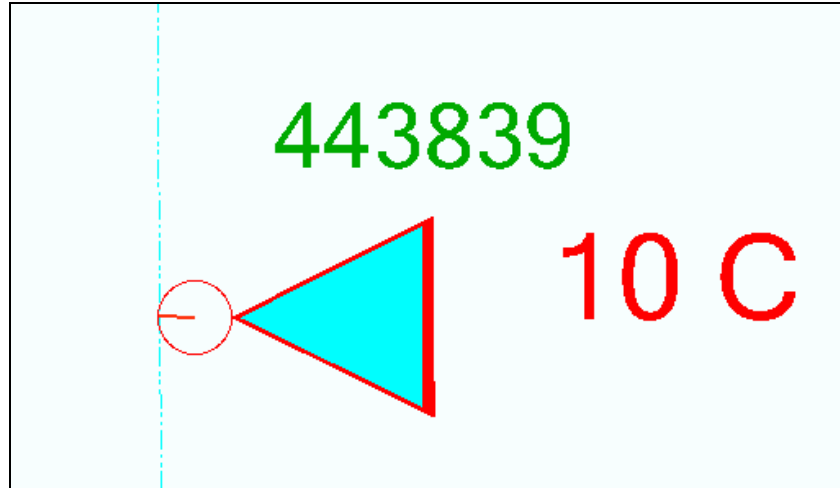


Figure 4.7-87. Overhead transformer bank

#### **4.7.2.1.14 Delete Attached Transformer Lead**

Transformer Lead features are not visible on the standard NIPSCO stored displays. They are maintained in the data for connectivity purposes but are not shown because the desired symbology is that the transformer is snapped to the pole offset from the conductor. Because the transformer lead is not visible, users are not able to select and delete it when they are deleting a transformer. Therefore this AutoUpdater will automatically delete any attached transformer lead features whenever a transformer bank feature is deleted in the GIS.

##### **4.7.2.1.14.1 Assign to Classes**

TransformerBank

##### **4.7.2.1.14.2 Use Case**

A user deletes an overhead TransformerBank feature that is connected to the overhead conductor via a TransformerLead feature (subtype of TieBus). When the transformer is deleted, the TransformerLead should also be deleted.

##### **4.7.2.1.14.3 Design**

1. Add a new Overhead TransformerBank by using the TransformerBank Edit Task – 1<sup>st</sup> click on the pole, 2<sup>nd</sup> click on the conductor at the tap point, 3<sup>rd</sup> click to indicate the rotation of the TransformerBank.
2. The TransformerBank is created on the pole and attached to the existing overhead conductor via a TieBus.TransformerLead feature.
3. Select only the TransformerBank feature.
4. Delete the TransformerBank feature.

5. The TransformerLead feature connecting the TransformerBank to the overhead conductor is also deleted from the map.

#### **4.7.2.1.15 Abandon Gas Features**

The Miner and Miner Abandon Tools are used in the process to abandon gas features. The RetireWONumber, RetireDate, and RetireType of a retired gas feature being collected by this component do not exist before abandonment. Therefore they must be collected at the time of retirement.

The requirements can be summarized as follows. When a gas feature is abandoned, it is moved from its originating feature class to its corresponding Retired feature class. For example, a Drip feature will be moved to the RetiredDrip feature class upon abandonment.

During the abandon process, a form is presented to the user. This form allows the user to fill in the applicable RetireWONumber, RetireDate, and RetireType fields. Once done, the user clicks 'OK' and the Miner and Miner abandon process will take over, delete the original feature and create the new feature using the values as input by the user.

##### **4.7.2.1.15.1 Assign to Classes**

- Casing
- Drip
- DeadEndGas
- PressureControlFitting
- GasMain
- GasValve
- PipeChange
- RegulatorStation
- TakeStation

##### **4.7.2.1.15.2 Use Case**

A user abandons one of the above listed gas features. During this process, the shape of the originating feature plus any attributes configured to be transferred is copied over to its corresponding Retired feature. Along with this, the user is prompted for a RetireWorkOrderNumber, RetireDate, and RetireType information. This information, once collected, will be used to populate the corresponding attributes on the retired feature.

If the user does not indicate the RetireType, Abandoned will be populated as the default.

##### **4.7.2.1.15.3 Design**

1. Abandon a gas feature (i.e. Drip, DeadEnd, PressureControlFitting, GasValve, RegulatorStation) using the MM Abandon tools.
2. A form prompts the user for RetireWorkOrderNumber, RetireDate, and RetireType.
3. The feature is abandoned to its corresponding Retired feature class.



4. The newly created Retired feature's attributes are populated with the data from the form.

Figure 4.7-88 shows the form that is used to collect the work order and abandonment type.

Retire WorkOrder Number Input Form - (Gas Main w/ OID: 178244)

Please enter the Retired WorkOrder Number

Please enter the Retired Date for this Device

Retired Type:  Removed  Abandoned

OK

Figure 4.7-88. Form to abandon a feature

#### 4.7.2.1.16

An AU determines the GasMain that the Casing feature has been snapped to and populates the RelMainObjectId field with the GasMain's OID.

When a user creates/updates a Casing feature, the user will snap it to a GasMain. The AU will populate the RelMainObjectId field of the Casing with the ObjectID of the GasMain.

##### 4.7.2.1.16.1 Assign to Classes

- Casing
- Others as needed

##### 4.7.2.1.16.2 Use Case

A user creates a new Casing feature and places it on a GasMain. The RelMainObjectId field of the Casing feature is populated with the OID of the Main it was snapped to. If the Casing overlies more than one GasMain, the related OID will be based on the last point the user clicked on.

##### 4.7.2.1.16.3 Design

1. Create a Casing feature and place it on a GasMain.
2. The RelMainObjectId field of the Casing feature is populated with the OID of the GasMain on which it resides.
3. Update the Casing feature by moving it to a different GasMain feature.
4. The RelMainObjectId field of the Casing feature is populated with the OID of the GasMain on which it resides.
5. Place a casing feature over more than one GasMain feature.

6. The RelMainObjectId field of the Casing feature is populated with the OID corresponding to the GasMain that the last sketch point was set on.

#### **4.7.2.1.17 Place and Relate Gas Main Edit Task**

The edit task is available to be applied to any feature class. This edit task requires two clicks during each sketch. The first click determines where the feature is to be placed. The second click determines which GasMain is to be considered the related GasMain. The OID of the designated GasMain is persisted within the 'RelatedGasMainOID' field. An AutoUpdater will fire twice. First, after the Edit Task executes and second after the ArcFM Segment Split AU executes. The Feature AU will check to see if the OID of the Related GasMain is valid (since the ArcFM Segment Split AU may have deleted it). If it is valid then nothing else is done. If it's not valid, the AU will determine the valid related GasMain based on the second point of the edit sketch. If for some reason the AU is unable to determine this, the value entered into each RelatedGasMainOID field will be zero.

The user is locked into a two click sketching process during the creation of the configured feature. The first click determines where the feature is placed. The second click is used to determine the OID of the related GasMain. The second click uses the point selected and creates an invisible buffer in an effort to find a single feature containing the model name of GasMain. If a feature with the model name GasMain is found, the OID from the GasMain is saved into the 'RelatedGasMainOID' (or similar) field. If this GasMain is then split (deleted and two new GasMains added), the newly created GasMain will be determined and it's ObjectId populated into the RelatedGasMainOID field. If a GasMain cannot be determined, a zero will be placed in the fields and later flagged for manual correction via a QA rule. If a related ObjectId is determined but the GasMain it belongs to is later split, then the ObjectId will no longer be valid. The validation rule will also flag this error for correction.

##### **4.7.2.1.17.1 Assign to Classes**

- RegulatorStation
- PipelineMarker
- GasMainLocation

##### **4.7.2.1.17.2 Use Case**

- User places a Feature on the edge of a GasMain. The user first clicks on the location where the feature will be placed. The second click is on or near the GasMain that the user deems to be the related GasMain. The Feature is created and the appropriate RelatedGasMainOID populated with the appropriate OID.
- User places a Regulator Station feature at the end of a GasMain. The user first clicks on the location where the feature will be placed. The second click is on or near the GasMain that the user deems to be the related GasMain. The Feature is created and the appropriate RelatedGasMainOID populated with the appropriate OID.
- User places a Regulator Station feature at the end of a GasMain. The related GasMain has yet to be created so the user simply clicks in an area where no other

GasMains reside. The new feature is created, but neither RelatedGasMainOID field will be populated since it did not exist at the time of creation. The user will either fix this manually or be prompted to do so when QA is run.

- User places a Regulator Station feature and then selects the related GasMain. The data is valid until a later time when a user splits the related GasMain as determined above. Since the GasMain was split, it was effectively deleted and two new GasMains created. Because of this, the original ObjectID as determined during placement of the Feature is no longer valid. When a user runs QA on the Feature in question, it will be flagged as an error since the ObjectID as originally assigned is no longer valid.

#### **4.7.2.1.17.3 Design**

1. Ensure both the Edit Task and AU are installed and configured according to this document.
2. Start editing and place a Feature within the MM Attribute Editor's Targets Tab.
3. Place a Feature by first clicking on the location where the Feature will reside. The Edit Task is expecting two clicks so click again on a GasMain feature which you intend to be designated as the related GasMain. Once done, the Edit Task will complete and the new feature will be added.
4. Check to ensure RelatedGasMainOID value of the newly created Feature corresponds to the OID of the GasMain designated as the related GasMain and is contained within the correct attribute.
5. Try creating a new Feature at the end of a GasMain and select the GasMain itself as the related GasMain. Repeat step #4.
6. Try creating a new Feature anywhere between the endpoints of a GasMain and then click again to designate either side as the related GasMain. Repeat step #4.
7. Try creating a new Feature at the end of a GasMain then select a point that is not near any other GasMain. In this situation, the end user is not designating a related GasMain since it may not yet exist.
8. Check to ensure that the new Feature's RelatedGasMainOID fields contain a value of zero.
9. Note: behind the scenes, the AU is working to ensure that the correct OID is being assigned to the RelatedGasMainOID field depending on whether or not the GasMain in question is being split by the MM Segment Split AU.

#### **4.7.2.1.18 *Retrieve ObjectID of Closest Gas Main***

This AU, when assigned to a field will populate the field with the OID of the GasMain that resides closest to it.

##### **4.7.2.1.18.1 Assign to Classes**

- GasMainLocation
- PipeExposure
- PipelineMarker
- Drip
- LeakReports

#### **4.7.2.1.18.2 Use Case**

A user creates/updates a feature with a field where this AU is assigned. The field is populated with the OID of the closest GasMain.

#### **4.7.2.1.18.3 Design**

1. Create any of the above features.
2. Once created, the feature should automatically be related to the Gas Main that is closest to it on the map.

#### **4.7.2.1.19 CP Section – Corrosion Control Number**

When a CPSection feature is created/updated, the DG\_GridNumber field will be populated with the 12 digit DGGridNumber of the DGGrid feature it resides within. To build this information, the AU will perform a spatial query to determine which DGGrid the CPSection (point feature) resides within. From this, the DGGridNumber is retrieved and placed into the DG\_GridNumber field.

The CorrosionSectionNumber will be populated manually by the end user.

The CorrosionControlNumber field will then be populated based upon the concatenation of the DG\_GridNumber along with a dash (-) and the 3 digit CorrosionSectionNumber. Note that if a user enters a CorrosionSectionNumber that is less than three digits, this AU will need to pad out the CorrosionSectionNumber to 3 digits before its concatenated.

The requirements can be summarized as follows:

1. To automate the maintenance of the DG\_GridNumber field.
2. To automate the maintenance of the CorrosionControlNumber field.
3. To determine the DGGrid that the CPSection lies within.
4. To determine the DGGridNumber of the DGGrid that the CPSection resides within.
5. To populate the DG\_GridNumber field with the number retrieved from the DGGrid feature.
6. To pad out the CorrosionSectionNumber to 3 digits
7. To concatenate the DG\_GridNumber, a dash and the CorrosionSectionNumber field value.
8. To take this concatenated value and populate the CorrosionControlNumber field.

To execute this functionality when a CPSections is either created or updated.

#### **4.7.2.1.19.1 Assign to Classes**

CPSection

#### **4.7.2.1.19.2 Use Case**

- A user creates a CPSection feature. During this process, they manually populate the three-digit CorrosionSectionNumber field. When the AU fires, the DG\_GridNumber field is populated. Along with this, the CorrosionControlNumber field is populated based upon the concatenation of the

DG\_GridNumber field, a dash and the CorrosionSectionNumber number(padded out to 3 digits).

- A user updates a CPSection feature. During this update, they may change the three-digit CorrosionSectionNumber field. When the AU fires, the DG\_GridNumber is updated (if the feature has moved), then the CorrosionControlNumber field is updated with a concatenation of the DG\_GridNumber, a dash and the CorrosionSectionNumber number.

#### **4.7.2.1.19.3 Design**

1. A user adds a new CPSection feature.
2. During this addition, the CorrosionSectionNumber is manually populated with a number up to three digits in length.
3. The DG\_GridNumber is auto populated with the DGGrid number of the DGGrid feature it resides within.
4. The CorrosionControlNumber field is then auto populated with a concatenation of the DG\_GridNumber, a dash and the CorrosionSectionNumber. This concatenated value should contain no spaces.
5. A user updates a CPSection feature.
6. During this update, the CorrosionSectionNumber is changed to a number up to three digits in length.
7. The DG\_GridNumber is auto populated with the DGGrid number of the DGGrid feature it resides within.
8. The CorrosionControlNumber field is then updated with a concatenation of the DG\_GridNumber, a dash and the CorrosionSectionNumber. This concatenated value should contain no spaces.

#### **4.7.2.1.20 CP Section – Maintenance Tool**

The CP Section tool relates a CPSection to one or more lines of GasMain. A user selects a CPSection, clicks a button and then selects a GasMain. The trace begins at the point where the user clicked the Main. This trace continues until it comes to a point where electricity would no longer be able to flow, such as an insulated fitting or plastic pipe. Once the trace is complete, the pipes found within the trace are highlighted with a red graphic. The user is then prompted to accept or reject the results. If the user accepts the results, the CPSection is related to the pipe(s) found by the trace. If the user rejects the results, the tool exits.

The trace used in this customization leverages the ArcFM CP Trace task and GasTraceWeights.

The requirements can be summarized as follows:

1. Create a tool that automatically relate a CPSection feature to the appropriate GasMain feature(s)
2. Utilize the off-the-shelf ArcFM CP Trace task and GasTraceWeights
3. Implement this functionality via an ESRI Tool(allowing the user to interact with the map).

Allow a user the choice of accepting or rejecting the results of this tool. The trace determines which GasMain features make up a specific CP section. If this appears incorrect to the user, they can reject the results as needed.

#### **4.7.2.1.20.1 Assign to Classes**

This is implemented as a Command. It functions by building relationships between the following two classes:

- GasMain
- CPSection

#### **4.7.2.1.20.2 Use Case**

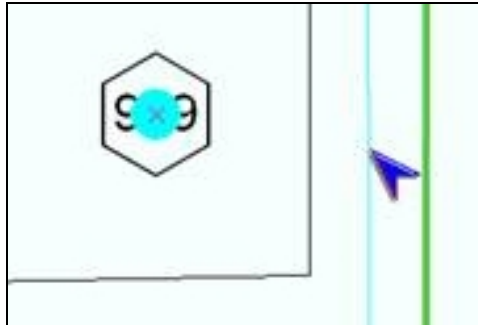
- The end user selects one CPSection feature. The user then clicks the custom tool with a tool tip of ‘CPSection Maintenance Tool’. The tool then waits for the user to click within the selection tolerance of a GasMain feature. When done, this initiates the ArcFM CP Trace task. This trace task is dependant upon the GasTraceWeight field which is updated automatically by the ArcFM Solution. Effectively, the trace task identifies all sections of GasMain that are part of one CP Section. The results are displayed as a **red** graphic over top of the GasMain feature(s) found within the trace. A user has the ability to determine if a relationship should be created between the CPSection and the results of the CP Trace. A form is presented asking if the user would like to accept or reject the results. If the user accepts the results, the GasMain features found by the trace will be related to the CPSection feature. This is accomplished by populating the GasMain’s RelCpSectionObjectId attribute with the OID of the CPSection feature in question. If the user rejects the results no relationships are created.
- The end user updates a CPSection feature by performing the same steps as found in #1.
- The end user places an insulated fitting between a section of GasMain that used to be one continuous CPSection. The end user then selects the original CPSection feature and follows the steps as outlined in #1. A new CPSection feature is placed and associated with the appropriate GasMain by following the steps as outlined in #1.

#### **4.7.2.1.20.3 Design**

Standard ESRI tool command button and message boxes are used. The button is always enabled. Only when the user selects the button does code fire to determine if there’s a problem. If so, the user is warned and given an appropriate warning. For example, if more than one CPSection is selected, then the tool will give a warning then exit. If no CPSection has been selected, the tool will give the user is given a warning then exits.

Select a CPSection, click the ‘Update CPSection’ tool, click on a GasMain to start the trace. Observe the red graphics highlighting the results of the trace, respond to ‘Accept’ or ‘Reject’ the results. Check to ensure that the GasMain found in the trace now has its RelCpSectionObjectId attribute populated with the OID of the CPSection feature in question.

Figure 4.7-89 shows a selected CP Section feature and the cursor when the CP Section Maintenance tool is invoked:



**Figure 4.7-89. Standard selection set**

The user then clicks on the Gas Main and the CP trace runs. Figure 4.7-90 shows a completed trace along with the confirmation dialog:

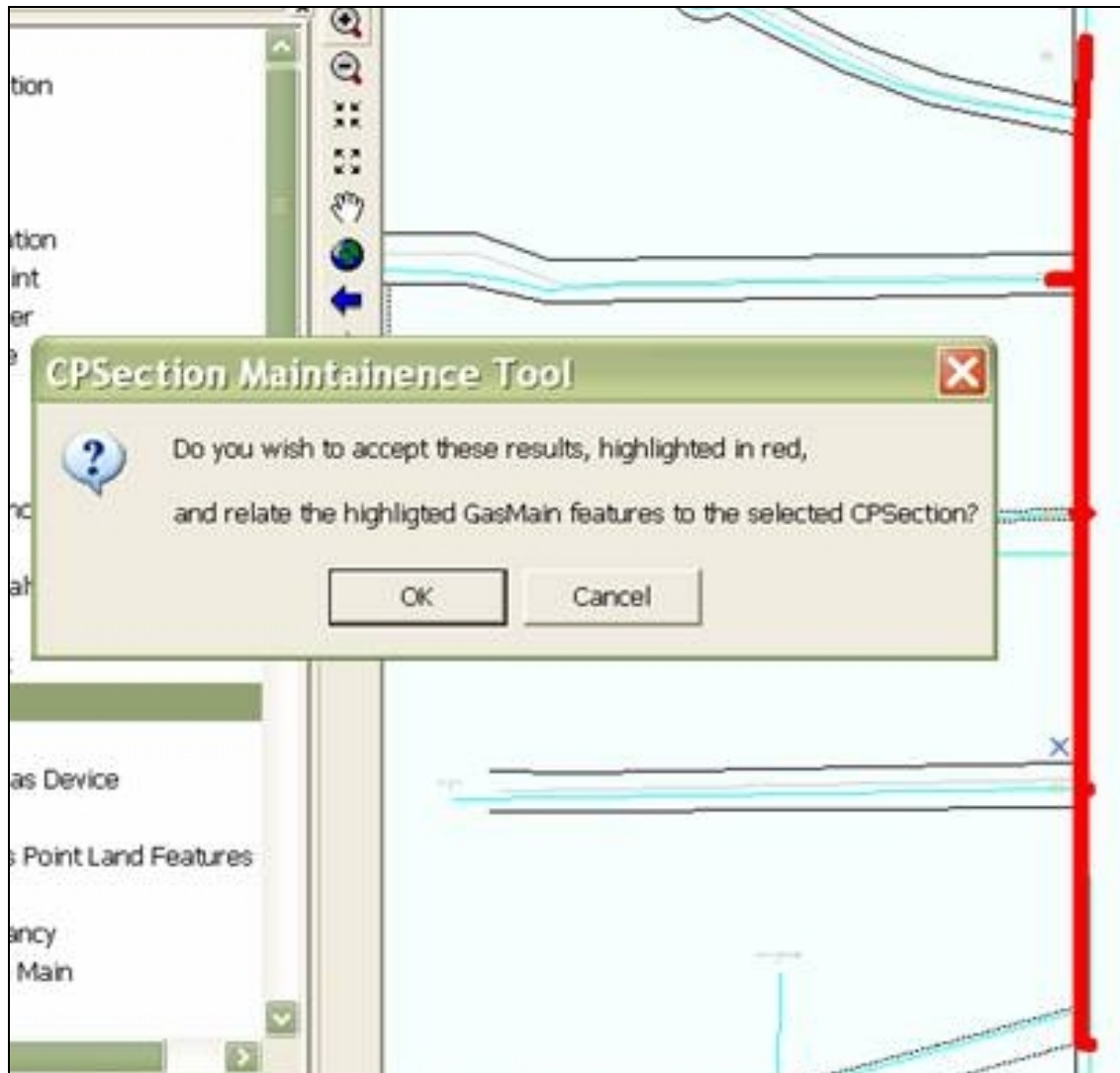
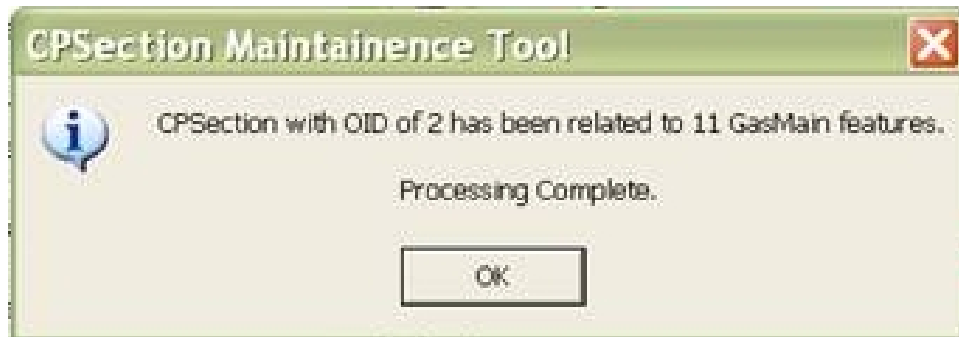


Figure 4.7-90. Completed trace



After the user clicks OK, the system will create the relationships and then will display a confirmation similar to Figure 4.7-91.



**Figure 4.7-91. Relationship confirmation**

#### **4.7.2.1.21 Gas Main Pipe Change**

Functionality was created to automatically detect when the size or material of a newly added or updated GasMain is different from that of the GasMain(s) to which it is connected. If this is found to be the case, the added/updated GasMain creates a new PipeChange feature and places it 6 feet from the intersection of the differing pipe. The PipeChange feature itself rotates and relates itself to the GasMain it resides on.

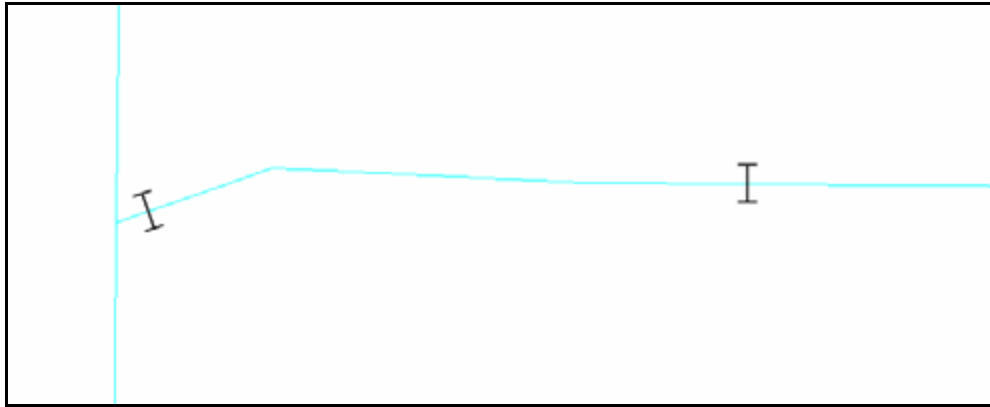
Functionality was created to automatically detect when the size or material of an updated GasMain is the same as that of connected GasMain. If this is found to be the case and a PipeChange feature currently exists, it will be deleted.

The functionality mentioned above is separated between two autoupdaters as follows. One AutoUpdater (PipeChangeAddorDeleteAU) resides on the GasMain's OnCreate and OnUpdate events. The AU determines if a PipeChange is required and then creates and places it. This AU also determines if a PipeChange is no longer required and deletes it. A second AutoUpdater (PipeChangeRotateRelateAU) resides on the PipeChange's OnCreate and OnUpdate events. This AU rotates the PipeChange so that it's perpendicular to the GasMain it resides on. It also relates itself to the GasMain it resides on.

This AU ensures that PipeChange features are properly created, related, and placed as necessary. Also, when a GasMain is deleted, all related PipeChange features are deleted as well since the relationship between the two is composite.

When the size or material of connected GasMains do not match, a PipeChange feature is required to provide a visual indication. The PipeChange feature is created and placed 6 feet from the point where the pipes intersect (on the added/updated GasMain). This can occur when a new GasMain is being created and taps an existing Main or when the attributes of an existing Main are updated. Also, if a GasMain is updated and no longer different in size or material from the GasMain it's connected to, then any existing PipeChange feature will be deleted.

The PipeChange is a non-network feature placed 6' down the length of an added/updated pipe.



**Figure 4.7-92. Pipe change**

The pipe change on the left in Figure 4.7-92 shows a pipe that taps into another—the pipe running vertically has a different material than the pipe that taps into it so the PipeChange feature is placed on the horizontal pipe in this case.

This customization also rotates the Pipe Change feature to orient it perpendicular with the underlying GasMain. Since the Pipe Change feature is a non-network feature, the out-of-the-box ArcFM Auto Angle Setter AU cannot be used because it is designed to work on network features. There is a developer's sample AU (and source code) that ships with ArcFM that does rotate a non-network feature, and that AU does work fine with the PipeChange and GasMain.

#### **4.7.2.1.21.1 Assign to Classes**

- GasMain – PipeChangeAU
- PipeChange – RotateRelateAU

#### **4.7.2.1.21.2 Use Case**

1. A user adds a GasMain feature, which ultimately is connected to another GasMain. If the GasMain that's added is different in size or material from any GasMain at either (from or to) junction, a PipeChange feature is created and added 6' down from the junction where the change exists. The PipeChange is rotated so that it's perpendicular to the GasMain and it's also related to the GasMain.
2. A user updates an existing GasMain feature by moving it or changing its attribute values. After this occurs, if the GasMain that's updated is different in size or material from GasMain at any junction, a PipeChange feature is created and added 6' down from the junction where the change exists. The PipeChange is rotated so that it's perpendicular to the GasMain and it's also related to the GasMain.
3. A user updates an existing GasMain feature by moving it or changing its attribute values. After this occurs, if the GasMain that's updated is no longer different in

size or material from GasMain at any junction and a PipeChange feature exists 6' down from the junction where the change used to exist, the PipeChange feature is deleted.

#### **4.7.2.1.21.3 Design**

Adding a New GasMain Feature of a different Size:

- Add a new GasMain and ensure its size is different than that of the GasMain it will be connected to. Connect it to the end of an existing GasMain.
- A PipeChange feature is created.
- The PipeChange feature is related to the GasMain it resides on.
- The PipeChange feature is placed on the newly added GasMain.
- The PipeChange feature offset 6 feet from the end of the GasMain.
- The PipeChange feature is rotated so that its symbology is perpendicular to the GasMain it resides on.

Adding a New GasMain Feature of a different Material:

- Add a new GasMain and ensure its material is different than that of the GasMain to which it will be connected. Connect it to the end of an existing GasMain.
- A PipeChange feature is created.
- The PipeChange feature is related to the GasMain it resides on.
- The PipeChange feature is placed on the newly added GasMain.
- The PipeChange feature is offset 6 feet from the end of the GasMain.
- The PipeChange feature is rotated so that its symbology is perpendicular to the GasMain it resides on.

Updating a GasMain Feature to a different Size:

- Update an existing GasMain and ensure its material is different than that of the GasMain it's connected to.
- A PipeChange feature is created if it did not already exist.
- The PipeChange feature is related to the GasMain it resides on.
- The PipeChange feature is placed on the newly added GasMain.
- The PipeChange feature is offset 6 feet from the end of the GasMain.
- The PipeChange feature is rotated so that its symbology is perpendicular to the GasMain it resides on.

Updating a GasMain Feature to a different Material:

- Update an existing GasMain and ensure its material is different than that of the GasMain it's connected to.
- A PipeChange feature is created if it did not already exist.
- The PipeChange feature is related to the GasMain it resides on.
- The PipeChange feature is placed on the newly added GasMain.
- The PipeChange feature is offset 6 feet from the end of the GasMain.
- The PipeChange feature is rotated so that its symbology is perpendicular to the GasMain it resides on.

Updating a GasMain Feature to the same Size and Material:

- Update an existing GasMain and ensure its size and material are the same as that of the GasMain to which it is connected. Also ensure that the GasMain being updated currently has a PipeChange feature on it.
- The PipeChange feature is deleted.

Deleting a GasMain:

When a Gas Main with PipeChange features is deleted, all PipeChange features are also deleted.

#### **4.7.2.1.22    *Emergency Valve Indicator***

The AutoUpdater will automatically create, relate and place an EmergencyValveMarker feature on the map when a GasValve feature is created with or has its EmergencyValveInd field update to 'Yes'. The AU will automatically delete an EmergencyValveMarker feature from the map when a GasValve feature has its EmergencyValveInd field updated to 'No'. This AU will also place the EmergencyValveMarker symbol and its associated annotation in a location that is considered a best fit.

Benefits of this AU:

1. This AU saves the end user from having to remember to:
  - create and place the EmergencyValveMarker feature each time one is required
  - relate the GasValve in question to the newly created emergencyValveMarker feature
  - place the related EmergencyValveMarker annotation
  - delete the EmergencyValveMarker feature when needed.
2. Since EmergencyValveMarker features are automatically added and removed when necessary, this AU effectively maintains the proper map display without having to rely on the end user memory and manual input.
3. Since EmergencyValveMarker features are automatically added and removed when necessary, this AU effectively maintains data integrity without having to rely on the end user memory and manual input.

It should be noted that the GasValves which have their EmergencyValveInd field set to 'Yes' are one of the most critical infrastructure items within the gas model. Therefore, maintaining properly related and displayed EmergencyValveMarker features along with their corresponding annotation should be considered equally as important.

#### **4.7.2.1.22.1    Assign to Classes**

GasValve

#### 4.7.2.1.22.2 Use Case

- GIS end user places/changes a GasValve feature so that its EmergencyValveInd is set to 'Yes'. When this occurs, a EmergencyValveMarker feature and its associated annotation is placed/rotated in an appropriate position near the GasValve in question.
- GIS end user changes a GasValve feature so that its EmergencyValveInd is set to 'No'. This will cause any related EmergencyValveMarker feature to be deleted.

#### 4.7.2.1.22.3 Design

When a GasValve feature's EmergencyValveInd is set to 'Yes', an EmergencyValveMarker feature is automatically created, related to the GasValve in question and placed near the GasValve in question. Along with placing the EmergencyValveMarker feature, its related annotation is also placed within the EmergencyValveMarker's symbol and rotated. When a GasValve's EmergencyValveInd is set to 'No', its associated EmergencyValveMarker feature is automatically deleted. The primary purpose is to alleviate the end user from having to remember to create/delete these features and to eliminate the manual steps that go along with this process. This AU may not place annotation in the most optimal location and therefore may require user interaction to do so.

When a GasValve feature's EmergencyValveInd attribute is changed, an attribute AU will fire. First, the AU determines if the GasValve is being set as an emergency GasValve. If it is being set to an emergency GasValve, the AU checks if the GasValve has an EmergencyValveMarker feature related to it. If it does not (most likely), the AU will create an EmergencyValveMarker feature and populate its values. The shape of this feature will be similar to the GasValve with the exception that it's offset from the GasValve to avoid overlapping. The SymbolRotationValue will be set and adjusted appropriately so that it resides at one of the following angles (45, 135, 225 or 315 degrees). Its LabelText will be populated with the ValveNumber of the GasValve. Once this is done, the EmergencyValveMarker will have its corresponding annotation created and placed as per standard ArcMap functionality. The GasValve will be related to the EmergencyValveMarker which in turn will be related to its annotation. The annotation will also be rotated in a similar fashion to the EmergencyValveMarker and reside within this feature.

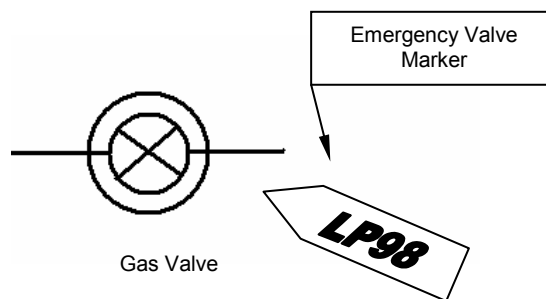
Because functionality executes within an AU, there is no user interaction while the features are being created. After the placement is complete, a user is free to adjust the placement using standard ArcMap functionality.

If a GasValve is no longer designated an emergency valve, the AU will find all related EmergencyValveMarker features and delete them. This will automatically remove any annotation related to the EmergencyValveMarker as well.

Note: ArcMap's automatic screen refresh does not always execute as it should. Therefore the AU does a screen refresh for the user after the above noted changes have been made. This makes for a much cleaner and less confusing map display while editing.

#### **4.7.2.1.23 Valve Number AU**

An AutoUpdater is required to maintain the LabelText field value on the EmergencyValveMarker feature class. The EmergencyValveMarker feature has feature-linked annotation that is driven from the LabelText field. Figure 4.7-93 shows an emergency valve marker.



**Figure 4.7-93. Emergency valve marker**

This LabelText field reflects the ValveNumber of the GasValve feature that it's related to. When the ValveNumber field of the GasValve feature is updated, this update is propagated to the LabelText field of any related EmergencyValveMarkers.

This AU will compliment the CreateRelateRotateEmergencyValveMarkerAU. The CreateRelateRotateEmergencyValveMarkerAU fires when a GasValve's EmergencyValveInd field is set to 'Yes'. This AU is set on the OnUpdate event and the OnCreate event of the GasValve feature class. When this occurs, an EmergencyValveMarker feature is created and related to the GasValve and the Label text field of the related EmergencyValveMarker is populated with the GasValve's valve number. The ValveNumberAU only addresses the situation where a GasValve's valve number is updated. This update is propagated to the EmergencyValveMarker's label text field as discussed above.

##### **4.7.2.1.23.1 Assign to Classes**

GasValve

##### **4.7.2.1.23.2 Use Case**

A user updates the 'valvenumber' attribute on a GasValve feature causing any related EmergencyValveMarker features to update the 'labeltext' attribute with the name value.

#### 4.7.2.1.23.3 Design

When the 'valvenumber' field of a GasValve feature is updated, this change is propagated to the 'labeltext' field of any related EmergencyValveMarker features.

1. Select a GasValve feature which has a related EmergencyGasValve feature.  
If none can be found, change an existing GasValve 'emergencyvalveind' field to 'yes'. This will create a related EmergencyValveMarker.
2. Update the 'valvenumber' attribute on the GasValve feature.
3. Verify the 'labeltext' value on all related EmergencyValveMarker feature is the same as the 'valvenumber' value on the GasValve.

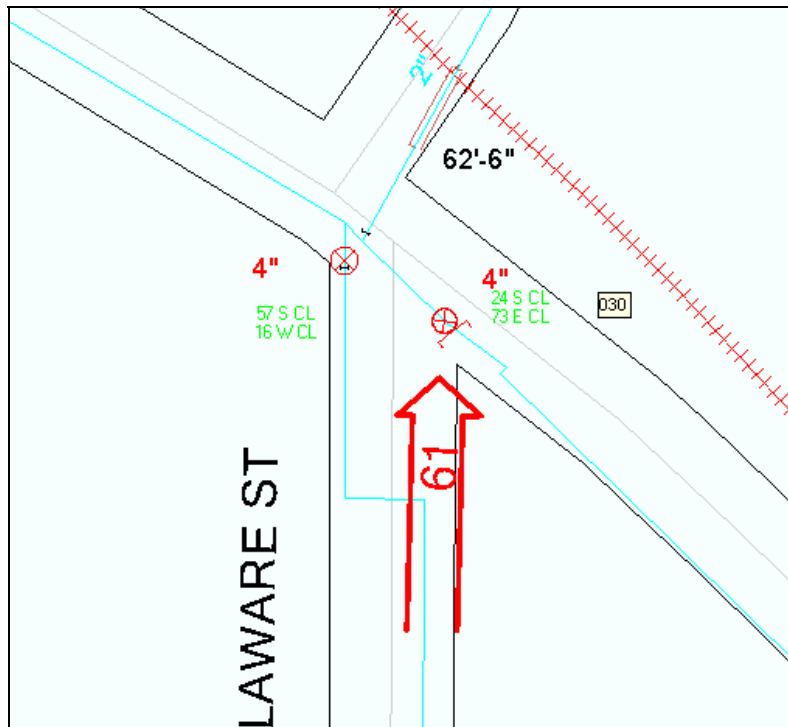


Figure 4.7-94. Emergency valve marker installation in the AEDR system

#### 4.7.2.1.24 Custom Identify Tool

The ESRI product contains a standard feature Identify Tool. This tool is used to click on any location on the map and display all features at that location along with their attributes. This tool works very well but it displays all attributes of the features including the system fields that were meant to be hidden via the ArcFM configuration. For this reason, a custom Identify Tool was developed for the AEDR system. It works in an identical manner to the ESRI tool but it honors the ArcFM configuration and does not display any hidden fields. Figure 4.7-95 shows the custom Identify Tool.

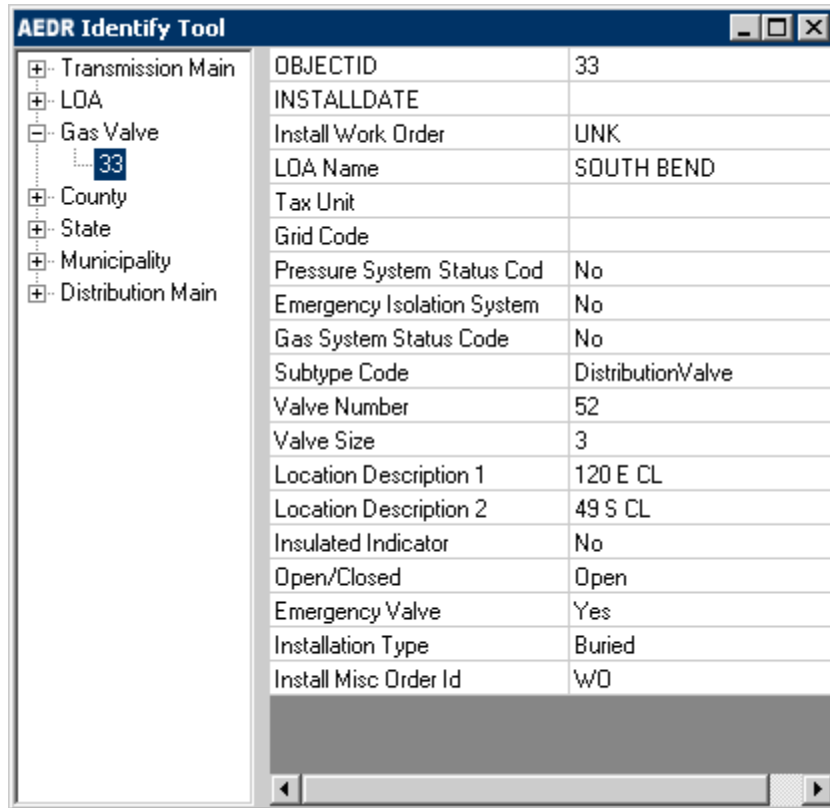


Figure 4.7-95. Custom identify tool

The attributes for a feature are viewed by selecting the object id of the feature in the left hand pane.

#### 4.7.2.1.25 *Custom Structure Relate*

The ArcFM product contains a Structure Relate AutoUpdater with the following description:

Searches within a tolerance for features with a model name of 'Structure' (default tolerance is 25 map units). If found, then a new relationship is created between the placed feature and the structure feature. The search tolerance is 25 map units. This value is hard-coded and may be modified by customizing the shared product code.

When this was tested at NIPSCO, it was found that the product code actually used a 25 map unit square (measured on the diagonal) to do the spatial search instead of a 25 map unit radius of a circle as expected. This resulted in dead spots within the 25 map unit radius of a circle which caused some structures to not be related correctly. The product code was attained from Miner & Miner and two custom versions of this AutoUpdater were implemented with different (larger) map units. The first was used for all standard structure relates (devices/etc to pole/pad). The second was implemented to relate a substation breaker to the substation feature.

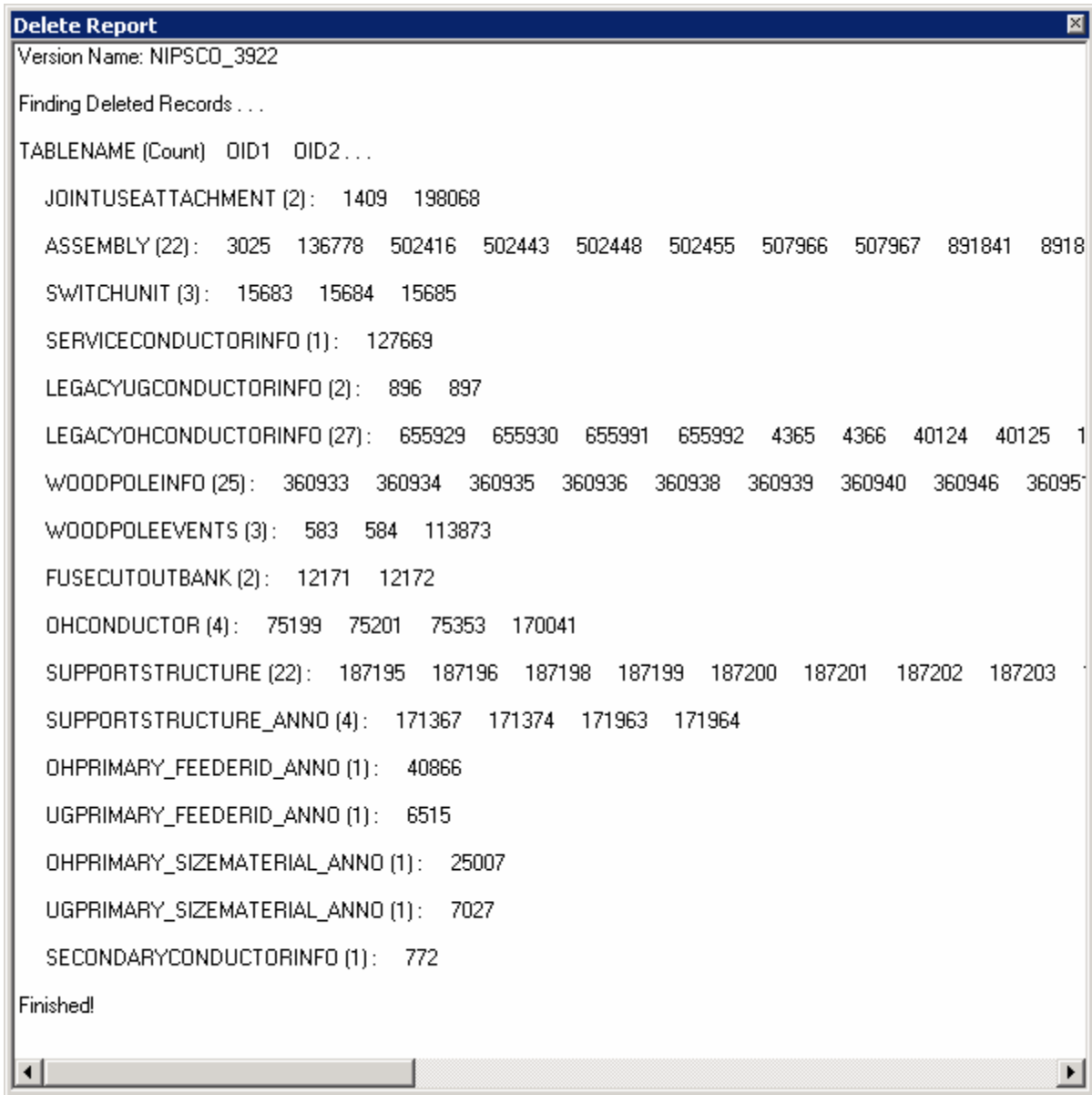


### **4.7.2.2 QAQC Tools**

NIPSCO employs two QAQC users to validate, approve, and post the work of over sixty editors. This amounts to a very large amount of work. Two tools were developed to assist the QAQC users in this task.

#### ***4.7.2.2.1 Delete Report***

The delete was created as a very simple way to pull a list of all features that have been deleted in the current version/session. Without this step in place, there was no way for the QAQC users to know if anything had been deleted from the current session. This tool was written before the “All Edits Report” (see next section) which includes more detailed information on the deletions. The Delete Report was a quick and dirty way to extract deletions from the system. It operates by querying the ESRI versioning “Delete” tables for any edits committed in the current version/session. The report is available by clicking an ArcMap button while editing any version/session. An example of the report is shown in Figure 4.7-96.



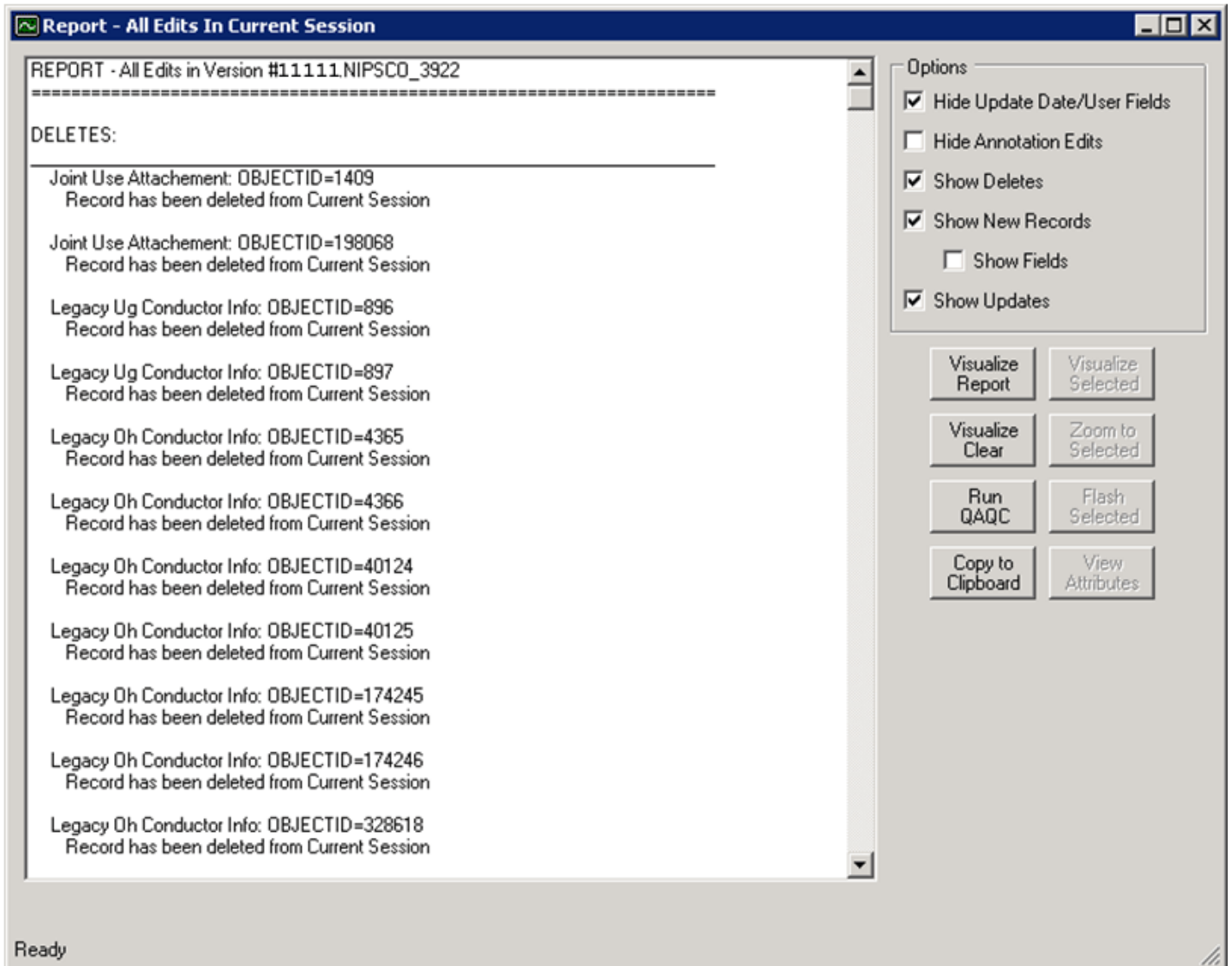
**Figure 4.7-96.**

The report simply displays the table name, the count of deleted records, and the object id of the deleted records. This works as a simple approach but does not provide an easy way to find more information on the deleted records or to export the report. These more advanced requirements were rolled into the creation of the All Edits Report.

#### ***4.7.2.2.2 All Edits Report***

The All Edits Report was developed as a single point of access for the QA/QC of any session/version. It includes both basic and advanced tools to view all new records, updated records, and deleted records. The report utilizes an ESRI reconcile operation to obtain a list of all edited tables in the current version/session. Then each table is queried with a difference cursor to locate the details of each individual edit. The report is

launched by clicking an ArcMap button. The basic user interface is shown below and the tools are detailed in the following sections.



**Figure 4.7-97. All edits report**

The basic report is text based and is categorized by the edit type (delete, new record, or update). At the root, the display includes the table name, the object id, and the details of the edit.

#### 4.7.2.2.1 Record Deletions

The initial display of a deletion includes only high level information including the table name and the object id. An example of a deleted record would look like Figure 4.7-98.

DELETES:

---

Support Structure: OBJECTID=186617  
Record has been deleted from Current Session

**Figure 4.7-98. Record deletion**

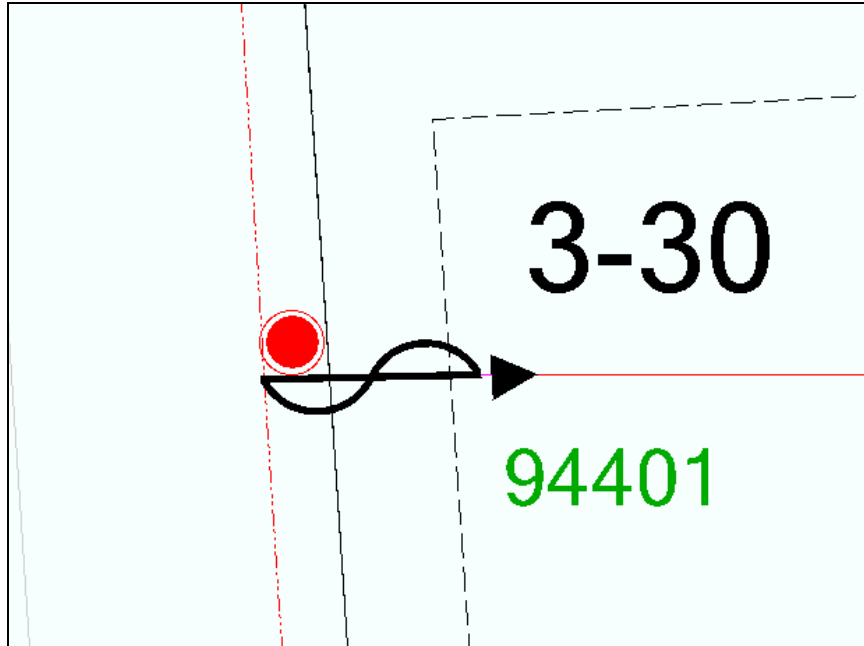
The user can then select the entry in the report and click the “View Attributes” button. This will launch the edit report attribute details form shown in Figure 4.7-99 which displays the attributes of the feature from the parent version and shows that the record has been deleted in the current version.

**Edits Report - Attribute Details**  
**Support Structure: OBJECTID=186617**  
**Record has been deleted from Current Session**

Attribute	Current Session	Parent Session
OBJECTID	DELETED	186617
CreationDate	DELETED	5/11/2006 11:49:59 AM
Created By	DELETED	Migration
UPDATEDATE	DELETED	4/11/2000 12:00:00 AM
Updated By	DELETED	FDSI
Legacy Ees Number	DELETED	31570231
LOA	DELETED	HAMMOND
Grid	DELETED	BD16A
INSTALLDATE	DELETED	11/27/1979 12:00:00 AM
Install WO Number	DELETED	MO
Install Misc Order Id	DELETED	MO8588-1
RETIREDATE	DELETED	
Retire WO Number	DELETED	
Retire Misc Order Id	DELETED	
Tax Unit	DELETED	M34
LEGACYWRINSTALLTIME	DELETED	2/11/1993 1:35:24 PM
LEGACYWRREMOVALTIM	DELETED	
Symbol Rotation	DELETED	0
Graphics Scale Factor	DELETED	1
Subtype	DELETED	Pole
Location Description	DELETED	E.S. US 41 5TH P.S. US 30
Pole Height	DELETED	40
Pole Material	DELETED	Wood
Primary Pole Number	DELETED	
Foreign Owner Name	DELETED	NIPSCO
Service PointType	DELETED	No Service Point
Transmission Structure Num	DELETED	
INSTALLTIMESTAMP	DELETED	2/11/1993 1:37:13 PM
REMOVALTIMESTAMP	DELETED	
Pole Number	DELETED	00094401

**Figure 4.7-99. Record deletion report**

The user can use this data to discover all of the key asset information about the deleted asset. This is crucial in discovering if the asset was deleted in error. With the report line still selected, the user can then click the “Visualize Selected” button if the deletion was a feature (i.e. not an object). The map will be automatically zoomed to the location where the feature previously existed and the previous point or linear geometry will be drawn in red as shown in Figure 4.7-100.



**Figure 4.7-100. Visual indicator to the user as to where the asset was located before it was deleted**

#### 4.7.2.2.2.2 New Records

The initial display of a new record includes only the high level information including the table name and the object id. Figure 4.7-101 shows an example of a new record.

#### NEW RECORDS:

---

Oh Conductor: OBJECTID=203272  
NEW record was created in Current Session  
**Figure 4.7-101. Record added**

With New Records, the user can check the “Show Fields” check box to add all textual fields to the report as shown in Figure 4.7-102.



**Figure 4.7-102. Show fields checkbox**

Figure 4.7-103 shows the same record in the report expanded.

**NEW RECORDS:**

---

Oh Conductor: OBJECTID=203272  
NEW record was created in Current Session  
OBJECTID = 203272  
Enabled = True  
CreationDate = 10/20/2006 12:00:00 AM  
Created By = #999999  
UPDATEDATE = 3/17/2006 12:00:00 AM  
Updated By = #999999  
Legacy Node 1 = 41481970  
Legacy Node 2 = 31570556  
Legacy Ees Number = 41481971  
LOA Number = HAMMOND  
Grid = BD17D  
Measured Length = 66.88  
Electric Trace Weight = 1879048192  
Feeder Manager Non-Traceable =  
Feeder Information = 7  
Circuit Number = 12-175  
Circuit Number 2 =  
Primary Operating Voltage = 12.5 KV  
Phase = ABC  
Owner = NIPSCO  
Legacy Circuit Number = 12-175  
Subtype = ThreePhaseOverheadPrimary  
Wire Size = 2  
Wire Material = Aluminum Alloy  
SHAPE.len = 66.8875459633555

**Figure 4.7-103. New record expanded when the "show fields" checkbox is enabled**

This added detail provides the QAQC user with much more information on the edit. In this case we can see that this new record was likely the result of a split operation on an existing conductor. This is evident by noting that several migration fields are populated (an end user would not have access).

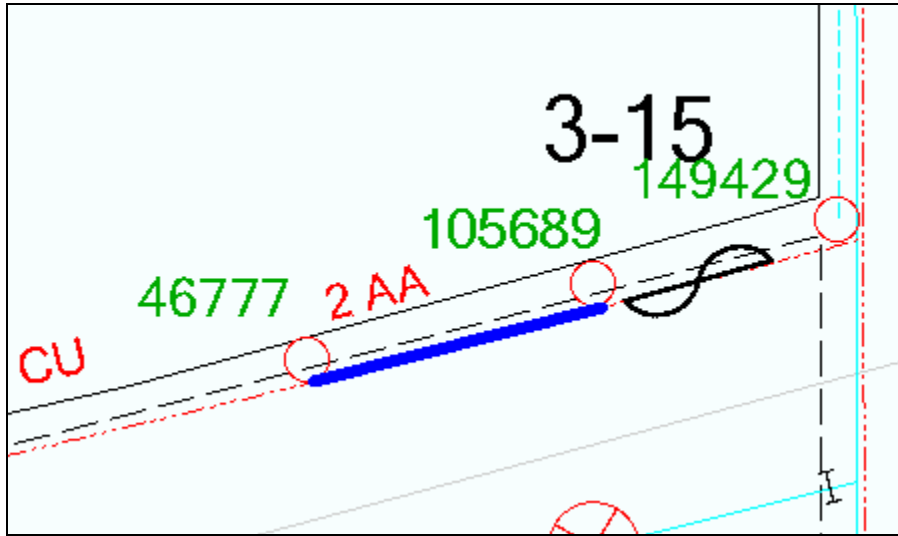
Alternatively, the user could also click the “View Attributes” button to launch the All Edits Attribute Details form.

**Oh Conductor: OBJECTID=203272**  
**NEW record was created in Current Session**

Attribute	Current Session	Parent Session
OBJECTID	203272	N/A
Enabled	True	N/A
CreationDate	10/20/2006 12:00:00 AM	N/A
Created By		N/A
UPDATEDATE	3/17/2006 12:00:00 AM	N/A
Updated By		N/A
Legacy Node 1	41481970	N/A
Legacy Node 2	31570556	N/A
Legacy Ees Number	41481971	N/A
LOA Number	HAMMOND	N/A
Grid	BD17D	N/A
Measured Length	66.88	N/A
Electric Trace Weight	1879048192	N/A
Feeder Manager Non-Trace		N/A
Feeder Information	7	N/A
Circuit Number	12-175	N/A
Circuit Number 2		N/A
Primary Operating Voltage	12.5 KV	N/A
Phase	ABC	N/A
Owner	NIPSCO	N/A
Legacy Circuit Number	12-175	N/A
Subtype	ThreePhaseOverheadPrimar	N/A
Wire Size	2	N/A
Wire Material	Aluminum Alloy	N/A
SHAPE.len	66.8875459633555	N/A

**Figure 4.7-104. All edits attribute details form depicts the same data for the new record and shows that the record does not exist in the parent session**

With the report line still selected, the user can then click the “Visualize Selected” button if the new record was a feature (i.e. not an object). The map will be automatically zoomed to the location where the feature has been created and the point or linear geometry will be drawn in blue as shown in Figure 4.7-105.



**Figure 4.7-105. Visualized selected provides a visual indicator to the user showing where the asset was originally located**

#### 4.7.2.2.2.3 Updates

The initial display of an updated record includes the high level information including the table name and the object id. It also includes the attribute level details of the update. An example of a updated record is shown in Figure 4.7-106.

#### UPDATES:

- 
- Legacy Oh Conductor Info: OBJECTID=655992
  - Record has been updated in Current Session
  - \* Field UPDATEDATE changed:
    - value in Parent Session =
    - value in Current Session = 10/20/2006 12:00:00 AM
  - \* Field Updated By changed:
    - value in Parent Session =
    - value in Current Session = #999999
  - \* Field RETIREDATE changed:
    - value in Parent Session =
    - value in Current Session = 1/15/2005 7:36:45 AM
  - \* Field Retire WO Number changed:
    - value in Parent Session =
    - value in Current Session = WO53529-1
  - \* Field Retire Misc Order Id changed:
    - value in Parent Session =
    - value in Current Session = WO
  - \* Field Subtype changed:
    - value in Parent Session = OhConductor



- value in Current Session = RetiredOhConductor  
**Figure 4.7-106. Updated record**

This detail tells the QAQC user exactly what was updated on the record. In this case, we can easily tell that this record was retired by noting the change in Subtype as well as the populated retire date and retire work order.

If the QAQC user needs additional information on the record, they can select the entry in the report and click the “View Attributes” button. This will launch the edit report attribute details form which shows the attributes of the feature from the current session AND the parent session side by side as shown in Figure 4.7-107.

**Edits Report - Attribute Details**  
**Legacy Oh Conductor Info: OBJECTID=655992**  
**Record has been updated in Current Session**

Attribute	Current Session	Parent Session
OBJECTID	655992	655992
CreationDate	5/11/2006 11:44:33 AM	5/11/2006 11:44:33 AM
Created By		Migration
UPDATEDATE	10/20/2006 12:00:00 AM	
Updated By		
INSTALLDATE	10/1/1975 12:00:00 AM	10/1/1975 12:00:00 AM
Install WO Number	WO53529-1	WO53529-1
Install Misc Order Id	WO	WO
RETIREDATE	1/15/2005 7:36:45 AM	
Retire WO Number	WO53529-1	
Retire Misc Order Id	WO	
LEGACYWRINSTALLTIME	5/18/2005 8:09:41 AM	5/18/2005 8:09:41 AM
LEGACYWRREMOVALTIM		
ASSOCIATIONTIMESTAMP	3/17/2006 11:08:28 AM	3/17/2006 11:08:28 AM
Subtype	RetiredOhConductor	OhConductor
From Pole Number	00149429	00149429
To Pole Number	00075006	00075006
Wire Size	2/0	2/0
Wire Material	Copper	Copper
Wire Type	Stranded Wire as Neutral	Stranded Wire as Neutral
Circuit Number	12-175	12-175
Conductor Span Count	1	1
Span Length	168	168
Legacy Conductor Number	110	110

**Figure 4.7-107. Edit attribute details form presents an easy to read format for the QAQC user to review all information about the edit**

If the updated record is a feature, the user can click the “Visualize Selected” button to view the location of the updated feature. The map will zoom to the location and the updated feature will be displayed in green as shown in Figure 4.7-108.

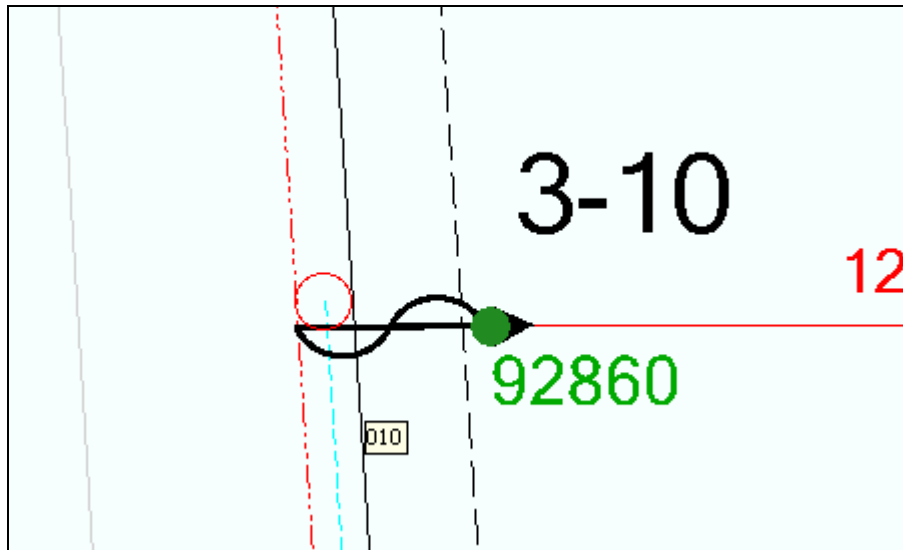


Figure 4.7-108. Updated fuse cutout bank

If a feature has been spatially edited, the textual update entry will include an entry that specifies “Geometry has changed”. Then when the user clicks the “Visualize Selected” button, the original geometry from the parent version is shown in orange and the new geometry from the current version is shown in green.

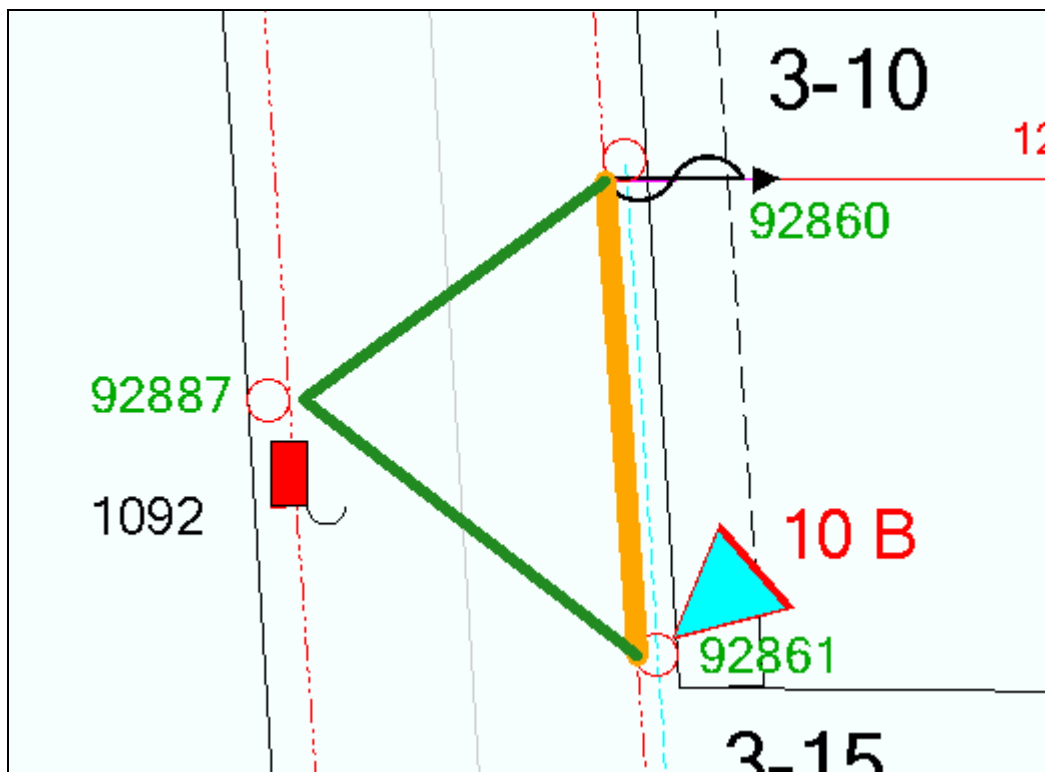
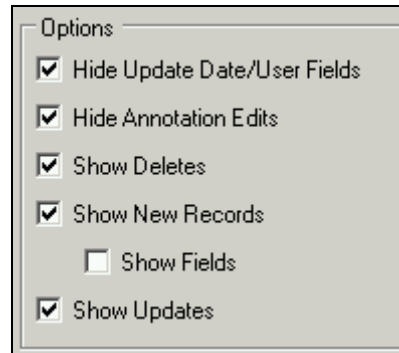


Figure 4.7-109. Conductor has been re-drawn to cross the street (shown in green)

This makes it very easy for the QAQC user to determine exactly what edits have taken place.

#### 4.7.2.2.4 All Edits Options

Several options are available with the All Edits report to give the QAQC users more control over their interaction with the edits:



**Figure 110. All edits options**

The “Hide Update Date/User Fields” check box will remove any of the following fields from the ‘new records’ or ‘updates’ section of the report:

- CreationUserId
- CreationDate
- UpdateDate
- UpdateUserId

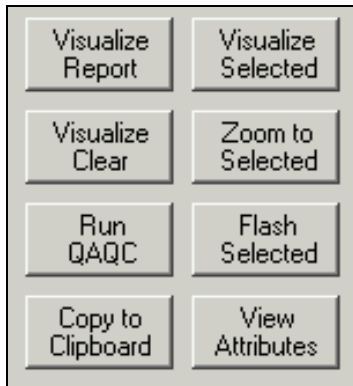
This can help to de-clutter a report with a significant amount of data. While important, this data is often not the information that the QAQC users want to view because these fields are set by field AutoUpdaters as a result of other edits made on the features.

The “Hide Annotation Edits” check box removes any annotation edits from the report. This can also help to de-clutter a report with a significant amount of data. AEDR annotation is primarily feature-linked which means that it is auto-generated by the system and is not explicitly edited by the user. Therefore it is often not necessary to QA the annotation as long as the related feature is QA’ed.

The “Show Delete”, “Show New Records”, and “Show Updates” check boxes toggle on and off their respective sections of the report. This is yet another way to de-clutter a report with a significant amount of data. Each type of edit can be reviewed individually making the report easier to manage.

#### 4.7.2.2.5 All Edits Tools

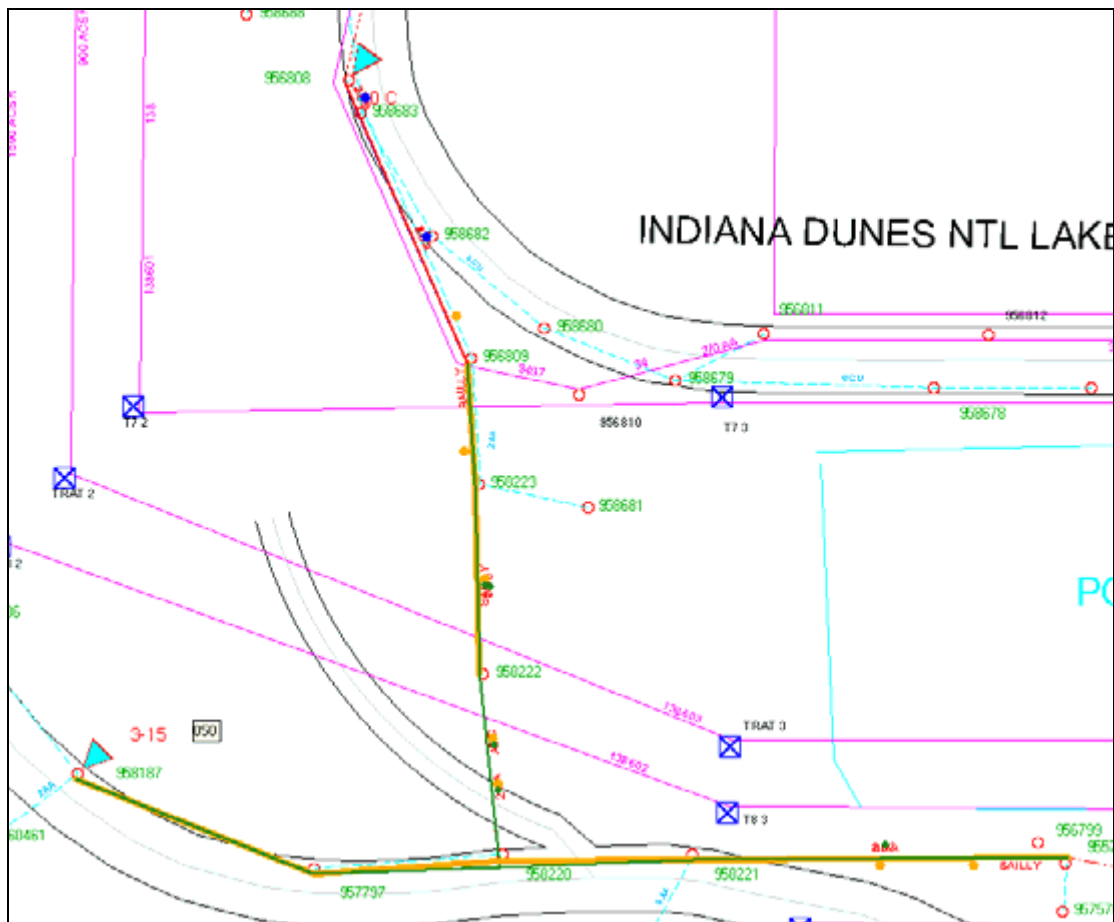
Several tools are included with the All Edits report to make the QA experience more valuable. Some have already been discussed in previous sections. The others are discussed here.



**Figure 4.7-111. Other useful tools included with the all edits report**

#### 4.7.2.2.2.5.1 Visualize Report

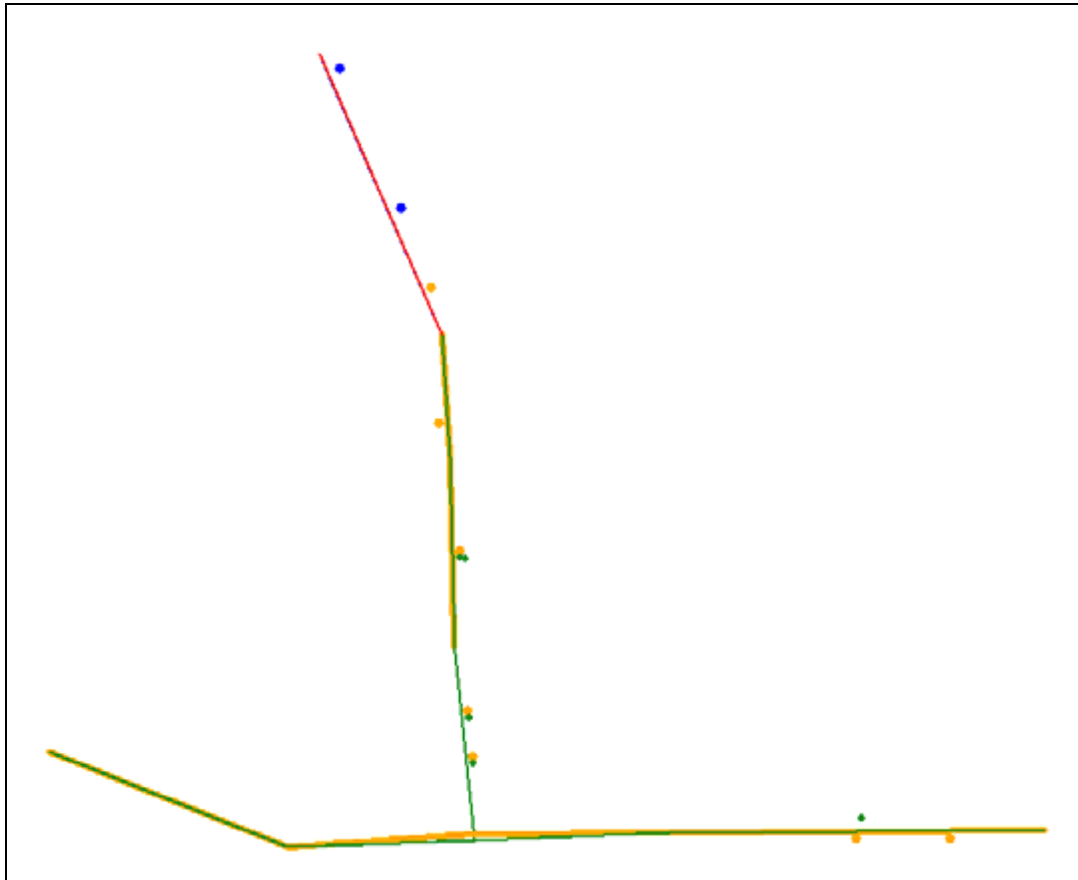
This button visualizes all feature edits from the report on the map. The deletions are shown in red, the new records in blue, and the updates in green/orange. This tool is extremely useful in determining the spatial extent of the edits performed in the session. Figure 4.7-112 is an example of this tool.



**Figure 4.7-112. Visualize report**

If this tool zooms the map out to a very large scale, it is indicative that the editor has performed edits spanning many different areas within the service territory. This can occasionally be a red flag to the QAQC user because most edits should be occurring within a fixed area within a single operating area.

If the QAQC user is having a hard time seeing the edits, the feature layers on the map can be turned off so that only the edit graphics remain. This makes the location of the edited features very evident regardless of the scale of the map. Figure 4.7-113 shows the same report with the layers turned off.



**Figure 4.7-113. Layers toggled off for clarity**

#### 4.7.2.2.2.5.2 Zoom to Selected

This button will zoom the user to the extent of the feature corresponding to the selected entry on the All Edits report. It can be very helpful after using the Visualize Report button to locate individual features.

#### 4.7.2.2.2.5.3 Flash Selected

This button will flash the feature corresponding to the selected entry on the All Edits report. It can be very helpful after using the Visualize Report button to locate individual features within the larger picture of all edited features.

#### 4.7.2.2.2.5.4 Visualize Selected and View Attributes

These tools were discussed in earlier sections with regard to their use when performing QAQC on the individual deletions, new records, or updates.

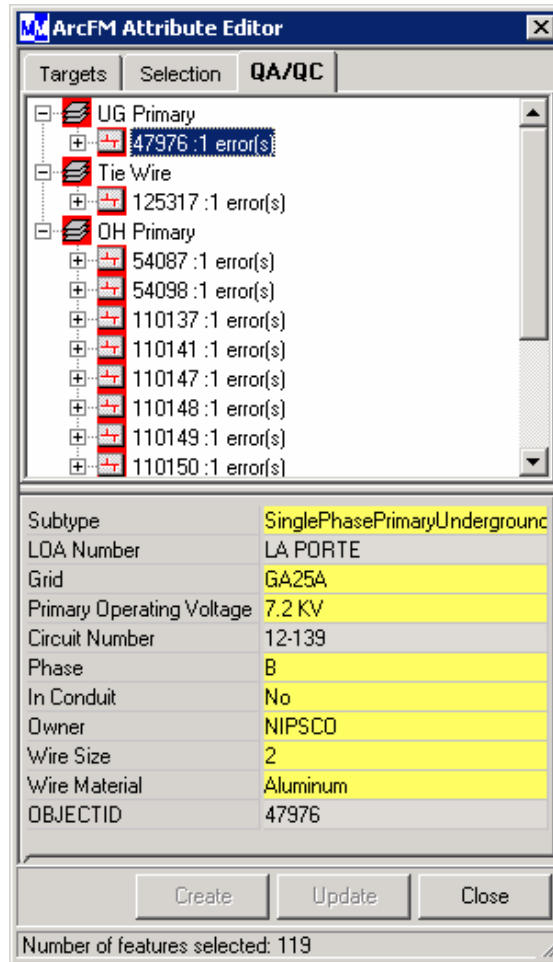
#### 4.7.2.2.2.5.5 Visualize Clear

This button simply clears any current All Edits visualizations on the map generated from either the Visualize Report or Visualize Selected tools. All visualizations will also be removed from the map when the All Edits report is closed.

#### 4.7.2.2.2.5.6 Run QAQC

This button automates several tasks for the QAQC user that would otherwise have to be performed manually:

1. The report selects all edited features on the map.
2. The report then selects features related to any edited objects on the map (the AEDR system uses the ArcFM “Validate Related Objects” option whenever available which will allow the ArcFM QAQC to run on object classes related to selected features even if the features themselves were not edited).
3. The report will add new feature layers for feature classes that are required for QA but that were not previously on the map. For example, if the current display only included the electric layers but the user had edited a Gas Main, the report would add a new layer for Gas Main and would then select any edited features.
4. The report will then open the ArcFM Attribute Editor if it is not already open.
5. The report will invoke the ArcFM QAQC routine for all selected features. The QAQC will run and will return the results in the standard fashion on the QA/QC tab of the Attribute Editor as shown in figure 4.7-114.



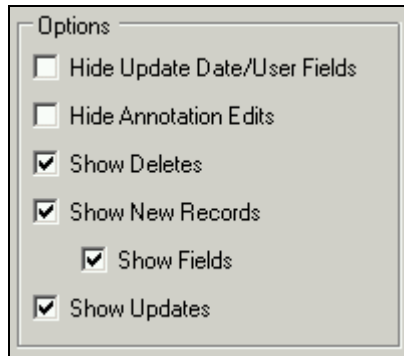
**Figure 4.7-114. ArcFM QAQC results**

6. The user can then proceed with using the standard QAQC tools.

This tool ensures that the QA/QC routine is run for all available features and objects and saves the QAQC user time by locating and selecting all edited features.

#### 4.7.2.2.2.5.7 Copy to Clipboard

NIPSCO developed an advanced requirement to be able to back up a file based representation of the work performed in any session. This tool copies the current representation of the All Edits report to the system clipboard where it can then be pasted into any text editor. The QAQC users typically first set the report options as shown in Figure 4.7-115.



**Figure 4.7-115. Report options**

Then they use the Copy to Clipboard tool. This ensures that the maximum amount of data is included on the report. This process has become crucial as a combination of ESRI and M&M bugs have caused the loss of session data during the posting process. With the exported report in hand, it is much easier for an editor to reconstruct the edits that occurred in a session.

### **4.7.2.3 Custom Login**

This section describes the NIPSCO ArcFM Login Utilities. This custom login component enables NIPSCO users to connect to an ArcFM geodatabase and Process Framework (Session Manager) database using Windows authenticated accounts on SQL Server databases. The custom login component must be installed on ArcFM client machines as necessary. While the default ArcFM login prompts users for connection information each time the ArcMap application is started, the NIPSCO custom login will attempt to read connection information from a configuration file, bypassing the default ArcFM Login dialog. If the connection configuration file is missing or contains incorrect parameters, then users will be prompted to supply the connection information.

#### ***4.7.2.3.1 Connection Configuration File***

When ArcMap is started, the NIPSCO custom login component attempts to locate the configuration file containing connection information. The component will read the connection information from the file and attempt to connect to the specified geodatabase. The Process Framework (Session Manager) connection information is cached and used when the “Open Session Manager” button is clicked from within ArcMap. The configuration file must be located in the same folder where the custom login assembly (NIPSCOLogin.dll) is installed. The name of the configuration file is NIPSCOConnections.xml. The configuration file is an XML document that has the values for the geodatabase server, geodatabase database, geodatabase service, Process Framework server, and Process Framework database that will be used to make appropriate connections.

The following is an example of a NIPSCOConnections.xml file with connection parameters specifying the geodatabase server (SQL), the SQL Server database location of the geodatabase (arcfm8), the SDE service (5151), the Process Framework server (SQL), and the SQL Server database location of the Process Framework data (px):



```

<?xml version="1.0" encoding="UTF-8"?>
<!-- Sample NIPSCO Custom Login Connection information configuration file.
      Must be installed in the same folder as the NIPSCOLogin.dll -->
<NIPSCOLogin>
  <SDEServer>aedrdbsqlp01</SDEServer>
  <SDEDatabase>arcfm8</SDEDatabase>
  <SDEService>9999</SDEService>
  <PxServer>aedrdbsqlp01</PxServer>
  <PxDatabase>px</PxDatabase>
</NIPSCOLogin >

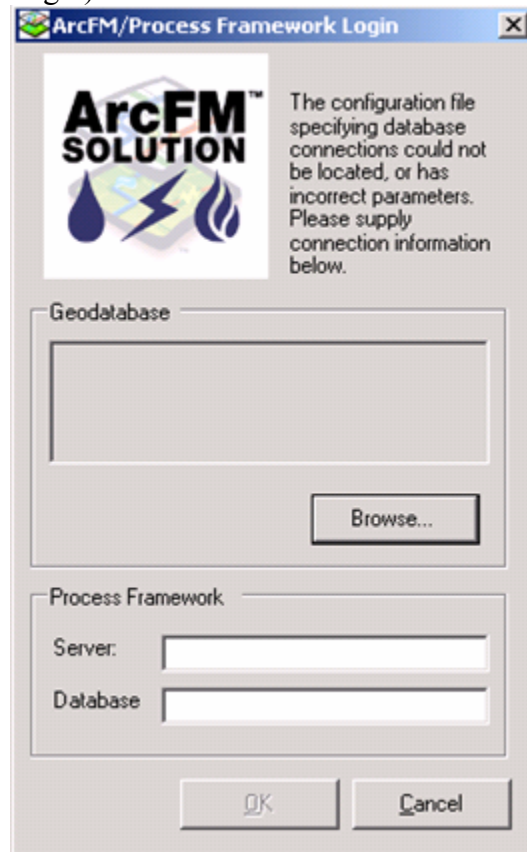
```

**Figure 4.7-116. Example NIPSCO custom login connection**

The NIPSCO custom login assumes that the databases being connected to are running on the SQL Server platform and are able to use Windows authentication to validate login names. The current Windows user name will always be used when making database connections.

#### 4.7.2.3.2 Custom Login Dialog

If the NIPSCOConnections.xml file is missing or has incorrect parameter names for the geodatabase login, then the user will be prompted with a dialog asking them to provide the information necessary to connect to the ArcFM geodatabase and the Process Framework (Session Manager) database.



**Figure 4.7-117. Login dialog box**

Clicking the “Browse” button on the “Geodatabase” frame will open up an ESRI Catalog browser, enabling the user to choose an established workspace connection. Once a valid connection has been selected, its properties will appear in the box above the Browse button. The “Process Framework” frame allows users to type the Process Framework server and Process Framework SQL Server database used for the Session Manager connection. The “OK” button will become enabled when a valid geodatabase connection has been selected. Note that it is not necessary to indicate the Process Framework server or database in order to enable the OK button and proceed with the geodatabase login, but users will not be able to access the Session Manager from ArcMap. Clicking the “Cancel” button will bypass the ArcFM geodatabase login and Process Framework login. ArcMap will start as normal, but there will be no access to Session Manager or ArcFM functionality such as Stored Displays, Page Templates, and Stored Documents. In this case, the default ArcFM Login may still be used to connect to a geodatabase to access ArcFM functionality by clicking the “Login To ArcFM” button on the ArcFM toolbar in ArcMap.

#### **4.7.2.4 Citrix Publishing – ArcLauncher**

Both ESRI ArcMap and Miner & Miner ArcFM can be used with different licensing schemes. This means that the same installed applications provide different functionality based on the license that is used by the user. The following are the available licenses in use at NIPSCO for both products:

ESRI ArcMap:

- ArcView: Provides view only access to the data via the ArcMap product.
- ArcEditor: Provides edit access to the data via the ArcMap product.
- ArcInfo: Provides full edit and analysis to the data via the ArcMap product.

M&M ArcFM:

- ArcFM Viewer: Provides use of ArcFM tools within ArcMap within a read only context.
- ArcFM: Provides full editing with ArcFM tools within ArcMap.

NIPSCO has purchased licenses of all of the above types but different licenses are intended for different groups of users. The ArcView/ArcFM Viewer is intended for the engineers, call screening, and outage management groups. They are provided with read only access for analysis purposes. The ArcEditor/ArcFM is intended for the Maps & Records clerks. They are the primary editors of the GIS data. The ArcInfo license is only used by the GIS group for advanced data analysis purposes.

Allowing different users to use different licensing combinations in a Citrix environment is a somewhat complicated task because there is only one single installation of the software. Typically the license preferences are set by the desktop administrator programs which store the setting in the registry. This setting then applies to ALL connections that are made to the server. It was necessary to find a way to dynamically set the license to be used on user basis.

The ESRI license can be dynamically updated by setting an environment variable as follows:

- ArcView: ESRI\_SOFTWARE\_CLASS = Viewer
- ArcEditor: ESRI\_SOFTWARE\_CLASS = Editor
- ArcInfo: ESRI\_SOFTWARE\_CLASS = Professional

The Miner & Miner license can be updated by setting specific registry keys as follows:

- ArcFM Viewer: HKEY\_CURRENT\_USER\Software\Miner and Miner\Desktop Manager\Products\ArcFM Viewer = 1
- ArcFM: HKEY\_CURRENT\_USER\Software\Miner and Miner\Desktop Manager\Products\ArcFM = 1

Both of these license changes are automated via the NIPSCO ArcLauncher application. It is a command line application that accepts parameters for the application to be run (i.e. ArcMap, ArcCatalog, etc) and the license level to be used. It then sets both the ESRI license environment variable and the Miner & Miner registry keys appropriately before starting the application.

All AEDR Citrix applications have been published using ArcLauncher to handle the licensing issues. The three core applications are published as follows:

- **ArcInfo:** E:\ARCGIS\ARCEXE83\BIN\ArcLauncher.exe  
E:\ARCGIS\ARCEXE83\BIN\ARCMAP.EXE Professional
- **ArcEditor:** E:\ARCGIS\ARCEXE83\BIN\ArcLauncher.exe  
E:\ARCGIS\ARCEXE83\BIN\ARCMAP.EXE Editor
- **ArcViewer:** E:\ARCGIS\ARCEXE83\BIN\ArcLauncher.exe  
E:\ARCGIS\ARCEXE83\BIN\ARCMAP.EXE Viewer

This allows a single user to access the same application via different Citrix publishing and all licensing is set correctly.

## **4.8 AEDR Interfaces**

This section defines the interfaces between the AEDR system and all of the surrounding applications and systems. Some of the interfaces are minimal while others are very in depth. Details and illustrations are provided for each interface in the following sub sections.

### **4.8.1 Facility Browser Part 1**

#### **4.8.1.1 Overview**

The Facility Browser Part 1 encompasses the design only of the Facility Browser and is discussed in this report. The actual Facility Browser implementation will be part of Phase II.

The legacy version of Facility Browser used MapGuide as its Mapping Engine. Additional tools and components of Facility Browser are SQL Server as the database for point based-features, Spatial Data Files (SDF) as the linear spatial data, and Cold Fusion as the primary application development environment. There are also additional tables in the SQL Server database for information about customers and Gas Service Cards. Additional development tools being utilized are the MapGuide API, HTML, and JavaScript.

MapGuide is a web-based mapping solution from Autodesk. The SQL Server database is storing data in a flat-file type format where the spatial information is coming from XY coordinates. The SDFs require conversion from the AutoCAD drawings, and the Cold Fusion technology being used to drive the application has become outdated.

The legacy version of Facility Browser was initially implemented as a query and reporting tool on the web. It also allowed for the viewing of NIPSCO data as a seamless database versus using the tiled AutoCAD environment. Over the years, the seamless database remained in place, but Facility Browser became more than a query and reporting tool. Data entry and editing was implemented as some of the added functionality. Spatial data editing was also implemented for the addition, deletion, and movement of customer points. Additional functionality also allowed for the creation of Gas Service Cards, as well as the maintenance of some Gas Service Card data.

In the legacy version of Facility Browser the processing is executing on the client, so any of the geoprocessing for analysis of the map data is executing on the user's machine and not the server.

The new version of Facility Browser was designed using ArcIMS as the mapping engine and ArcSDE as the spatial data component. The data connections for querying and reporting on the spatial data, as well as making the various calls to ArcIMS was designed to use ArcXML. By using ArcXML, no interpretation of calls being made using a connector are necessary. The development tool to be used for the new version is ASP.NET in the C#.NET environment. Both HTML and JavaScript will continue to be

used for the client application. All custom functionality developed for Facility Browser (e.g. Gas Service Card viewer) will be built using C#.NET.

The new version of Facility Browser will take a step back to its origins and become a query and reporting only tool. Any of the data editing, data maintenance, data creation, etc. tools and functionality that existed in the legacy version of Facility Browser will reside elsewhere.

Also, the new application will be using an ArcIMS Image Map Service. By using the Image Map Service, all of the geoprocessing and querying will take place on the ArcIMS Application/Spatial Server with the results being returned to the end user as a web page.

Figure 4.8-1 shows the main user interface for the new Facility Browser:

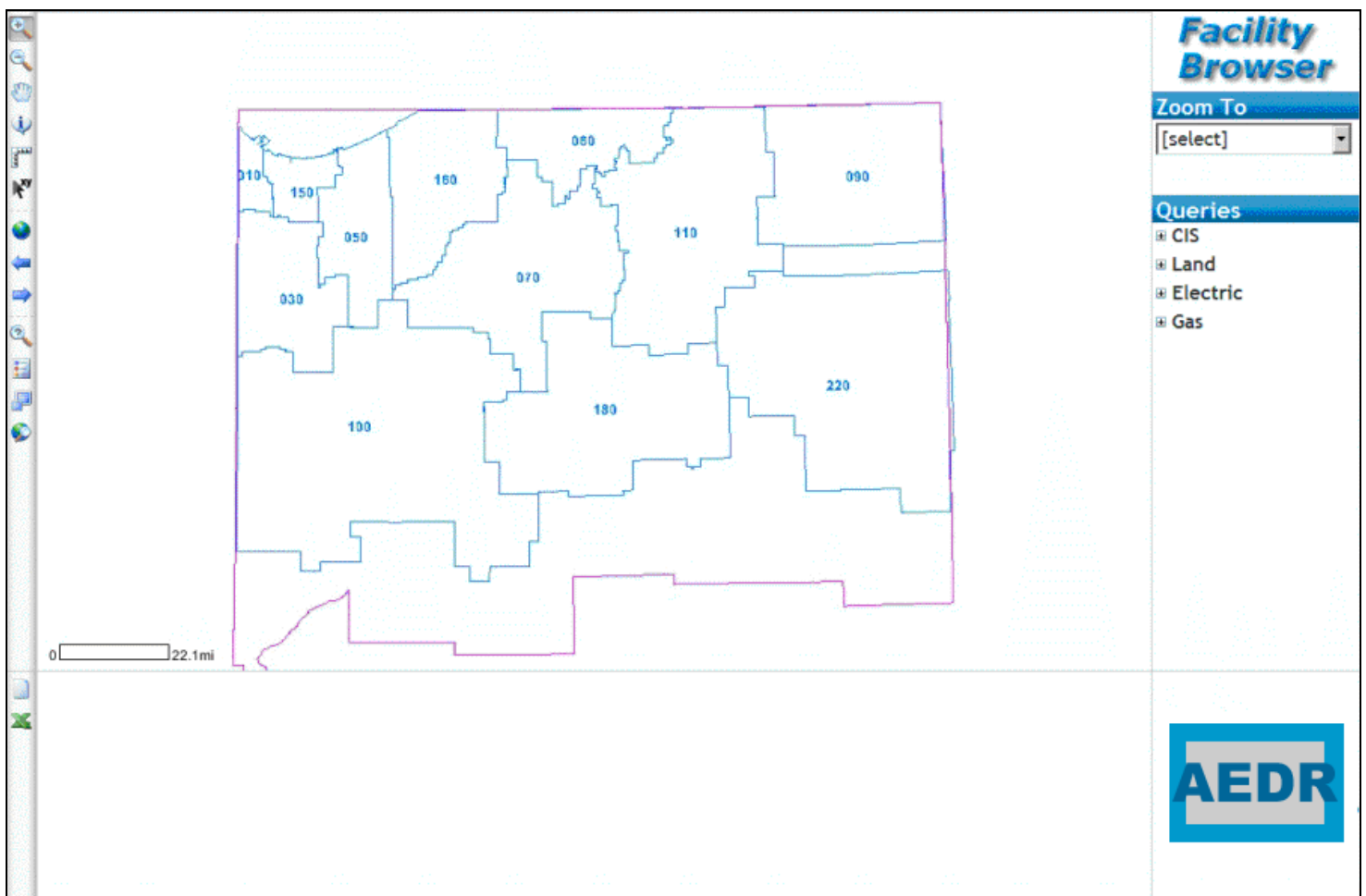


Figure 4.8-1. Facility Browser main user interface

## 4.8.1.2 Design

### 4.8.1.2.1 Use of ArcIMS

ArcIMS will be the solution for delivering dynamic maps and AEDR data and services via the Web. It provides a highly scalable framework for GIS Web publishing that meets

the needs of corporate Intranets and demands of worldwide Internet access. ArcIMS services can be used by a wide range of clients including custom Web applications, the ArcGIS Desktop, and mobile and wireless devices.

With ArcIMS users can:

- Deliver dynamic maps and data via the web
- Create task-focused applications that use geographic content
- Develop custom applications using industry standard web development environments such as ASP.Net, and

Implement GIS portals.

#### **4.8.1.2.2 New Application Functionality**

The new Facility Browser will support all of the current map tools that were available to the users for interacting with the map. These include Zoom In, Zoom Out, Zoom Extent, Zoom Previous, Zoom Forward, Pan, Saved Views, Get XY Location, Select/Identify, Turn On/Off Map Layers, View Map with No Frames, View Legend.

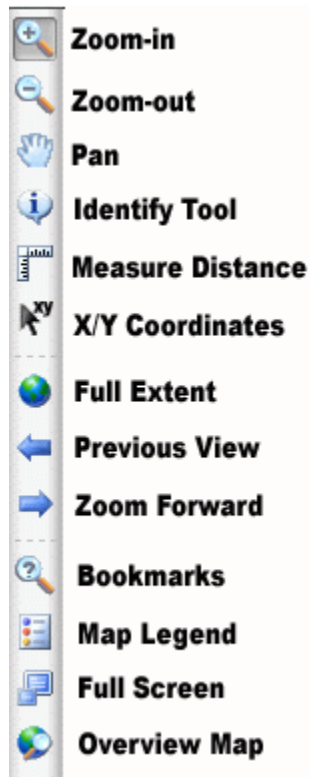
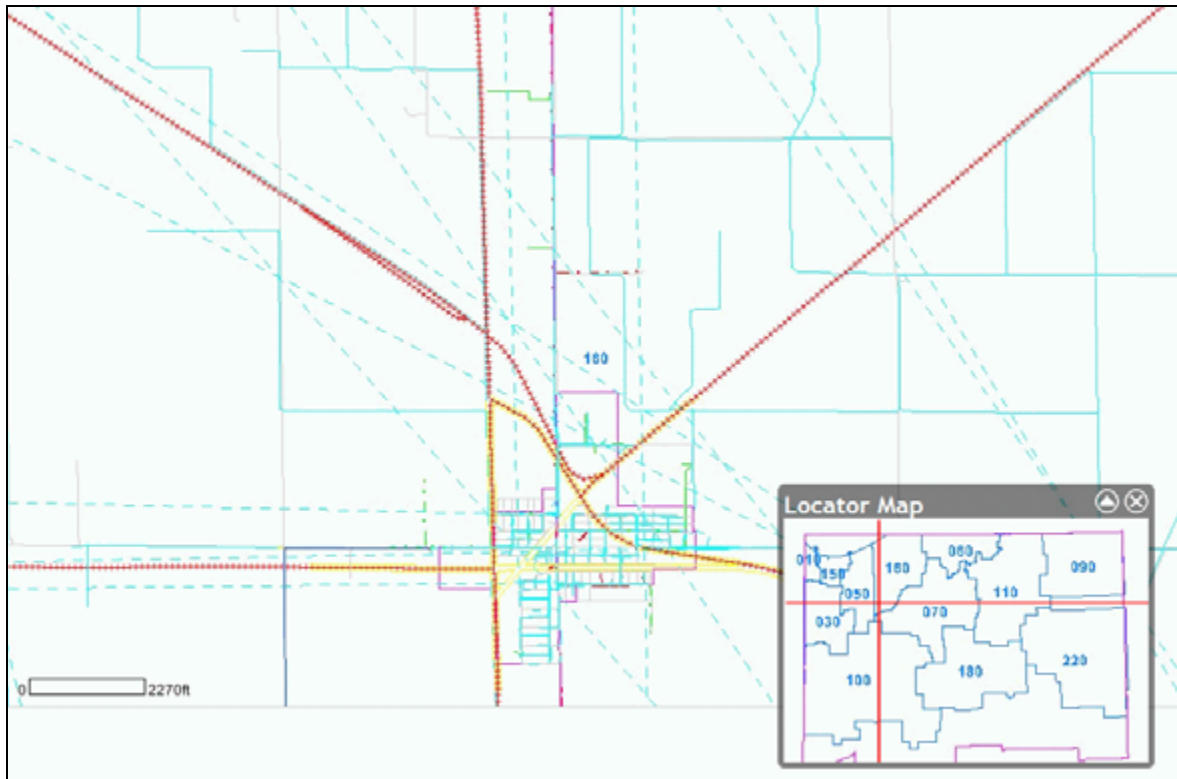


Figure 4.8-2. Map tools

The new application will also have a locator map as shown in Figure 4.8-3.



**Figure 4.8-3. Locator map (in lower right corner) showing the current map location in relation to the entire NIPSCO Service Territory**

Users will be able to perform queries on all of the Land, Gas, and Electric Facilities in the Geodatabase. These queries will function the same manner that the existing queries function. Once a set of features has been selected based on the criteria input by the user, a report is generated and the map is zoomed to the extents of the selection set. A user can then zoom to the individual features listed in the report, get more details about a feature, and send the reports to a delimited file for use in Excel.

Figure 4.8-4 shows an example of executing a feature query:

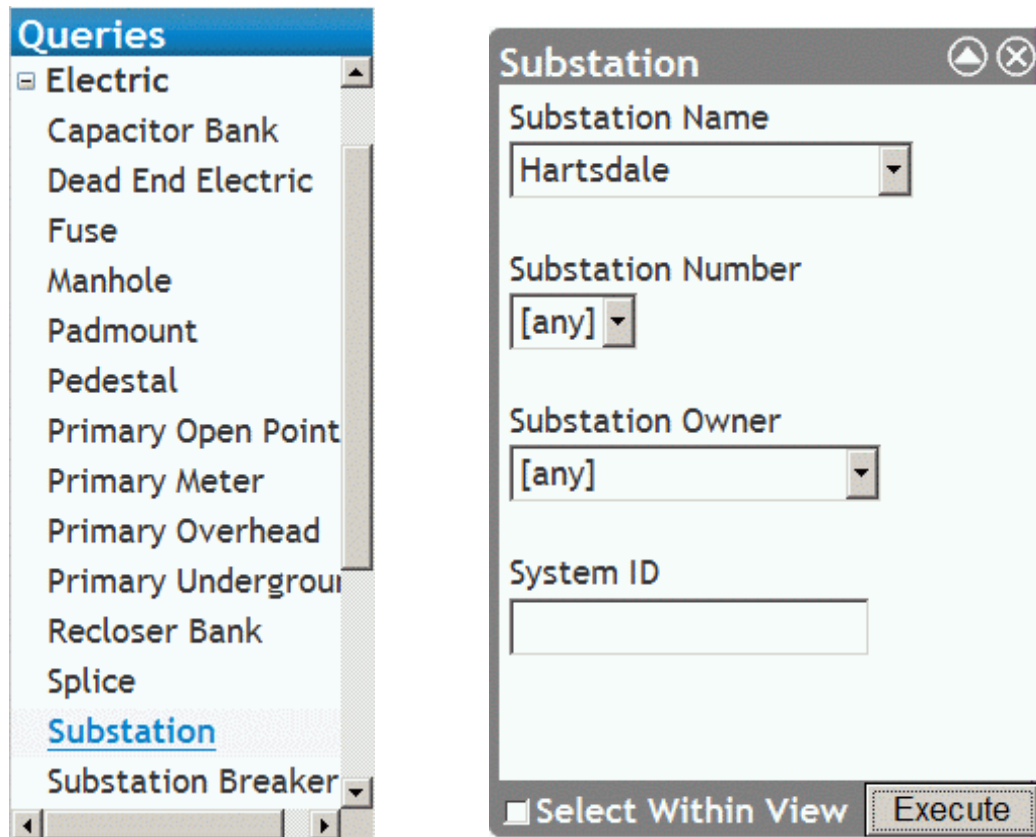


Figure 4.8-4. Query execution

Any matching records are returned in the results grid shown in Figure 4.8-5.







	Substation Name	Substation Number	Substation Owner	System ID
  	Hartsdale	33	Nipsco Substation	57
  	Hartsdale	33	Nipsco Substation	58

Figure 4.8-5. Query results



Users will also be able to perform queries on the Gas & Electric Service Cards to retrieve a list of cards based on an LOA, City, and Street or via the site location. These cards will then be viewed with the new image browser developed. The new image browser will replace the legacy Pegasus ImagXpress tool as the technology has become outdated.

Figure 4.8-6 shows an example of querying a Gas Service Card:

Figure 4.8-6. Query of service cards

Any matching records are returned in the results grid shown in Figure 4.8-7.

	Site Identification Num...	Service Type C...	Utility Type C...	Meter Num...	Customer Last Name	Customer First N
	<a href="#">28510008</a>	SVC	EL		JONES	RENALDO
	<a href="#">31874003</a>	SVC	GA	9475374	JONES	JOHN
	<a href="#">947090002</a>	SVC	EL	0472738	JONES	ELLEN
	<a href="#">983630004</a>	SVC	EL	0557719	JONES	BRUCE
	<a href="#">926040003</a>	SVC	GA	9407169	JONES	GARY
	<a href="#">923850007</a>	SVC	GA	0920473	JONES	JOHN

Figure 4.8-7. Results of query

Clicking the links above will launch the new Service Card Viewer shown in Figure 4.8-8.

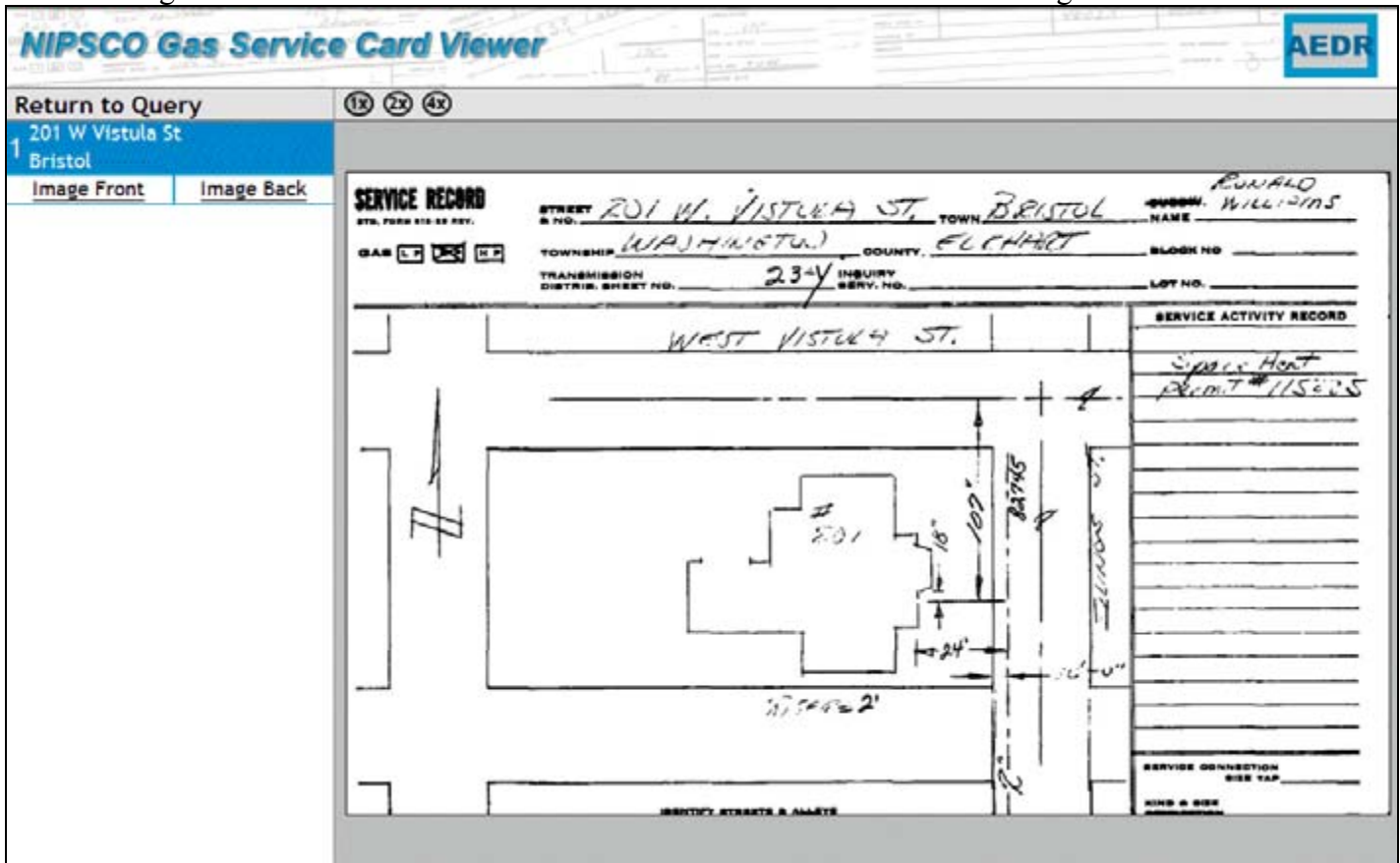


Figure 4.8-8. Service card

#### 4.8.1.2.3 Additional Applications / Tasks Required

Because the new version of Facility Browser will revert to a query and reporting system only, some tools and functionality that previously existed were moved elsewhere.

##### 4.8.1.2.3.1 Application to Manage the Placement, Deletion, and Editing of the Customer Sites

In the legacy Facility Browser, new customers are managed by storing the site locations as XY coordinates in a flat file. The new data model has a feature class for customers which enables the use of out-of-the-box ArcMap/ArcFM tools to manage the customer sites.

A new interface that imports the data from CIS into the Geodatabase must be developed. Currently, there is a process in place that moves the data from the CIS text file to SQL Server. This application will require some modifications but the process will remain the same. The difference is that the data will be imported into a Geodatabase Feature Class. When the import takes place, the new sites will be assigned the XY Coordinate of the Minor Grid Code within the site. By assigning this XY, the user creating the new data will be navigated to the general area of the customer location. Additionally, customers

will need to be flagged as to whether or not they are a gas customer. In doing so, the process in which Gas Service Cards are created can come into play.

Placement functionality of the customers will be accomplished using out-of-the-box ArcFM tools. Some new custom forms will be created to allow the users to query and find the various customers that require placement, require a new service card, or need to be moved to a new location because of a poor geocoding score from the original geocoding process. This customization will be done using C#.NET and ArcObjects.

#### **4.8.1.2.3.2 Normalize the Current Gas Service Cards Database**

The legacy Gas Service Cards database does not contain unique Image IDs throughout the company. Image IDs are only unique for the LOA, City, and Street where they are located. In order for a more straightforward maintenance, as well as a more efficient query/reporting process, assignment of unique Image IDs are required. This is known as “normalizing” the data. Normalizing the data can be accomplished via an automated fashion using a custom C# application. If the data were to be normalized, the queries to access the Service Cards would have to be modified. Queries for the other features and facilities will be more or less translated from MapGuide-ColdFusion to ArcIMS-C#.NET. Additionally, some discussion will be necessary to ensure the validity and appropriateness of the new naming conventions.

#### **4.8.1.2.3.3 Application to Create New Gas Service Cards**

The legacy Gas Service Cards were created using Facility Browser and the Pegasus ImageXpress tool. This solution is rather inelegant and cumbersome, but the business process and workflow is relatively sound. A new tool needs to be developed to manage the creation of the Gas Service Cards.

The new tool for creating and managing Gas Service Cards and their associated data will be integrated into the ArcMap/ArcFM framework using an ArcMap Layout. By creating and customizing an ArcMap layout for the end users, it will have the general look and feel of a paper Gas Service Card but will be editable. By moving the application from the web to the desktop, the users will have a more stable environment for editing and creating data. Plus, they will already have access to the software and data necessary to create the maps for the Service Cards. Additionally, they will have direct access to the necessary tables that are populated with Service Card data.

Customization will be required to build the application. This customization will be accomplished using ArcObjects and C#.NET. The new tool will allow for the creation, insertion, and update of the map for the service card, as well as any data that needs to be updated in the various tables.

#### **4.8.1.2.3.4 Replication of Data**

The new Facility Browser will access ArcSDE to pull both spatial and attribute data. Because Facility Browser is a web application, it will be accessed by many users across the NIPSCO organization. This will generate a sizable load on the ArcSDE database server and when combined with the load from ArcEditor and ArcView users it will likely

cause performance problems. Therefore it has been determined that a second production ArcSDE server will be purchased and configured to support the Facility Browser data access. This will separate the two major load components of the AEDR system and should provide significant improvements in performance for all system components.

All editing and maintenance of the data will take place on the production ArcSDE database server. The data will be replicated to the Facility Browser ArcSDE database on a nightly basis and will be executed via an SQL Server administration script.

The script will be responsible for the following actions:

- Take a backup (\*.bak) of the production ArcSDE database
- Restore the .bak file to the Facility Browser ArcSDE database
- Apply Facility Browser-specific views to allow object table data to be joined directly to feature classes (ArcIMS does not allow the direct viewing of object tables)
- Apply the Facility Browser-specific indexes to improve the ArcIMS performance.

## **4.8.2 Field Browser Part 1**

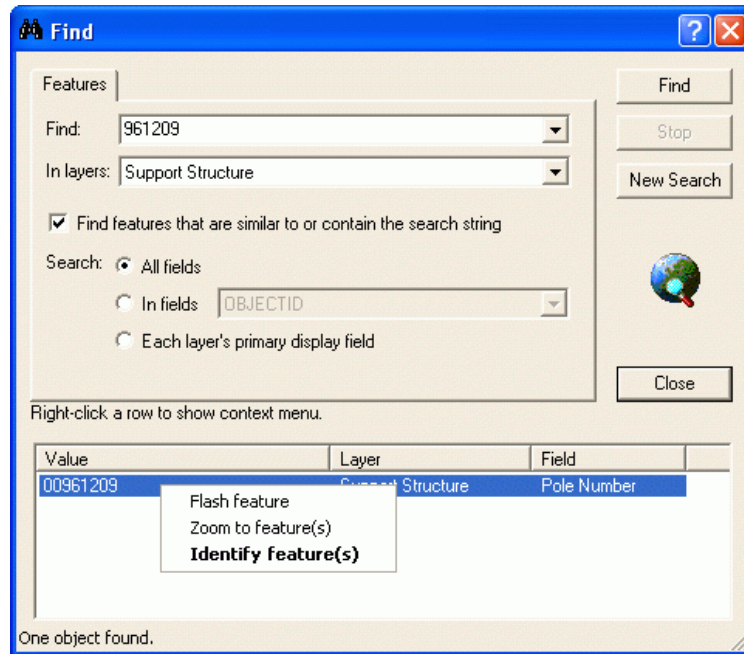
### **4.8.2.1 Overview**

Field Browser Part 1 encompasses the design only of the Field Browser as discussed in this report. The actual Field Browser implementation will be part of Phase II.

The Field Browser is used both in the office and by field personnel. It is a self-contained installation of the AEDR data and a GIS viewer that does not require a software license of any sort. The legacy Field Browser application is a custom CAD-based solution which contained basic map viewing functionality. The Field Browser data is updated on the field units monthly by running an application called InfoBuilder. This application processes and groups the NIPSCO CAD map tiles into a \*.dwf format. It also extracts all of the entity data from the CAD tiles into a Microsoft Access database. The legacy Field Browser solution has performed well for several years and the main goal of the new Field Browser implementation is to match the existing functionality on the ESRI platform.

ESRI ArcReader was chosen as the platform for the new Field Browser because of its easy deployment, lack of license, and native support for ESRI data formats. ArcReader is an ideal way to deliver interactive mapping capabilities that access a wide variety of dynamic geographic information. Using ArcReader, the field users can view the same data that exists in the back office ArcGIS applications after they have been converted using the ArcGIS Publisher extension. This extension adds simple map publication capabilities to ArcMap that allow any map document (\*.mxd) to be converted to a published map file (\*.pmf). These pmf files can then be copied locally to any computer along with an extracted set of data. ArcReader can then load the data with the configured layers and symbology without any connection to a network. ArcReader provides a comprehensive set of tools to view and query the data as well as a fairly customizable user interface that will allow different users to have individualized views of the data.

Figure 4.8-9 shows the standard ArcReader “Find” window which will be used to query the AEDR assets.



**Figure 4.8-9. Query window to locate the assets**

#### 4.8.2.2 Field Browser Goals

The goal of the new Field Browser is to provide the end-user with at the least the same functionality that exists in the legacy Field Browser;

- a tool that allows NIPSCO employees to view electric and gas facilities over the top of an accurate land base
- the ability to query based on certain facility information including pole number, regulator station number, substation name, pad number, valve number, street intersection, etc, and
- the users must be able to view an entire LOA, seamlessly, without the need to jump from map to map.

#### 4.8.2.3 Field Browser Requirements

The requirements for the new Field Browser center on replacing the current functionality:

- The end user is able to view all the facilities within the NIPSCO service area. The system provides the gas street, line, service personnel, corrosion control and locating contractors with electronic field access.
- The end user will need to be able to view a legend of the facilities with a description name.
- The end user needs to be able to use zoom functionality including pan, zoom window, zoom in/out, zoom full extents, zoom previous, and zoom forward.
- The end user is able to pull up the extents of any of our Local Operating Areas (LOA's).

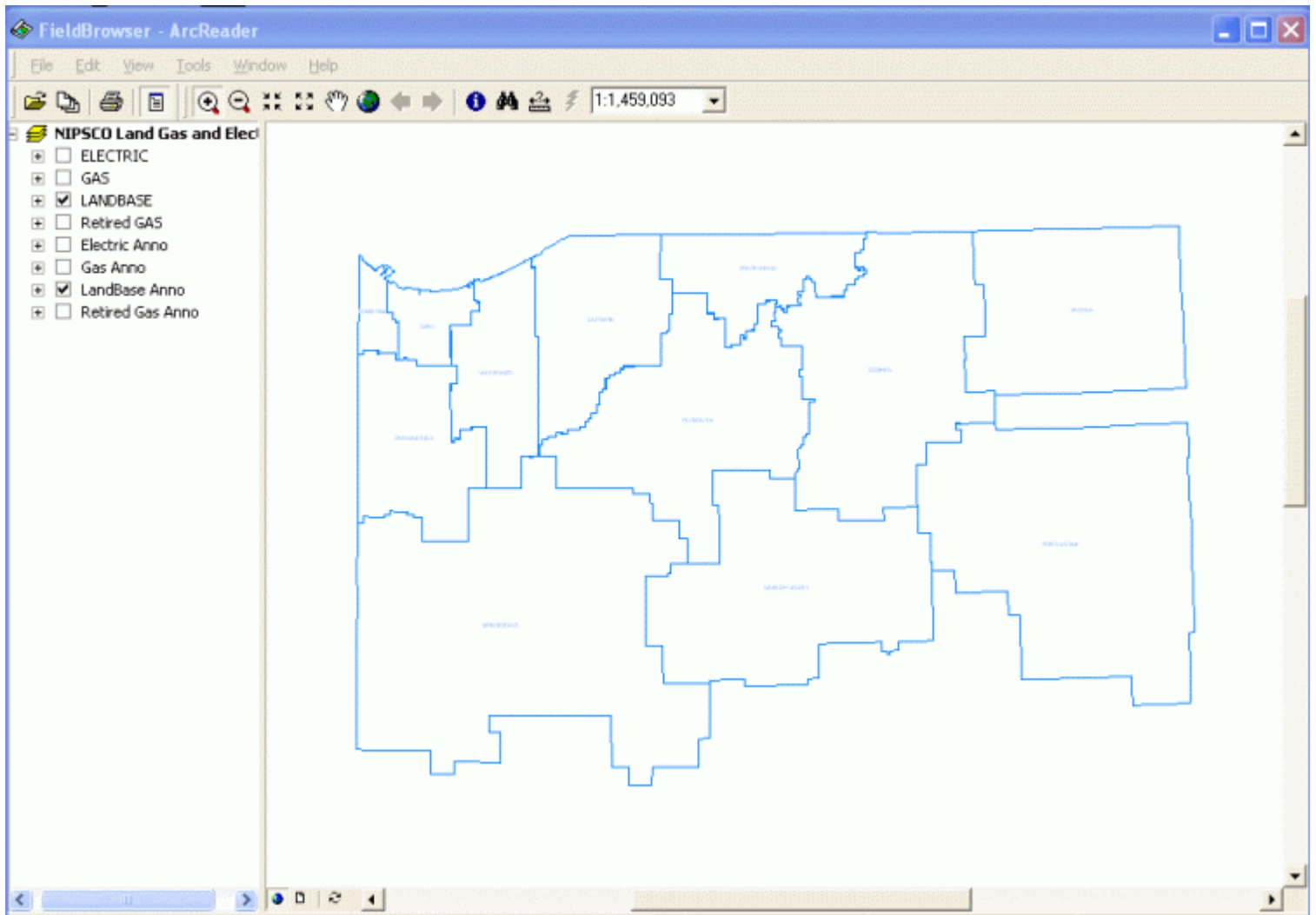
- The end user has full control on what facilities are viewed.
- The system provides full query access to the facility data by using any of the following fields: Street Intersection, Pole, Switch, Substation, Transformer Number, Pad Number, Regulator Station, Emergency Valve, Valve, and Corrosion Control Section.
- The end user can view facilities seamlessly.
- The Field Browser will load and open with minimal delay.

#### **4.8.2.4 Design**

The most notable design feature for the new Field Browser is the MS Explorer style view of the application. This feature is important because it allows the GIS team to manage the layers into data frames or groups. By creating groups like “electric”, “gas” and “land”, a user on the gas side of the company can easily toggle off the electric and or land facilities. It also allows the user to turn individual layers on/off, an option currently missing in the legacy Field Browser.

The background color of the new Field Browser will be white instead of the current black background. The new application will continue to run on the existing Field Browser laptop computers. Performance will be evaluated to insure the current hardware will support the new Field Browser. The GIS department will continue to provide Field Browser users with monthly updates via CD media. The updates will be created by exporting personal geodatabases.

Figure 4.8-10 shows the default interface of the new Field Browser.



**Figure 4.8-10. Field Browser main user interface**

#### ***4.8.2.4.1 Exporting Data***

There are a couple of ways to export data using ArcGIS tools. The method NIPSCO uses to export the data will depend on performance and efficiencies going forward to provide monthly updates to our field personnel. The two methods are exporting personal geodatabases and exporting shape files.

An ArcMap (.mxd) file is created by saving a copy of the production SDE database. This allows configuration and symbology maintenance of all the features within the database. Once the NewFB.mxd has been created, either a shape file or a personal geodatabase may be exported.

##### **4.8.2.4.1.1 Shape Files**

1. To export the shape file for each feature using the ArcCatalog exporting functionality, the location of the exported shape files will need to be created using relative paths. NIPSCO will use the following locations:

C:\FieldBrowser\Land → Land Feature Shape files  
C:\FieldBrowser\Gas → Gas Feature Shape files  
C:\FieldBrowser\Electric → Electric Feature Shape files

2. The next step is to create the link between the ArcMap .mxd and the exported shape files by “setting the data source” for each of the features. This is necessary because the .mxd was saved when the links to the data were pointing to the SQL database.
3. Next, some minor configurations changes will need to occur. The changes will include configuring labels, scale ranges for both the feature and label, setting the rotation of symbols, and making certain that the query is defined correctly.
4. Finally, the user can publish the Map using ArcMap’s Publisher Extension and export to c:\NewFieldBrowser\NewFB.pmf.

#### **4.8.2.4.1.2 Personal Geodatabase**

1. To export a personal geodatabase, the user opens ArcCatalog and creates four personal geodatabases in the following locations:
  - C:\FieldBrowser\PersonalGDB\Electric.mdb
  - C:\FieldBrowser\ PersonalGDB\Gas.mdb
  - C:\FieldBrowser\ PersonalGDB\Landbase.mdb
  - C:\FieldBrowser\ PersonalGDB\Annotation.mdb.

The purpose for the individual personal geodatabases are to ensure that no individual geodatabase exceeds the maximum size of 2GB. The NIPSCO dataset is too large to fit into a single personal geodatabase.

2. The user connects to the production database by right-clicking on a dataset or individual classes within a dataset, the user then selects copy, then pastes it into the appropriate new personal geodatabase created in step 1. Repeat for each dataset.
3. Finally, the user can publish the Map using ArcMap’s Publisher Extension and export to c:\FieldBrowser\NewFB.pmf.

#### **4.8.2.4.1.3 Chosen Approach**

The personal geodatabase approach was chosen for the rollout of the Field Browser because a personal geodatabase retains much more metadata surrounding the raw data than a shapefile. For example, a geodatabase retains the alias information which allows the field names to be shown with common names as opposed to system names (“Pole Number” vs. “DistribRefNumber”). A shapefile loses this information and the published .mxd file must then be manually updated to replicate these settings. Another limitation with shapefiles was that the field names were truncated to eight characters. This caused heavy rework of the published .mxd file because all of the feature layer definitions referenced the longer back office field names.



The main issue with using a personal geodatabase is the size of the database. It is ideal to keep the size of the Field Browser footprint as small as possible, especially because the monthly data updates need to be distributed via CD-ROM. When the datasets are copied from the ArcSDE geodatabase into the personal geodatabase, all table objects that are related to the feature classes are also copied across by default. ArcReader, however, does not allow a user to view related records so the existence of this data serves no purpose. For this reason, these tables will be removed from the personal geodatabases before they are distributed. Additional steps were also taken to minimize the size of the geodatabases and they are detailed in the next section.

#### ***4.8.2.4.2 Field Browser Geodatabase Post Processing***

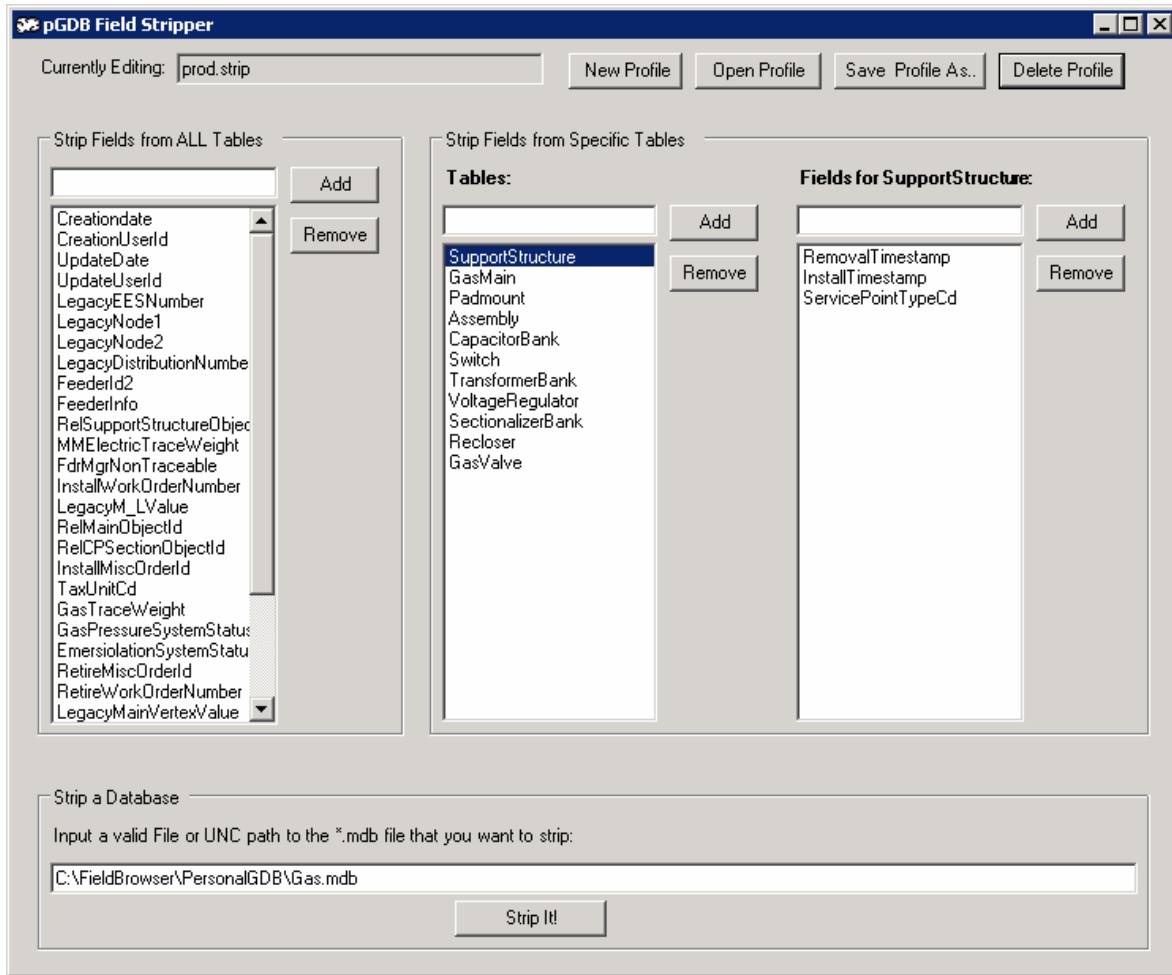
After the personal geodatabases have been created, several additional processes are used to reduce the size of the databases and to enhance the usability of the data. These processes are detailed in this section.

##### **4.8.2.4.2.1 pGDB Field Stripper**

As noted in an earlier section, all tables objects related to feature classes are deleted from the personal geodatabases. To keep the Field Browser footprint as small as possible, unnecessary back office columns of data will be removed from the feature class tables.

A new light-weight standalone windows application is planned to be created called “pGDB Stripper”. This application will allow the Field Browser administrator to create strip profiles that define which fields should be removed from all tables and also which fields should be removed from specific tables. An administrator will be able to create multiple strip profiles if needed to accommodate the four different personal geodatabases. The user interface is expected to be easy to use and the strip profiles are planned to be text based and can be checked into source control.

pGDB Stripper will also handle executing a strip profile against a personal geodatabase. Figure 4.8-11 shows the pGDB Stripper main window.



**Figure 4.8-11. The pGDB stripper parses through each table in the database and deletes any matching fields**

Currently, the following fields have been approved for removal from all personal geodatabase tables:

- Creationdate
- CreationUserId
- UpdateDate
- UpdateUserId
- LegacyEESNumber
- LegacyNode1
- LegacyNode2
- LegacyDistributionNumber
- FeederId2
- FeederInfo
- RelSupportStructureObjectId
- MMElectricTraceWeight
- FdrMgrNonTraceable
- InstallWorkOrderNumber

- LegacyM\_LValue
- RelMainObjectId
- RelCPSSectionObjectId
- InstallMiscOrderId
- TaxUnitCd
- GasTraceWeight
- GasPressureSystemStatusCd
- EmerisolationSystemStatusCd
- RetireMiscOrderId
- RetireWorkOrderNumber
- LegacyMainVertexValue
- RelGasMainObjectId
- LayerName
- Handle
- XdAppName
- ParentHandle
- GraphicScaleFactorValue
- ObjectId

Individual tables are still being reviewed for additional fields that are not necessary. Removing these fields from all tables will dramatically reduce the size of the personal geodatabases and using pGDB Stripper to manage the process will provide a consistent and reusable pattern to handle this task on a monthly basis.

#### 4.8.2.4.2.2 Street Centerline Intersection Queries

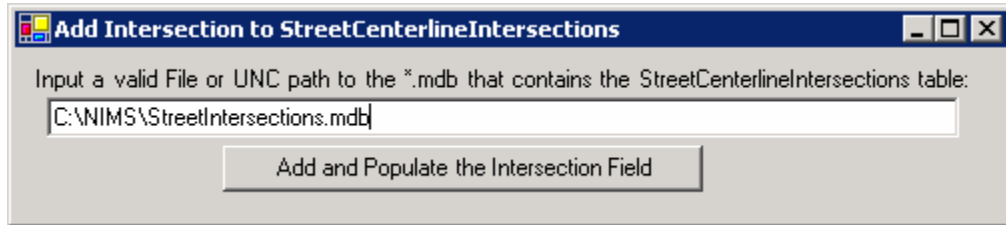
A landbase feature class “StreetCenterlineIntersections” exists in the back office and defines spatial points at the intersection of all street centerline features. Each point tracks the attribution as shown in Figure 4.8-12.

Field Name	Data Type
NAME1	Text
NAME2	Text
ZIPCODES	Text
XCOORD	Double
YCOORD	Double
ROADNAME	Text
SHAPE	Geometry

**Figure 4.8-12 Attribution of street centerlines**

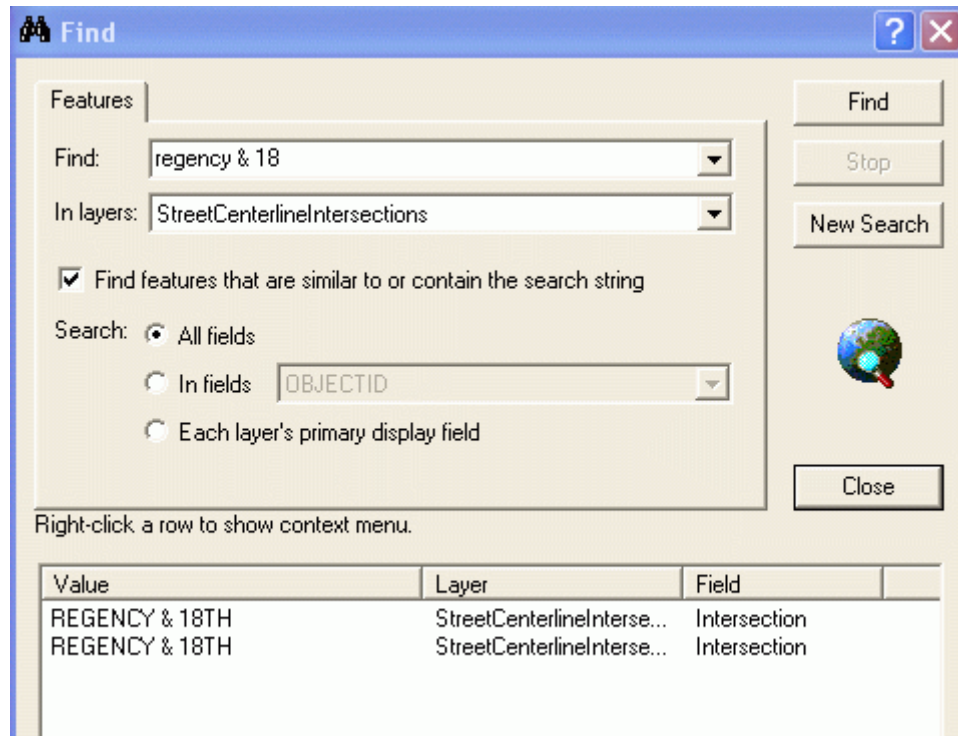
Most of these attributes are used for system purposes but the Name1 and Name2 fields will allow a user to query the AEDR for street intersections such as “Main” and “Broadway” or any other combination. A spatial location is returned and the user can then zoom directly to the intersection of the specified streets. This works very well for all of the back office applications including ArcGIS, ArcView, and Facility Browser. However, ArcReader only allows a user to query on a single field so inputting both a Name1 and a Name2 is not possible. Street intersection searches are crucial to field users and a solution was needed.

Figure 4.8-13 shows new light-weight windows application, “AddIntersectionToStreetIntersections” that will be created. It will contain a single prompt that allows the Field Browser to input a UNC path to the personal geodatabase where the extracted StreetCenterlineIntersections feature class resides:



**Figure 4.8-13. Street Centerline Intersection query**

When the user clicks the “Add and Populate the Intersection Field” button, the process will access StreetCenterlineIntersections table to check for the existence of an “Intersection” column. If it is not found the application will automatically add this column to the table. The process will then proceed to concatenate the values for Name1 and Name2 with an “&” in between and subsequently load this concatenated value into the Intersection column for all StreetCenterlineIntersections records. When this data is distributed to the field users, they can query on the single Intersection field with a parameter such as “Regency & 18<sup>th</sup>” as shown in Figure 4.8-14.



**Figure 4.8-14. Street centerline intersection query**

This solution solves the problem and allows the field users to utilize the StreetCenterlineIntersections table in a very similar manner to back office users.

### 4.8.3 SynerGEE

#### 4.8.3.1 Legacy DataPrep Overview

This section provides an overview of the legacy DataPrep process. Legacy DataPrep was a component of an interface between the SynerGEE application and the legacy Outfield mapping system. Legacy DataPrep exported gas system data from NIPSCO's database of AutoCAD drawings as comma delimited text files. A second application called MiddleLink read these text files to create a SynerGEE database. Finally, the SynerGEE application used the database for gas system flow & pressure calculation.

Legacy DataPrep exported gas mains, closed valves and regulator stations from each AutoCAD drawing specified by the user. Legacy DataPrep was designed to export open valves as well, however NIPSCO's legacy DataPrep only exported closed valves. Legacy DataPrep processed the facilities from each AutoCAD file contained within a target folder.

##### 4.8.3.1.1 Source AutoCAD Layers

<i>Gas Mains</i>	GLNLMAIXXXXXX GLNMMMAIXXXXXX GLNHMAIXXXXXX GLNTMAIXXXXXX GLNTMAINIPXXX
<i>Valves</i>	GPTXVALEMGCLO GPTXVALREGCLO
<i>Regulator Stations</i>	GPTHREGSERXXX GPTMREGSERXXX GPTLREGSERXXX GPTHREGSTAXXX GPTMREGSTAXXX GPTLREGSTAXXX

Figure 4.8-15. Source AutoCAD Layers

##### 4.8.3.1.2 Export Files

Legacy DataPrep generated eight text files for each AutoCAD drawing that was processed. Each of the eight file formats contain a header line, which contains comma delimited fields names, followed by many lines of comma delimited data values. When all the drawings were processed, Legacy DataPrep appended the files from each drawing into a single set of eight text files. The following file formats are generated by the application.

#### 4.8.3.1.2.1 BRS File

The BRS (browser) file contained data that was to be reviewed by the legacy DataPrep user after the process had been run. It contained references to regulator stations that do not have any connected pipes. The following header describes the fields exported to the browser file.

Drawing Name, Data Source ID, x1, y1, x2, y2, Error Code, Message

Drawing Name – No longer a need for this value  
Data Source ID – The station EES number (Originally from “EES” EED Field)  
x1 – X value for first point in regulator station  
y1 – Y value for first point in regulator station  
x2 – X value for second point in regulator station  
y2 – Y value for second point in regulator station  
Error Code – Always “1”  
Message - Always "Could not gather any pipes at insertion point of Regulator"

#### 4.8.3.1.2.2 GMAP File

The GMAP file was written before any data is analyzed. It is static and contained the following lines:

[Version]  
FmtFileVersion = 4.00

#### 4.8.3.1.2.3 GNODE File

The GNODE file contained all of the vertices for each gas main. The number of fields can vary due to the number of vertices. The following header describes the fields exported to the GNODE file.

;Id,FromX,FromY,GNodeX,GNodeY,....ToX,ToY,

ID – EES number for the gas main (Originally from “EES” EED Field)  
FromX – X value from the gas main’s “From” point  
FromY – Y value from the gas main’s “From” point  
GNodeX – X value from one of a gas main’s interior vertices (may repeat)  
GNodeY – Y value from one of a gas main’s interior vertices (may repeat)  
ToX – X value from the gas main’s “To” point  
ToY – Y value from the gas main’s “To” point

#### 4.8.3.1.2.4 LOG File

The log file contained messages generated by the application during the export process.

#### 4.8.3.1.2.5 NODE File

The NODE file listed the nodes at the end of each selected gas main. The following header describes the fields exported to the NODE file.

```
;Id,X,Y,Name,Elevation,IsSupplyNode,SourcePressure,SecondaryPressureUnits,Flow,SpecificGravity,HeatContent,Temperature,
```

ID – PCON NDE1 or NDE2 (Originally from PCON NDE1 or NDE2 EED Field)

X – X coordinate for the node

Y – Y coordinate for the node

Name – Empty

Elevation – Empty

IsSupplyNode – Always “False”

SourcePressure – Empty

SecondaryPressureUnits – Always “False”

Flow – Empty

SpecificGravity – Empty

HeatContent – Empty

Temperature – Empty

#### 4.8.3.1.2.6 Pipe File

The PIPE file listed all of the gas mains selected by the user. The following header describes the fields exported to the PIPE file.

```
;Id,FNode,TNode,Name,Length,Material,NominalDiameter,InternalDiameter,Roughness,Pressure,Efficiency,Gravity,Temperature,FMMStatus,
```

ID – EES Number of the gas main (Originally from the EED “EES” field)

FNode – EES Number for the first node (Originally from PCON NDE1)

TNode – EES Number for the second Node (Originally from PCON NDE2)

Name – EES Number of the gas main (Originally from the EED “EES” field)

Length – Total length of the gas main (Calculated length)

Material – Material of the gas main (Originally from the EED “MAT” field)

NominalDiameter – Size of the gas main (Originally from the EED “SIZ” field)

InternalDiameter – Empty

Roughness – Empty

Pressure – Empty

Efficiency – Empty

Gravity – Empty

Temperature – Empty

FMMStatus – Always “U”



#### 4.8.3.1.2.7 REGSTATION File

The REGSTATION file listed all of the regulator stations selected by the user. The following header describes the fields exported to the REGSTATION file.

```
;Id,FNodeId,TNodeId,StationName,Name,Temperature,SetPressure,SetNodeId,Is  
Linear,Orientation,FMMStatus,
```

ID – EES Number of the reg station (Originally from the “EES” EED field)  
FNodeID – EES Number for the first node (Originally from PCON NDE1)  
TNodeID – EES Number for the second node (Originally from PCON NDE2)  
StationName – Copied from the reg station’s “NUM” EED field  
Name – Concatenation of reg station’s “NUM” and “SEQ” EED fields  
Temperature – Empty  
SetPressure – Empty  
SetNodeID – EES Number for the second node (Originally from PCON NDE2)  
IsLinear – Always “True”  
Orientation – Empty  
FMMStatus – Always “U”

#### 4.8.3.1.2.8 VALVE File

The VALVE file contained data about closed valves only. The following header describes the fields exported to the VALVE file.

```
;Id,FNode,TNode,Name,RegulatorConstant,MaxRegulatorConstant,SetPressure,  
MinDP,ValveType,IsLinear,Orientation,FMMStatus,
```

ID – EES Number of the closed valve (Originally from the “EES” EED field)  
FNode – EES Number for the first valve node (Originally from PCON NDE1)  
TNode – Empty  
Name – Empty  
RegulatorConstant – Empty  
MaxRegulatorConstant – Empty  
SetPressure – Empty  
MinDP – Empty  
ValveType – Empty  
IsLinear – Always “False”  
Orientation – Empty  
FMMStatus – Always “U”

### 4.8.3.2 New DataPrep Design

As previously mentioned in the overview, the NIPSCO GIS project team replaced Outfield; an AutoCAD based mapping system, with an ESRI based GIS. Because the facility data is now stored and maintained in a different technology platform, the legacy DataPrep component to the SynerGEE interface was re-written. The new custom DataPrep application creates the same text files in the same format as the legacy DataPrep application. The DataPrep export procedure was required to yield data values

identical to the original Outfield data in order to support the target applications. However, instead of exporting the data from tiled AutoCAD drawings, the new application exports the data from a seamless ESRI Geodatabase.

Due to the change in technology, the following alterations to the application export process have occurred.

- Since the new DataPrep application only exports data from a single seamless data source, as opposed to multiple drawings, all text file headers occur only once in each file.
- The legacy Outfield managed field, EES, is no longer maintained in the new AEDR, as a result, the new DataPrep uses the ESRI managed ObjectId field instead as a unique identifier.
- The legacy Outfield managed fields NDE1, NDE2 are no longer maintained in the new AEDR either. The new DataPrep application replaced these values by generating node IDs at run-time. Like the NDE1 and NDE2 values, this new number uniquely identifies every exported node in the gas system.
- Because the original log file for legacy DataPrep was parsed per drawing and did not appear to have any data automation values, the new log file does not follow the same format as the original, but it does contain much of the same information.
- Regulator stations in the new system are one-point devices. In the legacy Outfield system regulators were two point devices with one of the points being identified as the high-pressure side of the regulator. The new DataPrep application exports the regulator stations from the AEDR so that the high-pressure side is identifiable by the SynerGEE application. The higher pressure side of the Regulator Station is identified in the REGSTATION file by the FnodeId field. The new application populates the FnodeId field by locating the geometrically coincident end Node of the GasMain feature identified in the RegulatorStation.RelUpstreamPipeOID field.

#### ***4.8.3.2.1 Application Framework***

The DataPrep application is built as an ArcMap extension, which adds functionality to the out-of-the-box tools. The DataPrep extension adds a toolbar to the ArcMap graphic user interface, with a single command button. The button launches a wizard that guides the user through the export process. A number of configuration settings necessary for the DataPrep Application are configurable via an XML file.

##### **4.8.3.2.1.1 New Functionality**

The legacy DataPrep application does not export open gas valves. The source code that handles open valves in the legacy DataPrep application has been commented out. This

exports open gas valves to an AIM file. The new DataPrep application exports the open gas valves to the AIM file.

#### 4.8.3.2.1.2 Source Data

DataPrep extracts information from an ESRI Geodatabase and saves that information as a set of comma delimited text files. Below is a list of connection properties to the Geodatabase and the feature classes used for the export.

Server Name: aedrdbsqlp01

ArcSDE Instance Name: esri\_sde

ArcSDE Instance port: 9999

Database: arcfm8

Version: Master Child

Feature Classes: arcfm8.gas.GasMain, arcfm8.gas.GasValves, and arcfm8.gas.RegulatorStations

Assumption: A single child version will be created to SDE.Default. This document refers to the child version as “Master Child”. Master Child will be the only child version to SDE.Default. All other versions will be created as children to the Master Child version.

#### 4.8.3.2.1.3 User Interface

The user launches the DataPrep application by double clicking on the DataPrep ArcMap document icon located on the user’s Desktop shown in Figure 4.8-16. The DataPrep ArcMap Document contains all configuration settings necessary for the DataPrep Application and is contained in the ArcMap Document. Three layers comprise the map, “Gas Main”, “Gas Valves”, and “Regulator Stations”.



Figure 4.8-16.

The user clicks on the DataPrep button to launch the wizard dialog box.

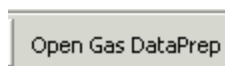
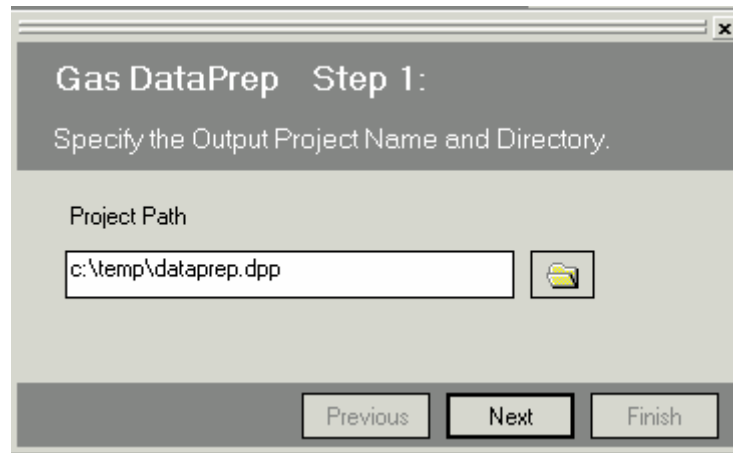


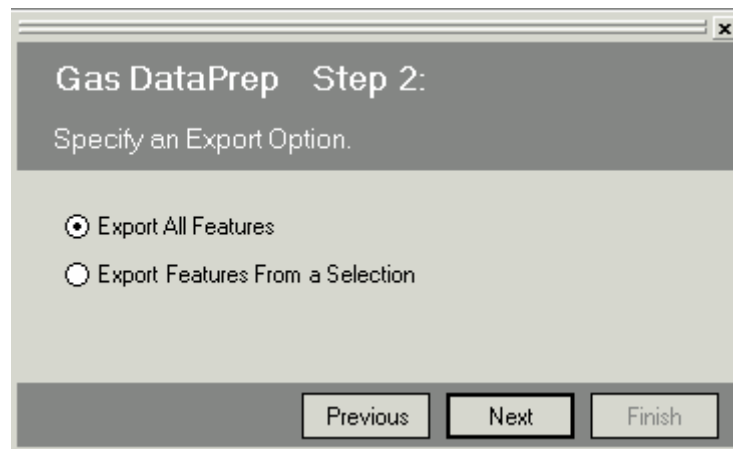
Figure 4.8-17.

The first screen, Figure 4.8-18 of the DataPrep wizard asks the user to specify an export project name and directory. Once a valid path has been specified, the Next button will become enabled and the user clicks Next.



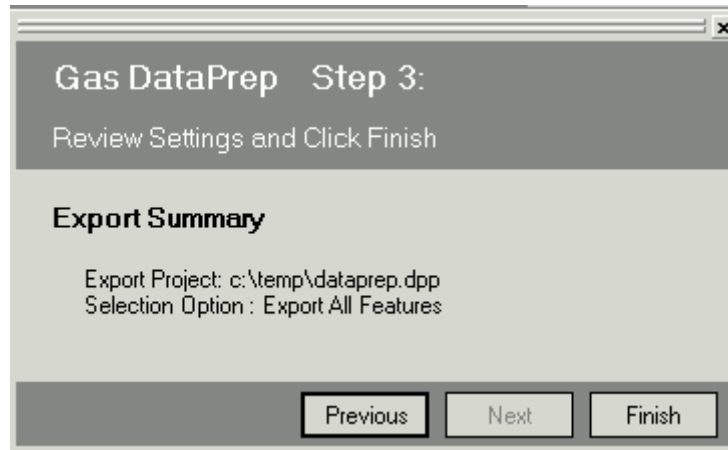
**Figure 4.8-18. DataPrep output location**

On the second wizard screen shown in Figure 4.8-19, the user can choose whether to export all features or features from a selection and clicks Next.



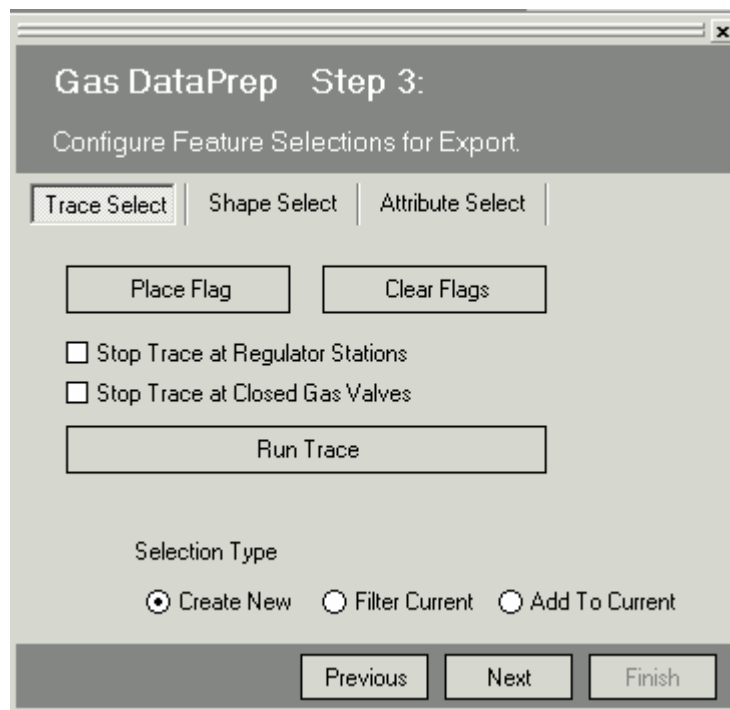
**Figure 4.8-19. DataPrep export option**

If the user chooses to export all features, the Figure 4.8-20 is presented and the user clicks Finish.



**Figure 4.8-20. DataPrep export summary**

If the user chooses to export features from a selection, Figure 4.8-21 the Feature Selection wizard screen is presented. The Feature Selection screen is a tabbed control offering several selection options including select by trace, select by attribute, and select by shape.



**Figure 4.8-21. Feature selection configuration box**

## 4.8.4 CADOPS and (FeederAll Part 1)

### 4.8.4.1 Overview

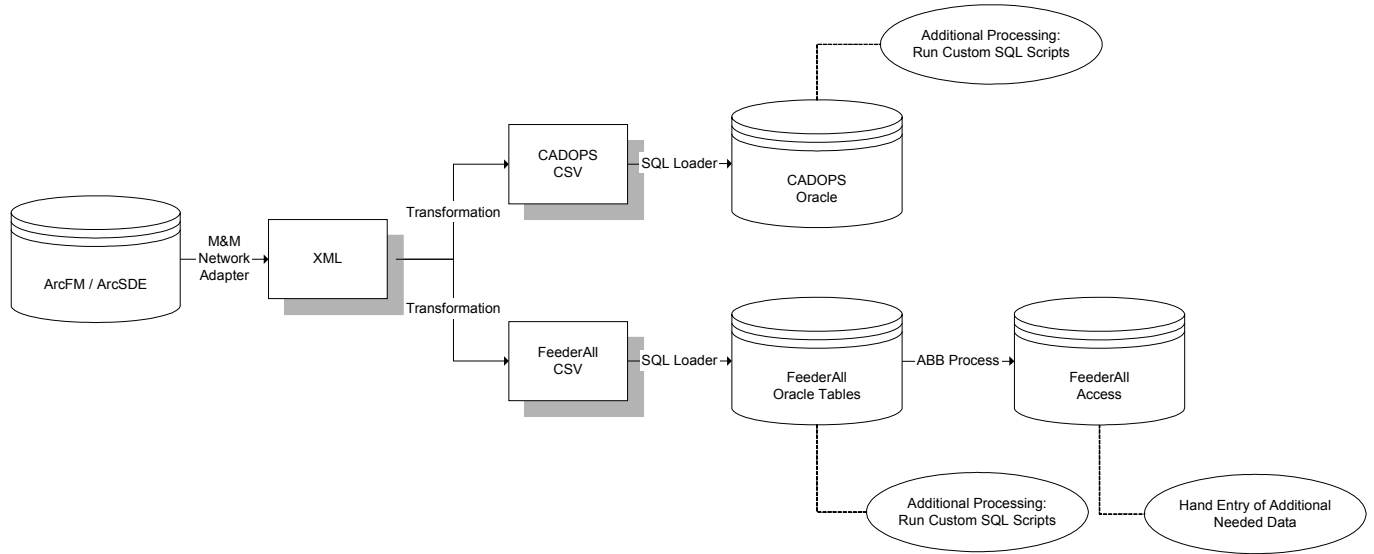
For outage management in the electric distribution system, NIPSCO uses ABB CADOPS running on top of an Oracle database. This system is also referred to as the NIPSCO Outage Restoration System or NORS. Previously, NIPSCO used a tool called ABB OUT to export facility data from legacy Outfield into a comma-delimited file. ABB OUT was also responsible for assigning type numbers to all features to provide a link to characteristic tables (DEVICETYPE, LINETYPE) maintained in CADOPS. Operations then used Oracle SQL Loader to load the data from the comma-delimited file into the CADOPS Oracle tables where custom SQL scripts were then run to update additional information.

For engineering analysis in the electric distribution system, NIPSCO uses ABB FeederAll. In the legacy system, a copy of the CADOPS comma-delimited file is used to supply the data for FeederAll. Oracle SQL Loader is used to load the data from the comma-delimited file into the FeederAll Oracle tables where custom SQL scripts are then run to update additional information. Next, an ABB process was used to transfer the Oracle data into a Microsoft Access database, which supports the FeederAll application. Additional hand entry of data within the Access database was necessary to support the analysis aspects of FeederAll.

To support the new interface, facility features and the network hierarchy are exported into the required comma-delimited file formats for line, device, load, node, path, capacitor, source, and mpoint. This is accomplished using ArcFM Network Adapter to select either a section or a feeder of data for export. The export process uses the XML produced by the Network Adapter API and transforms it to create the aforementioned comma-delimited formats for CADOPS and FeederAll. Only facility network geometry and attributes are exported—no annotation is exported for facility information.

CADOPS was completed and installed into production in Phase I of the AEDR project. FeederALL implementation was postponed until Phase II. However, the two projects share the same application with slightly differing configurations and exports, therefore they are described as one application and the interfaces are differentiated within this section.

The Figure 4.8-22 diagram illustrates the new interface:



**Figure 4.8-22. CADOPS/FeederAll interface diagram using Network Adapter to produce the XML file**

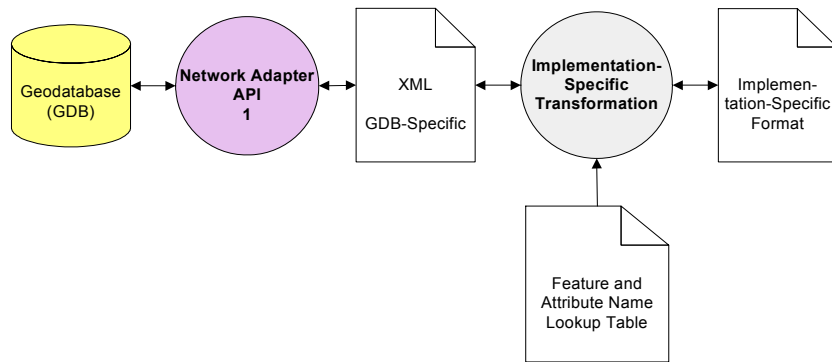
Once the XML is transformed into the CADOPS and FeederAll comma-separated-value (CSV) files, the new process will match the process that existed previously.

#### **4.8.4.1.1 ArcFM Network Adapter Architecture**

Network Adapter is a part of the ArcFM Solution and is based on ArcGIS 8 technology. The solution architecture is such that Network Adapter can be used with ArcFM, Designer, or Responder. The Network Adapter toolbar is available within ArcFM and allows a user's specific network model to be made available to external analysis engines.

The Network Adapter data flow framework consists of the following primary components:

- The Analysis API handles data flow between the Geodatabase in ArcFM/Designer and the data-specific XML document. The Analysis API is common to all analysis implementations and is a commercial off-the-shelf (COTS), COM-compliant component. It extracts features selected by the user—this means the user can create a selection set by Feeder or Feeders or using any spatial or logical query tool provided with ArcMap or ArcFM. The specific data items within the selected set that the API extracts are determined by the configuration of Model Names. The API has been optimized to produce the XML in a format that contains network connectivity and all the attributes configured through Model Names for extraction.
- As shown in Figure 4.8-23, the Implementation Specific Transformation which transforms data from the data-specific XML document produced by the Analysis API into the format required by a specific implementation. This transformation is accomplished through the use of XSLT.



**Figure 4.8-23. Network Adapter data flow framework**

#### 4.8.4.1.2 Extensible Stylesheet Language Transformation (XSLT)

An XSLT stylesheet is used to transform an XML document into another form. This could be another XML document, or a document in a different format altogether, such as PDF, HTML, or TXT. XSLT stylesheets work as a series of templates, which produce the desired formatting effect each time a given element is encountered. XSLT can also control the order in which elements and attributes are displayed. This means that tables of contents or indexes can be generated automatically on the basis of the content of a document. XSLT itself is an implementation of XML.

XSLT is sometimes defined as "Transformation by Example" whereas many other techniques would be defined as "Transformation by Program Logic". When using XSLT, a stylesheet (the example) is created that defines the desired end result. The XSLT processor is then responsible for transforming the source XML into that desired result.

The stylesheets, or "transformation specifications", are written primarily with declarative constructs though procedural techniques can be employed as needed. The stylesheet asserts the desired behavior of the XSLT processor based on conditions found in the source XML. It supplies examples of how each component of the result is formulated and indicates the conditions of the source that trigger which component is added to the result.

The use of XSLT within this interface will consist of the organizing and formatting of the Network Adapter XML into the appropriate CSV files to be imported into CADOPS and FeederAll.

#### 4.8.4.2 Use Case

Within an ArcFM session, the user selects the desired features using any of the ArcFM / ArcMap tools (including select by attributes, select by Feeder, trace tools, rubber band selection, etc). The user opens the ArcFM Network Adapter toolbar and clicks the export button. The system exports the selected features into the Network Adapter XML file based on the configured Network Adapter class and field model names. The system then transforms the XML via XSLT into the CADOPS and FeederAll comma-delimited file formats that are used by the current system. The user loads the comma-delimited files into their respective Oracle databases using Oracle SQL Loader. The CADOPS and



FeederAll interface process continues using the post-processing techniques and algorithms as they exist today.

### 4.8.4.3 Design

The detailed design of this interface outlines the feature classes and attributes that will be exported via Network Adapter and then the specifics of how they will be transformed via XSLT into the necessary comma-delimited files. The Oracle data models for CADOPS and FeederAll are identical which serves to simplify the process of transforming the data as well as allows for only a single set of Oracle SQL Loader control files to be maintained. However, the data modeling requirements for FeederAll differ from CADOPS significantly which has resulted in the need to have two separate exports for the two systems.

#### 4.8.4.3.1 Feature and Object Class Mappings

The requirements for this interface state that eight key tables must be loaded for CADOPS and FeederAll to function correctly. These tables include Line, Device, Load, Node, Path, Capacitor, Source, and MPoint. The GIS feature classes that participate in the electric network (and their related object classes) have each been individually mapped into these seven ABB tables shown in Table 4.8-1.

**Table 4.8-1. GIS feature and object class mapping**

<b>GIS Feature Class</b>	<b>ABB Table System</b>	
Switch / SupportStructure	Device	FeederAll & CADOPS
FuseCutoutBank / FuseUnit / SupportStructure	Device	FeederAll & CADOPS
RecloserBank / RecloserUnit / SupportStructure	Device	FeederAll & CADOPS
SectionalizerBank / SectionalizerUnit / SupportStructure	Device	FeederAll & CADOPS
PrimaryOpenPoint	Device	FeederAll & CADOPS
VoltageRegulator / VoltageRegulatorUnit / VoltageRegulatorBank	Device	FeederAll & CADOPS
CustomerGenerator	Device	FeederAll
CustomerGenerator	Source	FeederAll & CADOPS
TransformerBank / TransformerUnit / SupportStructure	Load	FeederAll & CADOPS
SubstationBreaker	Device	FeederAll
		FeederAll & CADOPS (with differing stype values)
SubstationBreaker / CircuitSource / Substation	Source	
SubstationBreaker	Mpoint	FeederAll
PowerTransformer / SubstationBreaker(s)	Source	FeederAll
CapacitorBank / CapacitorUnit	Capacitor	FeederAll & CADOPS
	Node & Path	FeederAll & CADOPS
Network Junction		
OhPrimary / ConductorInfo	Line	FeederAll & CADOPS

UgPrimary / ConductorInfo	Line	FeederAll & CADOPS
Busbar	Line	FeederAll & CADOPS
Tiewire	Line	FeederAll & CADOPS
PrimaryMeter	Load	FeederAll & CADOPS
OhTransmission / ConductorInfo	Line	FeederAll
UgTransmission / ConductorInfo	Line	FeederAll
FeederAllOpenPoint (FAOP)	Device	FeederAll

It was determined that although terminators and splices also participate in the electric network within the GIS, they would not be mapped into the ABB interface, as their existence does not affect either CADOPS or FeederAll. Also, the transmission features will only be exported for FeederAll as CADOPS deals exclusively with the distribution network.

Many attributes of the feature/object classes are mapped directly across into ABB fields. Some fields require additional processing such as concatenation or other summarization. These fields are further detailed in the next section.

ArcFM was configured to export the needed tables and attributes via Network Adapter. This is accomplished by creating new class and field model names to identify the tables and attributes to be exported. For this interface, two class model names of “CADOPS” and “FEEDERALL” and two field model names of “CADOPS” and “FEEDERALL” were created and configured on the tables listed above. This configuration can be easily modified along with the XSLT in the future to configure additional fields to be exported.

#### 4.8.4.4 Fields Requiring Additional Processing

##### 4.8.4.4.1 Device

- **DID:** The purpose of this field is defined as containing a unique identifier. Because multiple feature classes are being mapped into the DEVICE table, a unique combination of feature class / feature IDs are necessary. Though this field’s data type is defined as a VARCHAR, the data is later migrated into a NUMBER field which does not allow for any delimiting text such as a “.”. To satisfy these requirements, the FeatureClassId is concatenated with the ObjectId to create a single unique number. This ID allows the feature to be easily located in the GIS as long as the user is aware of the value of the FeatureClassId (this is a constant number determined when the geo-database schema is created).
- **DNAME:** The purpose of this field is to provide a name or description of the device. The desired format for this field is “CircuitId – SubstationId LoaNumber”. To achieve this format, three GIS fields are concatenated. The circuit ID (or feeder ID) is read from the FeederId field, which is maintained by Feeder Manager on all electric network features. The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSource. Finally, the LoaNumber exists on all features that are being exported.
- **NORM\_STATE:** This field accepts the normal status of the device in the format of a 3-digit integer (ABC – 0 indicates open, 1 indicates closed, ex. 101 – A & C closed,

B open). In the GIS, the normal state is tracked individually for phases A, B, and C. To populate this field in the ABB table, the values for the individual states are concatenated together to create the needed 3-digit integer.

- PHASE: This field accepts the phase on the device in the format of a 3-digit integer (ABC – 1 present, 0 not present). In the GIS, phase is tracked as a domain of values for all available phase combinations. To populate this field in the ABB table, the phase within the GIS is mapped into the 3-digit format (i.e. ABC=111, AC=101, B=010, etc). This phase designation does not imply the order of phases as they may appear on a pole or structure, such as ABC, CAB, BCA, or other phase orientation combinations.
- DEVICESIZE: This field tracks the amperage rating of the device. In most cases this exact field is tracked on the device features in the GIS. In a few cases like Switch, this field is not tracked on the banked feature class object but is calculated by adding the amperage rating values of any related unit objects.

#### **4.8.4.4.2 Load**

- LOID: This purpose of this field is defined as containing a unique identifier. In the case that the load is related to an overhead device, this field is populated with the related SupportStructure's PrimaryReferencePoleNumber. In the case that the load is related to an underground device, this field is populated with LongPadNumber that exists directly on the device.
- LONAME: The purpose of this field is to provide a name or description of the load. The desired format for this field is "CircuitId – SubstationId LoaNumber". To achieve this format, three GIS fields are concatenated. The circuit ID (or feeder ID) is read from the FeederId field, which is maintained by Feeder Manager on all electric network features. The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSouce. Finally, the LoaNumber exists on all features that are being exported.
- PHASE: This field accepts the phase on the device in the format of a 3-digit integer (ABC – 1 present, 0 not present). In the GIS, phase is tracked as a domain of values for all available phase combinations. To populate this field in the ABB table, the phase within the GIS is mapped into the 3-digit format (i.e. ABC=111, AC=101, B=010, etc).
- ABB\_INT\_ID: The purpose of this field is defined as containing a second unique identifier. Because multiple feature classes are being mapped into the load table, a unique combination of feature class / feature IDs are necessary. This field's data type is defined as a NUMBER(10) which does not allow for any delimiting text such as a ". To satisfy these requirements, the FeatureClassId is concatenated with the ObjectId to create a single unique number. This ID also allows the feature to be easily located in the GIS as long as the user is aware of the value of the FeatureClassId (this is a constant number determined when the geo-database schema is created).

#### **4.8.4.4.3 Source**

- ABB\_INT\_ID: The purpose of this field is defined as containing a unique identifier. Because multiple feature classes are being mapped into the source table, a unique

combination of feature class / feature IDs are necessary. This field's data type is defined as a NUMBER(10) which does not allow for any delimiting text such as a ".". To satisfy these requirements, the FeatureClassId is concatenated with the ObjectId to create a single unique number. This ID also allows the feature to be easily located in the GIS as long as the user is aware of the value of the FeatureClassId (this is a constant number determined when the geo-database schema is created).

- SOID: The purpose of this field is to provide a name or description of the source. The desired format for this field is "CircuitId – SubstationId LoaNumber". To achieve this format, three GIS fields are concatenated. The circuit ID (or feeder ID) is read from the FeederId field, which is maintained by Feeder Manager on all electric network features. The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSource. Finally, the LoaNumber exists on all features that are being exported. In the case of a customer generator, CustomerName should be substituted for SubstationId.
- SONAME: The desired format for this field is "SubstationId - SubstationNumber". The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSource. The SubstationNumber is acquired by traversing the relationships from any network feature to the CircuitSource to the SubstationBreaker to the Substation. In the case of a customer generator, CustomerName and CustomerSubstationId are substituted for SubstationId and SubstationNumber respectively.

#### **4.8.4.4.4 Capacitor**

- CAID: The purpose of this field is defined as containing a unique identifier. To accomplish this, a unique combination of feature class / feature IDs are necessary. Though this field's data type is defined as a VARCHAR, the data is later migrated into a NUMBER field which does not allow for any delimiting text such as a ".". To satisfy these requirements, the FeatureClassId is concatenated with the ObjectId to create a single unique number. This ID also allows the feature to be easily located in the GIS as long as the user is aware of the value of the FeatureClassId (this is a constant number determined when the geo-database schema is created).
- CANAME: The purpose of this field is to provide a name or description of the capacitor. The desired format for this field is "CircuitId – SubstationId LoaNumber". To achieve this format, three GIS fields are concatenated. The circuit ID (or feeder ID) is read from the FeederId field, which is maintained by Feeder Manager on all electric network features. The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSource. Finally, the LoaNumber exists on all features that are being exported.
- PH3PRES: This field accepts the phase on the capacitor in the format of a 3-digit integer (ABC – 1 present, 0 not present). In the GIS, phase is tracked as a domain of values for all available phase combinations. To populate this field in the ABB table, the phase within the GIS will need to be mapped into the 3-digit format (i.e. ABC=111, AC=101, B=010, etc).

#### 4.8.4.4.5 Line

- **ID:** The purpose of this field is defined as containing a unique identifier. Because multiple feature classes are being mapped into the LINE table, a unique combination of feature class / feature IDs are necessary. Though this field's data type is defined as a VARCHAR, the data is later migrated into a NUMBER field which does not allow for any delimiting text such as a “.”. To satisfy these requirements, the FeatureClassId is concatenated with the ObjectId to create a single unique number. This ID also allows the feature to be easily located in the GIS as long as the user is aware of the value of the FeatureClassId (this is a constant number determined when the geo-database schema is created).
- **NAME:** The purpose of this field is to provide a name or description of the line. The desired format for this field is “CircuitId – SubstationId LoaNumber”. To achieve this format, three GIS fields are concatenated. The circuit ID (or feeder ID) is read from the FeederId field, which is maintained by Feeder Manager on all electric network features. The SubstationId is acquired by traversing the relationships from any network feature to the CircuitSource. Finally, the LoaNumber exists on all features that are being exported.
- **PHASE\_PERM:** This field accepts the phases that are built on the line in the format of a 4-digit integer (representing ABCN). A value of 0 indicates the phase is not present. The values of 1-4 are used to indicate the position of the phased conductor if it exists. For NIPSCO's purposes, the conductors are always in the order ABCN (ABCN=1234, AN=1004, AB=1200, ABN=1204, etc). In the GIS, phase is tracked as a domain of values for all available phase combinations. To populate this field in the ABB table, the phase within the GIS is mapped into the first three digits of the above format. To determine if a neutral conductor is present, the related ConductorInfo objects are searched for an object with ConductorTypeCd=WN, which indicates a neutral conductor.

#### 4.8.4.5 ABB Category, Type, Voltage, and Symbolization Fields

Many of the ABB tables utilize lookup tables to determine the category, type, voltage level, and/or symbol to use within CADOPS and FeederAll. These values are set within the interface based on the properties of the features being exported. ABB maintains individual lookup tables for device category, device type, regulator type, line type, symbol, and voltage level. These tables have been consolidated into three text files in the current interface (Outfield→ABB). Within the new interface, these lookup tables will be mapped into a single XSL lookup files as follows:

**Table 4.8-2. ABB lookup tables defining fields**

<b>ABB Lookup Table</b>	<b>GIS Lookup Table</b>
DEV_CAT	ABBLookups.xsl
DEVTYPE	ABBLookups.xsl
REGTYPE	ABBLookups.xsl
LINETYPE	ABBLookups.xsl
SYMBOL	ABBLookups.xsl
VOLTAGELV	ABBLookups.xsl

#### **4.8.4.6 Issues**

Many issues were raised during the workshop for this interface. These issues have been reviewed by the NIPSCO GIS and/or CADOPS and FeederAll teams and have been closed with a decision. These issues are documented below:

##### **4.8.4.6.1 Modeling of VoltageRegulator**

The GIS models two and three-phase VoltageRegulators on two and three poles respectively because of their physical size. These multi-phase VoltageRegulators are related to each other via a VoltageRegulatorBank object. For the ABB interface, any multi-phase VoltageRegulator is transferred as a single entry in the DEVICE table. The location of the entry in the DEVICE table is derived from any one of the phased VoltageRegulator features. The phasing on the single device entry was adjusted to include all available phases in the bank.

##### **4.8.4.6.2 New Business Process for Modeling CustomerGenerator**

Customer generators are new features that are included in the AEDR going forward. To support the effective use of customer generators in the CADOPS and FeederAll applications, a new business process was created for the modeling of customer generators within the AEDR. When placing a CustomerGenerator feature, it is offset from the main primary conductor. This is accomplished by creating a primary conductor stub between the main primary conductor line and the CustomerGenerator. The CustomerGenerator is always modeled as an open device to further facilitate the export to the ABB applications. (NormalPosition for A, B, and C set to 0).

##### **4.8.4.6.3 Utilization of ABB Path Points**

The legacy interface between Outfield and CADOPS and FeederAll did not utilize path points but instead modeled all line objects as node to node. To provide a more accurate representation of the GIS spatial information, the new interface utilizes path points (via the ABB PATH table) to define multi-segmented lines. To accomplish this, the electric network simple junctions are used as path points and lines are only broken by nodes where their originating features are broken in the GIS (at devices or attribution changes).

##### **4.8.4.6.4 GIS Modeling of SubstationBusbar**

The GIS model includes a feature class for Busbar with an available subtype of SubstationBusBar. This subtype has its FdrMgrNonTraceable property defaulted to true (1). This prevents the SubstationBusbar from being traced and included in any ArcFM feeders. The intended use of the SubstationBusbar is to model connections to a common point between multiple SubstationBreakers within a Substation. This data will be used by FeederAll to assist in re-modeling a common source for multiple feeders and should be included in any exports for FeederAll. It should be noted that because the SubstationBusbar is not included as part of an ArcFM feeder, it will not be selected when running a 'select by feeder' operation or by an ArcFM trace. Therefore, to include it in an export for FeederAll, the SubstationBusbar will need to be manually added to the selection before launching the Network Adapter export. SubstationBusbar was excluded from any CADOPS export.

#### ***4.8.4.6.5 Maintaining List of Node IDs at LOA Boundaries***

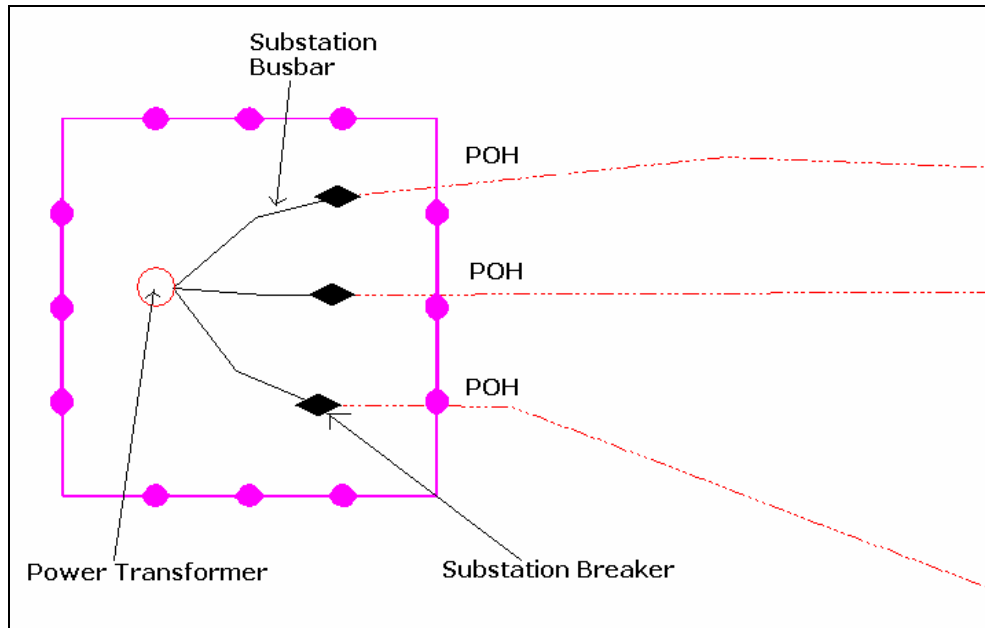
Part of the CADOPS import process is to run a script that creates sources on all nodes that exist at a LOA boundary. To accomplish this, the CADOPS administrator maintains a list of the IDs of those nodes at LOA boundaries. The concern was raised that the IDs of these nodes might not be constant if the electric network was dropped and recreated. While this is true, now that the AEDR data has been put into production and versioned, it is highly unlikely that the network will be dropped and recreated (therefore maintaining constant IDs).

#### ***4.8.4.6.6 Export of Transmission***

The FeederAll application includes analysis for transmission features whereas the CADOPS application deals exclusively with distribution features. Since the Network Adapter export operates based on a selected set of features, the easiest way to handle exporting different sets of features to the different systems is to complete the export based off of different selected sets of features. To include transmission features in an export, the user should manually add the features to the selected set. It is acceptable to also include surrounding features in the selected set as they will not be exported unless they have been configured for the ABB export via the chosen model names. This approach also allows more specific exports to be run (i.e. transmission only) as needed.

#### ***4.8.4.6.7 Tracking of a Single Source for Multiple Feeders***

The FeederAll application requires a single source for multiple feeders within a substation. A new feature class called PowerTransformer was added to the data model that acts as this single source and is tied to multiple SubstationBreakers by SubstationBusbar. The PowerTransformer was modeled as a simple point feature and will not be part of the electric network as it is not recognized as part of a feeder by Feeder Manager. An explicit relationship is created between the PowerTransformer and any downstream SubstationBreakers. This relationship will allow the export to use attribution from the SubstationBreakers instead of duplicating the data within the PowerTransformer feature class. In this manner, the PowerTransformer exists only as a geographic location for the FeederAll export. Figure 4.8-24 illustrates an example of a PowerTransformer connected to three Feeders:



**Figure 4.8-24. Feeder configuration within a substation**

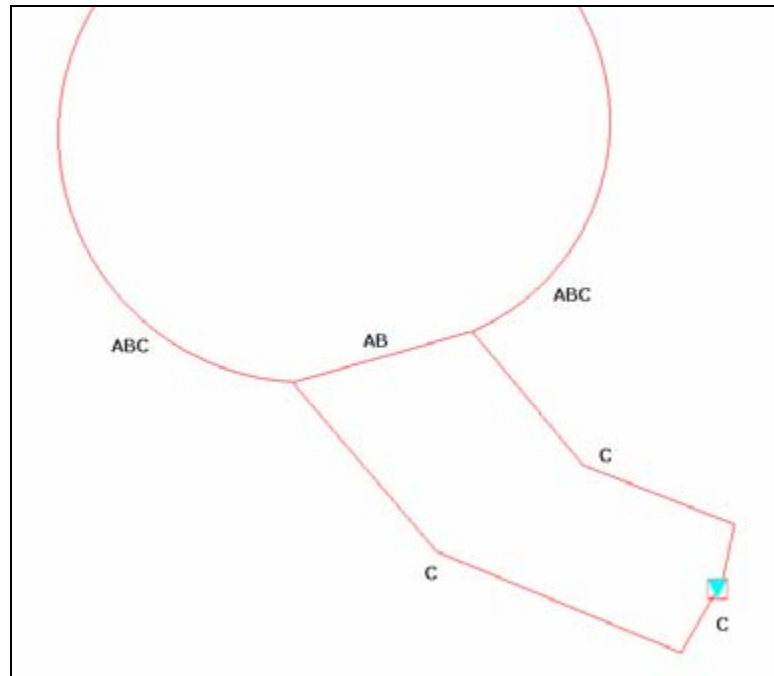
When these features are exported into FeederAll, an entry in the SOURCE table (with stype=1, designates as FeederAll source) is created at the node where the PowerTransformer exists. The SubstationBusbar will be exported as lines. And at the SubstationBreakers, three records are entered for each breaker as follows: 1) Entry is created in the Source table (with stype=0, designates as FeederAll feeder designation) 2) Entry is created in the MPOINT table (creates a FeederAll meter point) 3) The SubstationBreaker is entered as a device on the line. The handling of these features is significantly different from CADOPS and is necessary to run the distribution load analysis for a substation within FeederAll.

The required data model changes have been approved by the NIPSCO GIS project team. If this data model change had not been approved, the FeederAll administrator would have to continue with the legacy process, which included manually connecting related SubstationBreakers together via ABB lines and creating a single source connected at the intersection of the lines. It has been noted that because NIPSCO manages over 300 substations in the GIS, that this is a very time intensive process that would prevent the FeederAll users from gaining the desired benefits from the new interface.

#### ***4.8.4.6.8 Modeling of a Single Phase Transformer on a 3-Phase Line***

The NIPSCO data has many cases where a 3-phase underground line feeds an area where a single-phase transformer is offset from the 3-phase line. In these cases, a single-phase conductor is split off from the 3-phase line, runs out to the transformer, and returns to join the 3-phase line. The segment of the 3-phase line where the single-phase line splits off is reduced to a 2-phase line. The graphic in Figure 4.8-25 illustrates this case:

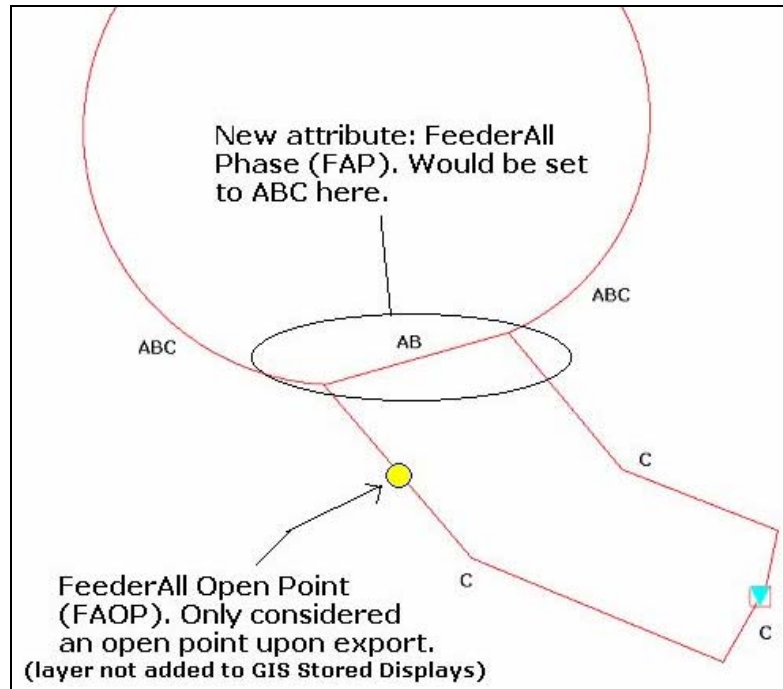




**Figure 4.8-25. Single-phase transformer offset on a 3-phase line**

This case accurately models the facilities as they exist in the field and is a valid scenario within the AEDR and within CADOPS. This case is not, however, supported by FeederAll. The FeederAll analysis sees this case as a loop condition and the administrator has to subsequently enter an open point on the single-phase line and update the two-phase line to 3-phase to correct the problem. To prevent this required manual update of the data by the FeederAll administrator, a new approach to this case was proposed. A new feature class called FeederAllOpenPoint should be created as part of the electric network within the GIS. This feature class should have no impact on FeederManager and will exist purely for the purposes of exportation to FeederAll. A FeederAllOpenPoint should be placed on the leg of the C phase that is downstream from the pad-mounted transformer. During the export, this FeederAllOpenPoint will be exported as an open device into FeederAll.

Next, a new attribute was added to the underground conductor feature class called FeederAllPhase. This attribute references the 'Phase Designation' domain. It allows the conductor to carry a different phase for the FeederAll export than it does for any GIS-based analysis. In the above example, the conductor with a phase of AB would have a FeederAllPhase of ABC. The export uses the FeederAllPhase if it is populated or PhaseDesignation if it is not. This change in conjunction with the FeederAllOpenPoint will allow the export to work correctly for the FeederAll analysis. The updated case is illustrated in Figure 4.8-26.



**Figure 4.8-26. FeederAll Open Point**

The required data model changes for FeederAllOpenPoint and FeederAllPhase have been approved by the NIPSCO GIS team. If this data model change had not been approved, the FeederAll administrator would have to continue with the process used today, which includes manually adding the open point and changing the phasing in all cases where this occurs. It has been noted that because there are hundreds, if not thousands, of locations where this case occurs, that this is a very time intensive process that would prevent the FeederAll users from gaining the desired benefits from the new interface.

## 4.8.5 CAD Export

### 4.8.5.1 Overview

NIPSCO required a CAD Conversion tool that would export GIS data from the NIPSCO Geodatabase to AutoCAD 2000 DWG and DXF files. A set of pre-existing, non-productized tools developed by Miner & Miner running on top of Safe Software's productized Feature Manipulation Engine (FME) were configured to generate the AutoCAD files.

The CAD Converter offered many of the characteristics that met NIPSCO functional requirements including:

- It presently works on ArcGIS 8.3.
- It exports graphics and labels/annotation.
- It exports to an AutoCAD DWG and DXF formats (presently to an AutoCAD 2000 format).
- It allows the user to specify a geographic area, and select layers to be exported.

CAD Converter offered a user-interface that guides the technician through the process of mapping the GIS data to a CAD template, including options to save the data mapping configuration as a template, and then exports the GIS data to an AutoCAD 2000 DWG or DXF format.

CAD Converter translates geographic features from ArcGIS / ArcFM formats to DWG, allowing data to be viewed in AutoDesk applications, such as AutoCAD and AutoCAD Map.

CAD Converter offers a simple and comprehensive user-interface, employing several methods to export features to a chosen export file from existing CAD drawing templates. The tool allows exporting features based on 4 selection types: currently selected and displayed features, the screen extent, polygon feature from feature layer in map, and features that lie within a polygon graphic. CAD Converter requires the GIS features to be mapped to their associated CAD layer, and allows the mappings to be saved for later retrieval. CAD Converter supports AutoCAD blocks.

The tool was evaluated against the following NIPSCO set of requirements:

1. The tool must produce a DWG file from the ArcSDE Geodatabase.
2. The tool must export CAD Layer Name information from a "CADLayerName" field.
3. The tool must export CAD Block Name information from a "CADBlockName" field.
4. The tool must export Block Rotation values from a "CADBlockRotation" field.
5. The tool must export Block scale from a "CADBlockScale" field.
6. The tool must be configurable.
7. The tool must be able to schedule the export of the DXF files from the AEDR (i.e., must support batch processing).
8. The tool must specify color as "ByLayer" and "By Block".
9. The tool must support Line Weight.
10. The tool must be able to store and process multiple configurations.
11. The tool must support the export of True Arc Information a.k.a. "bulge factor" (i.e., "hops" over a gas main). AutoCAD and ArcSDE manage arcs and polylines differently.

The CAD Converter tool meets 95% of the above requirements. It eliminated training on FME which would have required great deal of resource time in training and configuration.

Additional tool customization was required to meet all of the requirements. Miner & Miner provides the CAD Export tool as a developer sample tool only. It is not supported by Miner & Miner and will not be upgraded or altered by Miner & Miner without associated charges.

During implementation, we were able to meet the requirements 2, 3 and 4 with the data mapping database (see Figure 4.8-27) which uses existing geodatabase fields to drive differing symbology, line types, layers and line weights. This required minimal configuration training and time compared to the learning curve of other products. Requirements 5 and 11 did not represent a significant problem in the day to day production of AutoCAD files. Requirement 7 was resolved by exporting larger sections of data resulting in a significant reduction in operator time required to complete the export of company wide data.

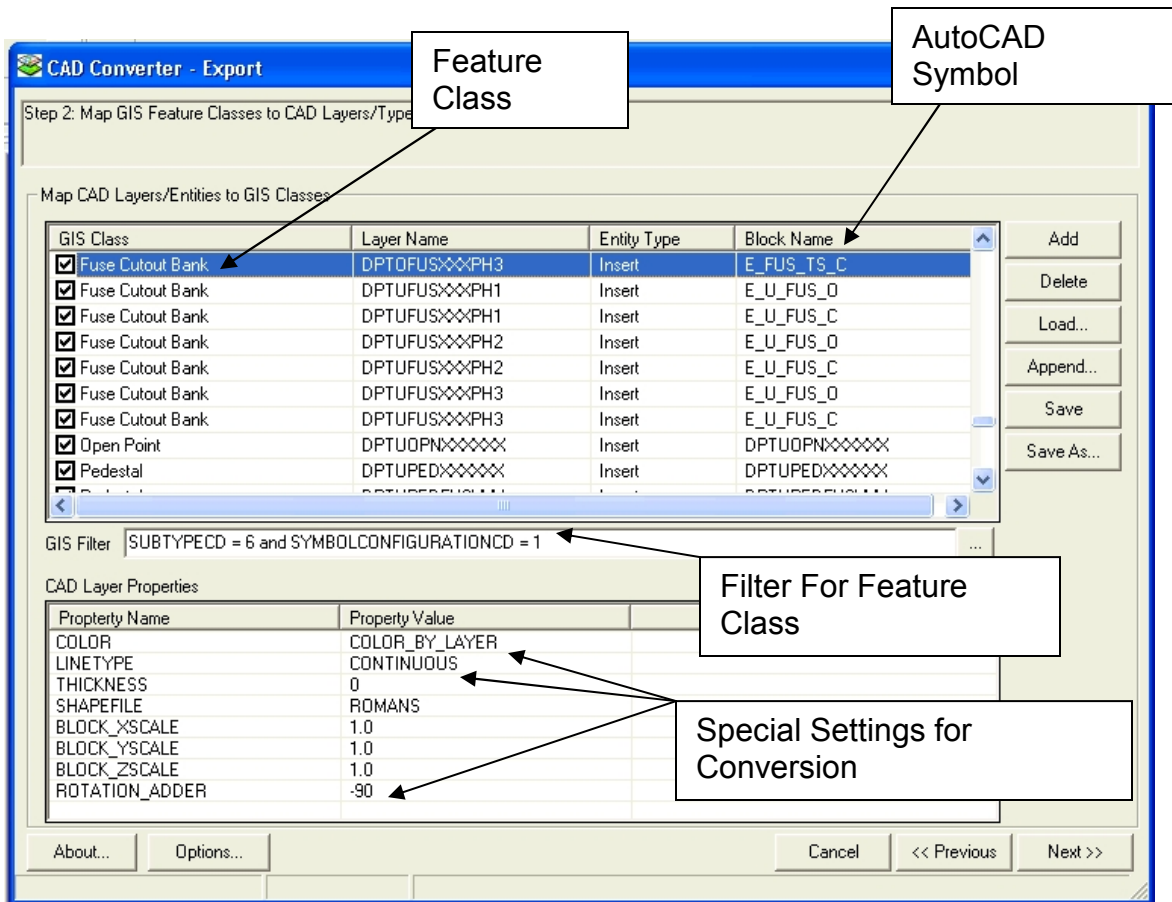


Figure 4.8-27. CAD Converter export mapping screen

### 4.8.5.2 Operational Use

To invoke the CAD Converter wizard, click the CAD Converter command on the CAD Converter toolbar as shown in Figure 4.8-28.



Figure 4.8-28.

## Step 1:

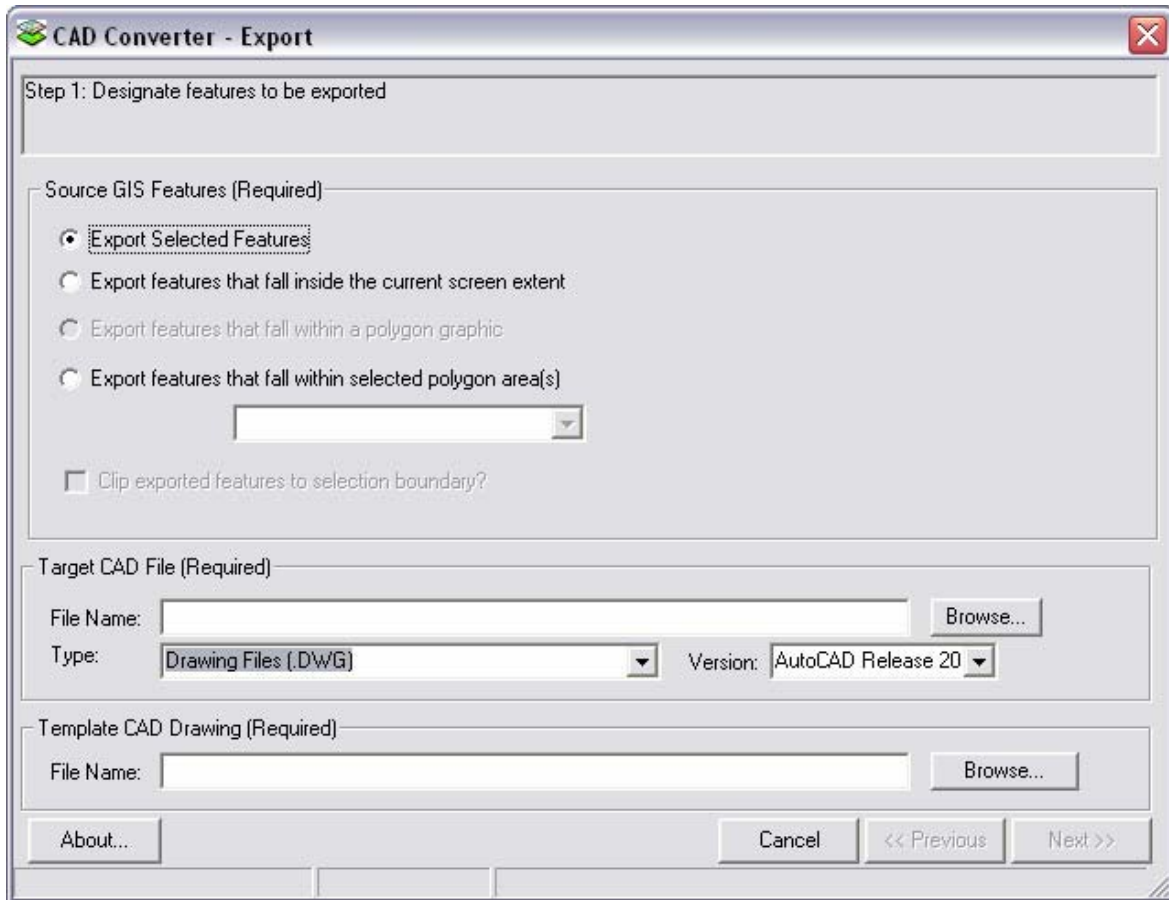


Figure 4.8-29. Feature selection wizard

### Selecting Output Features

Figure 4.8-29 is the first of three wizard screens that allows the user to choose the feature selection type, designate an output file, and reference a mapping AutoCAD drawing.

CAD Converter exports features based on 4 selection types. Four radio buttons on the initial export wizard screen display these options:

#### 1. Export by Selected Features

Exporting data by selected features requires features to be selected before the wizard is launched. It also depends on all features selected for an export to be visible in the map frame. This is due to ESRI functionality limiting selected features to those features currently in the view extent.

#### 2. Export by Screen Extent

Exporting data from the current screen extent will export all mapped features that lie in the visible extent regardless of any view scale set. Checking the “Clip Features at Boundary” checkbox when selecting this option will ensure only features within the boundary are selected.

### 3. Export by Polygon Feature Extent

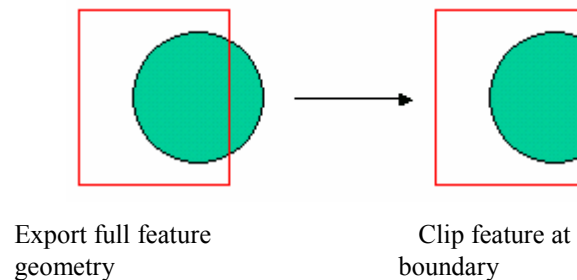
Exporting by polygon features allows the user to export based on the extent of a polygon feature. This feature must belong to a feature class loaded in ArcMap.

### 4. Export by Polygon Graphic

Exporting by polygon graphic allows the user to export based on the extent of a polygon drawn to the graphics container.

#### Clip Exported Features to Selection Boundary

The user can check this box (shown in Figure 4.8-30) to clip features at the boundary, or leave it unchecked to export the full feature geometry.



**Figure 4.8-30. Clip features checkbox**

#### Target CAD File

This option launches a Windows 'Save As' dialog. The user navigates to the destination location and either selects an existing file to overwrite, or types in the desired file name. To change between DXF and DWG files, the user selects the desired option on the combo dropdown labeled 'Type'. Click *Save*.

#### Template CAD Drawing

The export requires creating a GIS to CAD layer mapping, and uses an existing AutoCAD drawing for this purpose. This drawing must include all layers required in the output. Using the CAD Converter wizard, the user can then create the mappings between the GIS layer data and the CAD layers.

Clicking the *Browse* button in the Template CAD Drawing section of the wizard opens a Windows 'File Open' dialog. The user navigates to the .DWG file acting as the template and clicks *Open*.

This option saves the selected DWG template once it is set for future use.

## Step 2:

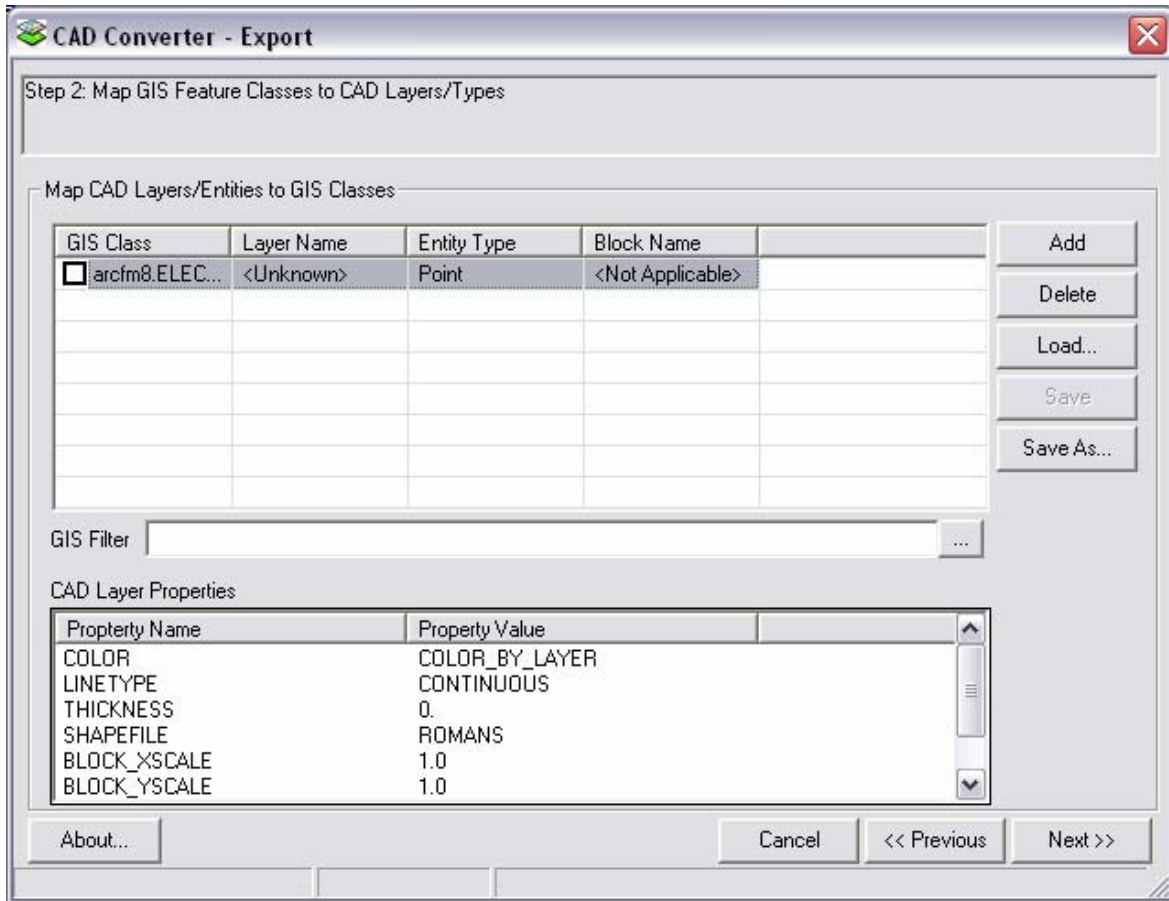


Figure 4.8-31. Mapping wizard

### Map Feature Layers to CAD Layers

This step shown in Figure 4.8-31 allows the user to add feature layers present in the map document and map the feature layers to a CAD layer. For point feature types, AutoCAD block graphics are specified.

To map layers, the user clicks the *Add* button to the right of the grid. This will add a blank GIS to CAD mapping row. The feature layer column will have a checkbox in the cell, checking the box will export the layer.

Once a new layer is added, clicking in each cell will invoke a drop down menu. The first column represents the feature layer name, the second the CAD layer, then the feature type, and the block name. Table 4.8-3 describes how the fields will be populated.

**Table 4.8-3.**

GIS Class	The name of the feature class to export.										
CAD Layer Name	The name of the layer (level) onto which features will be placed.  Multiple feature class/subtypes can be placed on the same CAD Layer. For example, all conductors, overhead and underground primary and secondary, can be placed on a single CAD Layer named 'WIRE'.										
CAD Entity Type	The type of CAD entity to be created. The entity type is based on the geometry type of the ArcInfo feature. Here are the types of entities that were created from ArcInfo features:  <table border="1"> <thead> <tr> <th>ArcInfo Feature</th> <th>Possible CAD Entity Types</th> </tr> </thead> <tbody> <tr> <td>Line</td> <td>Polyline</td> </tr> <tr> <td>Point</td> <td>Point Block (Cell)</td> </tr> <tr> <td>Annotation</td> <td>Text</td> </tr> <tr> <td>Polygon</td> <td>Polyline Polygon</td> </tr> </tbody> </table>	ArcInfo Feature	Possible CAD Entity Types	Line	Polyline	Point	Point Block (Cell)	Annotation	Text	Polygon	Polyline Polygon
ArcInfo Feature	Possible CAD Entity Types										
Line	Polyline										
Point	Point Block (Cell)										
Annotation	Text										
Polygon	Polyline Polygon										
Block Name	The name of the AutoCAD block to draw the exported feature.										
Color	Colors of CAD entities were defined as a property of the entity itself, however, colors can also be obtained from the color assigned to the level. For example, all conductors on a single CAD Layer were named 'WIRE' but still required different colors for primary and secondary, so a specific color was assigned to each feature class/subtype. However, if all entities in the WIRE layer were required to have the same color, then the color could be set to "BYLAYER".										
Line Style	A line style can be designated for CAD Polyline and Polygon features such as CONTINUOUS, DASHED, DASHDOT, etc.										
Line Type	A line weight from 0 to 15 can be designated for CAD Polyline and Polygon features.										
Shapefile	Allows selecting the exported text font.										
Block Scale	Controls the scale of the exported block.										
Rotation	Allows setting a rotation for exported features. ESRI rotation is known to be off -90 degrees from AutoCAD. Employing this constant will result in a consistent feature look between the two systems.										



(Optional) Select existing Feature Layer / CAD Layer mapping template

Once a mapping template has been created, it can be saved and reused at a later date. This functionality expedites the export process by removing the layer-by-layer mapping of GIS to CAD data every time the tool is run.

A mapping template is created by running CAD Converter, mapping GIS to CAD layers, selecting *Save As*, and naming the mapping template. Once a mapping template has been created, it becomes ready for use by selecting *Load* from the wizard button, navigating to the template, and opening it.

**Step 3:**

**Execute**

By clicking *Finish*, the designated features will be exported to the target output file(s). Progress is indicated on a bar that is shown at the bottom of the form while the export is in process.

**4.8.6 MAPPS**

Several interfaces exist between the new system and the Material Accounts Payable and Purchasing System (MAPPS). These interfaces are defined below.

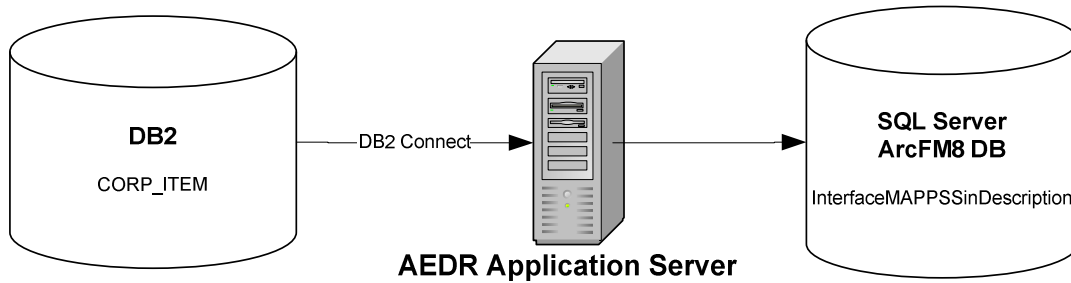
**4.8.6.1 SIN Description**

The SAGE tool accesses data from the MAPPS Stores Item Number (SIN) Description table CORP\_ITEM to display the SIN description to the user when the SIN value is added/updated on the transformer, regulator, or capacitor add/edit pages. This data exists in the MAPPS DB2 database. This data is replicated from DB2 into the AEDR database on a nightly basis so that it can be utilized quickly by the SAGE application. The query pulls both the SIN and the description field. This data is stored in the AEDR table ArcFM8.electric.InterfaceMAPPSSinDescription shown in Figure 4.8-32.

InterfaceMAPPSSinDescription	
<b>PK StoresItemNumber</b>	<b>VARCHAR(7)</b>
MappsDescription	VARCHAR(200)

**Figure 4.8-32. Stores Item Number data type**

The process is illustrated in Figure 4-8.33.



**Figure 4.8-33. MAPPS/AEDR Interface**

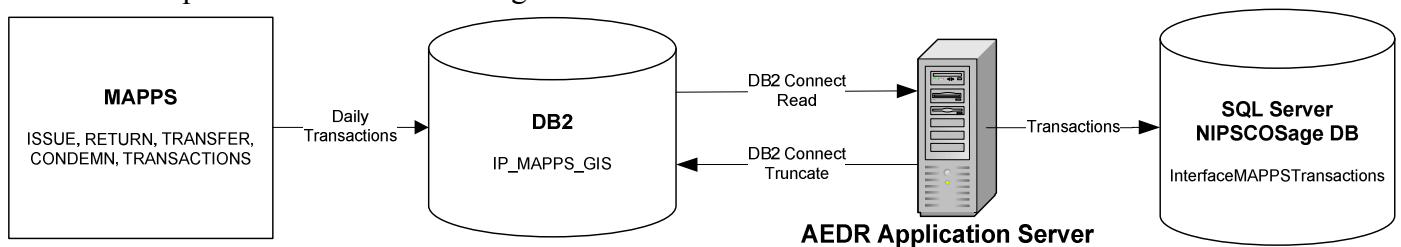
#### 4.8.6.2 Nightly Transactions

The MAPPS system manages daily transactions relating to the issuing out, stores return, transfer, and condemnation of transformers, regulators, and capacitors. These transactions must be matched against the EDFS/AEDR transactions that occur in a given day. Previously these transaction records were written nightly to a flat file that was then parsed by the EDFS application. In the new ArcFM/SAGE AEDR system, the MAPPS system writes these transaction records to a DB2 table, IP\_MAPPS\_GIS that are made available to the AEDR system via DB2 Connect. This operation occurs on a nightly basis and the GIS system truncates the DB2 transaction table after the records have been parsed. This architecture change allows the AEDR system to access the transactions in a more efficient and real-time manner. The transaction data is copied over into the GIS table NIPSCOSage.Sage.InterfaceMAPPSTransaction shown in Figure 4.8-34.

InterfaceMAPPSTransaction	
PK TransactionId	NUMERIC
CompanyNumber	VARCHAR(7)
TransactionType	VARCHAR(3)
Department	VARCHAR(3)
SystemCode	VARCHAR(1)
StoresitemNumber	VARCHAR(7)
TransactionDate	DATETIME
TransferReceivingDepartment	VARCHAR(3)
TransferNumber	VARCHAR(7)
CondemnationNumber	VARCHAR(3)

**Figure 4.8-34. MAPPS interface transactions and data types**

The process is illustrated in Figure 4.8-35.



**Figure 4.8-35. Batch transaction process**

### 4.8.6.3 Near Real Time Asset Push

Capital assets (transformers, regulators, and capacitors) are entered into the SAGE system. Whenever a new asset record is created, updated, or deleted it needs to be transmitted to MAPPS in near real time so that it can be issued out into the field. This is a critical task in a storm scenario. Because DB2 Connect is not always a reliable method of communication between .Net / SQL Server and the DB2 database, it was decided to not make this a synchronous operation when the asset is created in SAGE. Instead the transaction is written to a queue hosted in a SQL Server table MAPPSAssetPushQueue which contains two columns:

- ID – A system-generated unique ID
- AssetPushSQL – The SQL that needs to be executed against the DB2 database to update it with the latest asset data.

A windows service, MAPPSAssetPush, was then created on an application server. This service is responsible for polling the MAPPSAssetPushQueue table on a scheduled interval (every 30 minutes) to check for the existence of any records. If records are found, the service will then attempt to execute the SQL against the DB2 database. If the operation succeeds, the record will be removed from the MAPPSAssetPushQueue table. If it fails, the operation will be retried again at a specified time interval. The service also is configured to send out emails if failures occur so that the failure may be addressed as quickly as possible. The diagram in Figure 4.8-36 illustrates the MAPPS near real time asset push process:

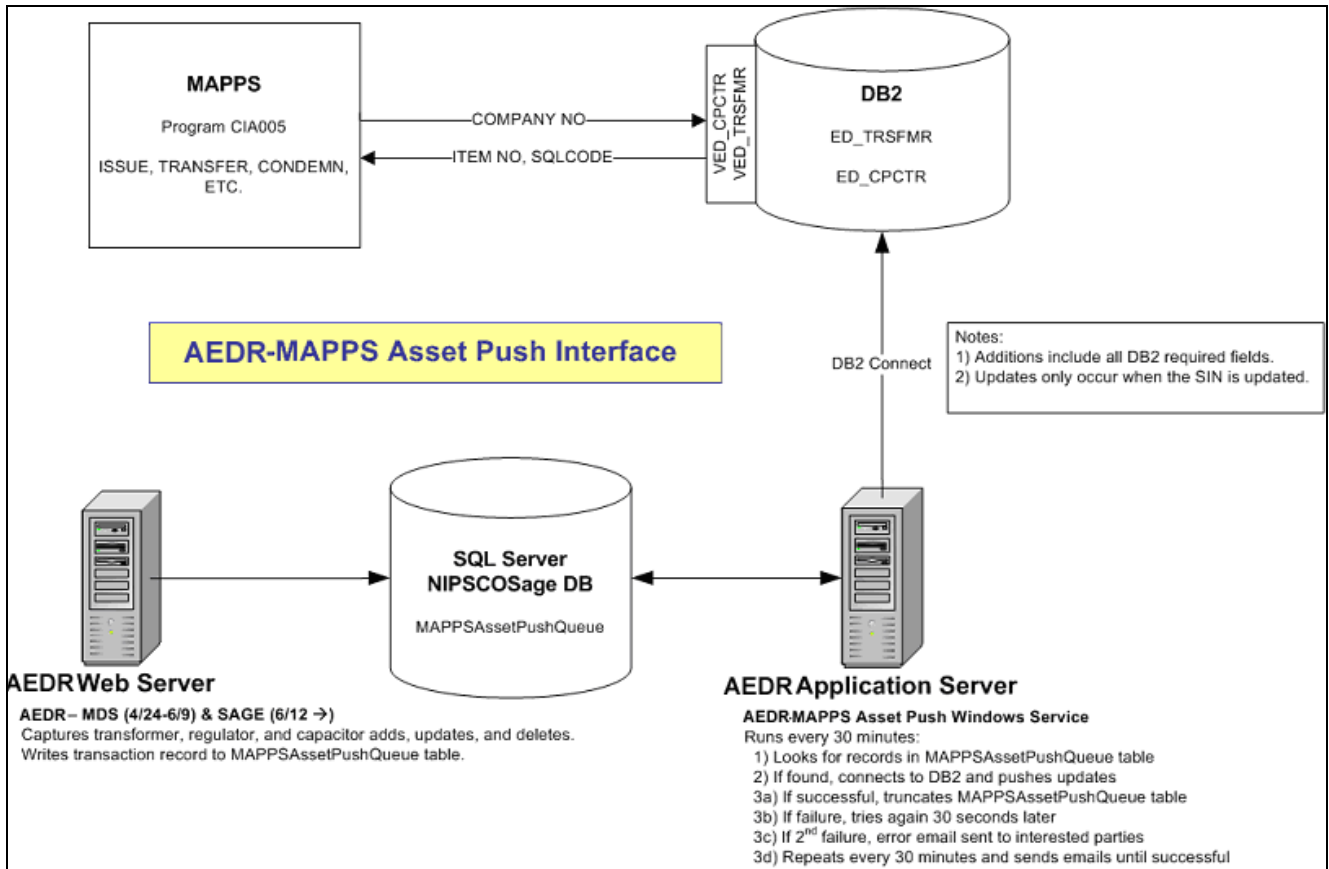


Figure 4.8-36. Asset Push process to transmit a new asset record to MAPPSS

## **4.8.7 CIS**

There are several interfaces between the AEDR and the Customer Information System (CIS). Information is passed back and forth between the two systems on a nightly basis. These interfaces are defined below.

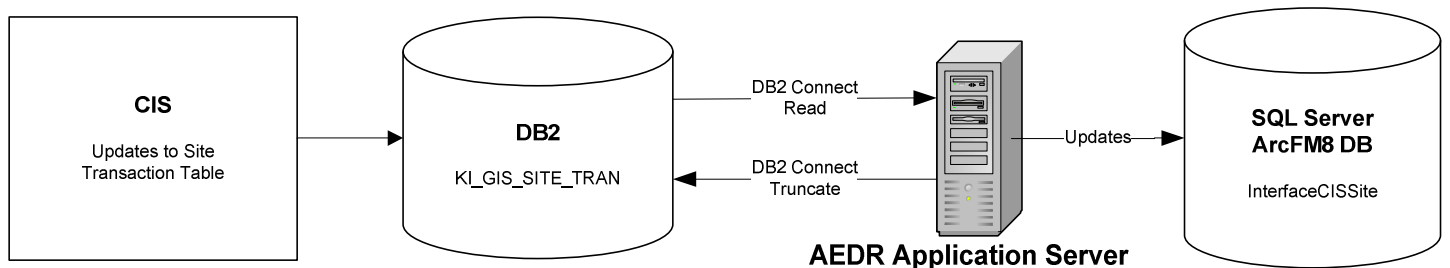
### **4.8.7.1 CIS Site**

The CIS tracks attribute information for every site (location) where services are installed. This information includes address and location information. This information is used within the AEDR for validation, reporting, and analysis. The CIS contains transaction tables that accumulate changes to this site information during the day. Then, every night the transactions are moved from the CIS DB2 transaction table into the GIS InterfaceCISSite table shown in Figure 4.8-37 which contains current data for all CIS Site records. This information is then utilized by AEDR users and various reports.

InterfaceCISSite	
<b>PK SIT_ID</b>	<b>INTEGER</b>
<b>PK GISST_CRET_TMSTMP</b>	<b>DATETIME</b>
SITUSE_CD	VARCHAR(2)
DPT_CD	VARCHAR(3)
TXNCUT_CD	VARCHAR(3)
RVTWN_CD	VARCHAR(3)
GISST_STAT_CD	VARCHAR(2)
NIPSCO_MAJ_MAP_CD	VARCHAR(2)
N_INTER_MAP_CD	VARCHAR(2)
NIPSCO_MNR_MAP_CD	VARCHAR(1)
AREA_CD	VARCHAR(3)
PHN_NUM	VARCHAR(7)
PHN_EFTV_DT	DATETIME
ADDR_DVLPMT_NM	VARCHAR(30)
ADDR_STT_NUM	VARCHAR(7)
ADDR_BLDG_NUM	VARCHAR(8)
ADDR_RRL_RTE_NUM	VARCHAR(8)
ADDR_APT_NUM	VARCHAR(8)
ADDR_BX_NUM_TXT	VARCHAR(8)
ADDR_STT_NM	VARCHAR(25)
ADDR_LOT_NUM	VARCHAR(10)
ADDR_ZIP_PLUS_NUM	VARCHAR(6)
ADDR_OVFL_AD	VARCHAR(23)
ADDR_STE_NUM	VARCHAR(8)
STTPFX_CD	VARCHAR(2)
STTSFX_CD	VARCHAR(4)
CNTY_CD	VARCHAR(2)
ST_CD	VARCHAR(2)
MNCPLT_NM	VARCHAR(25)
ZIP_CD_NUM	VARCHAR(5)
ADDR_FRCTN_TXT	VARCHAR(3)
ADDR_POST_BAR_CD	VARCHAR(12)
ADDR_CARR_RTE_NUM	VARCHAR(6)
GISST_LS_INDCR	VARCHAR(1)
PHN_EXTN_NUM	VARCHAR(5)
AREA2_CD	VARCHAR(3)
PHN2_NUM	VARCHAR(7)
PHN2_EXTN_NUM	VARCHAR(5)
ORGDTL_NM	VARCHAR(50)
ADRTXT_ADTL_TXT	VARCHAR(240)
GISST_CRET_ID	VARCHAR(10)
GISST_RVSD_ID	VARCHAR(10)
GISST_RVSD_TMSTMP	DATETIME

**Figure 4.8-37. CIS interface transactions and data types**

This process is illustrated in Figure 4.8-38.



**Figure 4.8-38. CIS interface batch process**

### 4.8.7.2 CIS Installed Service

The CIS tracks attribute information for every installed service located at each site (see previous section). This information includes customer and account information. This information is used within the AEDR for validation, reporting, and analysis. The CIS contains transaction tables that accumulate changes to this installed service information during the day. Then, every night the transactions are moved from the CIS DB2 transaction table into the GIS InterfaceCISInstalledService table as shown in Figure 4.8-39 which contains current data for all CIS Service records. This information is then utilized by AEDR users and various reports.

<b>InterfaceCISInstalledService</b>	
<b>PK SIT_ID</b>	<b>INTEGER</b>
<b>PK IS_SEQ_NUM</b>	<b>SMALLINT</b>
<b>PK GISIS_SEQ_NUM</b>	<b>INTEGER</b>
<b>PK GISIS_CRET_TMSTMP</b>	<b>DATETIME</b>
SRVTP_CD	VARCHAR(3)
SRVTP_MTRD_INDCR	VARCHAR(1)
UTIL_TYP_CD	VARCHAR(2)
ISSTAT_CD	VARCHAR(2)
NUMEQ_COMP_NUM	VARCHAR(10)
MSL_CD	VARCHAR(2)
IRSERV_CD	VARCHAR(2)
GISIS_STAT_CD	VARCHAR(2)
CA_ID	INTEGER
SAA_ID	INTEGER
SAA_SEQ_NUM	SMALLINT
SRVPLN_ID	INTEGER
SPO_ID	INTEGER
RC_CD	VARCHAR(2)
CUIN_LST_NM	VARCHAR(25)
CUIN_FST_NM	VARCHAR(25)
CUIN_MID_INIT_TXT	VARCHAR(1)
CUOR_CUST_NM	VARCHAR(50)
DSTR_RFRNC_ID	VARCHAR(8)
IS_LEG_NUM	INTEGER
ISD_SEQ_NUM	INTEGER
SIC_CD	VARCHAR(4)
NAICS_CD	VARCHAR(6)
ACYC_NUM	VARCHAR(2)
CYC_FRQY_CD	VARCHAR(2)
GISIS_CRET_ID	VARCHAR(10)
GISIS_RVSD_ID	VARCHAR(10)
GISIS_RVSD_TMSTMP	DATETIME
PET_CD	VARCHAR(2)

**Figure 4.8-39. CIS installed service transactions and data types**

This process is illustrated in Figure 4.8-40.

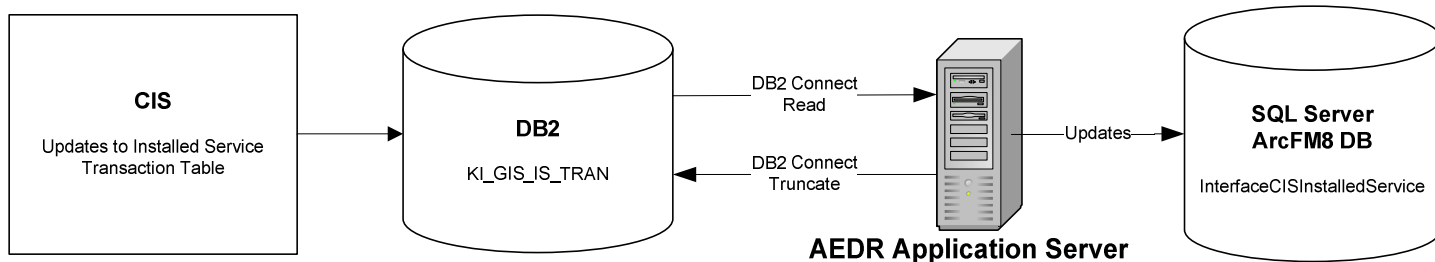


Figure 4.8-40. CIS installed service batch process

### 4.8.7.3 Transformer Install and Removal

Transformers are tracked as load points in the CIS and customers are tied to the load points. Because transformers are created, installed, and removed within the AEDR, this information needs to be passed to the CIS on a regular basis. Whenever these types of transactions occur in the AEDR, the records are tagged with creation and update timestamps. These timestamps are then used to query the system for all transformer installs and removals that have occurred in the past day. A nightly batch process pulls this information and then updates a CIS DB2 transaction table with the changes. These changes are then processed by the CIS to ensure the systems are always in sync. This process is illustrated in Figure 4.8-41.

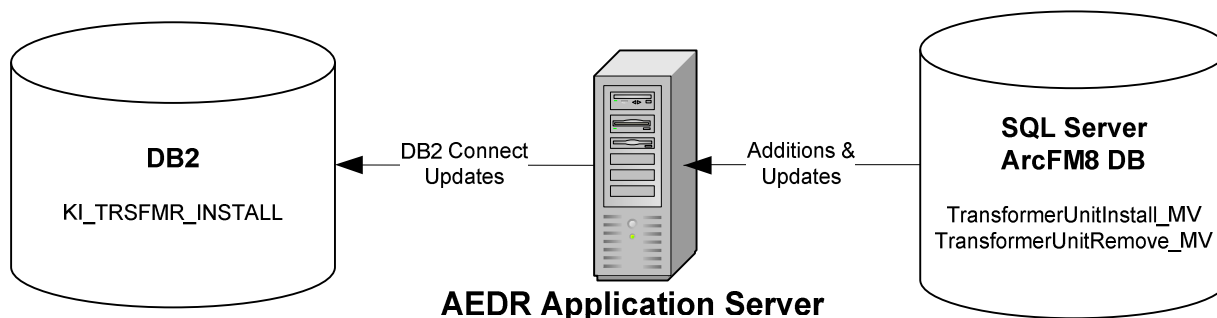
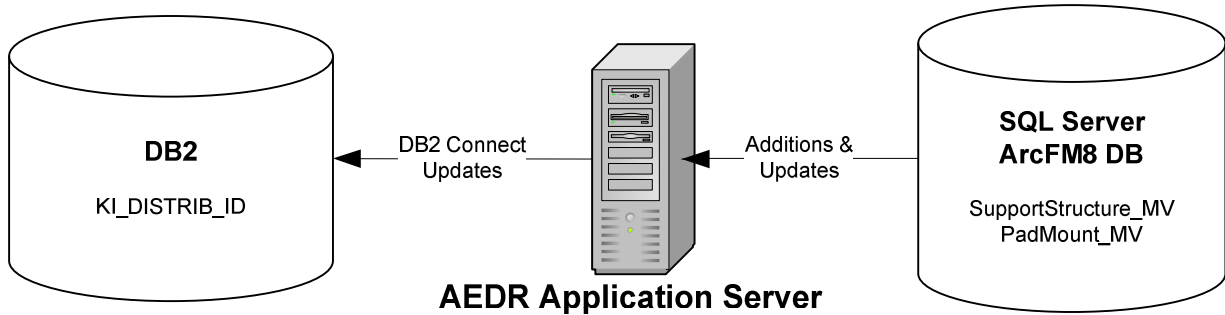


Figure 4.8-41. CIS transformer install and removal batch process

### 4.8.7.4 SupportStructure and Padmount Installation

Transformers are tracked as load points in the CIS. A transformer that feeds customers is always installed on a pole (SupportStructure) or a Padmount (pad or vault). Both of these structures are given a unique location ID within the NIPSCO territory. This information along with other key data is also used within the CIS to identify the location of a load point / transformer. Whenever a SupportStructure or Padmount is installed in the AEDR, the records are tagged with creation and update timestamps. These timestamps are then used to query the system for all installations that have occurred in the past day. A nightly batch process pulls this information and then updates a CIS DB2 transaction table with the changes. These changes are then processed by the CIS to ensure the systems are always in sync. This process is illustrated in Figure 4.8-42.





**Figure 4.8-42. CIS support structure and padmount installation nightly batch process**

### 4.8.7.5 Installed Service Coordinate Update

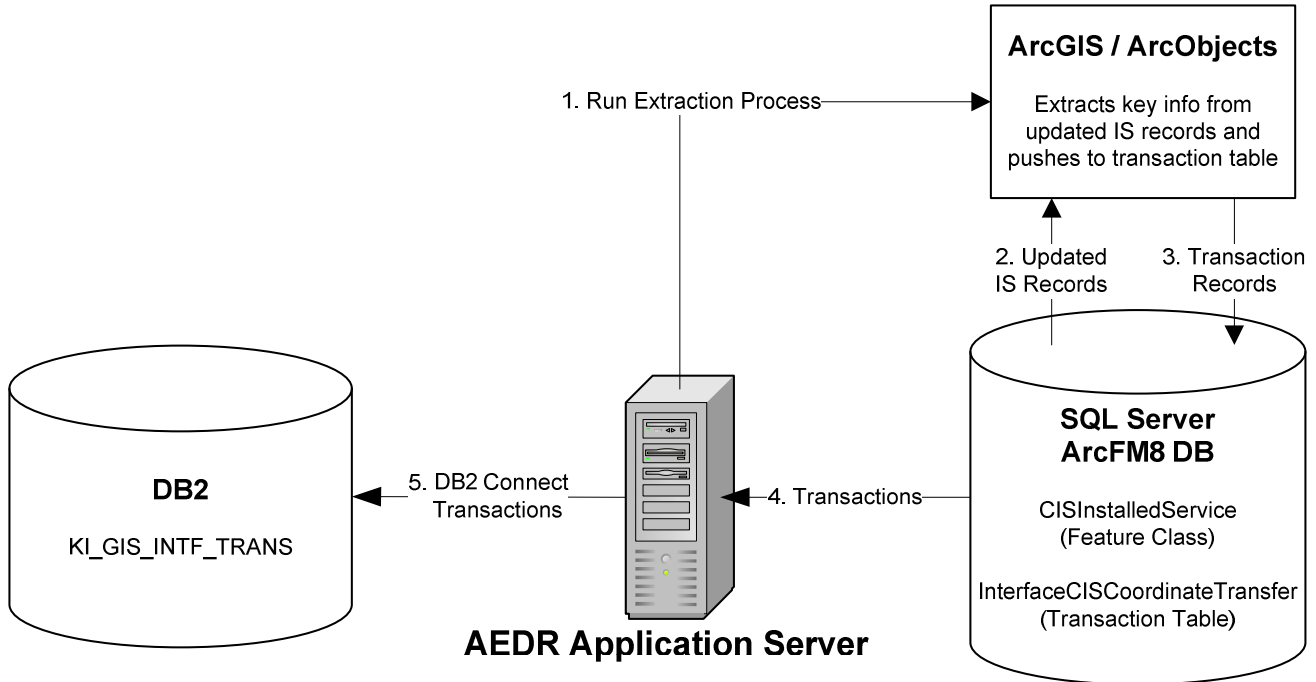
Each CIS installed service record contains an X, Y coordinate that is managed within the GIS. The records in the InterfaceCISInstalledService table are related to the CIS installed service features that exist in the GIS. A select group of editors have rights to update the location of these installed service points. Whenever an installed service point feature is moved or updated, the record is tagged with an update timestamp. This timestamp is used to pull the records that have been updated in the past day. A nightly ArcObjects batch process pulls the updated records, extracts X and Y coordinates from their shape field, and writes this information out to a staging table, InterfaceCoordinateTransfer as shown in Figure 4.8-43.

<b>InterfaceCISCoordinateTransfer</b>	
<b>PK SIT_ID</b>	<b>INTEGER</b>
<b>PK IS_SEQ_NUM</b>	<b>SMALLINT</b>
<b>PK GISIFT_CRET_TMSTMP</b>	<b>DATETIME</b>
GISIFT_STAT_CD	VARCHAR(1)
DSTR_RFRNC_ID	VARCHAR(8)
GISIFT_X_COORD_VAL	DECIMAL(15,6)
GISIFT_Y_COORD_VAL	DECIMAL(15,6)
IS_LEG_NUM	INTEGER
ISD_SEQ_NUM	INTEGER
GISIFT_CRET_ID	VARCHAR(10)
GISIFT_RVSD_ID	VARCHAR(10)
GISIFT_RVSD_TMSTMP	DATETIME

**Figure 4-8.43. CIS installed service transfer transactions and data types**

A second nightly batch process pulls this information out of the InterfaceCoordinateTransfer table and then updates a CIS DB2 transaction table with the changes. The updated location information is then processed by the CIS to ensure the systems are always in sync.

This process is illustrated in Figure 4.8-44.



**Figure 4.8-44. CIS installed service coordinate transfer nightly batch process**

#### 4.8.7.6 CIS Account Summary

The raw CIS Site and Installed Service tables are large, bulky, and not easy for an end user to traverse and/or analyze. Therefore a nightly batch process was written to extract the key CIS Account data into a much smaller table, InterfaceCISAccount, shown in Figure 4.8-45 which is very easy to access.

InterfaceCISAccount	
<b>PK AccountNumber</b>	<b>INTEGER</b>
CustomerLastName	VARCHAR(25)
CustomerFirstName	VARCHAR(25)
CustomerMiddleInitial	VARCHAR(1)
CustomerOrgName	VARCHAR(50)

**Figure 4.8-45. CIS account data transactions and data types**

The AccountNumber field is the primary key. This key joins these account records to several GIS asset tables that track a CIS Account Number field including CompanyStreetlight and CustomerStreetlight. This link allows a user to create a client side join to easily display the CIS Account records related to the assets within the GIS.

#### 4.8.7.7 CIS Service Address Summary

The raw CIS Site and Installed Service tables are large, bulky, and not easy for an end user to traverse and/or analyze. Therefore a nightly batch process was written to extract the key CIS Service Address data into a much smaller table, InterfaceCISServiceAddress, shown in Figure 4.8-46 which is very easy to access.

<b>InterfaceCISServiceAddress</b>	
LoadDistribRefNumber	VARCHAR(8)
StreetNumber	VARCHAR(7)
BuildingNumber	VARCHAR(8)
RuralRouteNumber	VARCHAR(8)
ApartmentNumber	VARCHAR(8)
BoxNumber	VARCHAR(8)
StreetName	VARCHAR(25)
LotNumber	VARCHAR(10)
ZipPlusNumber	VARCHAR(6)
AddressOverflow	VARCHAR(23)
SuiteNumber	VARCHAR(8)
StreetPrefixCode	VARCHAR(2)
StreetSuffixCode	VARCHAR(2)
CountyCode	VARCHAR(2)
StateCode	VARCHAR(2)
ZipCode	VARCHAR(5)

**Figure 4.8-46. CIS service address transactions and data types**

The LoadDistribRefNumber is the primary key. This key joins these address records to the pole or pad features (based on DistribRefNumber) that are related to the transformer that feeds the services at these addresses. This link allows a user to create a client side join to easily display the CIS service address records related to a pole or pad within the GIS.

#### 4.8.7.8 CIS Life Support Summary

The raw CIS Site and Installed Service tables are large, bulky, and not easy for an end user to traverse and/or analyze. Therefore a nightly batch process was written to extract the CIS Life Support indicator per distribution reference number into a much smaller table, InterfaceCISLifeSupport, shown in Figure 4.8-47 which is very easy to access by users, validation, and reporting processes.

<b>InterfaceCISLifeSupport</b>	
<b>PK LoadDistribRefNumber</b>	<b>VARCHAR(8)</b>
LifeSupportYesNoInd	VARCHAR(1)

**Figure 4.8-47. CIS life support interface transactions and data types**

The LoadDistribRefNumber is the primary key. This key joins the life support Y/N indicator values to the pole or pad features (based on DistribRefNumber) that are related to the transformer that feeds the service with the life support customer. This link allows a user to create a client side join to easily display the CIS service address records related to a pole or pad with the GIS. This relationship is also used to prevent certain asset operations from occurring within the GIS to ensure that power is never disconnected to a life support customer.

### 4.8.8 General Ledger (GL)

The GL system manages work order numbers within NIPSCO. Work Order numbers are entered when most AEDR assets are installed/created. When this occurs an EDFS validation runs and checks the user-entered number against GL values. To accomplish this, all valid GL work order numbers are duplicated from the GL DB2 table into the GIS table, InterfaceGLWorkOrderNumber shown in Figure 4.8-48.

InterfaceGLWorkOrderNumber
PK WorkOrderNumber VARCHAR(15)

Figure 4.8-48. General Ledger work order validation data type

The EDFS validation can then easily validate the user-entered numbers against this table directly within the AEDR database. This process is illustrated in Figure 4.8-49.

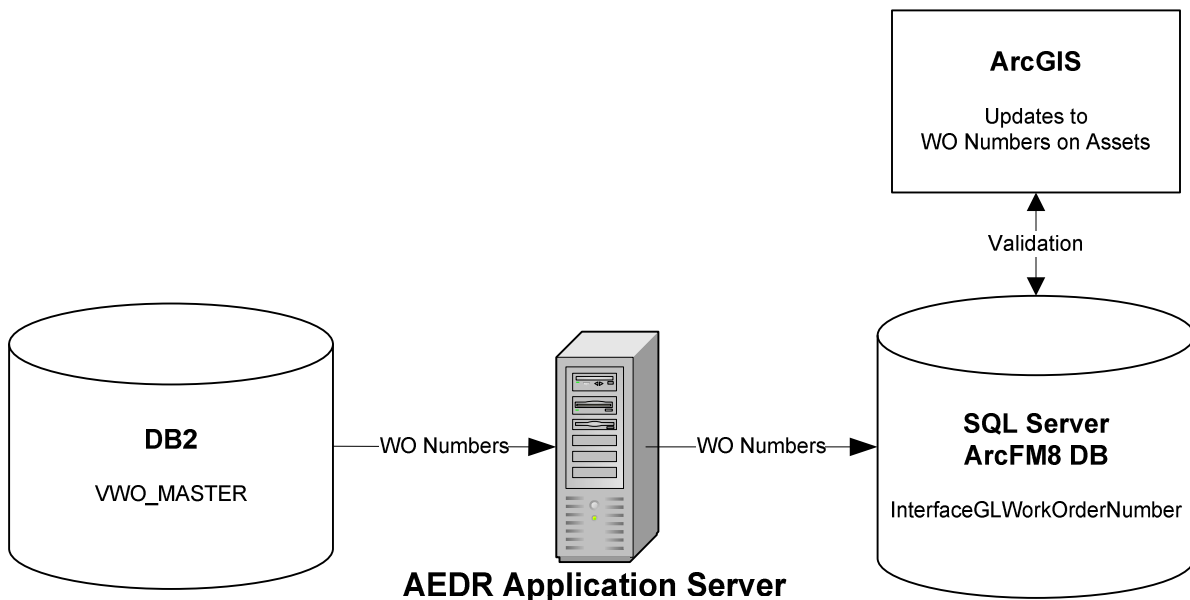


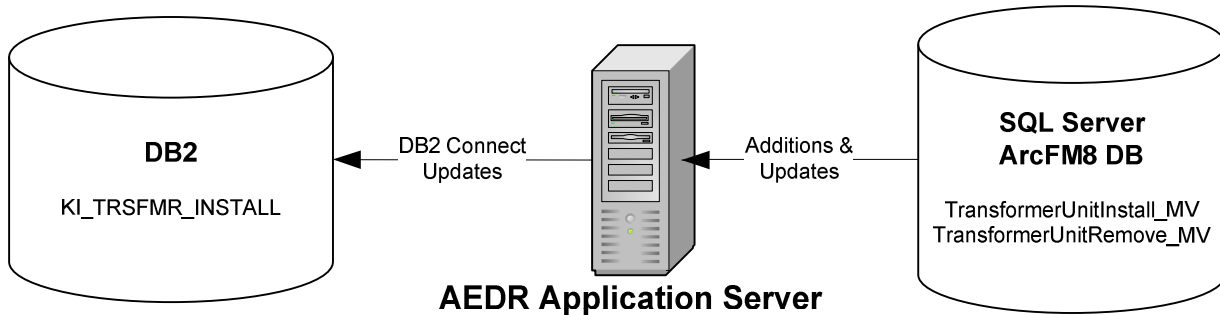
Figure 4.8-49. Work order validation process

### 4.8.9 Engineering Accounts Information File (EAIF)

The EAIF application allows engineers to perform load analysis on a specific transformer based on the properties of the transformer combined with the customer consumption data tracked in the CIS. Previously the EAIF application directly accessed the EDFS tables to get the transformer unit and installation data. In the new AEDR system, this information is managed within the GIS. When transformers are created, installed, and removed within the GIS, this information needs to be passed to the EAIF on a regular basis. This is now accomplished by passing this data via the CIS interface. EAIF was updated to read the transformer data directly from the CIS DB2 tables in place of the EDFS tables.

Whenever a transformer is edited in the GIS, the records are tagged with creation and update timestamps. These timestamps can then be used to query the system for all transformer installs and removals that have occurred in the past day. A nightly batch process pulls this information and then updates a CIS DB2 transaction table with the changes. These changes are then processed by the CIS to ensure the systems are always in synchronization. EAIF then accesses the CIS DB2 tables directly for both the transformer data and the load consumption data.

This process is illustrated in Figure 4.8-50.



**Figure 4.8-50. Transformer install & removal batch process interface for EAIF synchronization**

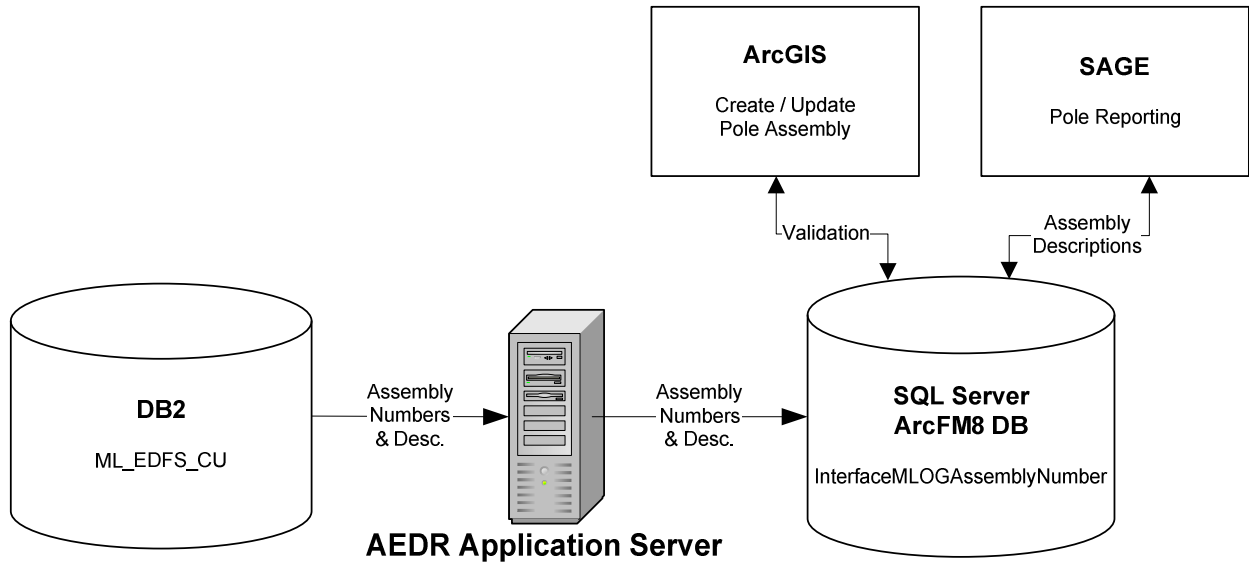
#### 4.8.10 Material and Labor Online Guide (MLOG)

The Material and Labor Online Guide (MLOG) system manages compatible unit / assembly numbers within NIPSCO. Assembly numbers are entered when GIS assets including Assemblies and Company Streetlights are installed/created. When this occurs an EDFS validation runs and checks the user-entered number against MLOG values. To accomplish this, all valid MLOG assembly numbers are duplicated from the MLOG DB2 table into the GIS table, InterfaceCHAssemblyNumber as shown in Figure 4.8-51.

<b>InterfaceCHAssemblyNumber</b>	
<b>PK AssemblyNumber</b>	<b>VARCHAR(50)</b>
AssemblyDescription	VARCHAR(200)

**Figure 4.8-51. MLOG interface transaction and data type**

The EDFS validation can then easily validate the user-entered assembly numbers against this table directly within the GIS database. The assembly description is also utilized in certain reports. This process can be illustrated in Figure 4.8-52.



**Figure 4.8-52. Assembly number validation process**

## **4.9 System Performance Evaluation / Stress Testing**

### **4.9.1 Overview**

In order to maximize the usability of AEDR, NIPSCO tuned the system for maximum performance. This document outlines the method employed for configuring and maintaining a faster performing system. Performance was defined as the application's impact on productivity. Therefore, the goal was to ensure a system performance level that complimented the end user workflow.

NIPSCO used the following strategies to achieve adequate system performance:

- Implement basic performance configurations prior to rollout.
- Run tests to evaluate the performance of the system and to identify potential performance enhancements prior to rollout.
- Based on performance testing, fine-tune the system prior to rollout.
- Conduct regular performance maintenance on the production system.

In tandem with system performance testing, performance testing of the ArcSDE/SQL Server database server was conducted. The performance testing report is located in Appendix C.

### **4.9.2 Testing**

#### **4.9.2.1 Hardware Size Testing and Tuning**

Prior to the Construction phase of the project, NIPSCO conducted testing to validate that the hardware selected to run AEDR supported adequate performance. Since AEDR had not been built yet, a simple proxy was constructed using basic out-of-the-box ArcGIS/ArcFM and sample data imported from NIPSCO's existing Automated Mapping System. A script was used to apply a processing load to the system by automatically zooming in and out and panning around within NIPSCO map data. The script recorded the redraw times of a single user. While redraw times were being recorded for the first user, additional users performing redraw actions were incrementally added to simulate additional load on the system. In general these tests demonstrated that NIPSCO's network, client hardware, ArcSDE server hardware, and Citrix server hardware were more than adequate to handle the maximum concurrent user load.

#### **4.9.2.2 First Performance Testing and Tuning**

By December 2004, NIPSCO had completed some Construction Phase tasks and had received some preliminary deliveries from the data migration vendor; it was possible to evaluate the preliminary Development Environment for performance. Some prerequisite tuning steps were identified that would be completed before the more advanced testing and tuning could occur.

### 4.9.2.3 Second Performance Testing and Tuning

With the exception of a few bug fixes and last minute tweaks, AEDR was fully designed and developed, including a Base Performance Configuration (see Section 4.9.3 Base Performance Configuration) by the spring of 2006. Additionally, the migration vendor that was moving NIPSCO's legacy data into the ArcSDE Geodatabase had provided a sample data set that was as close to production quality as possible. It was then possible to performance test AEDR under a production scenario.

NIPSCO created six testing scripts that included a cross section of day to day activities that AEDR would need to support in production. The test scripts emulated activities such as adding, deleting, or editing records, panning and zooming, zoom to feature by query, check out a new session (version), reconcile and post a session, system interface import, system interface export, run reports, etc.

Seven testers ran a test script simultaneously recording the duration for each script step in the form of start times and stop times. Then the step durations were summarized for each tester for the test script to create the Total Script Duration. The Total Script Durations for each tester were averaged and a standard deviation value calculated. Then a Quality Index was derived as an expression of the percent of standard deviation to the average. To increase confidence in the Average Script Duration, any total script duration that did not include all steps in the script was eliminated. Also, any total script durations that produced a statistical outlier was eliminated. And finally any Average Script Duration with a Quality Index greater than 33% was eliminated. Figure 4.9-1 describes the results.

Step	Tester 1	Tester 2	Tester 3	Tester 4	Tester 6	Tester 7	Average	Standard Deviation	Quality Index	
Performance Test Script #1	77					83	80.00	4.24	5.303300859	
Performance Test Script #2	90	111		148		70	90.33	20.50	22.69597685	
Performance Test Script #3	58				144	60	59.00	1.41	2.39697214	
Performance Test Script #4	28		70			27	27.50	0.71	2.571297386	
Performance Test Script #5	24		50		25	24	24.33	0.58	2.372672339	
Performance Test Script #6	20		33		26	20	22.00	3.46	15.74591643	
			<b>Average of Average Total Script Durations</b>					<b>50.53</b>		

Figure 4.9-1.

An average of 50.53 minutes per script was considered to show that the system could support adequate user productivity in production for seven concurrent users. No performance enhancements were identified.



#### 4.9.2.4 Final Performance Testing and Tuning

The last performance testing and tuning iteration took place a few weeks after the Second Performance Testing and Tuning session. The Final Performance Testing and Tuning session was similar to the Second Performance Testing and Tuning session except in two ways. First, more testers participated in the testing session; 32 testers instead of 7. Secondly, the 6 testing scripts used were divided into 18 separate scripts. Each of the 18 scripts contained approximately the same amount of work which was about equal to an average Work Order that would be entered into the system on a day to day basis. The advantage to structuring the tests scripts in this manner is that the final average of the script durations was more meaningful.

After filtering out the data points where a reliable duration could not be obtained, 8 data points remained. The Average of Average Total Script Durations was 43.10 minutes. Since each script was determined to contain about the same amount of work as an average work order then by proxy the prediction was that an average Work Order would take 43.10 minutes to complete. NIPSCO determined that this meant the system could support adequate user productivity. See the Figure 4.9-2 for the results.

Step	Average	Quality Index
Performance Test Script #1	42.00	NA
Performance Test Script #2	151.50	37.87810438
Performance Test Script #3	178.50	51.26014944
Performance Test Script #4	NA	NA
Performance Test Script #5	91.00	NA
Performance Test Script #6	149.50	65.65872418
Performance Test Script #7	109.00	30.57327011
Performance Test Script #8	NA	NA
Performance Test Script #9	152.00	37.33575212
Performance Test Script #10	33.50	30.84973803
Performance Test Script #11	32.00	28.25680012
Performance Test Script #12	31.00	26.70797804
Performance Test Script #13	29.50	22.49715154
Performance Test Script #14	55.50	30.11435281
Performance Test Script #15	32.33	23.76168994
Performance Test Script #16	23.00	NA
Performance Test Script #17	22.00	26.42722314
Performance Test Script #18	53.75	38.74127819
<b>Average of Average Total Script Durations</b>	<b>43.10</b>	

Figure 4.9-2.

#### 4.9.3 Base Performance Configuration

This section is intended to provide a checklist of base configurations that must be in place before a comprehensive performance tuning or testing workshop could take place

- Identify the Performance Testing Platform
  - ArcSDE Instance
  - Citrix Environment

- Thick Clients
- Thin Clients
- Create a Test Dataset
  - ArcSDE Geodatabase with the latest migration dataset
  - Update ArcSDE with the latest schema
  - Load CIS data into the Geodatabase
  - Create and populate all non-Geodatabase interface support tables
  - Load all aerial photography files on the test server
- Install Custom Application Components on the Test Server
  - Custom AutoUpdaters
  - EDFS Replacement Tool
  - Session Manager
  - AEDR Help System
  - Conductor Management Tool
  - SynerGEE Export
  - CADOPS/FeederAll Export
  - CIS and other interfaces
  - Distribution Reference Number Validation Tool
- ArcFM / ESRI Configuration
  - Build the Geometric Networks and import connectivity rules
  - Build Miner & Miner System Tables
  - Convert the database to Miner & Miner Objects
  - Initialize Network Trace Weights
  - Populate the Circuit Source table
  - Initialize the Electric Network using Feeder Manager Trace a Feeder, at least in performance testing area
  - Configure Snapping Rules
  - Configure and assign all AutoUpdaters
  - Configure Stored Displays
- Basic Performance Configuration
  - Apply Field Indexes
  - Run and apply the Spatial Index Grid scripts
  - Build table statistics using the Analyze command

#### **4.9.4 ArcSDE Geodatabase Performance Maintenance**

Once the system is in production, regular performance maintenance steps will need to occur. Many of these steps are included in the basic configuration exercise. However, as the data set changes over time, certain configurations should be re-applied.

##### **4.9.4.1 SQL Server Log Maintenance**

Log files record each transaction completed by the database. If the database would need to be restored, these log files would be used to restore the database state as it was altered AFTER the last backup was performed. Therefore, transaction logs recorded BEFORE the last backup procedure are no longer needed since those transactions were included in the backup.

In order to keep the log file size low, regular database backups should be performed. The log files should be truncated to mark unneeded log file records and shrunk to reduce the size of the log file.

#### **4.9.4.2 ArcSDE Compress Schedule**

ArcSDE versioning works by keeping track of the changes performed on the version. Behind the scenes a version is a set of tables that track these changes known as the “Add” and “Delete” tables. Over time the size of the Add and Delete tables can grow very large causing degraded performance. The “Compress” command removes any database states that are no longer needed and moves states common to all versions to the base business table. Decreasing the size of the Add and Delete tables improves performance.

The Compress command should be run often. However, the ArcSDE Geodatabase must be taken out of production in order to run the Compress since the Compress command requires an exclusive lock on all tables. No users can be logged in.

#### **4.9.4.3 ArcSDE Compress Success**

Compress success, meaning the ability of the Compress command to reduce the size of the Add and Delete tables can impact performance. A Compress process that removes very few records from the Add and Delete tables will not improve performance much.

The effectiveness of the Compress command can be maximized by encouraging the user community to post their version changes to the parent version when possible and by automating a batch and reconcile routine. Posting and reconciling improves compression success by moving states from one version to another. Once a state becomes common to all versions, the Compress command can write the state to the business table and remove the state.

#### **4.9.4.4 Analyze Command Schedule**

The “Analyze” command causes the underlying RDBMS to rebuild table statistics. The Analyze command should be issued after major database updates such as a Compress.

#### **4.9.4.5 Rebuild Field Index**

Field index improves the performance of queries. Indexes should be updated as data changes.

#### **4.9.4.6 Evaluate Spatial Index Grids (SIG)**

SIG improves the performance of spatial queries, for example, to find which polygon features a point falls within, a candidate group of polygons is created by returning only the polygons that fall within the SIG that intersect the point. Subsequently each geometry in the candidate list is examined to determine if the point falls within the polygon. This is faster because the query does not have to examine every record in the feature class. SIG are most effective when sized properly to the geometries stored in a particular layer. The goal is to have as few geometries returned in a sub-candidate list as possible.

The Spatial Index Grids will be built with the following criteria.

- SIG for Point Feature Class layers will equal 3.
- SIG for Line and Polygon Feature Class layers will equal 3 times the average of the average extent of geometries stored in the Feature Class. The average extent is the average of the height and width of the rectangle bounding each feature.
- Approximately 80% or more of a layer's features should fall within a single grid cell.
- The number of Grid Index record entries divided by the number of features in layer. This number will always be 1 or greater because every feature must belong to at least one grid. However, some features may belong to several grids and therefore would be represented in the grid table several times. 4 entries per feature should be the maximum ratio.
- Average features per grid should be low, with a maximum of 300.
- Maximum features per grid should be low, with a maximum of 4000.

#### 4.9.5 Helpful Information

- Analyze Data and Rebuild Indexes  
<http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=24518>
- Setting the Selection Threshold  
<http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=22668>
- HowTo: Tune the Multi-Level Grid Spatial Index  
<http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=23407>
- “ArcSDE Configuration and Tuning Guide for Microsoft SQL Server”  
Located on the ArcSDE installation CD's
- Performance Considerations for Run-Time Technologies in the .NET Framework  
<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dndotnet/html/dotnetperftechs.asp>
- Improving .NET Application Performance and Scalability  
<http://msdn.microsoft.com/library/en-us/dnpag/html/scalenet.asp>
- How to improve ArcSDE Performance by analyzing data and rebuilding indexes  
<http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=24518>

## ***4.10 AEDR Online Help Documentation***

### **4.10.1 Overview**

The AEDR system is very large and encompasses many separate but related components. It was determined that a comprehensive and centralized online help documentation system was needed to provide a single source for all AEDR users to access for information and operational instructions. Initially a compiled html help document (\*.chm) format was considered but this idea was eventually dismissed because of the inherent problems related to regularly distributing updated copies of the chm file to a large number of users.

The ideal system should handle real time updates and content distribution but would have the same format and functionality of a local chm file. It was determined that a custom solution would best meet this need. This solution is web based and is hosted at an easily accessible intranet web address. The solution contains sections for the following five main AEDR components:

- ArcEditor
- ArcView
- SAGE
- Facility Browser
- Field Browser

The end user functionality contains the following key components from a chm format:

- ***Contents***: A tree view presentation of the help contents are used to allow a user to traverse a logical path of AEDR functionality to access the specific topic desired.
- ***Index***: An alphabetic index of all topics are included with a type ahead text box to allow a user to locate various topics by typing common keywords or phrases that define the information requested.
- ***Search***: A full text search engine is included that will search all help files. Any matching files are shown in a list format and the searched words are highlighted on the topic page when it is viewed.
- ***Favorites***: The users are able to save a list of their favorite topics for easy repeated access. These favorites are stored centrally by the web application so that a user can access their favorites from any computer on the NIPSCO intranet. Each user's favorites are managed individually via their windows active directory authentication data.

Additionally, it was decided to include web-based authoring and management tools in the solution so that updates to the help content could be deployed by users with no knowledge of html, JavaScript, the web server, etc. This allows a standard administrator (admin) user to easily create and deploy help content in a seamless environment. The following tools have been provided:

- ***Add Content***: An admin user is able to design html content files directly within the application using a WYSIWYG (what you see is what you get) html editor.

The application handles the saving of the html content, the indexing of the topic title, and the indexing of the content text in the full text search engine.

- **Edit Content:** An admin user is able to edit any existing html content files directly within the application using a WYSIWYG (what you see is what you get) html editor. The application handles the saving of the html content, the re-indexing of the topic title, and the re-indexing of the content text in the full text search engine.
- **Image Management:** The application allows an admin user to upload and view images associated to the help topics. In an html based system, the images are not embedded directly in the html documents but are instead referenced from the html content files. The images reside in a common folder and are easily made accessible when editing the html content files.
- **Contents Management:** An admin user is able to edit the tree view contents layout including the order of topics, categories of topics, and the labels of the topics.

#### 4.10.2 Design

The solution was designed using ASP.Net and JavaScript technologies. The end product is a user-friendly help system. Figure 4.10-1 shows the main user interface to the help system:

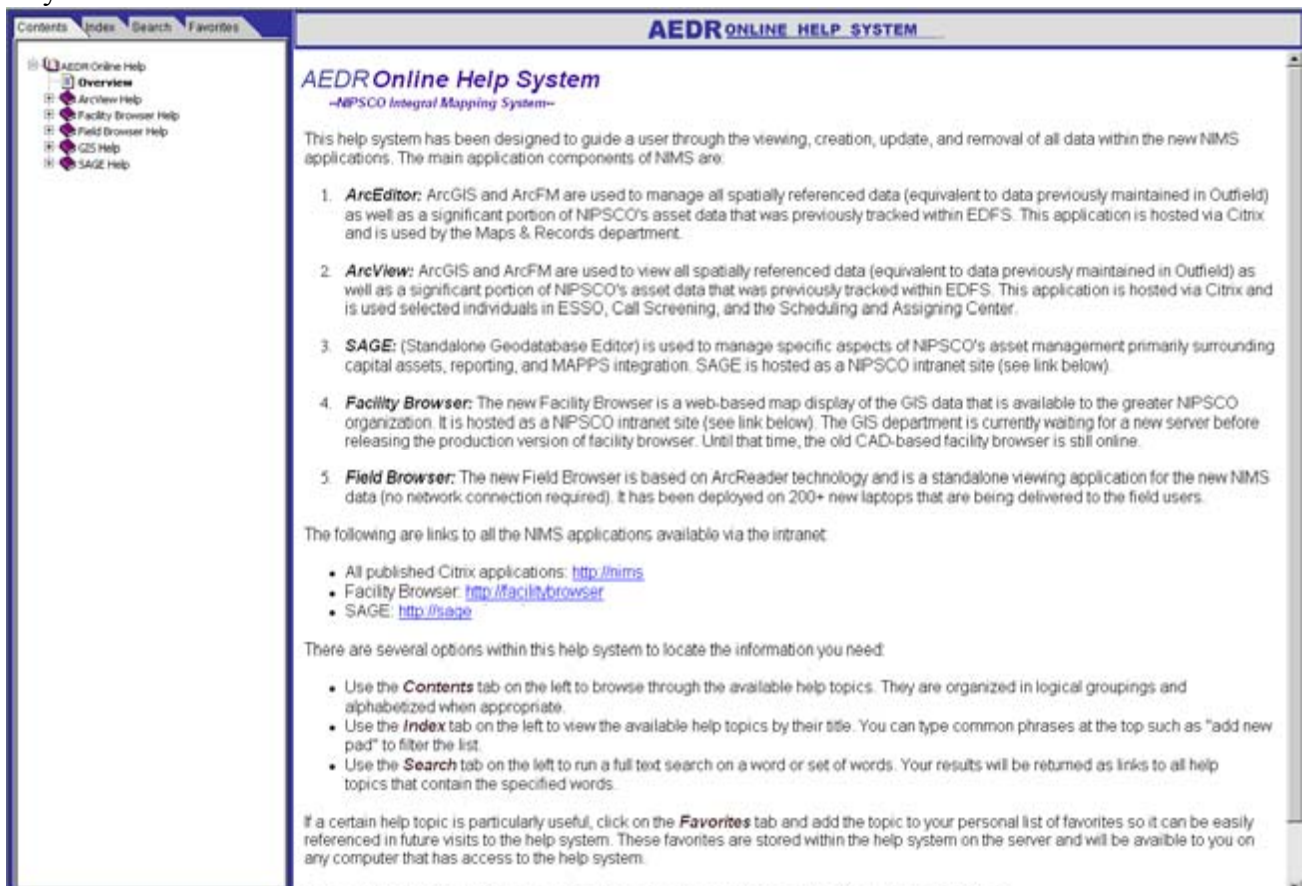


Figure 4.10-1

## 4.10.2.1 End User Components

### 4.10.2.1.1 Contents Pane

The goal of the contents pane is to utilize a tree view presentation of the help contents to allow a user to traverse a logical path of AEDR functionality to access the specific topic they are looking for. The content pane uses categories and sub categories to facilitate a drill-down approach to content files. In the following example, an edit user might be looking for instructions on adding a new fuse cutout bank in the GIS. They would drill down through GIS Help → Electric → Add New / Install → Add Fuse Cutout Bank:

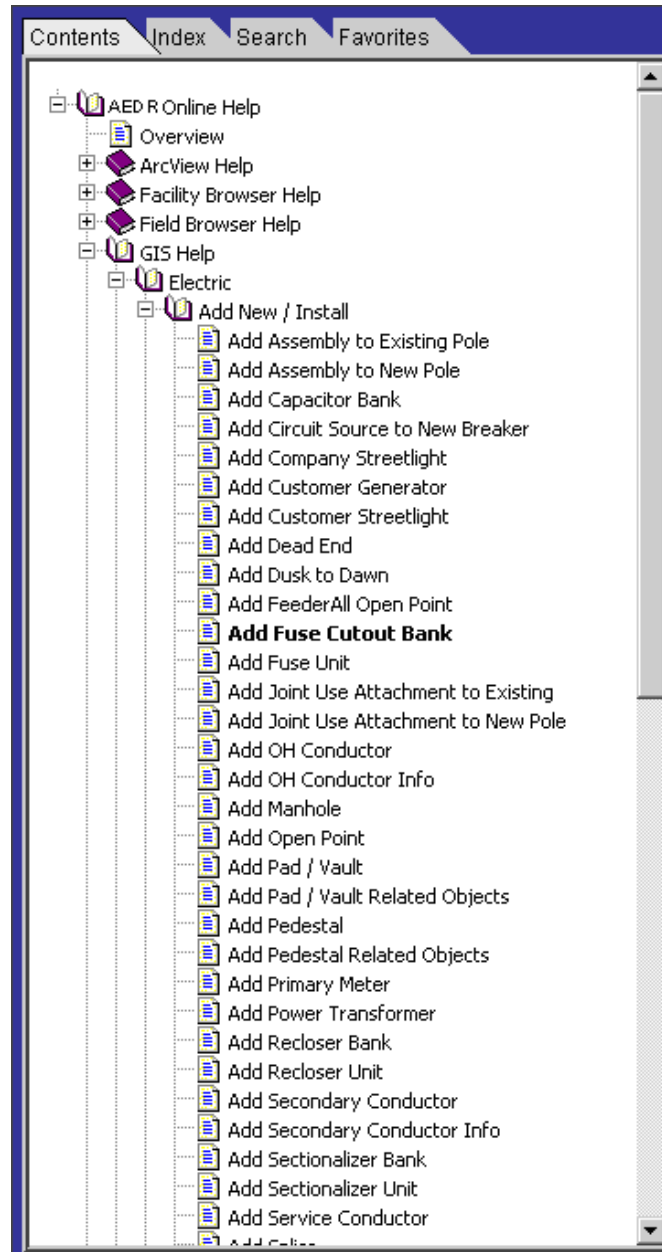


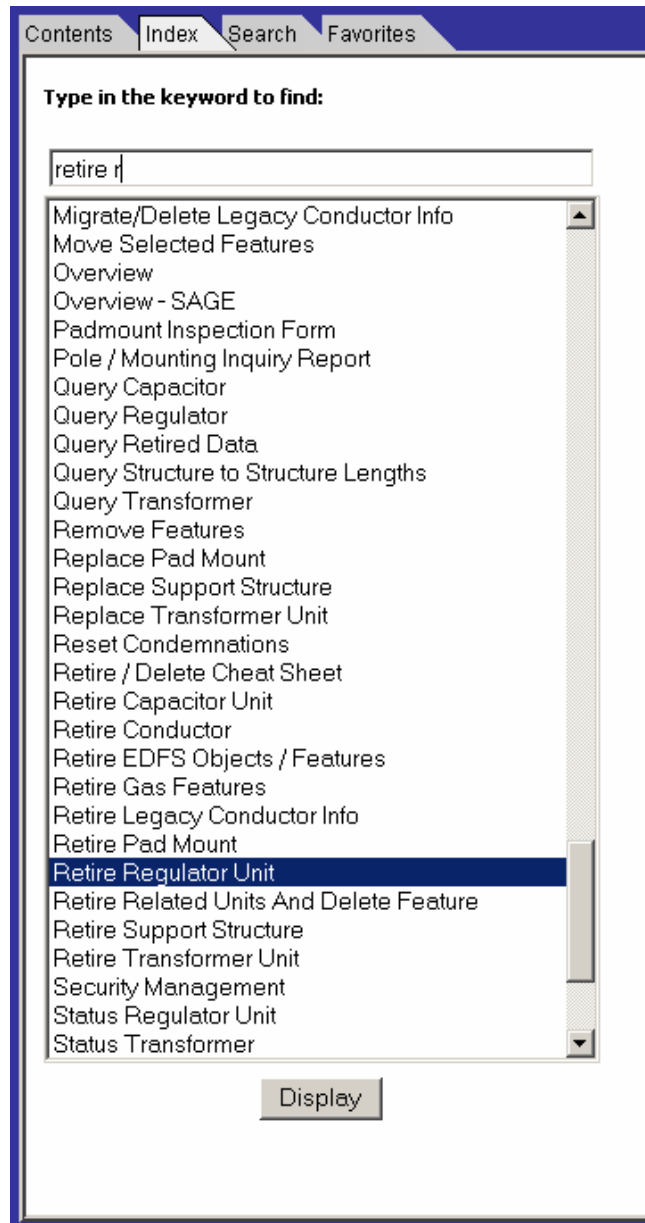
Figure 4.10.2

A standard chm-style look and feel is used for the contents pane. This capitalizes on user's previous use of standard help files. Clicking on any of the topics loads the content in the reading pane of the help system.

#### ***4.10.2.1.2 Index Pane***

The goal of the index pane is to present an alphabetic index of all topics with a type ahead text box to allow a user to locate various topics by typing common keywords or phrases that define the information they are looking for. As the user types the keywords or phrases, the application will dynamically search the list for matching topics. As matches are found, the application will automatically highlight the first match in the index list. In the following example, a user is searching for information on retiring a regulator unit. As the user types "Retire R" the application automatically matches the topic and highlights the matched entry:



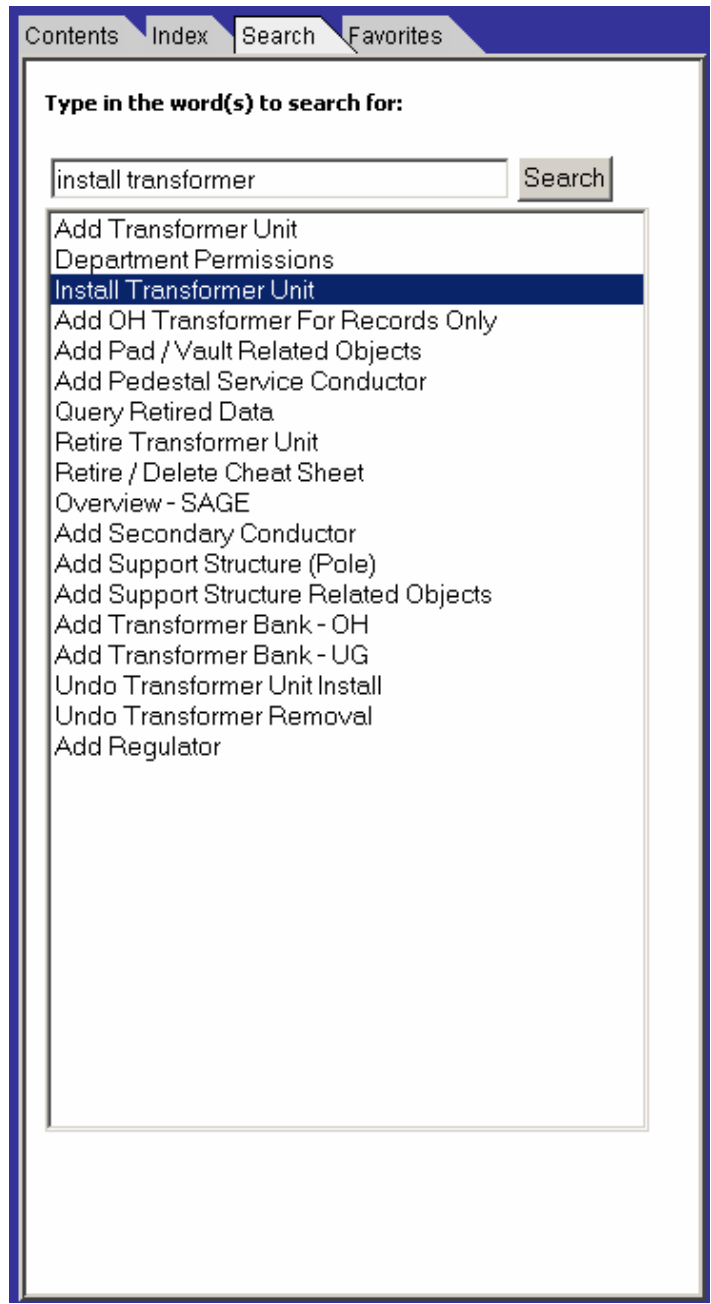


**Figure 4.10-3.**

The topic content can be displayed in the reading pane by either double clicking the index entry or clicking the “Display” button.

#### **4.10.2.1.3 Search Pane**

The goal of the search pane is to allow a user to perform a full text search against all help files. Any files containing ALL search words will be shown in a list format. In the following example, the user has searched on “install transformer” and several topics have been returned because they contain both the word “install” and “transformer”:



**Figure 4.10-4.**

Double clicking on any of the search results will load the topic content in the reading pane. When accessing topics from the search pane, the searched words will be highlighted on the topic page when it is viewed. In Figure 4.10-4 the user has double clicked on the “Install Transformer Unit” search result. The topic is displayed with the search words highlighted in yellow in Figure 4.10-5.

## How to Install a Transformer

### Description

This document describes the steps necessary for a transformer install in the SAGE system. Installing a transformer requires that the transformer be in stock (status: In Stock) before installing.

### Prerequisite Steps

1. Login to SAGE.

The initial SAGE screen display is dependent on the user login permissions.

### Steps

1. Click Transformer on the header dropdown.
2. Click New Install



The Install Transformer display will appear and contains two specific search fields to find the existing transformer. The fields include the Company Number and/or the Serial Number.



Figure 4.10-5

### 4.10.2.1.4 Favorites Pane

The goal of the favorites pane is for the users to be able to save a list of their favorite topics for easy repeated access. The user can click on the favorites pane with any content topic loaded. A text box will be automatically populated with the title of the current topic. The user can update the title and save the link as a favorite. In the Figure 4.10-6, the user is adding the "Install Transformer Unit" page to their favorites and is customizing the title that will be saved for the topic with a personal note:

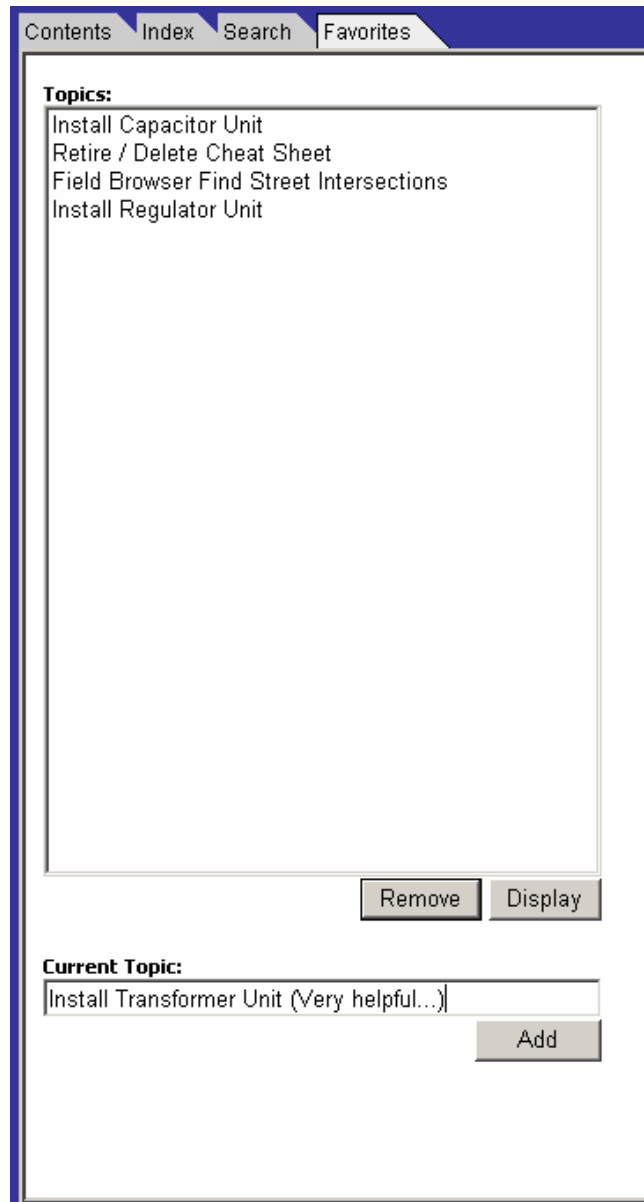


Figure 4.10-6.

The storage of these favorites occurs in an xml file stored on the web server. It is indexed by the user's windows active directory user id which allows for a user to access their unique favorites list from any computer on the NIPSCO intranet. An example of the xml storage is shown in Figure 4.10-7.

```

<?xml version="1.0" standalone="yes" ?>
<favorites>
  <favorite>
    <user>NA\#999999</user>
    <display>Install Transformer Unit (Very helpful...)</display>
    <page>source/New Install Transformer.htm</page>
  </favorite>
</favorites>
  
```

Figure 4.10-7

## 4.10.2.2 Administration Components

An admin user accesses the same intranet website but is presented with additional options for managing the help system. In the upper right of the screen of Figure 4.10-8 three new links are available: Add New, Edit, and Manage Contents:

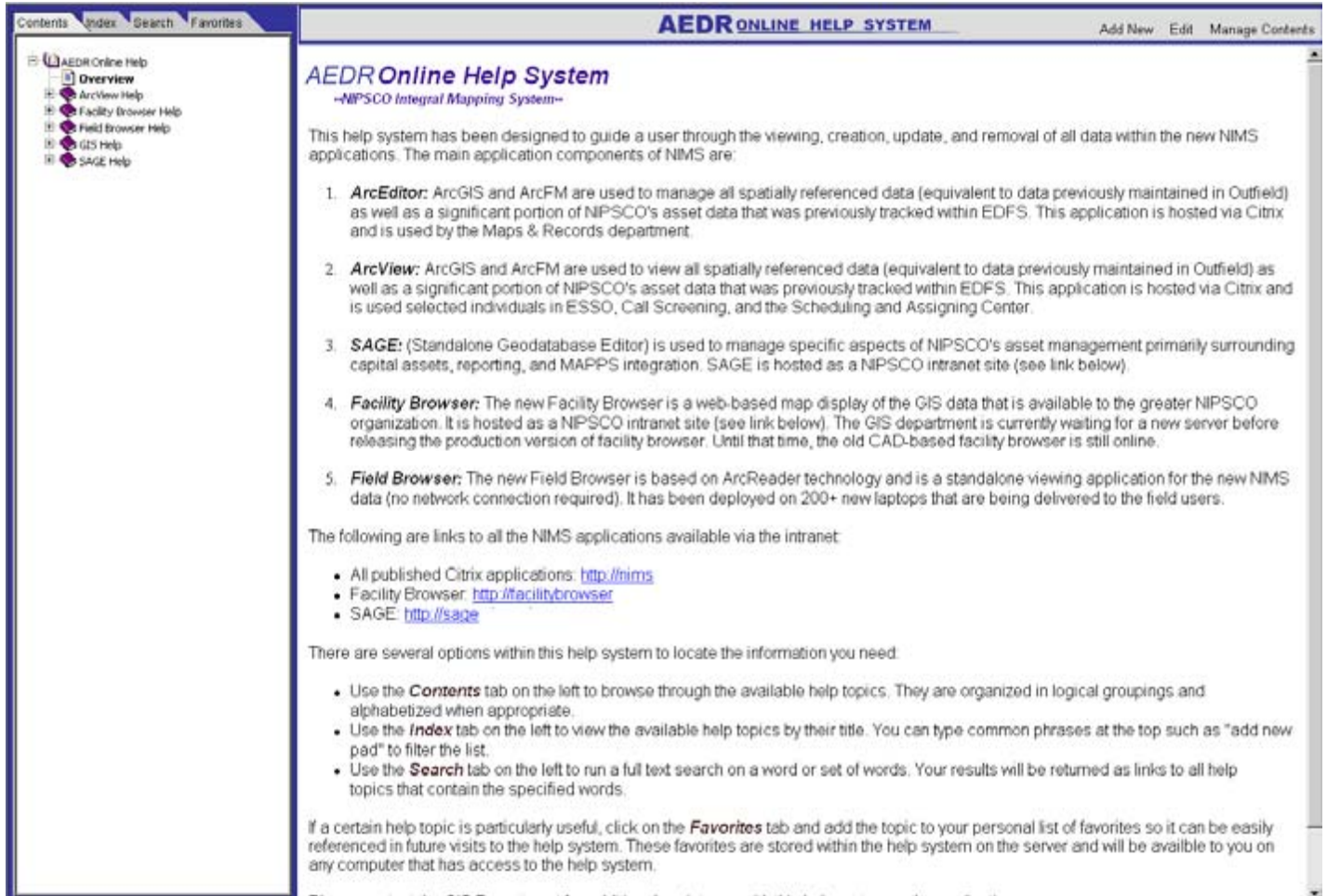
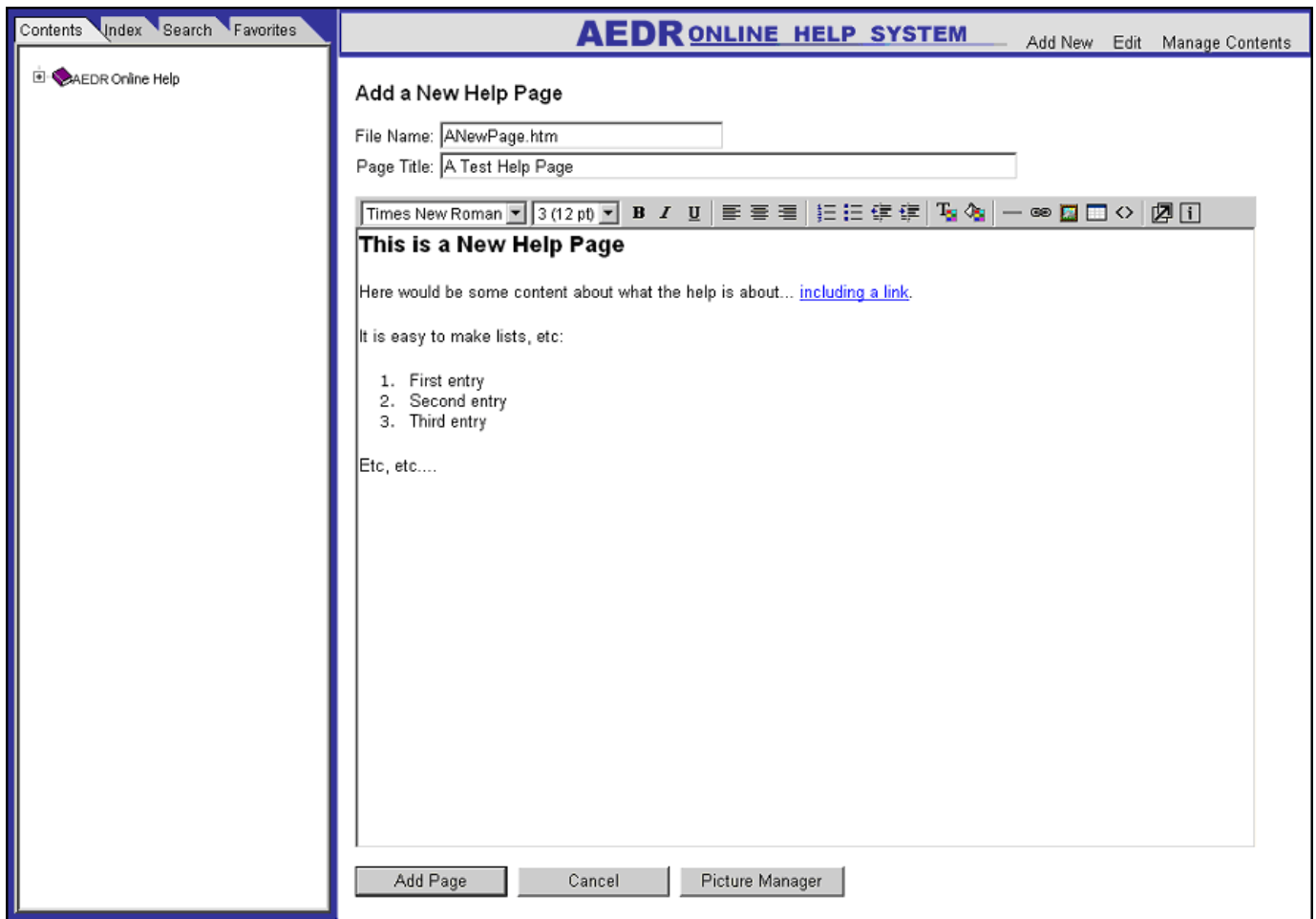


Figure 4.10-8.

Links available via the intranet allow an admin user full capability to manage the content within the help system without knowing anything about the underlying technology.

### 4.10.2.2.1 Add Content

An admin user can click the “Add New” link to load the “Add a New Help Page” management page. This page allows the user to specify the name of the html file, the page title (used for indexing), and the content of the page. The html editing is all handled via a free WYSIWYG (what you see is what you get) editor supplied by [www.InteractiveTools.com](http://www.InteractiveTools.com). This tool allows the creation of an html file using standard formatting tools equivalent to a subset of Microsoft Word tools. The end result is an intuitive user interface that allows for the accelerated development of help content shown in Figure 4.10-9.



**Figure 4.10-9.**

When the user clicks the Add Page button, the html is automatically saved to the web server, the topic title is added to the help index file, and the content of the help file is added to the full text search engine.

#### ***4.10.2.2.2 Image Management***

In an html based system, the images are not embedded directly in the html documents but are instead referenced from the html content files. To assist the user in managing these images, the application allows a user to upload and view images associated to the help topics. Clicking the “Picture Manager” button loads the Help Image Manager shown in Figure 4.10-10.

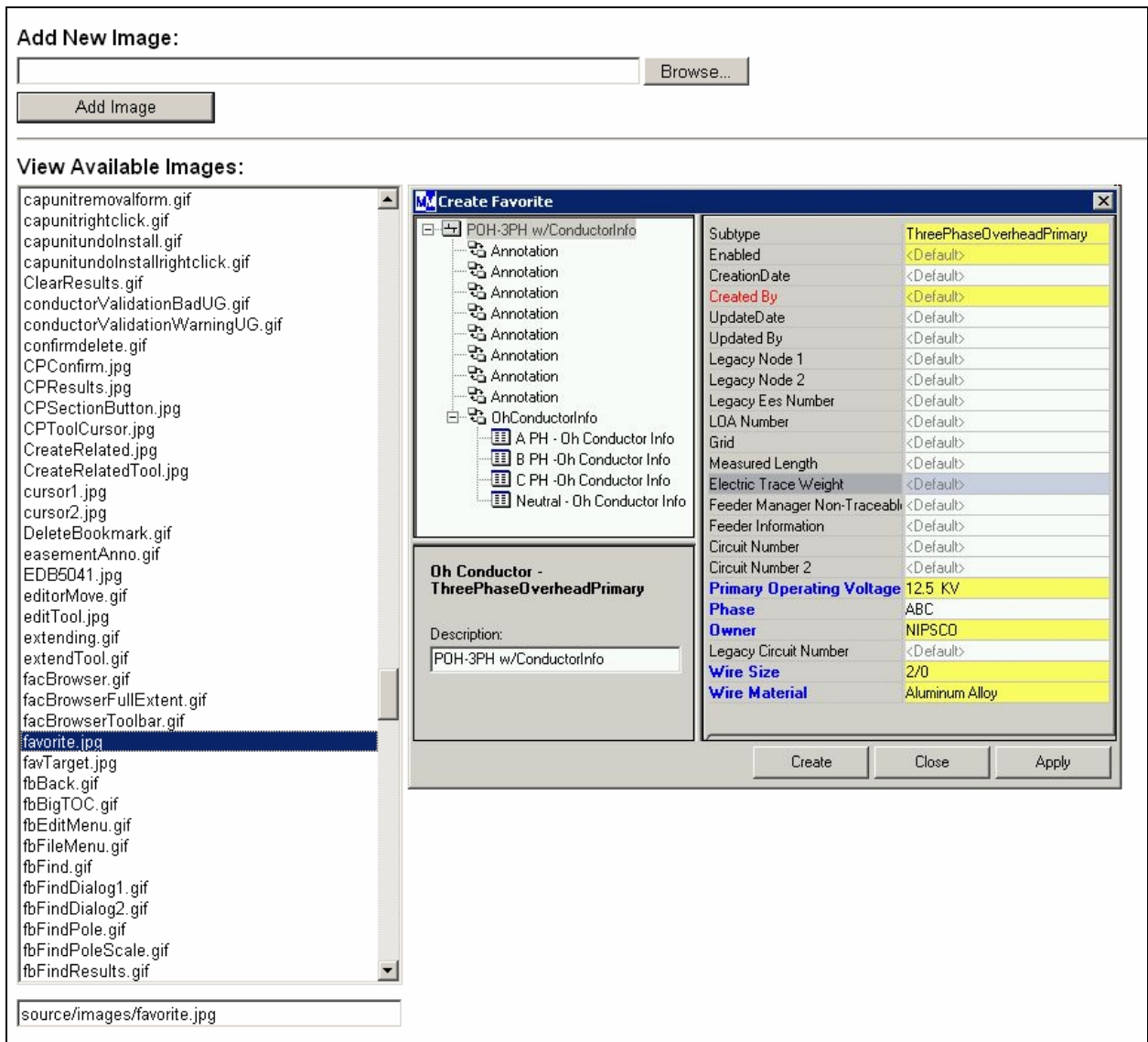



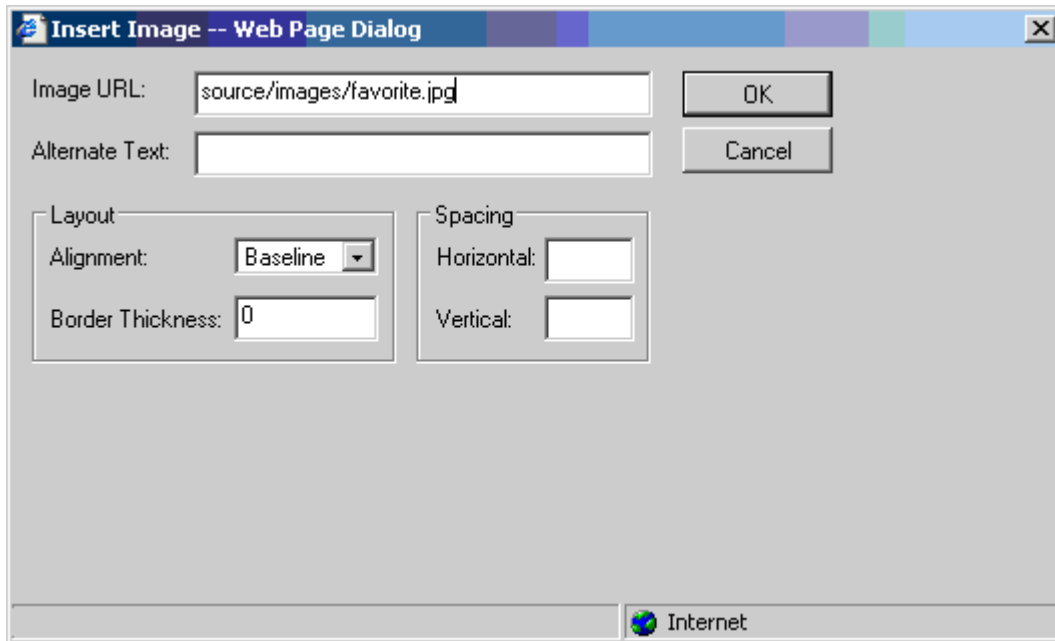
Figure 4.10-10.

The image manager provides several functions:

- A list is provided of all images that are currently part of the help system.
- The user can click on any image in the list and it will be displayed on the right hand side via dhtml.
- When an available image is selected, its full relative web server path is displayed at the bottom of this page. This is the path that is used to add a picture to a help content page.
- An “Add New Image” file upload box is provided to allow a user to browse to a picture on their local machine and subsequently upload it into the image manager.

The image manager makes it easy to view and locate images to be used in the help content pages. Within the add or edit content controls, the user just clicks the Insert

Image button  and then pastes the path of the picture into the Figure 4.10-11 dialog box.



**Figure 4.10-11.**

The image is then added to the content page.

#### **4.10.2.2.3 *Edit Content***

The Edit button loads a very similar page to the Add button but it can be used on any existing help content page. The user just loads the content page and then clicks the Edit button. The WYSIWYG editor is loaded with the current html file for editing including all formatting and images as shown in Figure 4.10-12.



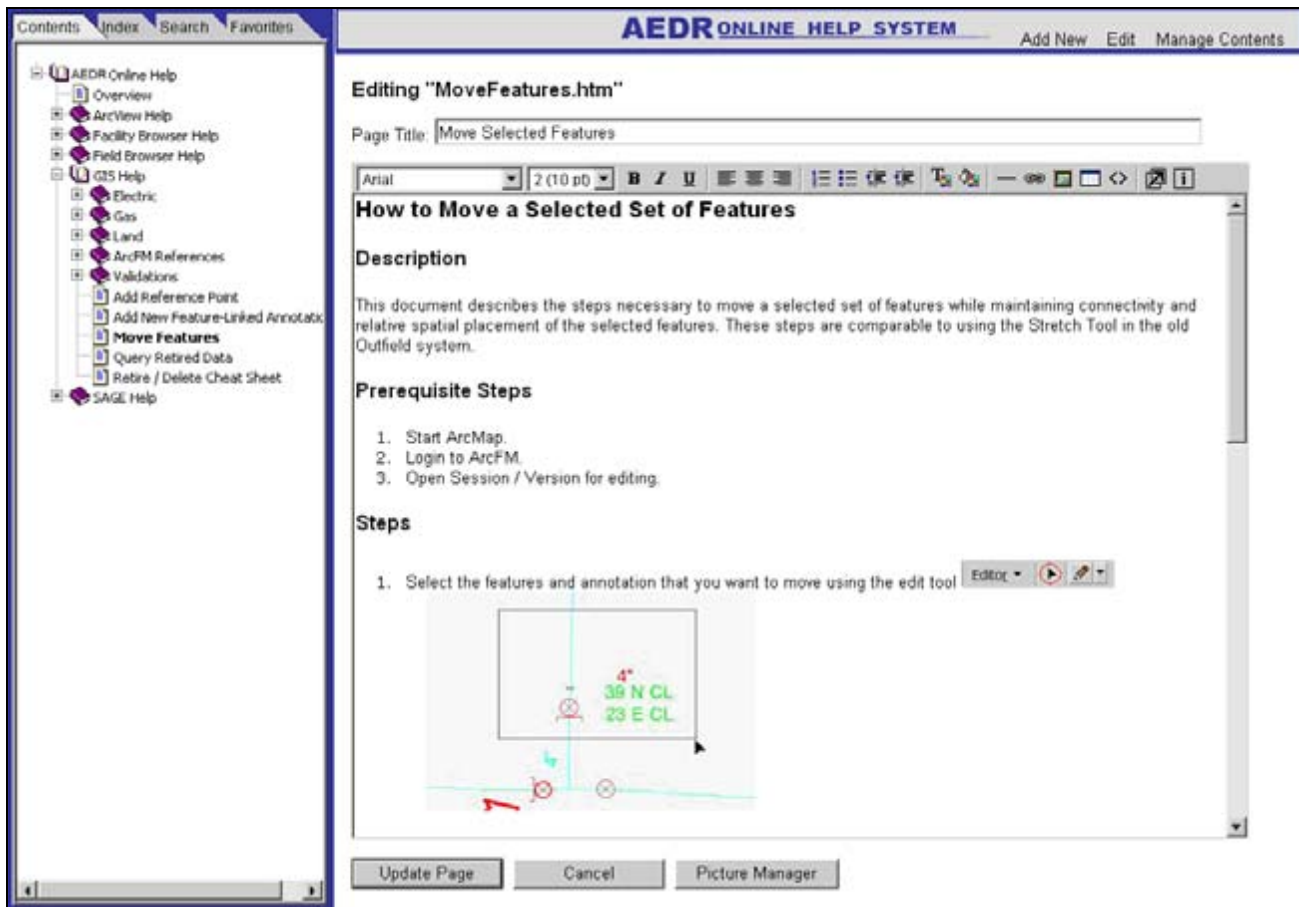
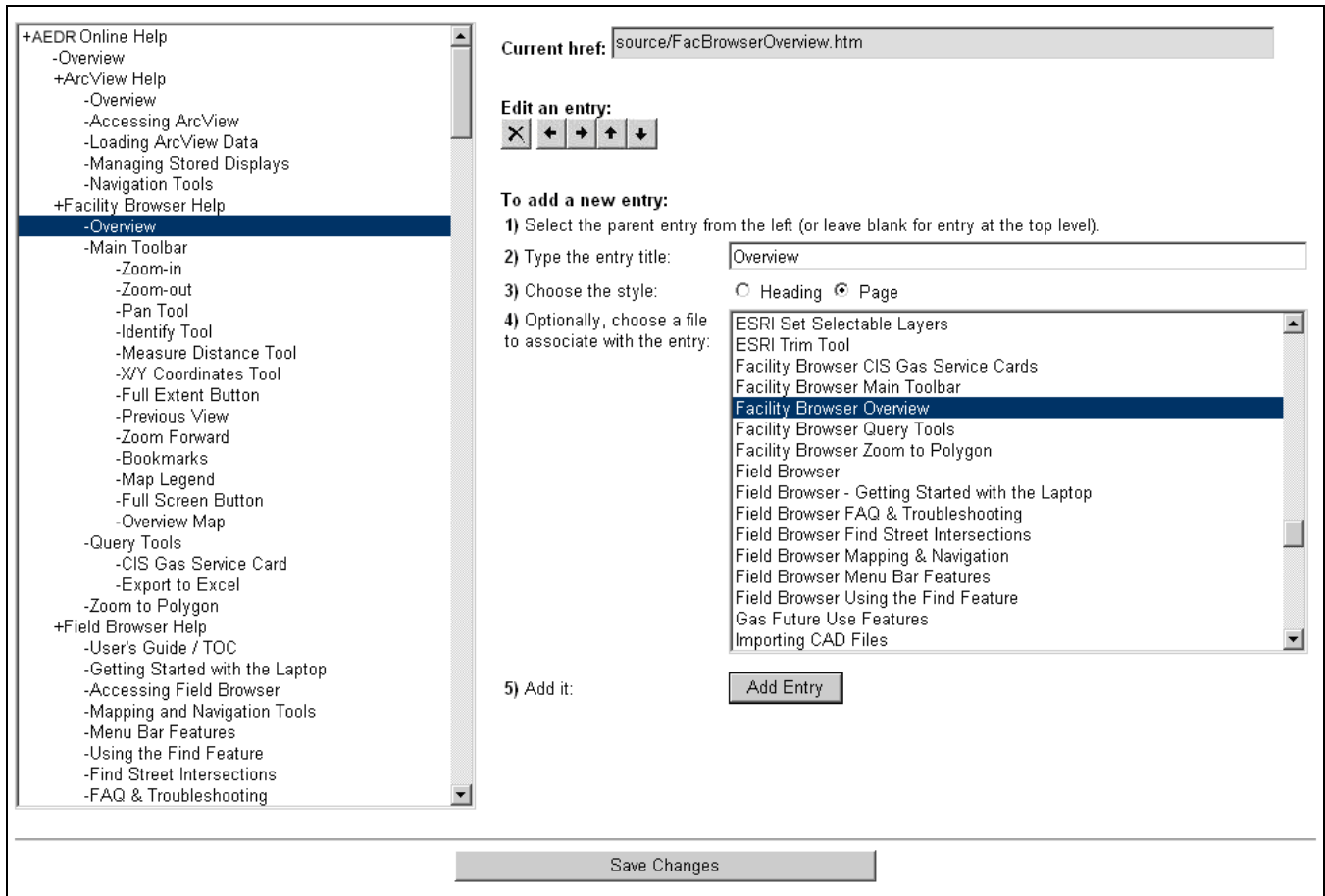


Figure 4.10-12.

The user can then apply any needed updates and save the page back to the server. Like the add page, the topic title is re-added to / updated in the help index file, and the content of the help file is re-indexed in the full text search engine.

#### 4.10.2.2.4 *Contents Management*

A comprehensive contents manager control has also been provided to allow an admin user full control over the contents tree view that is displayed on the contents pane. This tool shows the design of the contents tree view in formatted list box. A “+” indicates a heading and a “-“ indicates a content page. The indentation of the entries shows the categorical structure of the contents in Figure 4.10-13.



**Figure 4.10-13.**

Clicking on any entry in the contents list box will show the current path to the help content file in the “Current href” text box. Contents entry can be deleted, moved left or right (indentation), and moved up and down in the list box using the edit controls:



New contents entries can be easily added by following the steps provided on the screen. The entry title can be any value independent of the topic title. Clicking the Add Entry button adds a new entry with the specified parameters directly under the currently selected entry in the list box. It can then be moved using the edit controls as needed.

Once the new layout of the contents is acceptable, the user clicks the “Save Changes” button. The layout of the contents tree view is saved to the web server and is made immediately available to all users of the help system. All of these administration controls contribute to a highly effective and dynamic distribution of help information to a large audience of users.

## **4.11 Training**

### **4.11.1 Overview**

The training audience is composed of the GIS project team and the end-user community; the record clerks. The GIS project team was trained from both a technical and functional perspective, while training for the end-users was purely functional. NIPSCO adopted the “Train the Trainer” concept of training GIS project team members to assist in training the record clerks. The training effort of planning, preparing and organizing began eight months in advance of site training.

#### **4.11.1.1 Training Needs Assessment**

This task was the cornerstone of the entire training plan. Miner & Miner conducted an on-site visit to meet with a combination of NIPSCO GIS project team members and record clerk subject matter experts to accomplish the following:

- Discussed background, skill level, and computing literacy of the target training audience- record clerks
- Identified all job responsibilities of record clerks as they relate to tasks and functions in AEDR
- Reviewed implementation specific, custom functionality within AEDR
- Reviewed roles & responsibilities, business processes, and work flows with regards to AEDR
- Discussed and establish skeleton outlines for training content, structure, and delivery mechanisms
- Established AEDR “best practices” for all record clerk oriented tasks for incorporation into all custom documentation development
- Reviewed and select a series of real world work orders, where applicable, to serve as the basis for hands-on exercise scenarios
- Open Q&A, demonstration of ArcMap/ArcFM functionality
- Reviewed data options in support of course development and training delivery
- Discussed issues regarding training location preparations including: facility setups, hardware/software configurations, user roles and permissions, and on-site IT support.

#### **4.11.1.2 GIS Project Team Training**

During the pre-planning stages of the project (September 2003), the GIS project team received the standard (two weeks) ArcGIS and ArcFM training from ESRI and Miner & Miner, respectively. Approximately nine weeks prior to production implementation, the GIS project team attended the ArcFM user training for the purposes of critiquing the class, serving as a dress rehearsal for Miner & Miner trainers and preparing for the “Train the Trainer” program. Several GIS project team members were selected to augment the training program by assisting users in practice sessions following the formal Miner & Miner ArcFM training program.

### **4.11.1.3 Record Clerk Training**

A half-day training session on the basics of ArcGIS/ArcFM as it relates to Window technology preceded the customized training on current day-to-day processing of work using real-life work orders and business materials. For simplicity, users were taught only one method instead of a multitude of methods to accomplish the same goal.

Training the user community presented unique challenges related to timing and logistics. Record clerks were spread across the northern third of Indiana, in fourteen locations often with only two or three record clerks located at a particular site. The logistics were further complicated in that business requirements prevented training all record clerks at once. Some employees were required to remain back in the office to process critical work while co-workers attended training.

Record clerks were trained seven weeks prior to production implementation after which they were provided approximately four to six weeks of mandatory half-day practice. Miner & Miner training resources trained more than fifty record clerks in three different locations over a period of two weeks. Following the first week of record clerk training, NIPSCO trainers were dispersed to the newly trained record clerk locations to assist the record clerks in practice sessions while the second week of record clerk training commenced. Subsequent to completion of the second week of record clerk training, NIPSCO resources assisting Week 1 students were thinned out to the newly trained Week 2 students to continue assistance with the record clerk practice sessions.

### **4.11.1.4 Training Environment**

Logistically, three training sites were set up across northwest Indiana located several hours drive apart. This presented challenges for setting up each training environment with the appropriate hardware as additional desktops were scarce.

The AEDR software was installed on the future production CITRIX farm serving simultaneous training classes. Using CITRIX as opposed to stand-alone implementations presented an ideal situation for the following reasons:

- Users would be trained on the exact environment they would be working in production. Logging on to CITRIX would be included as part of the training.
- The training PCs were of substandard horse power and would require an investment in hardware upgrades to allow the applications to run.

Thirty-two client machines were located in logistically challenged areas and would need to be fully configured with OOTB ESRI/ArcFM, service packs & patches, custom font, EDFS and other custom installers. We saved approximately 600 man hours by using CITRIX where the applications were installed on a server farm.

#### **4.11.1.5 Conclusion**

Training presented some significant challenges due to the complexity of the software, the number of users requiring training and the remote training locations. We had highly acceptable results using the CITRIX environment while containing the resource costs to support the training environment.

Developing the training program to include the minimum amount of information necessary for the users to perform their job function was critical for the success of the training. The ArcGIS/ArcFM platform is sophisticated software in that the same type of function can be accomplished many different ways. We attribute user acceptance of a new, complex system for the following reasons:

- Real-world business cases were used to train users
- Teaching only one method to perform a given function allowed the user to understand and perfect the function before using different tools to accomplish the same task
- Mandatory practice sessions every day for several weeks with required work submitted for review
- Onsite assistance during practice sessions
- A robust on-line help with detailed steps to perform a given function.


## Appendix A-1

### Inception and Elaboration Project Plan

## NIPSCO GIS Inception and Elaboration Project Plan

ID	Task Name	Start	Finish
1	<b>NIPSCO Inception and Elaboration (Planning Stage)</b>	<b>Mon 7/21/03</b>	<b>Fri 12/19/03</b>
2	<b>General Management Tasks</b>	<b>Fri 7/25/03</b>	<b>Fri 12/19/03</b>
3	Change Management (5% of project)	Fri 7/25/03	Fri 12/19/03
4	Project Management (15% of project)	Fri 7/25/03	Fri 12/19/03
5	Configuration Management (10% of project)	Fri 7/25/03	Fri 12/19/03
6	System Administration (10% of project)	Fri 7/25/03	Fri 12/19/03
7	<b>Inception Phase</b>	<b>Mon 7/21/03</b>	<b>Thu 10/16/03</b>
8	<b>Develop the Business Case</b>	<b>Fri 8/1/03</b>	<b>Tue 9/30/03</b>
9	Define project objectives	Fri 8/1/03	Fri 8/1/03
10	Develop a financial forecast	Mon 8/4/03	Tue 9/30/03
11	Describe the project constraints	Wed 8/6/03	Wed 8/6/03
12	<b>Establish the Initial Staffing / Commitments</b>	<b>Fri 8/1/03</b>	<b>Tue 8/26/03</b>
13	Establish initial vendor staffing plan	Fri 8/1/03	Fri 8/1/03
14	Get participation commitments from SMEs	Mon 8/4/03	Mon 8/4/03
15	Schedule the core NIPSCO team commitments	Mon 8/4/03	Mon 8/4/03
16	Create initial project org chart	Mon 8/25/03	Mon 8/25/03
17	Create project contact list	Tue 8/26/03	Tue 8/26/03
18	Plan team training	Thu 8/7/03	Fri 8/8/03
19	<b>Setup Elaboration Development Environment</b>	<b>Mon 7/21/03</b>	<b>Thu 10/16/03</b>
20	Investigate hardware requirements	Mon 7/21/03	Mon 7/21/03
21	Obtain hardware	Fri 8/22/03	Mon 8/25/03
22	Install hardware	Mon 9/8/03	Wed 9/10/03
23	Investigate software requirements	Mon 7/21/03	Mon 7/21/03
24	Obtain software	Fri 8/1/03	Tue 8/5/03
25	Install SourceSafe software	Wed 10/8/03	Wed 10/8/03
26	<b>SDE Server Software</b>	<b>Wed 9/17/03</b>	<b>Thu 10/9/03</b>
27	Install SQLServer Enterprise Edition 8.00.760 SP3	Wed 9/17/03	Wed 9/17/03
28	Install geodatabase for ArcFM	Fri 9/19/03	Fri 9/19/03
29	Install ArcGIS 8.3 SP1 Map & Catalog	Thu 9/18/03	Thu 9/18/03
30	Install ArcView 8.3 SP1 Map & Catalog	Thu 9/18/03	Thu 9/18/03
31	Install ArcReader 8.3 SP1	Thu 9/18/03	Thu 9/18/03
32	Move FlexLM to SDE server	Thu 10/9/03	Thu 10/9/03
33	<b>Citrix Server Software</b>	<b>Thu 9/18/03</b>	<b>Fri 9/19/03</b>
34	Install ArcGIS 8.3 SP1 Map & Catalog	Thu 9/18/03	Thu 9/18/03
35	Install ArcView 8.3 SP1 Map & Catalog	Thu 9/18/03	Thu 9/18/03
36	Install ArcReader 8.3 SP1	Thu 9/18/03	Thu 9/18/03
37	Install ArcFM 8.3.1	Fri 9/19/03	Fri 9/19/03
38	Test the installation & uninstallation of ArcFM Designer 8.3.1	Fri 9/19/03	Fri 9/19/03
39	<b>Desktop Installations</b>	<b>Thu 9/18/03</b>	<b>Fri 9/26/03</b>
40	Install ArcGIS 8.3 SP1 Map & Catalog	Thu 9/18/03	Thu 9/18/03
41	Install ArcFM 8.3.1	Fri 9/19/03	Fri 9/19/03

## NIPSCO GIS Inception and Elaboration Project Plan

ID		Task Name	Start	Finish
42	✓	Install ArcFM 8.3.1 Designer on 3 of the elaboration desktops	Fri 9/19/03	Fri 9/19/03
43	✓	Install ArcFM 8.3.1 on project team desktops	Mon 9/22/03	Fri 9/26/03
44	✓	Install starter database that ESRI created for the RFP demo	Tue 10/14/03	Tue 10/14/03
45	✓	Set up the development, test environments	Tue 10/14/03	Thu 10/16/03
46	✓	Create Development Environment Report	Mon 9/29/03	Fri 10/3/03
47	✓	<b>Setup Document Collaboration</b>	<b>Mon 9/29/03</b>	<b>Mon 10/6/03</b>
48	✓	Review Lotus QuickPlace as potential collaboration tool	Mon 9/29/03	Mon 9/29/03
49	✓	Make decision on usefulness	Mon 10/6/03	Mon 10/6/03
50	✓	<b>Inception Phase Kickoff</b>	<b>Wed 8/13/03</b>	<b>Wed 9/24/03</b>
51	✓	Prep work for the conference call	Wed 8/13/03	Wed 8/13/03
52	✓	Pre-inception conference call	Wed 8/13/03	Wed 8/13/03
53	✓	Prep work for the inception phase kickoff meeting	Wed 8/13/03	Thu 8/14/03
54	✓	Participate in the inception phase kickoff meeting	Thu 8/14/03	Wed 8/20/03
55	✓	Document action items	Wed 8/20/03	Wed 8/20/03
56	✓	Schedule additional Inception Phase meetings	Wed 8/20/03	Wed 8/20/03
57	✓	Revise project plan based on results of the kickoff meeting	Tue 8/26/03	Wed 9/24/03
58	✓	<b>Prepare the risk spreadsheet</b>	<b>Wed 8/6/03</b>	<b>Wed 9/24/03</b>
59	✓	Create initial draft of the risk spreadsheet	Wed 8/6/03	Thu 8/7/03
60	✓	Refine / revise / publish the risk spreadsheet (on-going)	Fri 8/8/03	Wed 9/24/03
61	✓	<b>Prepare QA plan</b>	<b>Tue 9/23/03</b>	<b>Wed 10/15/03</b>
62	✓	Fill out the RUP template	Tue 9/23/03	Fri 9/26/03
63	✓	Review the document	Fri 9/26/03	Mon 10/6/03
64	✓	Finalize the document	Mon 10/6/03	Wed 10/15/03
65	✓	<b>Develop Sub-contractor Management Plan</b>	<b>Mon 9/22/03</b>	<b>Fri 9/26/03</b>
66	✓	Define organization	Mon 9/22/03	Mon 9/22/03
67	✓	Define methods for sub-contract management	Tue 9/23/03	Thu 9/25/03
68	✓	Define acceptance process	Fri 9/26/03	Fri 9/26/03
69	✓	<b>Capture System Details</b>	<b>Mon 9/22/03</b>	<b>Thu 10/2/03</b>
70	✓	<b>Create Project Encyclopedia</b>	<b>Mon 9/22/03</b>	<b>Fri 9/26/03</b>
71	✓	Load existing requirements	Mon 9/22/03	Tue 9/23/03
72	✓	Load actor details	Tue 9/23/03	Wed 9/24/03
73	✓	Load system details	Wed 9/24/03	Wed 9/24/03
74	✓	Load interface details	Thu 9/25/03	Thu 9/25/03
75	✓	Load data store details	Fri 9/26/03	Fri 9/26/03
76	✓	Load project org chart	Fri 9/26/03	Fri 9/26/03
77	✓	Review information that has been gathered	Wed 10/1/03	Wed 10/1/03
78	✓	Make adjustments if needed	Wed 10/1/03	Thu 10/2/03
79	✓	<b>Define Elaboration Phase Project Organization and Staffing</b>	<b>Tue 9/9/03</b>	<b>Mon 10/6/03</b>
80	✓	Evaluate staffing requirements based on scope	Tue 9/9/03	Mon 10/6/03
81	✓	Assign teams for each component	Thu 9/11/03	Wed 9/24/03
82	✓	Revise project org chart	Wed 9/17/03	Wed 9/17/03




## NIPSCO GIS Inception and Elaboration Project Plan

ID	Task Name	Start	Finish
83	Send out the org chart / review / revise (on-going)	Mon 9/22/03	Mon 9/22/03
84	Secure commitments on project resources for the Elaboration Phase	Fri 10/3/03	Fri 10/3/03
85	<b>Miscellaneous Prep Tasks</b>	<b>Wed 9/17/03</b>	<b>Tue 9/30/03</b>
86	Gather all data sources	Wed 9/17/03	Fri 9/19/03
87	Create agenda for demonstration of existing system	Tue 9/30/03	Tue 9/30/03
88	<b>Conduct Team Training</b>	<b>Mon 9/22/03</b>	<b>Fri 10/3/03</b>
89	ArcGIS I and II training	Mon 9/22/03	Fri 9/26/03
90	ArcFM training	Mon 9/29/03	Fri 10/3/03
91	<b>Review Inception Phase Results</b>	<b>Fri 9/26/03</b>	<b>Fri 9/26/03</b>
92	Review estimated Elaboration schedule and cost	Fri 9/26/03	Fri 9/26/03
93	Go / No-Go Decision	Fri 9/26/03	Fri 9/26/03
94	<b>Elaboration Phase</b>	<b>Tue 10/7/03</b>	<b>Fri 12/19/03</b>
95	<b>Data Modeling (4 weeks)</b>	<b>Tue 10/7/03</b>	<b>Mon 11/10/03</b>
96	<b>Land Data Modeling</b>	<b>Tue 10/7/03</b>	<b>Fri 10/10/03</b>
97	Data modeling overview	Tue 10/7/03	Tue 10/7/03
98	Land Data modeling workshop	Tue 10/7/03	Fri 10/10/03
99	Associations	Fri 10/10/03	Fri 10/10/03
100	<b>Full Team Kickoff Tasks</b>	<b>Mon 10/13/03</b>	<b>Thu 10/16/03</b>
101	<b>Demos of the existing system</b>	<b>Mon 10/13/03</b>	<b>Mon 10/13/03</b>
102	EDFS demo	Mon 10/13/03	Mon 10/13/03
103	Outfield demo	Mon 10/13/03	Mon 10/13/03
104	Infobuilder, MapGuide demo	Mon 10/13/03	Mon 10/13/03
105	<b>Training / Overviews</b>	<b>Mon 10/13/03</b>	<b>Tue 10/14/03</b>
106	Hold Multi-user Versioning & Designer workshop	Mon 10/13/03	Mon 10/13/03
107	ESRI Data Modeling/Migration discussion	Tue 10/14/03	Tue 10/14/03
108	SourceSafe training	Tue 10/14/03	Tue 10/14/03
109	Collaboration tool training	Tue 10/14/03	Tue 10/14/03
110	RUP overview	Tue 10/14/03	Tue 10/14/03
111	<b>General Data Model Interface Workshop</b>	<b>Wed 10/15/03</b>	<b>Thu 10/16/03</b>
112	Facility Browser Interface	Wed 10/15/03	Wed 10/15/03
113	Field Browser Interface	Wed 10/15/03	Wed 10/15/03
114	Autodesk Map Interface	Wed 10/15/03	Wed 10/15/03
115	InfoBuilder Interface	Wed 10/15/03	Wed 10/15/03
116	CIS	Thu 10/16/03	Thu 10/16/03
117	GPS	Thu 10/16/03	Thu 10/16/03
118	<b>Electric Data Modeling</b>	<b>Thu 10/16/03</b>	<b>Tue 10/28/03</b>
119	<b>Electric Data Modeling Workshop</b>	<b>Thu 10/16/03</b>	<b>Thu 10/23/03</b>
120	Electric data model general workshops	Thu 10/16/03	Wed 10/22/03
121	EDFS data modeling issues	Thu 10/23/03	Thu 10/23/03
122	GM&T data model issues	Fri 10/24/03	Fri 10/24/03
123	<b>Electric Data Model Interface Workshops</b>	<b>Mon 10/27/03</b>	<b>Tue 10/28/03</b>

## NIPSCO GIS Inception and Elaboration Project Plan

ID		Task Name	Start	Finish
124	✓	CADOPS Interface	Mon 10/27/03	Mon 10/27/03
125	✓	Feederall Interface	Mon 10/27/03	Mon 10/27/03
126	✓	IRTH Interface	Tue 10/28/03	Tue 10/28/03
127	✓	EAIF Interface	Tue 10/28/03	Tue 10/28/03
128	✓	MAPPS	Tue 10/28/03	Tue 10/28/03
129	✓	Walker General Ledger	Tue 10/28/03	Tue 10/28/03
130	✓	MLOG	Tue 10/28/03	Tue 10/28/03
131	✓	<b>Gas Data Modeling</b>	<b>Wed 10/29/03</b>	<b>Tue 11/4/03</b>
132	✓	Gas data model - general workshop	Wed 10/29/03	Mon 11/3/03
133	✓	<b>Gas Data Model Interface Workshops</b>	<b>Tue 11/4/03</b>	<b>Tue 11/4/03</b>
134	✓	Stoner	Tue 11/4/03	Tue 11/4/03
135	✓	Cathodic Protection/Corrosion Control	Tue 11/4/03	Tue 11/4/03
136	✓	Gas OMS	Tue 11/4/03	Tue 11/4/03
137	✓	<b>Finish the Remaining Data Model Tasks</b>	<b>Wed 11/5/03</b>	<b>Mon 11/10/03</b>
138	✓	<b>Finish Remaining Landbase Data Modeling</b>	<b>Wed 11/5/03</b>	<b>Thu 11/6/03</b>
139	✓	Land data model - Logical & Physical model completion	Wed 11/5/03	Wed 11/5/03
140	✓	Land data model - Construction phase estimates	Thu 11/6/03	Thu 11/6/03
141	✓	<b>Finish Remaining Electric Data Modeling</b>	<b>Wed 11/5/03</b>	<b>Mon 11/10/03</b>
142	✓	Electric data model - Logical & Physical model completion	Wed 11/5/03	Mon 11/10/03
143	✓	Electric data model - Construction phase estimates	Mon 11/10/03	Mon 11/10/03
144	✓	<b>Finish Remaining Gas Data Modeling</b>	<b>Wed 11/5/03</b>	<b>Mon 11/10/03</b>
145	✓	Gas data model - Logical & Physical model completion	Wed 11/5/03	Mon 11/10/03
146	✓	Gas data model - Construction phase estimates	Mon 11/10/03	Mon 11/10/03
147	✓	<b>Production Planning Hardware / Environment Architecture</b>	<b>Tue 11/4/03</b>	<b>Fri 11/7/03</b>
148	✓	Hardware configuration evaluation	Tue 11/4/03	Wed 11/5/03
149	✓	Create system architecture blueprint	Wed 11/5/03	Thu 11/6/03
150	✓	Estimate construction phase tasks	Thu 11/6/03	Fri 11/7/03
151	✓	<b>Data Cleanup Tasks (3 weeks)</b>	<b>Mon 11/10/03</b>	<b>Fri 12/5/03</b>
152	✓	<b>Setup Tasks</b>	<b>Mon 11/10/03</b>	<b>Tue 11/11/03</b>
153	✓	Establish test data / area	Mon 11/10/03	Mon 11/10/03
154	✓	Data cleanup approach / plan	Tue 11/11/03	Tue 11/11/03
155	✓	<b>Corrosion Control Numbering</b>	<b>Tue 11/11/03</b>	<b>Wed 11/12/03</b>
156	✓	Pre-migration cleanup	Tue 11/11/03	Tue 11/11/03
157	✓	Meet with user	Wed 11/12/03	Wed 11/12/03
158	✓	<b>Valid Values (Parallel Task 1)</b>	<b>Wed 11/12/03</b>	<b>Fri 11/14/03</b>
159	✓	List all known Outfield and EDFs attribute issues	Wed 11/12/03	Thu 11/13/03
160	✓	SQL against Outfield and EDFs to complete remaining issues list	Thu 11/13/03	Thu 11/13/03
161	✓	Determine transmission valid values	Fri 11/14/03	Fri 11/14/03
162	✓	<b>Positional Accuracy (Parallel Task 2)</b>	<b>Tue 11/11/03</b>	<b>Thu 11/13/03</b>
163	✓	List all known positional accuracy issues	Tue 11/11/03	Tue 11/11/03
164	✓	SQL against Outfield and EDFs to determine remaining issues list	Wed 11/12/03	Wed 11/12/03

## NIPSCO GIS Inception and Elaboration Project Plan

ID		Task Name	Start	Finish
165	✓	Present results to entire team	Thu 11/13/03	Thu 11/13/03
166	✓	<b>Connectivity (Parallel Task 3)</b>	<b>Tue 11/11/03</b>	<b>Wed 11/12/03</b>
167	✓	List all known Outfield connectivity issues	Tue 11/11/03	Tue 11/11/03
168	✓	SQL against Outfield to complete remaining issues list	Wed 11/12/03	Wed 11/12/03
169	✓	<b>GPS</b>	<b>Thu 11/13/03</b>	<b>Thu 11/13/03</b>
170	✓	Identify all known GPS points	Thu 11/13/03	Thu 11/13/03
171	✓	Decision process	Thu 11/13/03	Thu 11/13/03
172	✓	<b>Key fields</b>	<b>Fri 11/14/03</b>	<b>Mon 12/1/03</b>
173	✓	Estimate remaining pole cleanup	Fri 11/14/03	Fri 11/14/03
174	✓	Estimate transformer cleanup	Fri 11/14/03	Fri 11/14/03
175	✓	Estimate padmount cleanup	Mon 11/17/03	Mon 11/17/03
176	✓	Estimate remaining corrosion control section connectivity cleanup	Mon 11/17/03	Mon 11/17/03
177	✓	Discuss how to deal with secondary network data (on linen).	Tue 11/18/03	Tue 11/18/03
178	✓	Planning / design of secondary prototype. Review data, etc	Tue 11/18/03	Tue 11/18/03
179	✓	Present results to entire team	Wed 11/19/03	Wed 11/19/03
180	✓	Prototype conversion of some secondary data	Wed 11/19/03	Mon 12/1/03
181	✓	<b>Run Standard ESRI/M&amp;M Validation Tools (Dependency on Database)</b>	<b>Tue 12/2/03</b>	<b>Thu 12/4/03</b>
182	✓	Run the scripts/tools	Tue 12/2/03	Tue 12/2/03
183	✓	Review gas results (parallel)	Tue 12/2/03	Tue 12/2/03
184	✓	Review electric results (parallel)	Wed 12/3/03	Wed 12/3/03
185	✓	Review land results (parallel)	Thu 12/4/03	Thu 12/4/03
186	✓	Estimate construction phase data cleanup tasks	Fri 12/5/03	Fri 12/5/03
187	✓	Develop the Data Rectification RFP	Fri 12/5/03	Fri 12/5/03
188	✓	<b>Data Migration / Conversion Tasks (3 weeks)</b>	<b>Fri 10/17/03</b>	<b>Fri 11/21/03</b>
189	✓	Prepare overview of data migration approach	Fri 10/17/03	Fri 10/17/03
190	✓	Complete overview of data migration approach	Mon 11/10/03	Mon 11/10/03
191	✓	Prepare rules for RFP	Tue 11/11/03	Tue 11/11/03
192	✓	Development work (actual migration tests)	Mon 11/10/03	Fri 11/21/03
193	✓	Present results to entire team	Thu 11/13/03	Thu 11/13/03
194	✓	Document the results (Migration Plan)	Fri 11/21/03	Fri 11/21/03
195	✓	Develop the RFP for data migration	Fri 11/21/03	Fri 11/21/03
196	✓	<b>Performance Tasks</b>	<b>Mon 11/10/03</b>	<b>Thu 11/20/03</b>
197	✓	Develop performance testing plan	Mon 11/10/03	Tue 11/11/03
198	✓	Plan for production-like testing environment	Mon 11/17/03	Mon 11/17/03
199	✓	Establish environment and run tests	Mon 11/17/03	Thu 11/20/03
200	✓	Estimate construction phase performance tasks	Thu 11/20/03	Thu 11/20/03
201	✓	<b>ArcGIS / ArcFM Configuration (2 weeks)</b>	<b>Fri 11/21/03</b>	<b>Fri 11/21/03</b>
202	✓	Complete overview of configuration approach	Fri 11/21/03	Fri 11/21/03
203	✓	Review overview of configuration approach	Fri 11/21/03	Fri 11/21/03
204	✓	Discuss the "Go / No-Go" Decision	Fri 12/19/03	Fri 12/19/03

Appendix A-2

AEDR Construction Phase I Project Plan

ID	Task Name	Start	Finish
1	<b>NIPSCO AEDR - Phase 1</b>	<b>Mon 3/1/04</b>	<b>Wed 5/2/07</b>
2	<b>General Project Tasks</b>	<b>Mon 3/1/04</b>	<b>Mon 6/12/06</b>
3	<b>Project Management Tasks</b>	<b>Mon 3/1/04</b>	<b>Tue 11/1/05</b>
4	Project Management Tasks	Mon 3/1/04	Tue 11/1/05
5	<b>Miscellaneous Project Tasks</b>	<b>Mon 3/1/04</b>	<b>Mon 6/12/06</b>
6	General team meetings / general communication tasks	Mon 3/1/04	Mon 6/12/06
7	Elementool administration	Mon 3/1/04	Mon 6/12/06
8	<b>Review / Mitigate Risks</b>	<b>Wed 6/9/04</b>	<b>Thu 1/27/05</b>
9	<b>Risk List Review Coordination</b>	<b>Wed 6/9/04</b>	<b>Wed 6/30/04</b>
10	Establish draft schedule for reviewing / mitigating risks	Wed 6/9/04	Wed 6/9/04
11	Review and finalize the risk meeting / mitigation schedule	Tue 6/15/04	Tue 6/15/04
12	Establish initial procedures for risk list reviews	Wed 6/30/04	Wed 6/30/04
13	<b>Risk Reviews - Repeated Until Risks are Mitigated</b>	<b>Tue 6/15/04</b>	<b>Thu 1/27/05</b>
14	Technology review committee data migration/rectification risks	Tue 6/15/04	Tue 6/15/04
15	Technology review committee data migration/rectification risks	Fri 8/20/04	Fri 8/20/04
16	Scope creep risks	Thu 6/24/04	Thu 6/24/04
17	Internal team risks	Thu 6/24/04	Thu 6/24/04
18	Current production support risks	Thu 6/24/04	Thu 6/24/04
19	Resource dependency risks	Fri 6/25/04	Fri 6/25/04
20	Application usability risks	Wed 6/30/04	Wed 6/30/04
21	Quality risks	Wed 6/30/04	Wed 6/30/04
22	Data maintenance process risks	Thu 7/15/04	Thu 7/15/04
23	Test data risks	Fri 7/23/04	Fri 7/23/04
24	Field Browser risks	Wed 8/18/04	Wed 8/18/04
25	Data migration / rectification risks	Wed 6/16/04	Wed 6/16/04
26	Data migration / rectification risks	Fri 7/23/04	Fri 7/23/04
27	Annotation risks	Fri 7/16/04	Fri 7/16/04
28	CH integration risks	Tue 7/27/04	Tue 7/27/04
29	Real time interface risks	Fri 7/30/04	Fri 7/30/04
30	Data cleanup risks	Wed 9/1/04	Wed 9/1/04
31	Data migration / rectification risks	Wed 9/15/04	Wed 9/15/04
32	Whitespace management risks	Wed 9/15/04	Wed 9/15/04
33	Data Related Risks	Fri 10/22/04	Fri 10/22/04
34	Annotation risks	Wed 10/27/04	Wed 10/27/04
35	Pan/zoom performance risks	Wed 10/27/04	Wed 10/27/04
36	Data related risks	Fri 11/19/04	Fri 11/19/04
37	General project risks	Mon 11/22/04	Mon 11/22/04
38	Real time interface risks	Thu 12/9/04	Thu 12/9/04
39	Application startup performance risks	Thu 12/9/04	Thu 12/9/04
40	Mapping product risks.	Fri 12/10/04	Fri 12/10/04
41	CH integration risks	Fri 12/10/04	Fri 12/10/04
42	Data related risks	Wed 1/12/05	Wed 1/12/05
43	Real time interface risks	Thu 1/13/05	Thu 1/13/05
44	Application startup performance risks	Thu 1/13/05	Thu 1/13/05
45	Scope creep risks	Fri 1/14/05	Fri 1/14/05
46	CH integration risks	Thu 1/27/05	Thu 1/27/05

ID	Task Name	Start	Finish
47	<b>GIS Data Rectification</b>	<b>Mon 6/7/04</b>	<b>Fri 1/6/06</b>
48	<b>GIS Data Rectification - Startup Tasks</b>	<b>Mon 6/7/04</b>	<b>Wed 10/27/04</b>
49	<b>Migration and Rectification Preparation Tasks</b>	<b>Mon 6/7/04</b>	<b>Thu 7/1/04</b>
50	Review the data migration vendor proposal and update text as needed (for the contract)	Tue 6/8/04	Thu 6/10/04
51	Meeting to review rectification batches / pilot area	Thu 6/10/04	Thu 6/10/04
52	Put together map regarding the batches	Fri 6/11/04	Fri 6/11/04
53	Miscellaneous planning for the migration/rectification kickoff meeting	Mon 6/7/04	Fri 6/11/04
54	Answer additional vendor questions	Wed 6/16/04	Wed 6/16/04
55	Validate the feature counts for the data migration vendor contract	Thu 6/17/04	Thu 6/17/04
56	Meeting to review modeling of transformers / substations	Wed 6/30/04	Wed 6/30/04
57	Review whitespace management of dual substations	Wed 6/30/04	Wed 6/30/04
58	Make sure that dual substation migration is covered in data migration vendor's SOW	Thu 7/1/04	Thu 7/1/04
59	<b>Data Migration and Rectification Contract</b>	<b>Wed 6/23/04</b>	<b>Mon 8/9/04</b>
60	Add level of effort and cost for optional tasks in contract	Fri 7/2/04	Tue 7/20/04
61	Finalize the data migration vendor contract	Wed 6/23/04	Mon 8/9/04
62	<b>Data Migration and Rectification Kickoff and Workshops</b>	<b>Mon 6/14/04</b>	<b>Fri 6/18/04</b>
63	<b>Day 1 Workshops (afternoon only)</b>	<b>Mon 6/14/04</b>	<b>Mon 6/14/04</b>
64	Vendors travel to NIPSCO	Mon 6/14/04	Mon 6/14/04
65	Data migration and rectification kickoff meeting	Mon 6/14/04	Mon 6/14/04
66	Review project / review scope of work	Mon 6/14/04	Mon 6/14/04
67	Define contract expectations	Mon 6/14/04	Mon 6/14/04
68	Define project administration and communication	Mon 6/14/04	Mon 6/14/04
69	<b>Day 2 Workshops</b>	<b>Tue 6/15/04</b>	<b>Tue 6/15/04</b>
70	Review pilot area	Tue 6/15/04	Tue 6/15/04
71	Review rectification batches	Tue 6/15/04	Tue 6/15/04
72	Data rectification and migration - miscellaneous issues	Tue 6/15/04	Tue 6/15/04
73	Outfield / Field Browser / Facility Browser demos	Tue 6/15/04	Tue 6/15/04
74	Determine drafting standards / schema	Tue 6/15/04	Tue 6/15/04
75	Documentation - AutoCAD schema	Tue 6/15/04	Tue 6/15/04
76	<b>Day 3 Workshops</b>	<b>Wed 6/16/04</b>	<b>Wed 6/16/04</b>
77	Data model and ArcFM status / issues	Wed 6/16/04	Wed 6/16/04
78	EDFS migration strategies	Wed 6/16/04	Wed 6/16/04
79	<b>Review Source Materials</b>	<b>Wed 6/16/04</b>	<b>Wed 6/16/04</b>
80	Street light database	Wed 6/16/04	Wed 6/16/04
81	Customer point data	Wed 6/16/04	Wed 6/16/04
82	Demonstrate EDFs	Wed 6/16/04	Wed 6/16/04
83	Outfield migration strategies	Wed 6/16/04	Wed 6/16/04
84	Data matrix	Wed 6/16/04	Wed 6/16/04
85	Fuzzy / buffered edges	Wed 6/16/04	Wed 6/16/04
86	Rectification rules	Wed 6/16/04	Wed 6/16/04
87	<b>Day 4 Workshops</b>	<b>Thu 6/17/04</b>	<b>Thu 6/17/04</b>
88	Feature-level migration mapping rules	Thu 6/17/04	Thu 6/17/04
89	Demo Elementool	Thu 6/17/04	Thu 6/17/04
90	Make decision on Elementool versus CRS usage for migration / rectification	Thu 6/17/04	Thu 6/17/04
91	<b>Day 5 Workshops</b>	<b>Fri 6/18/04</b>	<b>Fri 6/18/04</b>
92	Miscellaneous issues / action items	Fri 6/18/04	Fri 6/18/04

ID	Task Name	Start	Finish
93	Get metrics on secondary migration issues	Fri 6/18/04	Fri 6/18/04
94	Determine how to resolve EDFs secondary migration (graphic generation)	Fri 6/18/04	Fri 6/18/04
95	Transfer any available sample migration code / migration reports to data migration vendor	Fri 6/18/04	Fri 6/18/04
96	<b>Resolve the Rectification Tickets from Elementool</b>	<b>Fri 7/30/04</b>	<b>Wed 8/18/04</b>
97	Review and resolve Elementool tickets	Fri 7/30/04	Wed 8/18/04
98	<b>Establish Data Migration Vendors Project Web Site for NIPSCO</b>	<b>Mon 6/21/04</b>	<b>Fri 6/25/04</b>
99	Establish NIPSCO web site	Mon 6/21/04	Fri 6/25/04
100	Establish NIPSCO logins for the web site	Fri 6/25/04	Fri 6/25/04
101	<b>Define the Delivery Batches for Rectified Data</b>	<b>Mon 6/21/04</b>	<b>Fri 6/25/04</b>
102	Establish data rectification batch definition guidelines	Mon 6/21/04	Mon 6/21/04
103	Create full schedule / map of data rectification batches	Mon 6/21/04	Wed 6/23/04
104	Send the schedule / map to NIPSCO	Thu 6/24/04	Thu 6/24/04
105	Review the delivery batch schedule / map	Fri 6/25/04	Fri 6/25/04
106	<b>Define Migration Vendor Delivery QA and Acceptance Procedures</b>	<b>Mon 6/21/04</b>	<b>Mon 7/12/04</b>
107	Create migration vendor-specific data QA procedures and send to NIPSCO	Mon 6/21/04	Fri 7/2/04
108	Review migration vendor's QA procedures	Fri 7/9/04	Fri 7/9/04
109	Finalize migration vendor-specific data QA procedures	Mon 7/12/04	Mon 7/12/04
110	<b>Define NIPSCO Data Receipt and Acceptance Procedures</b>	<b>Wed 6/23/04</b>	<b>Mon 7/12/04</b>
111	Investigate possible data migration vendor's use of QA / QC routines from Outfield and ABB-OUT	Fri 6/25/04	Fri 6/25/04
112	Gather all info / instructions from QA/QC routines from Outfield and ABB-OUT	Tue 6/29/04	Fri 7/2/04
113	Create NIPSCO-specific rectification data receipt and acceptance procedures	Wed 6/23/04	Tue 7/6/04
114	Review the NIPSCO-specific rectification data receipt and acceptance procedures	Fri 7/9/04	Fri 7/9/04
115	Revise the NIPSCO-specific rectification data receipt and acceptance procedures	Mon 7/12/04	Mon 7/12/04
116	<b>Define the Rectification Rules</b>	<b>Thu 7/22/04</b>	<b>Wed 8/4/04</b>
117	Present (or e-mail) rectification rules with examples	Thu 7/22/04	Thu 7/22/04
118	Review the rectification rules and send back comments	Wed 7/28/04	Wed 7/28/04
119	Update the rectification rules based on review comments	Fri 7/30/04	Fri 7/30/04
120	Send the revised rectification rules to data migration vendor for review and revision	Fri 7/30/04	Fri 7/30/04
121	Review and revise the rectification rules	Mon 8/2/04	Tue 8/3/04
122	Update, finalize, and approve the rectification rules	Wed 8/4/04	Wed 8/4/04
123	<b>Define Customer Point Rectification Process</b>	<b>Fri 6/18/04</b>	<b>Tue 6/29/04</b>
124	Decide on options for freezing customer point data	Fri 6/18/04	Fri 6/18/04
125	Determine resource / schedule options for rectifying customer point data	Wed 6/23/04	Wed 6/23/04
126	Prepare draft proposal for customer point data	Thu 6/24/04	Thu 6/24/04
127	Review customer point proposal and determine next steps	Tue 6/29/04	Tue 6/29/04
128	<b>Miscellaneous Data Rectification Administrative Tasks</b>	<b>Mon 6/21/04</b>	<b>Fri 8/6/04</b>
129	Get decision on off-site data issues	Fri 8/6/04	Fri 8/6/04
130	Start rectification pilot project	Mon 6/21/04	Mon 6/21/04
131	Decide on rectification production schedule change (move up 3 weeks)	Fri 8/6/04	Fri 8/6/04
132	<b>Define the QC Automation Process</b>	<b>Fri 8/13/04</b>	<b>Fri 10/1/04</b>
133	Verify automated batch routines for QA/QC	Mon 8/16/04	Mon 8/16/04
134	Identify QC automation process for feature count	Fri 8/13/04	Thu 8/19/04
135	Identify QC automation process for DOQQ positional rectification	Fri 8/13/04	Thu 8/19/04
136	Review automation process options and determine approach	Tue 8/24/04	Tue 8/24/04
137	Determine resources needed for automation process options	Fri 8/27/04	Fri 8/27/04
138	Document the procedures to deliver & accept tiles	Fri 10/1/04	Fri 10/1/04

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ID	Task Name	Start	Finish
139	<b>Establish and Train the Data Rectification QA Team</b>	<b>Wed 8/11/04</b>	<b>Tue 8/31/04</b>
140	Identify 4 resources to assist in QA/QC of rectified maps	Fri 8/13/04	Mon 8/16/04
141	Verify raster can be displayed with AutoCAD Map software	Thu 8/19/04	Thu 8/19/04
142	Outline step-by-step procedures for clerks	Wed 8/11/04	Thu 8/19/04
143	Outline Outfield QC's with checklist	Tue 8/24/04	Tue 8/24/04
144	Order extra monitors for clerk's desktop computers	Fri 8/27/04	Fri 8/27/04
145	Ensure video cards & monitors are delivered and installed	Fri 8/27/04	Fri 8/27/04
146	Create training documentation for the rectification QA team	Fri 8/27/04	Fri 8/27/04
147	Create procedures for communicating rectification rules	Fri 8/27/04	Fri 8/27/04
148	Document a process with deliverables for communicating errors to data migration vendor	Fri 8/27/04	Fri 8/27/04
149	Train the rectification QA record clerks	Tue 8/31/04	Tue 8/31/04
150	<b>"Fuzzy Edge" Tasks</b>	<b>Thu 6/24/04</b>	<b>Wed 10/27/04</b>
151	Create prototype drawing file that is re-projected	Thu 6/24/04	Thu 6/24/04
152	Test and document the impacts of re-projection / rectification on CADOPS	Thu 7/1/04	Thu 7/1/04
153	Test and document the impacts of re-projection / rectification on InfoBuilder	Wed 6/30/04	Wed 6/30/04
154	Test and document the impacts of re-projection / rectification on Facility Browser	Wed 6/30/04	Wed 6/30/04
155	Test and document the impacts of re-projection / rectification on Field Browser	Thu 7/1/04	Thu 7/1/04
156	Test and document the impacts of re-projection / rectification on SynerGEE	Thu 7/1/04	Thu 7/1/04
157	Communicate "fuzzy" edge issues to CADOPS, SynerGEE, et al	Thu 7/1/04	Thu 7/1/04
158	Review fuzzy edge results and determine next steps	Fri 7/30/04	Fri 7/30/04
159	Re-project all tiles - batch #1 (over the weekend)	Fri 9/17/04	Mon 9/20/04
160	Re-project all tiles - batch #2 (over the weekend)	Fri 9/24/04	Mon 9/27/04
161	Process all DOQQs	Tue 9/28/04	Wed 9/29/04
162	Re-process InfoBuilder	Tue 10/5/04	Mon 10/11/04
163	Review reprojected tiles back from data migration vendor	Mon 10/11/04	Mon 10/11/04
164	Place CE, CG, CI back into production	Wed 10/20/04	Wed 10/20/04
165	Change author file for facility browser to accept new coordinate system	Mon 10/25/04	Wed 10/27/04
166	Review and process Elementool tickets for CF and CH	Mon 10/25/04	Mon 10/25/04
167	Re-deliver CF and CH files	Tue 10/26/04	Tue 10/26/04
168	Final QA of CF and CH files	Wed 10/27/04	Wed 10/27/04
169	<b>Functional Testing / Debugging / Record Clerk Support</b>	<b>Mon 11/1/04</b>	<b>Fri 11/5/04</b>
170	Review and research Outfield functional issues related to rectification	Mon 11/1/04	Fri 11/5/04
171	Establish DWGVerify review procedures	Wed 11/3/04	Thu 11/4/04
172	Assist with rectification research issues	Wed 11/3/04	Wed 11/3/04
173	Copy DOQQ files to a server closer to project team	Mon 11/8/04	Mon 11/15/04
174	<b>Automated Edge Matching</b>	<b>Tue 10/19/04</b>	<b>Wed 11/17/04</b>
175	Automated edgematching QA for migration document review & meeting	Tue 10/19/04	Tue 10/19/04
176	Validate technical assumptions	Fri 10/22/04	Fri 10/22/04
177	Create list of entities that need to be edge-matched	Mon 10/25/04	Mon 10/25/04
178	Review latest issues associated with edge matching	Tue 10/26/04	Tue 10/26/04
179	Create and test the automated edgematch query	Fri 10/29/04	Fri 10/29/04
180	Develop and test automated edge match query	Thu 10/28/04	Fri 10/29/04
181	Prepare automated edge match options	Fri 10/29/04	Fri 10/29/04
182	Review automated edge match options and determine solution	Mon 11/1/04	Mon 11/1/04
183	Create remaining design for automated edge match functionality	Tue 11/2/04	Tue 11/2/04
184	Review design for the remaining automated edge match functionality	Wed 11/3/04	Wed 11/3/04



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ID	Task Name	Start	Finish
185	Approve remaining automated edge match functionality	Wed 11/3/04	Wed 11/3/04
186	Finish the development of automated edge match functionality	Wed 11/3/04	Thu 11/4/04
187	Deliver batch 2 rectified files to vendor for edge match testing	Fri 11/5/04	Fri 11/5/04
188	Run the edge match QA against the batch 2 files	Mon 11/8/04	Mon 11/8/04
189	Run the Edge Match application on batch 2 files	Wed 11/10/04	Wed 11/10/04
190	Validate the automated edge match results	Thu 11/11/04	Thu 11/11/04
191	Apply final updates to the application	Tue 11/16/04	Tue 11/16/04
192	Deliver and install automated edge match code at NIPSCO	Wed 11/17/04	Wed 11/17/04
193	<b>Rectify Batch 0 (Pilot) - CE, CF, CG, CH, CI</b>	<b>Mon 6/7/04</b>	<b>Tue 11/2/04</b>
194	<b>Miscellaneous Pilot Area Tasks</b>	<b>Tue 9/7/04</b>	<b>Fri 10/22/04</b>
195	Create script to run Outfield QA routines against all DWGs in directory	Tue 9/7/04	Fri 9/10/04
196	Create script to count features for all DWGs in directory	Thu 9/9/04	Fri 9/10/04
197	Deliver the final versions of the CF, CG, CH and CI tiles	Mon 9/13/04	Mon 9/13/04
198	Finish QA of the CE tiles	Fri 9/10/04	Fri 9/24/04
199	Test batch scripts against production 1 tiles	Fri 9/10/04	Fri 9/10/04
200	Install batch scripts at NIPSCO	Fri 10/22/04	Fri 10/22/04
201	Develop procedures for cross tile workorder issues	Fri 9/17/04	Fri 9/17/04
202	Finalize and sign-off on the rectification rules	Fri 10/8/04	Fri 10/8/04
203	Create schedule for CF, CG, CH, and CI re-QA tasks	Mon 10/4/04	Mon 10/4/04
204	Re-QA CFNE (1430 features)	Fri 10/15/04	Tue 10/19/04
205	Re-QA CFNW (3148 features)	Mon 10/18/04	Wed 10/20/04
206	Re-QA CFSE (1798 features)	Fri 10/22/04	Fri 10/22/04
207	Re-QA CFSW (1835 features)	Fri 10/22/04	Fri 10/22/04
208	Re-QA CGNE (705 features)	Wed 10/6/04	Wed 10/6/04
209	Re-QA CGNW (912 features)	Wed 10/6/04	Wed 10/6/04
210	Re-QA CGSE (1220 features)	Fri 10/15/04	Wed 10/20/04
211	Re-QA CGSW (2387 features)	Fri 10/22/04	Fri 10/22/04
212	Re-QA CHNE (4270 features)	Wed 10/6/04	Wed 10/6/04
213	Re-QA CHNW (2319 features)	Wed 10/6/04	Wed 10/6/04
214	Re-QA CHSE (771 features)	Mon 10/18/04	Wed 10/20/04
215	Re-QA CHSW (1377 features)	Mon 10/18/04	Thu 10/21/04
216	Re-QA CINE (571 features)	Wed 10/6/04	Wed 10/6/04
217	Re-QA CINW (492 features)	Wed 10/6/04	Wed 10/6/04
218	Re-QA CISE (209 features)	Wed 10/6/04	Wed 10/6/04
219	Re-QA CISW (315 features)	Wed 10/6/04	Wed 10/6/04
220	Deliver the final version of CE	Thu 9/30/04	Thu 9/30/04
221	Re-QA the final version of the CE tile	Wed 10/6/04	Wed 10/6/04
222	<b>Rectify Pilot Tiles CH and CI</b>	<b>Mon 6/7/04</b>	<b>Tue 8/10/04</b>
223	<b>Perform Rectification of Pilot Tiles CH and CI</b>	<b>Mon 6/7/04</b>	<b>Fri 7/9/04</b>
224	Complete workorders in CH and CI	Mon 6/7/04	Fri 6/18/04
225	Freeze pilot tiles CH and CI	Mon 6/21/04	Mon 6/21/04
226	Send pilot tiles CH and CI to migration vendor	Mon 6/21/04	Mon 6/21/04
227	Rectify pilot tiles CH and CI	Mon 6/21/04	Fri 7/9/04
228	Deliver pilot tiles CH and CI	Fri 7/9/04	Fri 7/9/04
229	<b>Perform QA on Pilot Tiles CH and CI</b>	<b>Mon 7/12/04</b>	<b>Fri 7/23/04</b>
230	General quality checks / updates for pilot tiles CH and CI	Mon 7/12/04	Mon 7/19/04



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ID	Task Name	Start	Finish
231	General quality checks of CH and CI pilot tiles	Mon 7/12/04	Fri 7/16/04
232	Check connectivity of pilot tiles CH and CI	Tue 7/13/04	Mon 7/19/04
233	Revise NIPSCO data receipt and acceptance procedures	Fri 7/23/04	Fri 7/23/04
234	<b>Correct Pilot Tiles CH and CI Based on QA Comments</b>	<b>Mon 7/26/04</b>	<b>Wed 7/28/04</b>
235	Fix pilot tiles CH and CI based on the QA feedback	Mon 7/26/04	Tue 7/27/04
236	Re-deliver pilot tiles CH and CI with fixes based on QA feedback	Wed 7/28/04	Wed 7/28/04
237	<b>Re-Test the Re-Delivered CH and CI Pilot Tiles</b>	<b>Mon 8/2/04</b>	<b>Tue 8/10/04</b>
238	Re-test pilot tile CH SE	Tue 8/3/04	Tue 8/3/04
239	Re-test pilot tile CH SW	Tue 8/10/04	Tue 8/10/04
240	Complete the remaining 2 land scoring spreadsheets	Mon 8/2/04	Mon 8/2/04
241	Send all scoring spreadsheets to migration vendor	Mon 8/2/04	Mon 8/2/04
242	<b>Rectify Pilot Tiles CG and CF</b>	<b>Mon 6/7/04</b>	<b>Thu 8/19/04</b>
243	<b>Perform the Rectification of Pilot Tiles CG and CF</b>	<b>Mon 6/7/04</b>	<b>Fri 7/23/04</b>
244	Complete workorders in CG and CF	Mon 6/7/04	Thu 7/1/04
245	Freeze pilot tiles CG and CF	Fri 7/2/04	Fri 7/2/04
246	Send pilot tiles CG and CF to migration vendor	Fri 7/2/04	Fri 7/2/04
247	Rectify pilot tiles CG and CF	Fri 7/2/04	Fri 7/23/04
248	Deliver pilot tiles CG and CF	Fri 7/23/04	Fri 7/23/04
249	<b>Perform QA on Pilot Tiles CG and CF</b>	<b>Tue 7/27/04</b>	<b>Thu 8/12/04</b>
250	Review and score CF NW	Thu 7/29/04	Thu 7/29/04
251	Review and score CF NE	Tue 8/10/04	Tue 8/10/04
252	Review and score CF SW	Wed 8/11/04	Wed 8/11/04
253	Review and score CF SE	Thu 8/12/04	Thu 8/12/04
254	Review and score CG NW	Tue 7/27/04	Tue 7/27/04
255	Review and score CG SW	Wed 7/28/04	Wed 7/28/04
256	Review and score CG NE	Thu 8/5/04	Thu 8/5/04
257	Review and score CG SE	Fri 8/6/04	Fri 8/6/04
258	<b>Peer Review / Cross-Checks for CF and CG</b>	<b>Mon 8/9/04</b>	<b>Thu 8/19/04</b>
259	Peer review of CF NW	Tue 8/10/04	Wed 8/11/04
260	Peer review of CG NW	Mon 8/9/04	Tue 8/10/04
261	Peer review of CG NE	Tue 8/10/04	Wed 8/11/04
262	Revise NIPSCO data receipt and acceptance procedures	Thu 8/19/04	Thu 8/19/04
263	<b>Correct Pilot Tiles CG and CF Based on QA Comments</b>	<b>Thu 8/12/04</b>	<b>Mon 8/16/04</b>
264	Elementool #343 - CGSWE- ERROR	Thu 8/12/04	Thu 8/12/04
265	Elementool #345 - Rectification QA Results - CGNW	Thu 8/12/04	Thu 8/12/04
266	Elementool #351 - 5-EdgeMatch Errors CGSEE&CHNEE	Thu 8/12/04	Thu 8/12/04
267	Correct pilot tiles CG and CF based on the QA feedback	Thu 8/12/04	Mon 8/16/04
268	Re-deliver pilot tiles CG and CF with fixes based on QA feedback	Mon 8/16/04	Mon 8/16/04
269	<b>Rectify Pilot Tiles CE</b>	<b>Fri 8/6/04</b>	<b>Wed 8/25/04</b>
270	Complete workorders for CE	Fri 8/6/04	Fri 8/6/04
271	Freeze pilot tiles for CE	Fri 8/6/04	Fri 8/6/04
272	Send pilot tiles for CE to migration vendor	Fri 8/6/04	Fri 8/6/04
273	Rectify pilot tiles for CE	Fri 8/6/04	Tue 8/24/04
274	Deliver pilot tiles for CE	Wed 8/25/04	Wed 8/25/04
275	Determine how to handle the errors detected by DWGVerify	Mon 11/1/04	Mon 11/1/04
276	Place CF and CH back into production	Tue 11/2/04	Tue 11/2/04

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ID	Task Name	Start	Finish
277	Resolve batch 0 (pilot) errors detected by DWGVerify	Tue 11/2/04	Tue 11/2/04
278	<b>Rectify Batch 1 - AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK</b>	<b>Fri 8/27/04</b>	<b>Tue 11/2/04</b>
279	Notify Crown Point and Monticello clerks	Fri 8/27/04	Fri 8/27/04
280	Complete workorders for AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 8/27/04	Fri 8/27/04
281	Freeze tiles AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 8/27/04	Fri 8/27/04
282	Send tiles to migration vendor - AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 8/27/04	Fri 8/27/04
283	Complete packaging of tiles	Fri 8/27/04	Fri 8/27/04
284	Create scoring spreadsheet for batch #1	Fri 8/27/04	Fri 8/27/04
285	Rectify Tiles - AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 8/27/04	Fri 9/10/04
286	Deliver tiles AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 9/10/04	Fri 9/10/04
287	Process the delivered tiles	Mon 9/13/04	Mon 9/13/04
288	QA tiles AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Mon 9/13/04	Wed 9/22/04
289	Double check the QA work that was done by the record clerks	Tue 9/14/04	Wed 9/22/04
290	Correct Elementool tickets (if any) for AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Wed 9/29/04	Thu 9/30/04
291	Re-deliver (if necessary) tiles AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Fri 10/1/04	Fri 10/1/04
292	Process the re-delivered tiles	Fri 10/1/04	Fri 10/1/04
293	Re-QA (if necessary) tiles AH, AI, AJ, AK, BH, BI, BJ, BK, CJ, CK, DI, DJ, DK	Mon 10/4/04	Mon 10/11/04
294	Place rectified tiles back into production (except CK)	Wed 10/20/04	Wed 10/20/04
295	Place CK back into production	Tue 11/2/04	Tue 11/2/04
296	Resolve batch 1 errors detected by DWGVerify	Tue 11/2/04	Tue 11/2/04
297	<b>Rectify Batch 2 - AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, FJ, FK, FL,</b>	<b>Fri 9/3/04</b>	<b>Mon 12/20/04</b>
298	Notify Crown Point, Monticello and LaPorte clerks	Fri 9/3/04	Fri 9/3/04
299	Complete workorders for AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, F	Fri 9/3/04	Fri 9/3/04
300	Freeze tiles AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, FJ, FK, FL, FM	Fri 9/3/04	Fri 9/3/04
301	Send tiles to migration vendor - AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH	Fri 9/3/04	Fri 9/3/04
302	Complete packaging of tiles	Fri 9/3/04	Fri 9/3/04
303	Create scoring spreadsheet for batch #2	Fri 9/3/04	Fri 9/3/04
304	Rectify Tiles - AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, FJ, FK, FL, F	Thu 9/9/04	Wed 9/22/04
305	Deliver tiles AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, FJ, FK, FL, FM	Wed 9/22/04	Wed 9/22/04
306	Process the delivered tiles	Thu 9/23/04	Thu 9/23/04
307	QA tiles AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH, FI, FJ, FK, FL, FM, FI	Thu 9/23/04	Fri 10/8/04
308	Double check the QA work that was done by the record clerks	Thu 9/23/04	Fri 10/8/04
309	Correct Elementool tickets (if any) for AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, F	Wed 10/13/04	Mon 10/18/04
310	Re-deliver (if necessary) tiles AG, AL, AM, AN, BG, BL, BM, BN, DF, DG, DH, DL, DM, DN, EG, EH, EI, EJ, EK, EL, EM, EN, FG, FH,	Tue 10/19/04	Tue 10/19/04
311	Process the initial re-delivered tiles	Wed 10/20/04	Wed 10/20/04
312	Re-deliver batch 2 files (as needed)	Wed 10/20/04	Tue 11/9/04
313	Process batch 2 re-delivered files	Wed 10/20/04	Tue 11/9/04
314	Run DWGVerify against batch 2 files (after each re-delivery)	Wed 10/20/04	Tue 11/9/04
315	Review DWGVerify results for batch 2 (after each re-delivery)	Wed 10/20/04	Tue 11/9/04
316	Re-QA the batch 2 files	Wed 10/20/04	Tue 11/9/04
317	Review and process Elementool tickets for batch 2	Fri 11/12/04	Thu 12/2/04
318	Batch 2 - Fix DWGVerify issues and re-deliver files	Fri 11/12/04	Fri 11/12/04
319	Batch 2 - Final run of the DWGVerify routine to verify fixes	Mon 11/15/04	Mon 11/15/04
320	Batch 2 - Review final DWGVerify results	Mon 11/15/04	Mon 11/15/04
321	Batch 2 - Fix Edge Match issues and re-deliver files	Wed 11/17/04	Wed 11/17/04
322	Batch 2 - Run Edge Match QA routine and deliver results to migration vendor	Wed 11/17/04	Wed 11/17/04

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ID		Task Name	Start	Finish
323	✓	Batch 2 - Fix final Elementool tickets and re-deliver files	Wed 11/17/04	Wed 11/17/04
324	✓	Batch 2 - Final run of DWGVerify and verify results	Wed 11/17/04	Wed 11/17/04
325	✓	Batch 2 - Final run of Edge Match and verify results	Mon 11/29/04	Mon 11/29/04
326	✓	Batch 2 - Create list of files that are ready to go back into production	Mon 11/29/04	Mon 11/29/04
327	✓	Batch 2 - Verify / approve list of files that can go back into production	Mon 11/29/04	Mon 11/29/04
328	✓	Batch 2 - Place initial set of tiles back into production	Mon 11/29/04	Mon 11/29/04
329	✓	Batch 2 - Cleanup issues on remaining tiles	Fri 12/3/04	Fri 12/3/04
330	✓	Batch 2 - Perform general scan QA of all files	Mon 12/6/04	Tue 12/7/04
331	✓	Batch 2 - Place tiles back into production	Tue 12/7/04	Tue 12/7/04
332	✓	Batch 2 - Investigate issues with DFSE	Tue 12/7/04	Tue 12/7/04
333	✓	Batch 2 - Complete the fixes for BL and DF	Wed 12/8/04	Wed 12/8/04
334	✓	Batch 2 through 7 - Review file date/time stamp issues (as needed)	Mon 12/13/04	Fri 12/17/04
335	✓	Batch 2 - Put BL and DF back into production	Mon 12/20/04	Mon 12/20/04
336	✓ 	<b>Rectify Batch 3 - AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, HI, HJ, HN,</b>	<b>Wed 9/15/04</b>	<b>Fri 1/7/05</b>
337	✓	Notify Crown Point, Valpo, Plymouth, and Monticello clerks	Wed 9/15/04	Wed 9/15/04
338	✓	Complete workorders for AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, H	Wed 9/15/04	Wed 9/15/04
339	✓	Freeze tiles AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, HI, HJ, HN, IN	Wed 9/15/04	Wed 9/15/04
340	✓	Send tiles to migration vendor - AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG	Wed 9/15/04	Wed 9/15/04
341	✓	Complete packaging of tiles	Wed 9/15/04	Wed 9/15/04
342	✓	Rectify Tiles - AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, HI, HJ, HN,	Thu 9/16/04	Mon 10/4/04
343	✓	Deliver tiles AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, HI, HJ, HN, IN	Mon 10/4/04	Mon 10/4/04
344	✓	Process the delivered tiles	Wed 10/6/04	Wed 10/6/04
345	✓	Initial QA pass on tiles AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, HF, HG, HH, HI,	Thu 10/7/04	Wed 10/27/04
346	✓	Review and process Elementool tickets	Thu 10/7/04	Wed 10/27/04
347	✓	Correct Elementool tickets (if any) for AE, AF, AO, BE, BF, BO, DE, DO, DP, EE, EF, EO, EP, FE, FF, GE, GF, GG, GH, GI, GJ, HE, H	Thu 10/7/04	Wed 10/27/04
348	✓	Review & Determine if extra QA is required on any tile	Thu 10/28/04	Thu 10/28/04
349	✓	Perform second pass QA on selected batch 3 files	Thu 10/28/04	Thu 11/4/04
350	✓	Batch 3 - Re-deliver batch 3 files (as needed)	Thu 10/28/04	Tue 11/16/04
351	✓	Batch 3 - Process batch 3 re-delivered files	Thu 10/28/04	Tue 11/16/04
352	✓	Batch 3 - Run DWGVerify against batch 3 files (after each re-delivery)	Thu 10/28/04	Tue 11/16/04
353	✓	Batch 3 - Review DWGVerify results for batch 3 (after each re-delivery)	Thu 10/28/04	Tue 11/16/04
354	✓	Batch 3 - Re-QA the batch 3 files	Thu 10/28/04	Tue 11/16/04
355	✓	Batch 3 - Review and process Elementool tickets for batch 3	Wed 11/17/04	Fri 12/3/04
356	✓	Batch 3 - Run automated edge matching and deliver results	Wed 11/17/04	Wed 11/17/04
357	✓	Batch 3 - Fix final Elementool tickets and re-deliver files	Wed 11/17/04	Wed 11/17/04
358	✓	Batch 3 - Deliver fixes for DWGVerify and Edge Match errors	Wed 12/1/04	Wed 12/1/04
359	✓	Batch 3 - Final run of DWGVerify and verify results	Thu 12/2/04	Thu 12/2/04
360	✓	Batch 3 - Final run of Edge Match and verify results	Thu 12/2/04	Thu 12/2/04
361	✓	Batch 3 - QA final re-delivered files for DWGVerify, Edge Match, and Elementool tickets	Thu 12/2/04	Fri 12/3/04
362	✓	Batch 3 - Perform General Scan QA of all files	Wed 12/8/04	Thu 12/9/04
363	✓	Batch 3 - Create list of files that are ready to go back into production	Thu 12/9/04	Thu 12/9/04
364	✓	Batch 3 - Verify / approve list of files that can go back into production	Thu 12/9/04	Thu 12/9/04
365	✓	Batch 3 - Place initial set of tiles back into production	Thu 12/9/04	Thu 12/9/04
366	✓	Batch 3 - Cleanup issues on additional tiles	Tue 12/14/04	Tue 12/14/04
367	✓	Batch 3 - Perform QA on additional tiles	Tue 12/14/04	Tue 12/14/04
368	✓	Batch 3 - Place additional tiles back into production	Wed 12/15/04	Wed 12/15/04

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ID	Task Name	Start	Finish
369	Batch 3 - Re-QA Elementool tickets	Wed 12/22/04	Wed 12/22/04
370	Batch 3 - Place second set of files back into production	Thu 12/23/04	Thu 12/23/04
371	Batch 3 - Cleanup final tile issues	Thu 1/6/05	Thu 1/6/05
372	Batch 3 - Place final tile (IN) back into production	Fri 1/7/05	Fri 1/7/05
373	<b>Rectify Batch 4 - GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, JJ, JK, JL, JM, KI</b>	<b>Wed 9/29/04</b>	<b>Wed 1/19/05</b>
374	Notify LaPorte, South Bend, Plymoth, Monticello and Wabash clerks	Wed 9/29/04	Wed 9/29/04
375	Complete workorders for GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, JJ, JK, J	Wed 9/29/04	Wed 9/29/04
376	Freeze tiles GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, JJ, JK, JL, JM, KI, KJ	Wed 9/29/04	Wed 9/29/04
377	Send tiles to migration vendor - GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, J	Wed 9/29/04	Wed 9/29/04
378	Rectify Tiles - GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, JJ, JK, JL, JM, KI, K	Wed 9/29/04	Fri 10/22/04
379	Deliver tiles GA, DB, GC, GD, GK, GL, GM, GN, HA, HD, HK, HL, HM, IA, ID, II, IJ, IK, IL, IM, JA, JB, JC, JD, JI, JJ, JK, JL, JM, KI, KJ	Fri 10/22/04	Fri 10/22/04
380	Process the delivered tiles	Mon 10/25/04	Mon 10/25/04
381	Run DWGVerify routines	Mon 10/25/04	Mon 10/25/04
382	Review DWGVerify results	Mon 10/25/04	Mon 10/25/04
383	Perform first pass QA on batch 4 files	Mon 10/25/04	Fri 11/5/04
384	Review and process Elementool tickets for batch 4	Mon 10/25/04	Fri 11/5/04
385	Identify batch 4 candidates for additional (second pass) QA	Tue 11/9/04	Tue 11/9/04
386	Batch 4 - Perform second pass QA on selected batch 4 files	Tue 11/9/04	Fri 12/3/04
387	Batch 4 - Re-deliver batch 4 files (as needed)	Tue 11/9/04	Fri 12/3/04
388	Batch 4 - Process batch 4 re-delivered files	Tue 11/9/04	Fri 12/3/04
389	Batch 4 - Run DWGVerify against batch 4 files (after each re-delivery)	Tue 11/9/04	Fri 12/3/04
390	Batch 4 - Review DWGVerify results for batch 4 (after each re-delivery)	Tue 11/9/04	Fri 12/3/04
391	Batch 4 - Run Edge Match QA against batch 4 files (after each re-delivery)	Tue 11/9/04	Fri 12/3/04
392	Batch 4 - Review Edge Match results for batch 4 (after each re-delivery)	Tue 11/9/04	Fri 12/3/04
393	Batch 4 - Review and process Elementool tickets for batch 4	Tue 11/9/04	Fri 12/3/04
394	Batch 4 - Verify the Elementool fixes	Thu 12/9/04	Fri 12/10/04
395	Batch 4 - Re-deliver fixes (if necessary)	Mon 12/13/04	Mon 12/13/04
396	Batch 4 - Re-run the DWGVerify QA routines	Tue 12/14/04	Tue 12/14/04
397	Batch 4 - Review the DWGVerify QA results	Tue 12/14/04	Tue 12/14/04
398	Batch 4 - Re-run the Edge Match QA routines	Tue 12/14/04	Tue 12/14/04
399	Batch 4 - Review the Edge Match QA results	Tue 12/14/04	Tue 12/14/04
400	Batch 4 - Perform General Scan QA of all files	Tue 12/14/04	Wed 12/15/04
401	Batch 4 - Create list of files that are ready to go back into production	Wed 12/15/04	Wed 12/15/04
402	Batch 4 - Verify / approve list of files that can go back into production	Thu 12/16/04	Thu 12/16/04
403	Batch 4 - Place initial set of tiles back into production	Thu 12/16/04	Thu 12/16/04
404	Batch 4 - Research issues / Elementool tickets / etc	Mon 12/20/04	Thu 12/23/04
405	Batch 4 - Cleanup issues	Wed 12/22/04	Wed 12/22/04
406	Batch 4 - Place second set of files back into production	Thu 12/23/04	Thu 12/23/04
407	Batch 4 - Cleanup issues on remaining tiles	Thu 1/6/05	Thu 1/6/05
408	Batch 4 - Place GB tile back into production	Mon 1/10/05	Mon 1/10/05
409	Batch 4 - Cleanup issues on remaining tile	Thu 1/13/05	Thu 1/13/05
410	Batch 4 - Place GD tile (final tile) back into production	Wed 1/19/05	Wed 1/19/05
411	<b>Rectify Batch 5 - HB, HC, IB, IC, JE, JF, JG, JH, ID, IE, IG, IH, KA, KB, KC, KD, KE</b>	<b>Fri 10/15/04</b>	<b>Wed 1/19/05</b>
412	Complete workorders for HB, HC, IB, IC, JE, JF, JG, JH, ID, IE, IG, IH, KA, KB, KC, KD, KE,	Fri 10/15/04	Fri 10/15/04
413	Freeze tiles HB, HC, IB, IC, JE, JF, JG, JH, ID, IE, IG, IH, KA, KB, KC, KD, KE,	Fri 10/15/04	Fri 10/15/04
414	Send tiles to migration vendor - HB, HC, IB, IC, JE, JF, JG, JH, ID, IE, IG, IH, KA, KB, KC, KD, KE,	Fri 10/15/04	Fri 10/15/04

ID		Task Name	Start	Finish
415	✓	Rectify the batch 5 tiles	Mon 10/18/04	Fri 10/29/04
416	✓	Initial delivery of the batch 5 tiles	Mon 11/1/04	Mon 11/1/04
417	✓	Add batch 5 to the scoring spreadsheet	Thu 11/4/04	Thu 11/4/04
418	✓	Run initial DWGVerify checks against the batch 5 tiles	Thu 11/4/04	Thu 11/4/04
419	✓	Review initial DWGVerify results for the batch 5 tiles	Thu 11/4/04	Thu 11/4/04
420	✓	Batch 5 - Perform first pass QA	Tue 11/9/04	Fri 11/19/04
421	✓	Batch 5 - Review and process Elementool tickets	Tue 11/9/04	Fri 11/19/04
422	✓	Batch 5 - Add data migration operator info to the scoring spreadsheet	Wed 12/1/04	Wed 12/1/04
423	✓	Batch 5 - Identify candidates for additional (second pass) QA	Wed 12/1/04	Wed 12/1/04
424	✓	Batch 5 - Perform second pass QA on selected files	Wed 12/1/04	Wed 12/15/04
425	✓	Batch 5 - Re-deliver files (as needed)	Wed 12/1/04	Wed 12/15/04
426	✓	Batch 5 - Process re-delivered files	Wed 12/1/04	Wed 12/15/04
427	✓	Batch 5 - Run DWGVerify against files (after each re-delivery)	Wed 12/1/04	Wed 12/15/04
428	✓	Batch 5 - Review DWGVerify results (after each re-delivery)	Wed 12/1/04	Wed 12/15/04
429	✓	Batch 5 - Run Edge Match QA (after each re-delivery)	Wed 12/1/04	Wed 12/15/04
430	✓	Batch 5 - Review Edge Match results (after each re-delivery)	Wed 12/1/04	Wed 12/15/04
431	✓	Batch 5 - Review and process Elementool tickets	Wed 12/1/04	Wed 12/15/04
432	✓	Batch 5 - Create list of files that are ready to go back into production	Tue 12/21/04	Tue 12/21/04
433	✓	Batch 5 - Place initial set of tiles back into production	Wed 12/22/04	Wed 12/22/04
434	✓	Batch 5 - Cleanup issues on remaining tiles	Fri 1/7/05	Fri 1/7/05
435	✓	Batch 5 - Place next batch of tiles back into production	Mon 1/10/05	Mon 1/10/05
436	✓	Batch 5 - Rectification DWGVerify Reports	Fri 1/7/05	Fri 1/7/05
437	✓	Batch 5 - Cleanup issues on remaining tiles	Thu 1/13/05	Thu 1/13/05
438	✓	Batch 5 - Place final tiles back into production	Wed 1/19/05	Wed 1/19/05
439	✓ 	<b>Rectify Batch 6 - AC, AD, KF, KG, KH, LA, LB, LC, LD, LE, LF, LG, LH, MC, MD, ME, MF, MG, MH</b>	<b>Mon 10/25/04</b>	<b>Fri 1/28/05</b>
440	✓	Complete workorders for AC, AD, KF, KG, KH, LA, LB, LC, LD, LE, LF, LG, LH, MC, MD, ME, MF, MG, MH	Mon 10/25/04	Mon 10/25/04
441	✓	Freeze tiles AC, AD, KF, KG, KH, LA, LB, LC, LD, LE, LF, LG, LH, MC, MD, ME, MF, MG, MH	Mon 10/25/04	Mon 10/25/04
442	✓	Send tiles to data migration vendor - AC, AD, KF, KG, KH, LA, LB, LC, LD, LE, LF, LG, LH, MC, MD, ME, MF, MG, MH	Mon 10/25/04	Mon 10/25/04
443	✓	Rectify the batch 6 tiles	Tue 10/26/04	Tue 11/9/04
444	✓	Initial delivery of the batch 6 tiles	Tue 11/9/04	Tue 11/9/04
445	✓	Batch 6 - Setup QA packages for QA clerks	Wed 11/10/04	Wed 11/10/04
446	✓	Batch 6 - Run initial DWGVerify QA checks	Thu 11/11/04	Thu 11/11/04
447	✓	Batch 6 - Review initial DWGVerify results and submit Elementool tickets	Thu 11/11/04	Thu 11/11/04
448	✓	Batch 6 - Run initial Edge Match QA checks	Wed 11/17/04	Wed 11/17/04
449	✓	Batch 6 - Review initial Edge Match results and submit Elementool tickets	Wed 11/17/04	Wed 11/17/04
450	✓	Batch 6 - Setup the scoring spreadsheet with files / counts / formulas	Fri 12/3/04	Fri 12/3/04
451	✓	Batch 6 - Add data migration vendor operator info to the scoring spreadsheet	Thu 12/2/04	Thu 12/2/04
452	✓	Batch 6 - Perform first pass QA	Tue 11/9/04	Tue 12/7/04
453	✓	Batch 6 - Review and process Elementool tickets	Tue 11/9/04	Tue 12/7/04
454	✓	Batch 6 - Cleanup DWGVerify QA issues and re-deliver	Wed 12/8/04	Wed 12/8/04
455	✓	Batch 6 - Cleanup Edge Match QA issues and re-deliver	Wed 12/8/04	Wed 12/8/04
456	✓	Batch 6 - Identify candidates for additional (second pass) QA	Thu 12/9/04	Thu 12/9/04
457	✓	Batch 6 - Perform second pass QA on selected files	Fri 12/10/04	Wed 12/22/04
458	✓	Batch 6 - Re-deliver files	Fri 12/10/04	Wed 12/22/04
459	✓	Batch 6 - Process re-delivered files	Fri 12/10/04	Wed 12/22/04
460	✓	Batch 6 - Run DWGVerify against files (after each re-delivery)	Fri 12/10/04	Wed 12/22/04

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ID		Task Name	Start	Finish
461	✓	Batch 6 - Review DWGVerify results (after each re-delivery)	Fri 12/10/04	Wed 12/22/04
462	✓	Batch 6 - Run Edge Match QA (after each re-delivery)	Fri 12/10/04	Wed 12/22/04
463	✓	Batch 6 - Review Edge Match results (after each re-delivery)	Fri 12/10/04	Wed 12/22/04
464	✓	Batch 6 - Review and process Elementool tickets	Fri 12/10/04	Wed 12/22/04
465	✓	Batch 6 - Create list of files that are ready to go back into production	Thu 12/23/04	Thu 12/23/04
466	✓	Batch 6 - Place initial set of tiles back into production	Thu 12/23/04	Thu 12/23/04
467	✓	Batch 6 - Cleanup issues on subset of tiles	Thu 1/13/05	Thu 1/13/05
468	✓	Batch 6 - Place the next subset of tiles back into production	Wed 1/19/05	Wed 1/19/05
469	✓	Batch 6 - Cleanup issues on remaining tiles	Thu 1/27/05	Thu 1/27/05
470	✓	Batch 6 - Place remaining tiles back into production	Fri 1/28/05	Fri 1/28/05
471	✓ 	<b>Rectify Batch 7 - BC, BD, LI, LJ, LK, LL, LM, MI, MJ, MK, ML, MN, NI, NJ, NK, NL, NM</b>	<b>Thu 11/4/04</b>	<b>Fri 1/28/05</b>
472	✓	Complete workorders for batch 7 tiles	Thu 11/4/04	Thu 11/4/04
473	✓	Freeze tiles for batch 7	Thu 11/4/04	Thu 11/4/04
474	✓	Send batch 7 tiles to migration vendor	Thu 11/4/04	Thu 11/4/04
475	✓	Batch 7 - Rectify the tiles	Fri 11/5/04	Mon 11/29/04
476	✓	Batch 7 - Initial delivery	Mon 11/29/04	Mon 11/29/04
477	✓	Batch 7 - Setup QA packages for QA clerks	Tue 11/30/04	Tue 11/30/04
478	✓	Batch 7 - Run initial DWGVerify QA checks	Tue 11/30/04	Tue 11/30/04
479	✓	Batch 7 - Review initial DWGVerify results and submit Elementool tickets	Tue 11/30/04	Tue 11/30/04
480	✓	Batch 7 - Run initial Edge Match QA checks	Tue 11/30/04	Tue 11/30/04
481	✓	Batch 7 - Review initial Edge Match results and submit Elementool tickets	Tue 11/30/04	Tue 11/30/04
482	✓	Batch 7 - Cleanup DWGVerify QA issues and re-deliver	Wed 12/1/04	Wed 12/1/04
483	✓	Batch 7 - Cleanup Edge Match QA issues and re-deliver	Wed 12/1/04	Wed 12/1/04
484	✓	Batch 7 - Setup the scoring spreadsheet with files / counts / formulas	Thu 12/2/04	Thu 12/2/04
485	✓	Batch 7 - Add data migration vendor operator info to the scoring spreadsheet	Fri 12/10/04	Fri 12/10/04
486	✓	Batch 7 - Perform first pass QA	Thu 12/2/04	Tue 12/21/04
487	✓	Batch 7 - Review and process Elementool tickets	Thu 12/2/04	Tue 12/21/04
488	✓	Batch 7 - Identify candidates for additional (second pass) QA	Tue 12/21/04	Tue 12/21/04
489	✓	Batch 7 - Perform second pass QA on selected files	Tue 12/21/04	Tue 1/4/05
490	✓	Batch 7 - Re-deliver files (complete re-delivery of BC and BD)	Tue 12/21/04	Tue 1/4/05
491	✓	Batch 7 - Process re-delivered files - part 1	Tue 12/21/04	Fri 12/24/04
492	✓	Batch 7 - Run Edge Match QA (after each re-delivery) - part 1	Tue 12/21/04	Fri 12/24/04
493	✓	Batch 7 - Process re-delivered files - part 2	Mon 12/27/04	Thu 1/6/05
494	✓	Batch 7 - Run DWGVerify against files (after each re-delivery)	Tue 12/21/04	Thu 1/6/05
495	✓	Batch 7 - Review DWGVerify results (after each re-delivery)	Tue 12/21/04	Thu 1/6/05
496	✓	Batch 7 - Run Edge Match QA (after each re-delivery) - part 2	Tue 1/4/05	Thu 1/6/05
497	✓	Batch 7 - Review Edge Match results (after each re-delivery)	Tue 12/21/04	Thu 1/6/05
498	✓	Batch 7 - Review and process Elementool tickets	Tue 12/21/04	Thu 1/6/05
499	✓	Batch 7 - Place next set of tiles back into production	Mon 1/10/05	Mon 1/10/05
500	✓	Batch 7 - Cleanup issues on a subset of tiles	Thu 1/13/05	Thu 1/13/05
501	✓	Batch 7 - Place the next subset of tiles back into production	Wed 1/19/05	Wed 1/19/05
502	✓	Batch 7 - Cleanup issues on remaining tiles	Thu 1/27/05	Thu 1/27/05
503	✓	Batch 7 - Place remaining tiles back into production	Fri 1/28/05	Fri 1/28/05
504	✓ 	<b>Rectify Batch 8 - AA, AB, BA, BB, MA, MB, NA, NB, NH, OH, OI, OJ, OK, OL, OM, PH, PI, PJ, PK, PL, PM</b>	<b>Mon 11/22/04</b>	<b>Fri 3/4/05</b>
505	✓	Batch 8 - Complete workorders	Mon 11/22/04	Mon 11/22/04
506	✓	Batch 8 - Freeze tiles	Mon 11/22/04	Mon 11/22/04

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ID		Task Name	Start	Finish
507	✓	Batch 8 - Send tiles to data migration vendor	Mon 11/22/04	Mon 11/22/04
508	✓	Batch 8 - Rectify the tiles	Mon 11/22/04	Tue 12/7/04
509	✓	Batch 8 - Initial delivery	Tue 12/7/04	Tue 12/7/04
510	✓	Batch 8 - Setup QA packages for QA clerks	Wed 12/8/04	Wed 12/8/04
511	✓	Batch 8 - Run initial DWGVerify QA checks	Wed 12/8/04	Wed 12/8/04
512	✓	Batch 8 - Review initial DWGVerify results and submit Elementool tickets	Thu 12/9/04	Thu 12/9/04
513	✓	Batch 8 - Run initial Edge Match QA checks	Wed 12/8/04	Wed 12/8/04
514	✓	Batch 8 - Review initial Edge Match results and submit Elementool tickets	Thu 12/9/04	Thu 12/9/04
515	✓	Batch 8 - Cleanup DWGVerify QA issues and re-deliver	Fri 12/10/04	Fri 12/10/04
516	✓	Batch 8 - Cleanup Edge Match QA issues and re-deliver	Fri 12/10/04	Fri 12/10/04
517	✓	Batch 8 - Setup the scoring spreadsheet with files / counts / formulas	Fri 12/10/04	Fri 12/10/04
518	✓	Batch 8 - Re-QA and Re-Deliver the entire batch	Mon 1/17/05	Mon 1/17/05
519	✓	Batch 8 - Setup the QA packages	Wed 1/19/05	Wed 1/19/05
520	✓	Batch 8 - Perform first pass QA	Thu 1/13/05	Fri 1/28/05
521	✓	Batch 8 - Review and process Elementool tickets	Wed 1/12/05	Fri 1/28/05
522	✓	Batch 8 - Add data migration vendor operator info to the scoring spreadsheet	Fri 1/28/05	Fri 1/28/05
523	✓	Batch 8 - Identify candidates for additional (second pass) QA	Fri 1/28/05	Mon 1/31/05
524	✓	Batch 8 - Place first 2 tiles back into production	Fri 1/28/05	Fri 1/28/05
525	✓	Batch 8 - Perform second pass QA on selected files	Mon 1/31/05	Mon 2/14/05
526	✓	Batch 8 - Re-deliver files with Elementool fixes	Tue 2/8/05	Tue 2/8/05
527	✓	Batch 8 - Process re-delivered files	Tue 2/8/05	Tue 2/8/05
528	✓	Batch 8 - Test the Elementool fixes	Tue 2/8/05	Thu 2/10/05
529	✓	Batch 8 - Run DWGVerify against files (after each re-delivery)	Thu 2/10/05	Thu 2/10/05
530	✓	Batch 8 - Review DWGVerify results (after each re-delivery)	Thu 2/10/05	Thu 2/10/05
531	✓	Batch 8 - Run Edge Match QA (after each re-delivery)	Thu 2/10/05	Thu 2/10/05
532	✓	Batch 8 - Review Edge Match results (after each re-delivery)	Thu 2/10/05	Thu 2/10/05
533	✓	Batch 8 - Prepare list of files to go back into production	Thu 2/10/05	Thu 2/10/05
534	✓	Batch 8 - Place next set of tiles back into production	Fri 2/11/05	Fri 2/11/05
535	✓	Batch 8 - Additional cleanup / fixes	Thu 2/17/05	Thu 2/17/05
536	✓	Batch 8 - Additional testing of the cleanup / fixes	Fri 2/18/05	Fri 2/18/05
537	✓	Batch 8 - Place next set of tiles back into production	Fri 2/18/05	Fri 2/18/05
538	✓	Batch 8 - Final edge match cleanup / fixes (2 tiles)	Wed 3/2/05	Wed 3/2/05
539	✓	Batch 8 - Additional testing of the cleanup / fixes (2 tiles)	Thu 3/3/05	Thu 3/3/05
540	✓	Batch 8 - Place final 2 tiles back into production	Fri 3/4/05	Fri 3/4/05
541	✓ 	<b>Rectify Batch 9 - NC, ND, NE, NF, NG, OA, OB, OC, OD, OE, OF, OG, QH, QI, QJ, QK, QL, QM, RH, RI, RJ, RK, RL, RM, SH, SI, SJ, SK</b>	<b>Wed 12/1/04</b>	<b>Fri 3/4/05</b>
542	✓	Batch 9 - Complete workorders - part 1 of 3	Wed 12/1/04	Wed 12/1/04
543	✓	Batch 9 - Freeze tiles - part 1 of 3	Wed 12/1/04	Wed 12/1/04
544	✓	Batch 9 - Send tiles to data migration vendor - part 1 of 3	Wed 12/1/04	Wed 12/1/04
545	✓	Batch 9 - Complete workorders - part 2 of 3	Tue 12/7/04	Tue 12/7/04
546	✓	Batch 9 - Freeze tiles - part 2 of 3	Tue 12/7/04	Tue 12/7/04
547	✓	Batch 9 - Send tiles to data migration vendor - part 2 of 3	Tue 12/7/04	Tue 12/7/04
548	✓	Batch 9 - Complete workorders - part 3 of 3	Thu 12/9/04	Thu 12/9/04
549	✓	Batch 9 - Freeze tiles - part 3 of 3	Thu 12/9/04	Thu 12/9/04
550	✓	Batch 9 - Send tiles to data migration vendor - part 3 of 3	Thu 12/9/04	Thu 12/9/04
551	✓	Batch 9 - Research and resolve DWG file with 0 features	Mon 12/13/04	Fri 12/17/04
552	✓	Batch 9 - Rectify the tiles (including complete re-QA)	Thu 12/2/04	Mon 1/17/05





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ID		Task Name	Start	Finish
553	✓	Batch 9 - Initial delivery	Fri 1/21/05	Thu 1/27/05
554	✓	Batch 9 - Setup QA packages for QA clerks	Fri 1/28/05	Fri 1/28/05
555	✓	Batch 9 - Run initial DWGVerify QA checks	Fri 1/28/05	Fri 1/28/05
556	✓	Batch 9 - Review initial DWGVerify results and submit Elementool tickets	Fri 1/28/05	Fri 1/28/05
557	✓	Batch 9 - Run initial Edge Match QA checks	Fri 1/28/05	Fri 1/28/05
558	✓	Batch 9 - Review initial Edge Match results and submit Elementool tickets	Fri 1/28/05	Fri 1/28/05
559	✓	Batch 9 - Cleanup DWGVerify QA issues and re-deliver	Fri 1/28/05	Fri 1/28/05
560	✓	Batch 9 - Cleanup Edge Match QA issues and re-deliver	Fri 1/28/05	Mon 1/31/05
561	✓	Batch 9 - Setup the scoring spreadsheet with files / counts / formulas	Mon 1/31/05	Mon 1/31/05
562	✓	Batch 9 - Perform first pass QA	Mon 1/31/05	Mon 2/14/05
563	✓	Batch 9 - Review and process Elementool tickets	Mon 1/31/05	Mon 2/14/05
564	✓	Batch 9 - Add data migration vendor operator info to the scoring spreadsheet	Wed 2/16/05	Wed 2/16/05
565	✓	Batch 9 - Identify candidates for additional (second pass) QA	Wed 2/16/05	Wed 2/16/05
566	✓	Batch 9 - Perform second pass QA on selected files	Wed 2/16/05	Wed 3/2/05
567	✓	Batch 9 - Re-deliver files	Wed 2/16/05	Wed 2/23/05
568	✓	Batch 9 - Process re-delivered files	Wed 2/16/05	Wed 2/23/05
569	✓	Batch 9 - Run DWGVerify against files (after each re-delivery)	Wed 2/16/05	Wed 2/23/05
570	✓	Batch 9 - Review DWGVerify results (after each re-delivery)	Wed 2/16/05	Wed 2/23/05
571	✓	Batch 9 - Run Edge Match QA (after each re-delivery)	Wed 2/16/05	Wed 2/23/05
572	✓	Batch 9 - Review Edge Match results (after each re-delivery)	Wed 2/16/05	Wed 2/23/05
573	✓	Batch 9 - Review and process Elementool tickets	Wed 2/16/05	Wed 2/23/05
574	✓	Batch 9 - Place next set of tiles back into production	Wed 2/23/05	Wed 2/23/05
575	✓	Batch 9 - Additional cleanup / fixes	Thu 3/3/05	Thu 3/3/05
576	✓	Batch 9 - Additional testing of the cleanup / fixes	Fri 3/4/05	Fri 3/4/05
577	✓	Batch 9 - Place final tiles back into production	Fri 3/4/05	Fri 3/4/05
578	✓	<b>Create New Rectification Batches and Schedule for 10 Through 14</b>	<b>Tue 12/7/04</b>	<b>Fri 12/10/04</b>
579	✓	Revise rectification schedule - Identify critical tiles	Tue 12/7/04	Tue 12/7/04
580	✓	Revise rectification schedule - Create new draft of schedule for remaining batches	Wed 12/8/04	Wed 12/8/04
581	✓	Revise rectification schedule - Review draft schedule and provide comments	Thu 12/9/04	Thu 12/9/04
582	✓	Revise rectification schedule - Revise schedule for remaining batches	Fri 12/10/04	Fri 12/10/04
583	✓	Revise rectification schedule - Update project plan with new schedule	Fri 12/10/04	Fri 12/10/04
584	✓ 	<b>Rectify Batch 10 - CB, DB, EB, PA, PB, PD, PE, PF, PG, UH, UI, UJ, UK, UL, UM, UN (17 tiles)</b>	<b>Fri 12/17/04</b>	<b>Fri 3/25/05</b>
585	✓	Insert completed tasks here	Fri 12/17/04	Fri 12/17/04
586	✓	Batch 10 - Complete workorders	Fri 12/17/04	Fri 12/17/04
587	✓	Batch 10 - Freeze tiles	Fri 12/17/04	Fri 12/17/04
588	✓	Batch 10 - Send tiles to migration vendor	Fri 12/17/04	Fri 12/17/04
589	✓	Batch 10 - Rectify the tiles	Mon 12/20/04	Wed 1/19/05
590	✓	Batch 10 - Initial delivery	Wed 1/26/05	Tue 2/8/05
591	✓	Batch 10 - Setup QA packages for QA clerks	Wed 2/2/05	Wed 2/2/05
592	✓	Batch 10 - Run initial DWGVerify QA checks	Wed 2/2/05	Wed 2/2/05
593	✓	Batch 10 - Review initial DWGVerify results and submit Elementool tickets	Wed 2/2/05	Wed 2/2/05
594	✓	Batch 10 - Run initial Edge Match QA checks	Wed 2/2/05	Wed 2/2/05
595	✓	Batch 10 - Review initial Edge Match results and submit Elementool tickets	Wed 2/2/05	Wed 2/2/05
596	✓	Batch 10 - Cleanup DWGVerify QA issues and re-deliver	Wed 2/2/05	Wed 2/2/05
597	✓	Batch 10 - Cleanup Edge Match QA issues and re-deliver	Wed 2/2/05	Thu 2/3/05
598	✓	Batch 10 - Setup the scoring spreadsheet with files / counts / formulas	Thu 2/3/05	Thu 2/3/05

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ID		Task Name	Start	Finish
599	✓	Batch 10 - Perform first pass QA	Mon 2/14/05	Tue 3/1/05
600	✓	Batch 10 - Review and process Elementool tickets	Mon 2/14/05	Tue 3/1/05
601	✓	Batch 10 - Add data migration vendor operator info to the scoring spreadsheet	Tue 3/1/05	Tue 3/1/05
602	✓	Batch 10 - Identify candidates for additional (second pass) QA	Tue 3/1/05	Tue 3/1/05
603	✓	Batch 10 - Perform second pass QA on selected files	Tue 3/1/05	Tue 3/15/05
604	✓	Batch 10 - Re-deliver files	Tue 3/1/05	Tue 3/15/05
605	✓	Batch 10 - Process re-delivered files	Tue 3/1/05	Tue 3/15/05
606	✓	Batch 10 - Run DWGVerify against files (after each re-delivery)	Tue 3/1/05	Tue 3/15/05
607	✓	Batch 10 - Review DWGVerify results (after each re-delivery)	Tue 3/1/05	Tue 3/15/05
608	✓	Batch 10 - Run Edge Match QA (after each re-delivery)	Tue 3/1/05	Tue 3/15/05
609	✓	Batch 10 - Review Edge Match results (after each re-delivery)	Tue 3/1/05	Tue 3/15/05
610	✓	Batch 10 - Review and process Elementool tickets	Tue 3/1/05	Tue 3/15/05
611	✓	Batch 10 - Place initial set of tiles back into production	Tue 3/15/05	Wed 3/16/05
612	✓	Batch 10 - Additional cleanup / fixes	Wed 3/23/05	Wed 3/23/05
613	✓	Batch 10 - Additional testing of the cleanup / fixes	Thu 3/24/05	Thu 3/24/05
614	✓	Batch 10 - Place final tiles back into production	Fri 3/25/05	Fri 3/25/05
615	✓ 	<b>Rectify Batch 11 - FA, FB, FC, QA, QC, QD, QE, QF, QG, RA, RB, RC, RD, RE, RF, RG (17 files)</b>	<b>Mon 1/3/05</b>	<b>Thu 3/24/05</b>
616	✓	Batch 11 - Complete workorders	Tue 1/4/05	Tue 1/4/05
617	✓	Batch 11 - Freeze tiles	Tue 1/4/05	Tue 1/4/05
618	✓	Batch 11 - Send tiles to migration vendor	Tue 1/4/05	Tue 1/4/05
619	✓	Batch 11 - Setup the scoring spreadsheet with files / counts / formulas	Thu 2/24/05	Thu 2/24/05
620	✓	Batch 11 - Rectify the tiles	Mon 1/3/05	Fri 1/21/05
621	✓	Batch 11 - Initial delivery	Wed 2/16/05	Tue 2/22/05
622	✓	Batch 11 - Setup QA packages for QA clerks	Wed 2/23/05	Wed 2/23/05
623	✓	Batch 11 - Run initial DWGVerify QA checks	Wed 2/23/05	Wed 2/23/05
624	✓	Batch 11 - Review initial DWGVerify results and submit Elementool tickets	Wed 2/23/05	Wed 2/23/05
625	✓	Batch 11 - Run initial Edge Match QA checks	Wed 2/23/05	Wed 2/23/05
626	✓	Batch 11 - Review initial Edge Match results and submit Elementool tickets	Wed 2/23/05	Wed 2/23/05
627	✓	Batch 11 - Cleanup DWGVerify QA issues and re-deliver	Wed 2/23/05	Wed 2/23/05
628	✓	Batch 11 - Cleanup Edge Match QA issues and re-deliver	Wed 2/23/05	Thu 2/24/05
629	✓	Batch 11 - Perform first pass QA	Mon 2/28/05	Wed 3/9/05
630	✓	Batch 11 - Review and process Elementool tickets	Mon 2/28/05	Wed 3/9/05
631	✓	Batch 11 - Add data migration vendor operator info to the scoring spreadsheet	Wed 3/9/05	Wed 3/9/05
632	✓	Batch 11 - Identify candidates for additional (second pass) QA	Wed 3/9/05	Wed 3/9/05
633	✓	Batch 11 - Perform second pass QA on selected files	Wed 3/9/05	Wed 3/23/05
634	✓	Batch 11 - Re-deliver files	Wed 3/9/05	Wed 3/23/05
635	✓	Batch 11 - Process re-delivered files	Wed 3/9/05	Wed 3/23/05
636	✓	Batch 11 - Run DWGVerify against files (after each re-delivery)	Wed 3/9/05	Wed 3/23/05
637	✓	Batch 11 - Review DWGVerify results (after each re-delivery)	Wed 3/9/05	Wed 3/23/05
638	✓	Batch 11 - Run Edge Match QA (after each re-delivery)	Wed 3/9/05	Wed 3/23/05
639	✓	Batch 11 - Review Edge Match results (after each re-delivery)	Wed 3/9/05	Wed 3/23/05
640	✓	Batch 11 - Review and process Elementool tickets	Wed 3/9/05	Wed 3/23/05
641	✓	Batch 11 - Place tiles back into production	Wed 3/23/05	Thu 3/24/05
642	✓ 	<b>Rectify Batch 12 - FD, SA, SB, SC, SD, SE, SF, SG, TA, TB, TC, TD, TE, TF, TG, UA, UB, UC, UD, UE, UF, UG (22 files)</b>	<b>Tue 1/11/05</b>	<b>Thu 3/31/05</b>
643	✓	Batch 12 - Complete workorders	Tue 1/11/05	Tue 1/11/05
644	✓	Batch 12 - Freeze tiles	Tue 1/11/05	Tue 1/11/05

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ID		Task Name	Start	Finish
645	✓	Batch 12 - Send tiles to migration vendor	Tue 1/11/05	Tue 1/11/05
646	✓	Batch 12 - Rectify the tiles	Wed 1/12/05	Tue 2/15/05
647	✓	Batch 12 - Initial delivery	Wed 2/23/05	Tue 3/1/05
648	✓	Batch 12 - Setup QA packages for QA clerks	Wed 3/2/05	Wed 3/2/05
649	✓	Batch 12 - Run initial DWGVerify QA checks	Wed 3/2/05	Wed 3/2/05
650	✓	Batch 12 - Review initial DWGVerify results and submit Elementool tickets	Wed 3/2/05	Wed 3/2/05
651	✓	Batch 12 - Run initial Edge Match QA checks	Wed 3/2/05	Wed 3/2/05
652	✓	Batch 12 - Review initial Edge Match results and submit Elementool tickets	Wed 3/2/05	Wed 3/2/05
653	✓	Batch 12 - Cleanup DWGVerify QA issues and re-deliver	Wed 3/2/05	Wed 3/2/05
654	✓	Batch 12 - Cleanup Edge Match QA issues and re-deliver	Wed 3/2/05	Thu 3/3/05
655	✓	Batch 12 - Setup the scoring spreadsheet with files / counts / formulas	Thu 3/3/05	Thu 3/3/05
656	✓	Batch 12 - Perform first pass QA	Mon 3/7/05	Wed 3/16/05
657	✓	Batch 12 - Review and process Elementool tickets	Mon 3/7/05	Wed 3/16/05
658	✓	Batch 12 - Add data migration vendor operator info to the scoring spreadsheet	Wed 3/16/05	Wed 3/16/05
659	✓	Batch 12 - Identify candidates for additional (second pass) QA	Wed 3/16/05	Wed 3/16/05
660	✓	Batch 12 - Perform second pass QA on selected files	Wed 3/16/05	Wed 3/30/05
661	✓	Batch 12 - Re-deliver files	Wed 3/16/05	Wed 3/30/05
662	✓	Batch 12 - Process re-delivered files	Wed 3/16/05	Wed 3/30/05
663	✓	Batch 12 - Run DWGVerify against files (after each re-delivery)	Wed 3/16/05	Wed 3/30/05
664	✓	Batch 12 - Review DWGVerify results (after each re-delivery)	Wed 3/16/05	Wed 3/30/05
665	✓	Batch 12 - Run Edge Match QA (after each re-delivery)	Wed 3/16/05	Wed 3/30/05
666	✓	Batch 12 - Review Edge Match results (after each re-delivery)	Wed 3/16/05	Wed 3/30/05
667	✓	Batch 12 - Review and process Elementool tickets	Wed 3/16/05	Wed 3/30/05
668	✓	Batch 12 - Place tiles back into production	Wed 3/30/05	Thu 3/31/05
669	✓ 	<b>Rectify Batch 13 - VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, WA, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, W</b>	<b>Thu 1/20/05</b>	<b>Wed 4/6/05</b>
670	✓	Batch 13 - Complete workorders	Thu 1/20/05	Thu 1/20/05
671	✓	Batch 13 - Freeze tiles	Thu 1/20/05	Thu 1/20/05
672	✓	Batch 13 - Send tiles to data migration vendor	Thu 1/20/05	Thu 1/20/05
673	✓	Batch 13 - Rectify the tiles	Mon 1/31/05	Mon 2/21/05
674	✓	Batch 13 - Initial delivery	Wed 3/2/05	Tue 3/8/05
675	✓	Batch 13 - Setup QA packages for QA clerks	Wed 3/9/05	Wed 3/9/05
676	✓	Batch 13 - Run initial DWGVerify QA checks	Wed 3/9/05	Wed 3/9/05
677	✓	Batch 13 - Review initial DWGVerify results and submit Elementool tickets	Wed 3/9/05	Wed 3/9/05
678	✓	Batch 13 - Run initial Edge Match QA checks	Wed 3/9/05	Wed 3/9/05
679	✓	Batch 13 - Review initial Edge Match results and submit Elementool tickets	Wed 3/9/05	Wed 3/9/05
680	✓	Batch 13 - Cleanup DWGVerify QA issues and re-deliver	Wed 3/9/05	Wed 3/9/05
681	✓	Batch 13 - Cleanup Edge Match QA issues and re-deliver	Wed 3/9/05	Thu 3/10/05
682	✓	Batch 13 - Setup the scoring spreadsheet with files / counts / formulas	Thu 3/10/05	Thu 3/10/05
683	✓	Batch 13 - Perform first pass QA	Thu 3/10/05	Wed 3/23/05
684	✓	Batch 13 - Review and process Elementool tickets	Thu 3/10/05	Wed 3/23/05
685	✓	Batch 13 - Add data migration vendor operator info to the scoring spreadsheet	Wed 3/23/05	Wed 3/23/05
686	✓	Batch 13 - Identify candidates for additional (second pass) QA	Wed 3/23/05	Wed 3/23/05
687	✓	Batch 13 - Perform second pass QA on selected files	Wed 3/23/05	Wed 4/6/05
688	✓	Batch 13 - Re-deliver files	Wed 3/23/05	Wed 4/6/05
689	✓	Batch 13 - Process re-delivered files	Wed 3/23/05	Wed 4/6/05
690	✓	Batch 13 - Run DWGVerify against files (after each re-delivery)	Wed 3/23/05	Wed 4/6/05

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ID	Task Name	Start	Finish
691	Batch 13 - Review DWGVerify results (after each re-delivery)	Wed 3/23/05	Wed 4/6/05
692	Batch 13 - Run Edge Match QA (after each re-delivery)	Wed 3/23/05	Wed 4/6/05
693	Batch 13 - Review Edge Match results (after each re-delivery)	Wed 3/23/05	Wed 4/6/05
694	Batch 13 - Review and process Elementool tickets	Wed 3/23/05	Wed 4/6/05
695	Batch 13 - Place tiles back into production	Wed 4/6/05	Wed 4/6/05
696	<b>Rectify Batch 14 - XH, XI, XJ, XK, XL, XM, XN, YH, YI, YJ, YK, YL, YM, YN</b>	<b>Fri 2/11/05</b>	<b>Mon 3/28/05</b>
697	Batch 14 - Complete workorders	Fri 2/11/05	Fri 2/11/05
698	Batch 14 - Freeze tiles	Fri 2/11/05	Fri 2/11/05
699	Batch 14 - Send tiles to data migration vendor	Fri 2/11/05	Fri 2/11/05
700	Batch 14 - Rectify the tiles	Fri 2/11/05	Fri 2/18/05
701	Batch 14 - Initial delivery	Fri 3/4/05	Thu 3/10/05
702	Batch 14 - Setup QA packages for QA clerks	Fri 3/11/05	Fri 3/11/05
703	Batch 14 - Run initial DWGVerify QA checks	Fri 3/11/05	Fri 3/11/05
704	Batch 14 - Review initial DWGVerify results and submit Elementool tickets	Fri 3/11/05	Fri 3/11/05
705	Batch 14 - Run initial Edge Match QA checks	Fri 3/11/05	Fri 3/11/05
706	Batch 14 - Review initial Edge Match results and submit Elementool tickets	Fri 3/11/05	Fri 3/11/05
707	Batch 14 - Cleanup DWGVerify QA issues and re-deliver	Fri 3/11/05	Fri 3/11/05
708	Batch 14 - Cleanup Edge Match QA issues and re-deliver	Fri 3/11/05	Fri 3/11/05
709	Batch 14 - Setup the scoring spreadsheet with files / counts / formulas	Fri 3/11/05	Fri 3/11/05
710	Batch 14 - Perform first pass QA	Fri 3/11/05	Mon 3/21/05
711	Batch 14 - Review and process Elementool tickets	Fri 3/11/05	Mon 3/21/05
712	Batch 14 - Add data migration operator info to the scoring spreadsheet	Mon 3/21/05	Mon 3/21/05
713	Batch 14 - Identify candidates for additional (second pass) QA	Mon 3/21/05	Mon 3/21/05
714	Batch 14 - Perform second pass QA on selected files	Mon 3/21/05	Mon 3/28/05
715	Batch 14 - Re-deliver files	Mon 3/21/05	Mon 3/28/05
716	Batch 14 - Process re-delivered files	Mon 3/21/05	Mon 3/28/05
717	Batch 14 - Run DWGVerify against files (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
718	Batch 14 - Review DWGVerify results (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
719	Batch 14 - Run Edge Match QA (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
720	Batch 14 - Review Edge Match results (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
721	Batch 14 - Review and process Elementool tickets	Mon 3/21/05	Mon 3/28/05
722	Batch 14 - Place tiles back into production	Mon 3/28/05	Mon 3/28/05
723	<b>Rectify Batch 15 - XA, XB, XC, XD, XE, XF, XG, YA, YB, YC, YD, YE, YF, YG</b>	<b>Fri 2/25/05</b>	<b>Mon 3/28/05</b>
724	Batch 15 - Complete workorders	Fri 2/25/05	Fri 2/25/05
725	Batch 15 - Freeze tiles	Fri 2/25/05	Fri 2/25/05
726	Batch 15 - Send tiles to data migration vendor	Fri 2/25/05	Fri 2/25/05
727	Batch 15 - Rectify the tiles	Fri 2/25/05	Fri 3/4/05
728	Batch 15 - Initial delivery	Fri 3/4/05	Fri 3/11/05
729	Batch 15 - Setup QA packages for QA clerks	Fri 3/11/05	Fri 3/11/05
730	Batch 15 - Run initial DWGVerify QA checks	Fri 3/11/05	Fri 3/11/05
731	Batch 15 - Review initial DWGVerify results and submit Elementool tickets	Fri 3/11/05	Fri 3/11/05
732	Batch 15 - Run initial Edge Match QA checks	Fri 3/11/05	Fri 3/11/05
733	Batch 15 - Review initial Edge Match results and submit Elementool tickets	Fri 3/11/05	Fri 3/11/05
734	Batch 15 - Cleanup DWGVerify QA issues and re-deliver	Mon 3/14/05	Mon 3/14/05
735	Batch 15 - Cleanup Edge Match QA issues and re-deliver	Mon 3/14/05	Mon 3/14/05
736	Batch 15 - Setup the scoring spreadsheet with files / counts / formulas	Mon 3/14/05	Mon 3/14/05

ID	Task Name	Start	Finish
737	Batch 15 - Perform first pass QA	Mon 3/14/05	Mon 3/21/05
738	Batch 15 - Review and process Elementool tickets	Mon 3/14/05	Mon 3/21/05
739	Batch 15 - Add data migration vendor operator info to the scoring spreadsheet	Mon 3/21/05	Mon 3/21/05
740	Batch 15 - Identify candidates for additional (second pass) QA	Mon 3/21/05	Mon 3/21/05
741	Batch 15 - Perform second pass QA on selected files	Mon 3/21/05	Mon 3/28/05
742	Batch 15 - Re-deliver files	Mon 3/21/05	Mon 3/28/05
743	Batch 15 - Process re-delivered files	Mon 3/21/05	Mon 3/28/05
744	Batch 15 - Run DWGVerify against files (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
745	Batch 15 - Review DWGVerify results (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
746	Batch 15 - Run Edge Match QA (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
747	Batch 15 - Review Edge Match results (after each re-delivery)	Mon 3/21/05	Mon 3/28/05
748	Batch 15 - Review and process Elementool tickets	Mon 3/21/05	Mon 3/28/05
749	Batch 15 - Place tiles back into production	Mon 3/28/05	Mon 3/28/05
750	<b>Rectify Critical Tiles</b>	<b>Thu 1/20/05</b>	<b>Thu 3/17/05</b>
751	<b>Rectify the Critical BC Tile</b>	<b>Tue 2/1/05</b>	<b>Wed 2/2/05</b>
752	BC Critical Tile - Finish the final QA tasks	Tue 2/1/05	Tue 2/1/05
753	BC Critical Tile - Place the critical tile back into production	Wed 2/2/05	Wed 2/2/05
754	<b>Rectify the Critical PC Tile</b>	<b>Thu 1/20/05</b>	<b>Fri 2/25/05</b>
755	PC Critical Tile - Freeze and send the critical tile to the data migration vendor	Thu 1/20/05	Thu 1/20/05
756	PC Critical Tile - Rectify the critical tile	Thu 1/20/05	Tue 2/1/05
757	PC Critical Tile - Review / answer data issues for data migration vendor	Tue 2/1/05	Tue 2/1/05
758	PC Critical Tile - Deliver the critical tile to NIPSCO	Tue 2/1/05	Tue 2/1/05
759	PC Critical Tile - Create QA packages for the critical tile	Tue 2/1/05	Tue 2/1/05
760	PC Critical Tile - Run DWGVerify against critical tile and review results	Tue 2/1/05	Tue 2/1/05
761	PC Critical Tile - Run edge match against the critical tile and review results	Tue 2/1/05	Tue 2/1/05
762	PC Critical Tile - QA the critical tile, review issues, etc	Wed 2/2/05	Tue 2/15/05
763	PC Critical Tile - Correct Elementool issues	Wed 2/16/05	Mon 2/21/05
764	PC Critical Tile - Re-QA the Elementool issues	Tue 2/22/05	Wed 2/23/05
765	PC Critical Tile - Place the critical tile back into production	Fri 2/25/05	Fri 2/25/05
766	<b>Rectify the Critical DD Tile</b>	<b>Wed 1/26/05</b>	<b>Mon 2/21/05</b>
767	DD Critical Tile - Freeze and send the critical tile to data migration vendor	Wed 1/26/05	Wed 1/26/05
768	DD Critical Tile - Rectify the critical tile	Wed 1/26/05	Wed 2/2/05
769	DD Critical Tile - Review / answer data issues for data migration vendor	Wed 2/2/05	Wed 2/2/05
770	DD Critical Tile - Deliver the critical tile to NIPSCO	Tue 2/8/05	Tue 2/8/05
771	DD Critical Tile - Create QA packages for the critical tile	Tue 2/8/05	Tue 2/8/05
772	DD Critical Tile - Run DWGVerify against critical tile and review results	Tue 2/8/05	Tue 2/8/05
773	DD Critical Tile - Run edge match against the critical tile and review results	Tue 2/8/05	Tue 2/8/05
774	DD Critical Tile - QA the critical tile, review issues, etc	Tue 2/8/05	Thu 2/17/05
775	DD Critical Tile - Correct Elementool issues	Thu 2/17/05	Fri 2/18/05
776	DD Critical Tile - Re-QA the Elementool issues	Fri 2/18/05	Mon 2/21/05
777	DD Critical Tile - Place the critical tile back into production	Fri 2/18/05	Fri 2/18/05
778	<b>Rectify the Critical QB Tile</b>	<b>Wed 1/26/05</b>	<b>Fri 2/25/05</b>
779	QB Critical Tile - Freeze and send the critical tile to data migration vendor	Wed 1/26/05	Wed 1/26/05
780	QB Critical Tile - Rectify the critical tile	Wed 1/26/05	Wed 2/2/05
781	QB Critical Tile - Review / answer data issues for data migration vendor	Wed 2/2/05	Wed 2/2/05
782	QB Critical Tile - Deliver the critical tile to NIPSCO	Fri 2/11/05	Fri 2/11/05


ID		Task Name	Start	Finish
783	✓	QB Critical Tile - Create QA packages for the critical tile	Fri 2/11/05	Fri 2/11/05
784	✓	QB Critical Tile - Run DWGVerify against critical tile and review results	Fri 2/11/05	Fri 2/11/05
785	✓	QB Critical Tile - Run edge match against the critical tile and review results	Fri 2/11/05	Fri 2/11/05
786	✓	QB Critical Tile - QA the critical tile, review issues, etc	Fri 2/11/05	Tue 2/22/05
787	✓	QB Critical Tile - Correct Elementool issues	Tue 2/22/05	Wed 2/23/05
788	✓	QB Critical Tile - Re-QA the Elementool issues	Wed 2/23/05	Thu 2/24/05
789	✓	QB Critical Tile - Place the critical tile back into production	Fri 2/25/05	Fri 2/25/05
790	✓	<b>Rectify the Critical CC Tile</b>	<b>Thu 2/3/05</b>	<b>Mon 3/14/05</b>
791	✓	CC Critical Tile - Freeze and send the critical tile to data migration vendor	Thu 2/3/05	Thu 2/3/05
792	✓	CC Critical Tile - Resolve edge matching with BC	Fri 2/18/05	Fri 2/18/05
793	✓	CC Critical Tile - Rectify the critical tile	Thu 2/3/05	Tue 2/15/05
794	✓	CC Critical Tile - Review / answer data issues for data migration vendor	Fri 2/18/05	Fri 2/18/05
795	✓	CC Critical Tile - Deliver the critical tile to NIPSCO	Wed 2/23/05	Wed 2/23/05
796	✓	CC Critical Tile - Create QA packages for the critical tile	Wed 2/23/05	Wed 2/23/05
797	✓	CC Critical Tile - Run DWGVerify against critical tile and review results	Wed 2/23/05	Wed 2/23/05
798	✓	CC Critical Tile - Run edge match against the critical tile and review results	Wed 2/23/05	Wed 2/23/05
799	✓	CC Critical Tile - QA the critical tile, review issues, etc	Thu 2/24/05	Wed 3/9/05
800	✓	CC Critical Tile - Correct Elementool issues	Thu 3/10/05	Thu 3/10/05
801	✓	CC Critical Tile - Re-QA the Elementool issues	Fri 3/11/05	Fri 3/11/05
802	✓	CC Critical Tile - Place the critical tile back into production	Mon 3/14/05	Mon 3/14/05
803	✓	<b>Rectify the Critical WB Tile</b>	<b>Fri 2/4/05</b>	<b>Fri 3/4/05</b>
804	✓	WB Critical Tile - Freeze and send the critical tile to data migration vendor	Fri 2/4/05	Fri 2/4/05
805	✓	WB Critical Tile - Rectify the critical tile	Fri 2/4/05	Fri 2/11/05
806	✓	WB Critical Tile - Review / answer data issues for data migration vendor	Fri 2/11/05	Fri 2/11/05
807	✓	WB Critical Tile - Deliver the critical tile to NIPSCO	Fri 2/11/05	Fri 2/11/05
808	✓	WB Critical Tile - Create QA packages for the critical tile	Fri 2/11/05	Fri 2/11/05
809	✓	WB Critical Tile - Run DWGVerify against critical tile and review results	Fri 2/11/05	Fri 2/11/05
810	✓	WB Critical Tile - Run edge match against the critical tile and review results	Fri 2/11/05	Fri 2/11/05
811	✓	WB Critical Tile - QA the critical tile, review issues, etc	Fri 2/11/05	Fri 2/18/05
812	✓	WB Critical Tile - Correct Elementool issues	Thu 2/24/05	Thu 2/24/05
813	✓	WB Critical Tile - Re-QA the Elementool issues	Fri 2/25/05	Fri 2/25/05
814	✓	WB Critical Tile - Place the critical tile back into production	Fri 3/4/05	Fri 3/4/05
815	✓	<b>Rectify the Critical EC Tile</b>	<b>Fri 2/4/05</b>	<b>Thu 3/10/05</b>
816	✓	EC Critical Tile - Freeze and send the critical tile to data migration vendor	Fri 2/4/05	Fri 2/4/05
817	✓	EC Critical Tile - Rectify the critical tile	Fri 2/4/05	Wed 2/16/05
818	✓	EC Critical Tile - Review / answer data issues for data migration vendor	Wed 2/16/05	Wed 2/16/05
819	✓	EC Critical Tile - Deliver the critical tile to NIPSCO	Fri 2/25/05	Fri 2/25/05
820	✓	EC Critical Tile - Create QA packages for the critical tile	Wed 3/2/05	Wed 3/2/05
821	✓	EC Critical Tile - Run DWGVerify against critical tile and review results	Wed 3/2/05	Wed 3/2/05
822	✓	EC Critical Tile - Run edge match against the critical tile and review results	Wed 3/2/05	Wed 3/2/05
823	✓	EC Critical Tile - Correct Elementool issues	Tue 3/8/05	Wed 3/9/05
824	✓	EC Critical Tile - Re-QA the Elementool issues	Wed 3/9/05	Thu 3/10/05
825	✓	EC Critical Tile - Place the critical tile back into production	Thu 3/10/05	Thu 3/10/05
826	✓	<b>Rectify the Critical ED Tile</b>	<b>Fri 2/4/05</b>	<b>Thu 3/10/05</b>
827	✓	ED Critical Tile - Freeze and send the critical tile to data migration vendor	Fri 2/4/05	Fri 2/4/05
828	✓	ED Critical Tile - Rectify the critical tile	Fri 2/4/05	Wed 2/16/05

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ID	Task Name	Start	Finish
829	ED Critical Tile - Review / answer data issues for data migration vendor	Wed 2/16/05	Wed 2/16/05
830	ED Critical Tile - Deliver the critical tile to NIPSCO	Fri 2/25/05	Fri 2/25/05
831	ED Critical Tile - Create QA packages for the critical tile	Wed 3/2/05	Wed 3/2/05
832	ED Critical Tile - Run DWGVerify against critical tile and review results	Wed 3/2/05	Wed 3/2/05
833	ED Critical Tile - Run edge match against the critical tile and review results	Wed 3/2/05	Wed 3/2/05
834	ED Critical Tile - QA the critical tile, review issues, etc	Wed 3/2/05	Tue 3/8/05
835	ED Critical Tile - Correct Elementool issues	Tue 3/8/05	Wed 3/9/05
836	ED Critical Tile - Re-QA the Elementool issues	Wed 3/9/05	Thu 3/10/05
837	ED Critical Tile - Place the critical tile back into production	Thu 3/10/05	Thu 3/10/05
838	<b>Rectify the Critical DC Tile</b>	<b>Tue 2/15/05</b>	<b>Tue 3/15/05</b>
839	DC Critical Tile - Freeze and send the critical tile to data migration vendor	Tue 2/15/05	Tue 2/15/05
840	DC Critical Tile - Rectify the critical tile	Tue 2/15/05	Wed 2/23/05
841	DC Critical Tile - Review / answer data issues for data migration vendor	Wed 2/23/05	Wed 2/23/05
842	DC Critical Tile - Deliver the critical tile to NIPSCO	Fri 3/4/05	Fri 3/4/05
843	DC Critical Tile - Create QA packages for the critical tile	Mon 3/7/05	Mon 3/7/05
844	DC Critical Tile - Run DWGVerify against critical tile and review results	Mon 3/7/05	Mon 3/7/05
845	DC Critical Tile - Run edge match against the critical tile and review results	Mon 3/7/05	Mon 3/7/05
846	DC Critical Tile - QA the critical tile, review issues, etc	Mon 3/7/05	Fri 3/11/05
847	DC Critical Tile - Correct Elementool issues	Fri 3/11/05	Mon 3/14/05
848	DC Critical Tile - Re-QA the Elementool issues	Mon 3/14/05	Tue 3/15/05
849	DC Critical Tile - Place the critical tile back into production	Tue 3/15/05	Tue 3/15/05
850	<b>Rectify the Critical FD Tile</b>	<b>Tue 2/15/05</b>	<b>Tue 3/15/05</b>
851	FD Critical Tile - Freeze and send the critical tile to data migration vendor	Tue 2/15/05	Tue 2/15/05
852	FD Critical Tile - Rectify the critical tile	Tue 2/15/05	Wed 2/23/05
853	FD Critical Tile - Review / answer data issues for data migration vendor	Wed 2/23/05	Wed 2/23/05
854	FD Critical Tile - Deliver the critical tile to NIPSCO	Fri 3/4/05	Fri 3/4/05
855	FD Critical Tile - Create QA packages for the critical tile	Mon 3/7/05	Mon 3/7/05
856	FD Critical Tile - Run DWGVerify against critical tile and review results	Mon 3/7/05	Mon 3/7/05
857	FD Critical Tile - Run edge match against the critical tile and review results	Mon 3/7/05	Mon 3/7/05
858	FD Critical Tile - QA the critical tile, review issues, etc	Mon 3/7/05	Fri 3/11/05
859	FD Critical Tile - Correct Elementool issues	Fri 3/11/05	Mon 3/14/05
860	FD Critical Tile - Re-QA the Elementool issues	Mon 3/14/05	Tue 3/15/05
861	FD Critical Tile - Place the critical tile back into production	Tue 3/15/05	Tue 3/15/05
862	<b>Rectify the Critical CD Tile</b>	<b>Wed 2/23/05</b>	<b>Thu 3/17/05</b>
863	CD Critical Tile - Freeze and send the critical tile to data migration vendor	Wed 2/23/05	Wed 2/23/05
864	CD Critical Tile - Rectify the critical tile	Wed 2/23/05	Wed 3/2/05
865	CD Critical Tile - Review / answer data issues for data migration vendor	Wed 3/2/05	Wed 3/2/05
866	CD Critical Tile - Deliver the critical tile to NIPSCO	Mon 3/7/05	Mon 3/7/05
867	CD Critical Tile - Create QA packages for the critical tile	Wed 3/9/05	Wed 3/9/05
868	CD Critical Tile - Run DWGVerify against critical tile and review results	Wed 3/9/05	Wed 3/9/05
869	CD Critical Tile - Run edge match against the critical tile and review results	Wed 3/9/05	Wed 3/9/05
870	CD Critical Tile - QA the critical tile, review issues, etc	Wed 3/9/05	Tue 3/15/05
871	CD Critical Tile - Correct Elementool issues	Tue 3/15/05	Wed 3/16/05
872	CD Critical Tile - Re-QA the Elementool issues	Wed 3/16/05	Thu 3/17/05
873	CD Critical Tile - Place the critical tile back into production	Thu 3/17/05	Thu 3/17/05
874	<b>Data Corruption Management</b>	<b>Fri 5/27/05</b>	<b>Fri 1/6/06</b>

ID	Task Name	Start	Finish
875	Identify data migration vendor-introduced Data Corruption	Fri 5/27/05	Tue 10/11/05
876	Clean up the critical corrupted data	Fri 6/3/05	Fri 1/6/06
877	<b>GIS Data Migration</b>	<b>Mon 3/1/04</b>	<b>Wed 5/2/07</b>
878	<b>Miscellaneous Data Migration Setup Tasks</b>	<b>Tue 9/28/04</b>	<b>Tue 1/3/06</b>
879	<b>Setup Automated Testing</b>	<b>Tue 9/28/04</b>	<b>Wed 11/3/04</b>
880	Get license key and install automated testing software on a common PC	Fri 10/1/04	Fri 10/1/04
881	Apply initial automated testing software configuration to NIPSCO environment	Mon 10/18/04	Mon 10/18/04
882	Download and install NIPSCO data from FTP server	Tue 9/28/04	Tue 9/28/04
883	Finalize initial Landbase tests	Wed 9/29/04	Wed 9/29/04
884	Create generated tests for landbase, gas and electric	Thu 9/30/04	Thu 9/30/04
885	Deliver initial landbase tests, and generated tests for gas and electric	Mon 10/4/04	Mon 10/4/04
886	Initial configuration of Nipsco-specific tests for electric	Mon 10/18/04	Fri 10/22/04
887	Initial configuration of Nipsco-specific tests for gas	Mon 10/18/04	Fri 10/22/04
888	Initial configuration Nipsco-specific tests for land	Tue 10/19/04	Mon 10/25/04
889	Deliver Nipsco-specific tests for gas and electric	Wed 10/6/04	Wed 10/6/04
890	Review tests and test results - Electric / log tickets	Thu 10/21/04	Thu 10/21/04
891	Review tests and test results - Gas / log tickets	Fri 10/22/04	Fri 10/22/04
892	Review tests and test results - Land / log tickets	Mon 10/25/04	Mon 10/25/04
893	Revise automated tests based on review comments	Mon 11/1/04	Tue 11/2/04
894	Deliver final automated testing software configuration to Nipsco	Wed 11/3/04	Wed 11/3/04
895	<b>Finalize the Conductor Migration Specifications</b>	<b>Fri 10/8/04</b>	<b>Fri 12/17/04</b>
896	Coordinate meetings/logistics for all migration add-ons (secondary conductor, etc.)	Fri 10/8/04	Fri 10/8/04
897	Complete the specifications for all migration add-ons (secondary conductor, etc.)	Thu 10/14/04	Fri 10/15/04
898	Provide conductor modeling details and data "preview" to data migration vendor	Tue 11/2/04	Tue 11/2/04
899	Create draft secondary conductor creation specifications	Fri 11/5/04	Fri 11/5/04
900	Review draft secondary conductor creation specifications	Tue 11/30/04	Tue 11/30/04
901	Finalize the secondary conductor creation specifications	Fri 12/17/04	Fri 12/17/04
902	Write Scripts to create data cleanup reports of error codes on the full delivery of data	Fri 12/30/05	Tue 1/3/06
903	<b>Data Migration Performance Issues</b>	<b>Fri 11/19/04</b>	<b>Fri 11/18/05</b>
904	Compare metrics	Fri 11/19/04	Fri 11/19/04
905	Write-up next steps for the performance issues	Fri 11/19/04	Fri 11/19/04
906	Data migration performance - next steps	Tue 12/7/04	Tue 12/7/04
907	Reset Performance Metrics based on Delivery 6.0	Fri 11/18/05	Fri 11/18/05
908	<b>Finalize the Source/Target Record Reconciliation Process</b>	<b>Wed 10/27/04</b>	<b>Fri 12/17/04</b>
909	Record Counting - Review record count comparison status	Wed 10/27/04	Wed 10/27/04
910	Review reconciliation document and provide review comments	Wed 12/8/04	Wed 12/8/04
911	Finalize the reconciliation document and project plan based on review comments	Fri 12/17/04	Fri 12/17/04
912	<b>Develop Record Count Reconciliation Functionality</b>	<b>Wed 1/12/05</b>	<b>Wed 1/26/05</b>
913	Develop specs / process for source (DWG File) record count report	Wed 1/12/05	Wed 1/12/05
914	Develop source (DWG File) record count report	Wed 1/12/05	Wed 1/12/05
915	Develop specs / process for target (ArcSDE) record count report	Wed 1/12/05	Wed 1/12/05
916	Develop record count reconciliation checklist	Mon 1/24/05	Mon 1/24/05
917	Finalize the record count checklist	Wed 1/26/05	Wed 1/26/05
918	<b>Determine Solution for Migration of Duplicate Centerlines Between Outfield Tiles</b>	<b>Thu 12/9/04</b>	<b>Tue 1/25/05</b>
919	Document options for handling duplicate centerlines	Thu 12/9/04	Thu 12/9/04
920	Review and determine option for handling duplicate features	Thu 1/6/05	Thu 1/6/05



ID		Task Name	Start	Finish
921	✓	Merge the Centerline and County Boundary files into a single map	Fri 1/14/05	Fri 1/14/05
922	✓	Review the merged Centerline / County map and identify 20-30 candidates	Mon 1/24/05	Mon 1/24/05
923	✓	Create a report of the results	Tue 1/25/05	Tue 1/25/05
924	✓	<b>GIS Data Migration - Iteration 1 (Small Area and Subset of Feature Classes)</b>	<b>Mon 6/21/04</b>	<b>Mon 10/25/04</b>
925	✓	<b>GIS Data Migration - Additional AutoCAD File Sources</b>	<b>Wed 8/18/04</b>	<b>Mon 8/23/04</b>
926	✓	Review additional sources for data migration matrix	Wed 8/18/04	Wed 8/18/04
927	✓	Send additional data source samples to data migration vendor	Mon 8/23/04	Mon 8/23/04
928	✓	<b>Update the Data Matrix for Migration Iteration 1</b>	<b>Fri 7/9/04</b>	<b>Fri 8/20/04</b>
929	✓	<b>High Priority Gas</b>	<b>Fri 7/9/04</b>	<b>Fri 7/16/04</b>
930	✓	Meeting to review critical Gas matrix spreadsheets	Fri 7/9/04	Fri 7/9/04
931	✓	Log Gas matrix changes into Elementool	Fri 7/9/04	Fri 7/9/04
932	✓	Research miscellaneous gas matrix issues	Mon 7/12/04	Mon 7/12/04
933	✓	Apply the gas matrix changes	Fri 7/16/04	Fri 7/16/04
934	✓	Deliver the gas matrix spreadsheet(s) to data migration vendor	Fri 7/16/04	Fri 7/16/04
935	✓	<b>High Priority Land (Critical Objects Only)</b>	<b>Fri 7/9/04</b>	<b>Mon 7/19/04</b>
936	✓	Prep for Land matrix review	Fri 7/9/04	Fri 7/9/04
937	✓	Meeting to review critical Land matrix spreadsheets	Fri 7/9/04	Fri 7/9/04
938	✓	Log Land matrix changes into Elementool	Fri 7/9/04	Fri 7/9/04
939	✓	Research miscellaneous land matrix issues	Mon 7/12/04	Mon 7/12/04
940	✓	Apply the land matrix changes	Mon 7/19/04	Mon 7/19/04
941	✓	Deliver the land matrix spreadsheet(s) to data migration vendor	Mon 7/19/04	Mon 7/19/04
942	✓	<b>Update the Gas Matrix</b>	<b>Wed 7/21/04</b>	<b>Fri 7/23/04</b>
943	✓	Meeting to determine schedule for reviewing / updating gas matrix spreadsheets	Wed 7/21/04	Wed 7/21/04
944	✓	Update the Gas Casing matrix spreadsheet	Wed 7/21/04	Wed 7/21/04
945	✓	Update the Gas CP Rectifier matrix spreadsheet	Wed 7/21/04	Wed 7/21/04
946	✓	Update the Gas Pipe Change matrix spreadsheet	Wed 7/21/04	Wed 7/21/04
947	✓	Update the Gas Pipe Exposure matrix spreadsheet	Thu 7/22/04	Thu 7/22/04
948	✓	Update the Gas Drip matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
949	✓	Update the Gas Insulated Coupling matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
950	✓	Update the Gas Pressure Control matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
951	✓	Update the Gas Dead End matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
952	✓	Update the Gas Pipe Marker matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
953	✓	Update the Gas Company Use matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
954	✓	Update the Gas Leak Report matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
955	✓	Update the Gas Leak Survey Area matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
956	✓	Update the Gas Service Stub matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
957	✓	Update the Gas Squeeze Off matrix spreadsheet	Fri 7/23/04	Fri 7/23/04
958	✓	<b>Review and Finalize the Gas Matrix</b>	<b>Fri 7/30/04</b>	<b>Fri 8/6/04</b>
959	✓	Review and verify gas matrix spreadsheets	Fri 7/30/04	Fri 7/30/04
960	✓	Meeting to review gas and electric customer issues	Fri 8/6/04	Fri 8/6/04
961	✓	Update the Gas Section matrix spreadsheet	Mon 8/2/04	Mon 8/2/04
962	✓	<b>Update the Land Bridge Matrix</b>	<b>Thu 8/12/04</b>	<b>Thu 8/12/04</b>
963	✓	Review Land Bridge matrix spreadsheet	Thu 8/12/04	Thu 8/12/04
964	✓	Log Land Bridge matrix changes into Elementool	Thu 8/12/04	Thu 8/12/04
965	✓	Apply the matrix changes for Land Bridge	Thu 8/12/04	Thu 8/12/04
966	✓	Initial delivery of the Land Bridge matrix	Thu 8/12/04	Thu 8/12/04

ID		Task Name	Start	Finish
967	✓	<b>Update the Land County Matrix</b>	<b>Fri 8/13/04</b>	<b>Mon 8/16/04</b>
968	✓	Review Land County matrix spreadsheet	Fri 8/13/04	Fri 8/13/04
969	✓	Log Land County matrix changes into Elementool	Fri 8/13/04	Fri 8/13/04
970	✓	Apply the matrix changes for Land County	Fri 8/13/04	Fri 8/13/04
971	✓	Initial delivery of the Land County matrix	Mon 8/16/04	Mon 8/16/04
972	✓	<b>Update the Land DG Grid Matrix</b>	<b>Fri 8/13/04</b>	<b>Fri 8/13/04</b>
973	✓	Review Land DG Grid matrix spreadsheet	Fri 8/13/04	Fri 8/13/04
974	✓	Log Land DG Grid matrix changes into Elementool	Fri 8/13/04	Fri 8/13/04
975	✓	Apply the matrix changes for Land DG Grid	Fri 8/13/04	Fri 8/13/04
976	✓	Initial delivery of the Land DG Grid matrix	Fri 8/13/04	Fri 8/13/04
977	✓	<b>Update the Land Easement Matrix</b>	<b>Fri 8/13/04</b>	<b>Mon 8/16/04</b>
978	✓	Review Land Easement matrix spreadsheet	Fri 8/13/04	Fri 8/13/04
979	✓	Log Land Easement matrix changes into Elementool	Mon 8/16/04	Mon 8/16/04
980	✓	Apply the matrix changes for Land Easement	Mon 8/16/04	Mon 8/16/04
981	✓	Initial delivery of the Land Easement matrix	Mon 8/16/04	Mon 8/16/04
982	✓	<b>Update the Land Franchise BoundaryMatrix</b>	<b>Mon 8/16/04</b>	<b>Mon 8/16/04</b>
983	✓	Review Land Franchise Boundary matrix spreadsheet	Mon 8/16/04	Mon 8/16/04
984	✓	Log Land Franchise Boundary matrix changes into Elementool	Mon 8/16/04	Mon 8/16/04
985	✓	Apply the matrix changes for Land Franchise Boundary	Mon 8/16/04	Mon 8/16/04
986	✓	Initial delivery of the Land Franchise Boundary matrix	Mon 8/16/04	Mon 8/16/04
987	✓	<b>Update the Land Discrepancy Matrix</b>	<b>Mon 8/16/04</b>	<b>Mon 8/16/04</b>
988	✓	Review Land Discrepancy matrix spreadsheet	Mon 8/16/04	Mon 8/16/04
989	✓	Apply the matrix changes for Land Discrepancy	Mon 8/16/04	Mon 8/16/04
990	✓	Initial delivery of the Land Discrepancy matrix	Mon 8/16/04	Mon 8/16/04
991	✓	<b>Update the Land Linear Water Matrix</b>	<b>Mon 8/16/04</b>	<b>Mon 8/16/04</b>
992	✓	Review Land Linear Water matrix spreadsheet	Mon 8/16/04	Mon 8/16/04
993	✓	Apply the matrix changes for Land Linear Water	Mon 8/16/04	Mon 8/16/04
994	✓	Initial delivery of the Land Linear Water matrix	Mon 8/16/04	Mon 8/16/04
995	✓	<b>Update the Land LOA Matrix</b>	<b>Mon 8/16/04</b>	<b>Tue 8/17/04</b>
996	✓	Review Land LOA matrix spreadsheet	Mon 8/16/04	Mon 8/16/04
997	✓	Apply the matrix changes for Land LOA	Tue 8/17/04	Tue 8/17/04
998	✓	Initial delivery of the Land LOA matrix	Tue 8/17/04	Tue 8/17/04
999	✓	<b>Update the Land Lotline Matrix</b>	<b>Tue 8/17/04</b>	<b>Tue 8/17/04</b>
1000	✓	Review Land Lotline matrix spreadsheet	Tue 8/17/04	Tue 8/17/04
1001	✓	Apply the matrix changes for Land Lotline	Tue 8/17/04	Tue 8/17/04
1002	✓	Initial delivery of the Land Lotline matrix	Tue 8/17/04	Tue 8/17/04
1003	✓	<b>Update the Land Lot Number Matrix</b>	<b>Tue 8/17/04</b>	<b>Tue 8/17/04</b>
1004	✓	Review Land Lot Number matrix spreadsheet	Tue 8/17/04	Tue 8/17/04
1005	✓	Apply the matrix changes for Land Lot Number	Tue 8/17/04	Tue 8/17/04
1006	✓	Initial delivery of the Land Lot Number matrix	Tue 8/17/04	Tue 8/17/04
1007	✓	<b>Update the Land Minor Grid Matrix</b>	<b>Tue 8/17/04</b>	<b>Tue 8/17/04</b>
1008	✓	Review Land Minor Grid matrix spreadsheet	Tue 8/17/04	Tue 8/17/04
1009	✓	Apply the matrix changes for Land Minor Grid	Tue 8/17/04	Tue 8/17/04
1010	✓	Initial delivery of the Land Minor Grid matrix	Tue 8/17/04	Tue 8/17/04
1011	✓	<b>Update the Miscellaneous Linear Land Feature Matrix</b>	<b>Tue 8/17/04</b>	<b>Tue 8/17/04</b>
1012	✓	Review Miscellaneous Linear Land Feature matrix spreadsheet	Tue 8/17/04	Tue 8/17/04

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ID		Task Name	Start	Finish
1013	✓	Apply the matrix changes for Miscellaneous Linear Land Feature	Tue 8/17/04	Tue 8/17/04
1014	✓	Initial delivery of the Miscellaneous Linear Land Feature matrix	Tue 8/17/04	Tue 8/17/04
1015	✓	<b>Update the Miscellaneous Point Land Feature Matrix</b>	<b>Tue 8/17/04</b>	<b>Tue 8/17/04</b>
1016	✓	Review Miscellaneous Point Land Feature matrix spreadsheet	Tue 8/17/04	Tue 8/17/04
1017	✓	Apply the matrix changes for Miscellaneous Point Land Feature	Tue 8/17/04	Tue 8/17/04
1018	✓	Initial delivery of the Miscellaneous Point Land Feature matrix	Tue 8/17/04	Tue 8/17/04
1019	✓	<b>Update the Land Municipality Matrix</b>	<b>Wed 8/18/04</b>	<b>Wed 8/18/04</b>
1020	✓	Review Land Municipality matrix spreadsheet	Wed 8/18/04	Wed 8/18/04
1021	✓	Apply the matrix changes for Land Municipality	Wed 8/18/04	Wed 8/18/04
1022	✓	Initial delivery of the Land Municipality matrix	Wed 8/18/04	Wed 8/18/04
1023	✓	<b>Update the Land PLSS Section Matrix</b>	<b>Wed 8/18/04</b>	<b>Wed 8/18/04</b>
1024	✓	Review Land PLSS Section matrix spreadsheet	Wed 8/18/04	Wed 8/18/04
1025	✓	Apply the matrix changes for Land PLSS Section	Wed 8/18/04	Wed 8/18/04
1026	✓	Initial delivery of the Land PLSS Section matrix	Wed 8/18/04	Wed 8/18/04
1027	✓	<b>Update the Land Political Township Matrix</b>	<b>Wed 8/18/04</b>	<b>Wed 8/18/04</b>
1028	✓	Review Land Political Township matrix spreadsheet	Wed 8/18/04	Wed 8/18/04
1029	✓	Apply the matrix changes for Land Political Township	Wed 8/18/04	Wed 8/18/04
1030	✓	Initial delivery of the Land Political Township matrix	Wed 8/18/04	Wed 8/18/04
1031	✓	<b>Update the Land Polygon Water Matrix</b>	<b>Wed 8/18/04</b>	<b>Wed 8/18/04</b>
1032	✓	Review Land Polygon Water matrix spreadsheet	Wed 8/18/04	Wed 8/18/04
1033	✓	Apply the matrix changes for Land Polygon Water	Wed 8/18/04	Wed 8/18/04
1034	✓	Initial delivery of the Land Polygon Water matrix	Wed 8/18/04	Wed 8/18/04
1035	✓	<b>Update the Land Quarter Township Grid Matrix</b>	<b>Wed 8/18/04</b>	<b>Wed 8/18/04</b>
1036	✓	Review Land Quarter Township Grid matrix spreadsheet	Wed 8/18/04	Wed 8/18/04
1037	✓	Apply the matrix changes for Land Quarter Township Grid	Wed 8/18/04	Wed 8/18/04
1038	✓	Initial delivery of the Land Quarter Township Grid matrix	Wed 8/18/04	Wed 8/18/04
1039	✓	<b>Update the Land Railroad Matrix</b>	<b>Wed 8/18/04</b>	<b>Thu 8/19/04</b>
1040	✓	Review Land Railroad matrix spreadsheet	Wed 8/18/04	Thu 8/19/04
1041	✓	Apply the matrix changes for Land Railroad	Thu 8/19/04	Thu 8/19/04
1042	✓	Initial delivery of the Land Railroad matrix	Thu 8/19/04	Thu 8/19/04
1043	✓	<b>Update the Land Reference Line Matrix</b>	<b>Thu 8/19/04</b>	<b>Thu 8/19/04</b>
1044	✓	Review Land Reference Line matrix spreadsheet	Thu 8/19/04	Thu 8/19/04
1045	✓	Apply the matrix changes for Land Reference Line	Thu 8/19/04	Thu 8/19/04
1046	✓	Initial delivery of the Land Reference Line matrix	Thu 8/19/04	Thu 8/19/04
1047	✓	<b>Update the Land Reference Point Matrix</b>	<b>Thu 8/19/04</b>	<b>Thu 8/19/04</b>
1048	✓	Review Land Reference Point matrix spreadsheet	Thu 8/19/04	Thu 8/19/04
1049	✓	Apply the matrix changes for Land Reference Point	Thu 8/19/04	Thu 8/19/04
1050	✓	Initial delivery of the Land Reference Point matrix	Thu 8/19/04	Thu 8/19/04
1051	✓	<b>Update the Land States Matrix</b>	<b>Thu 8/19/04</b>	<b>Thu 8/19/04</b>
1052	✓	Review Land States matrix spreadsheet	Thu 8/19/04	Thu 8/19/04
1053	✓	Apply the matrix changes for Land States	Thu 8/19/04	Thu 8/19/04
1054	✓	Initial delivery of the Land States matrix	Thu 8/19/04	Thu 8/19/04
1055	✓	<b>Update the Land Street ROW Matrix</b>	<b>Thu 8/19/04</b>	<b>Thu 8/19/04</b>
1056	✓	Review Land Street ROW matrix spreadsheet	Thu 8/19/04	Thu 8/19/04
1057	✓	Apply the matrix changes for Land Street ROW	Thu 8/19/04	Thu 8/19/04
1058	✓	Initial delivery of the Land Street ROW matrix	Thu 8/19/04	Thu 8/19/04

ID		Task Name	Start	Finish
1059	✓	<b>Update the Land Township Range Matrix</b>	<b>Thu 8/19/04</b>	<b>Fri 8/20/04</b>
1060	✓	Review Land Township Range matrix spreadsheet	Thu 8/19/04	Thu 8/19/04
1061	✓	Apply the matrix changes for Land Township Range	Fri 8/20/04	Fri 8/20/04
1062	✓	Initial delivery of the Land Township Range matrix	Fri 8/20/04	Fri 8/20/04
1063	✓	<b>Update the Electric Manhole Matrix</b>	<b>Tue 7/27/04</b>	<b>Fri 7/30/04</b>
1064	✓	Review Manhole matrix spreadsheet	Tue 7/27/04	Tue 7/27/04
1065	✓	Log Manhole matrix changes into Elementool	Fri 7/30/04	Fri 7/30/04
1066	✓	Apply the matrix changes for Manhole	Fri 7/30/04	Fri 7/30/04
1067	✓	Initial delivery of the Manhole matrix	Fri 7/30/04	Fri 7/30/04
1068	✓	<b>Update the Electric Pedestal Matrix</b>	<b>Tue 7/27/04</b>	<b>Fri 7/30/04</b>
1069	✓	Review Pedestal matrix spreadsheet	Tue 7/27/04	Tue 7/27/04
1070	✓	Log Pedestal matrix changes into Elementool	Fri 7/30/04	Fri 7/30/04
1071	✓	Apply the matrix changes for Pedestal	Fri 7/30/04	Fri 7/30/04
1072	✓	Initial delivery of the Pedestal matrix	Fri 7/30/04	Fri 7/30/04
1073	✓	<b>Update the Electric OH Transmission Matrix</b>	<b>Wed 7/28/04</b>	<b>Fri 7/30/04</b>
1074	✓	Review OH Transmission matrix spreadsheet	Wed 7/28/04	Wed 7/28/04
1075	✓	Apply the matrix changes for OH Transmission	Fri 7/30/04	Fri 7/30/04
1076	✓	Initial delivery of the OH Transmission matrix	Fri 7/30/04	Fri 7/30/04
1077	✓	<b>Update the Electric Substation Matrix</b>	<b>Wed 7/28/04</b>	<b>Fri 7/30/04</b>
1078	✓	Review Substation matrix spreadsheet	Wed 7/28/04	Wed 7/28/04
1079	✓	Apply the matrix changes for Substation	Fri 7/30/04	Fri 7/30/04
1080	✓	Initial delivery of the Substation matrix	Fri 7/30/04	Fri 7/30/04
1081	✓	<b>Update the Electric Switch Gear Matrix</b>	<b>Wed 7/28/04</b>	<b>Fri 7/30/04</b>
1082	✓	Review Switch Gear matrix spreadsheet	Wed 7/28/04	Wed 7/28/04
1083	✓	Apply the matrix changes for Switch Gear	Fri 7/30/04	Fri 7/30/04
1084	✓	Initial delivery of the Switch Gear matrix	Fri 7/30/04	Fri 7/30/04
1085	✓	<b>Update the Electric Substation Breaker Matrix</b>	<b>Wed 8/4/04</b>	<b>Fri 8/20/04</b>
1086	✓	Review Substation Breaker matrix spreadsheet	Wed 8/4/04	Wed 8/4/04
1087	✓	Apply the matrix changes for Substation Breaker	Fri 8/20/04	Fri 8/20/04
1088	✓	Initial delivery of the Substation Breaker matrix	Fri 8/20/04	Fri 8/20/04
1089	✓	<b>Create and Deliver Initial Transformer Matrix</b>	<b>Thu 7/1/04</b>	<b>Wed 7/14/04</b>
1090	✓	Meeting to review transformer matrix spreadsheet	Thu 7/1/04	Thu 7/1/04
1091	✓	Log transformer matrix changes into Elementool	Wed 7/7/04	Wed 7/7/04
1092	✓	Apply the approved matrix changes for transformer bank	Mon 7/12/04	Mon 7/12/04
1093	✓	Review initial matrix template	Tue 7/13/04	Tue 7/13/04
1094	✓	Revise and finalize the matrix template	Wed 7/14/04	Wed 7/14/04
1095	✓	Initial delivery of the transformer bank matrix - approved rows	Wed 7/14/04	Wed 7/14/04
1096	✓	<b>Create and Deliver Initial Conductor Matrix</b>	<b>Thu 7/8/04</b>	<b>Tue 7/27/04</b>
1097	✓	Meeting to review conductor matrix spreadsheet	Thu 7/8/04	Thu 7/8/04
1098	✓	Log conductor matrix changes into Elementool	Thu 7/8/04	Thu 7/8/04
1099	✓	Apply the approved matrix changes for conductor	Tue 7/13/04	Tue 7/13/04
1100	✓	Initial delivery of the conductor matrix - approved rows	Wed 7/14/04	Wed 7/14/04
1101	✓	Research miscellaneous conductor matrix issues	Tue 7/27/04	Tue 7/27/04
1102	✓	<b>Create and Deliver Initial Support Structure Matrix</b>	<b>Thu 7/8/04</b>	<b>Wed 7/14/04</b>
1103	✓	Review support structure matrix spreadsheet	Thu 7/8/04	Thu 7/8/04
1104	✓	Log support structure matrix changes into Elementool	Thu 7/8/04	Thu 7/8/04

ID	Task Name	Start	Finish
1105	Apply the approved matrix changes for support structure	Wed 7/14/04	Wed 7/14/04
1106	Initial delivery of the support structure matrix - approved rows	Wed 7/14/04	Wed 7/14/04
1107	<b>Create and Deliver Initial Capacitor Matrix</b>	<b>Fri 7/9/04</b>	<b>Fri 7/16/04</b>
1108	Review capacitor matrix spreadsheet	Fri 7/9/04	Fri 7/9/04
1109	Log capacitor matrix changes into Elementool	Fri 7/9/04	Fri 7/9/04
1110	Apply the approved matrix changes for capacitor	Fri 7/16/04	Fri 7/16/04
1111	Initial delivery of the capacitor matrix - approved rows	Fri 7/16/04	Fri 7/16/04
1112	<b>Create and Deliver Initial Switch/Fuse Matrix</b>	<b>Thu 7/15/04</b>	<b>Mon 7/19/04</b>
1113	Review switch/fuse matrix spreadsheet	Thu 7/15/04	Thu 7/15/04
1114	Log switch/fuse matrix changes into Elementool	Thu 7/15/04	Thu 7/15/04
1115	Apply the approved matrix changes for switch/fuse	Mon 7/19/04	Mon 7/19/04
1116	Initial delivery of the switch/fuse matrix - approved rows	Mon 7/19/04	Mon 7/19/04
1117	<b>Update the Electric Primary Meter Matrix</b>	<b>Tue 7/27/04</b>	<b>Fri 7/30/04</b>
1118	Review Primary Meter matrix spreadsheet	Tue 7/27/04	Tue 7/27/04
1119	Log Primary Meter matrix changes into Elementool	Fri 7/30/04	Fri 7/30/04
1120	Apply the matrix changes for Primary Meter	Fri 7/30/04	Fri 7/30/04
1121	Initial delivery of the Primary Meter matrix	Fri 7/30/04	Fri 7/30/04
1122	<b>Update the Electric Recloser Bank Matrix</b>	<b>Tue 7/27/04</b>	<b>Fri 7/30/04</b>
1123	Review Recloser Bank matrix spreadsheet	Tue 7/27/04	Tue 7/27/04
1124	Log Recloser Bank matrix changes into Elementool	Fri 7/30/04	Fri 7/30/04
1125	Apply the Recloser Bank changes for conduit	Fri 7/30/04	Fri 7/30/04
1126	Initial delivery of the Recloser Bank matrix	Fri 7/30/04	Fri 7/30/04
1127	<b>Miscellaneous Data Migration / Matrix Tickets</b>	<b>Fri 7/2/04</b>	<b>Wed 9/8/04</b>
1128	Elementool ticket processing	Fri 7/2/04	Wed 9/8/04
1129	<b>Update the Data Matrix based on the Data Model</b>	<b>Fri 7/2/04</b>	<b>Fri 7/9/04</b>
1130	Decide on approach to be used for data matrix	Fri 7/2/04	Fri 7/2/04
1131	Create new, blank electric matrix with the latest data model	Thu 7/8/04	Thu 7/8/04
1132	Create new, blank gas matrix with the latest data model	Fri 7/9/04	Fri 7/9/04
1133	Create new, blank land matrix with the latest data model	Fri 7/9/04	Fri 7/9/04
1134	<b>Freeze the Data Matrix for Data Migration Iteration 1</b>	<b>Fri 9/3/04</b>	<b>Fri 9/3/04</b>
1135	FreezeData Matrix - Electric	Fri 9/3/04	Fri 9/3/04
1136	FreezeData Matrix - Gas	Fri 9/3/04	Fri 9/3/04
1137	FreezeData Matrix - Land	Fri 9/3/04	Fri 9/3/04
1138	<b>Update the Electric Primary Open Point Matrix</b>	<b>Fri 9/17/04</b>	<b>Fri 9/17/04</b>
1139	Review Primary Open Point matrix spreadsheet	Fri 9/17/04	Fri 9/17/04
1140	Apply the matrix changes for Primary Open Point	Fri 9/17/04	Fri 9/17/04
1141	Initial delivery of the Primary Open Point matrix	Fri 9/17/04	Fri 9/17/04
1142	<b>Update the Electric Splice Matrix</b>	<b>Tue 9/21/04</b>	<b>Tue 9/21/04</b>
1143	Review Splice matrix spreadsheet	Tue 9/21/04	Tue 9/21/04
1144	Apply the matrix changes for Splice	Tue 9/21/04	Tue 9/21/04
1145	Initial delivery of the Splice matrix	Tue 9/21/04	Tue 9/21/04
1146	<b>Update the Electric Terminator Matrix</b>	<b>Tue 9/21/04</b>	<b>Tue 9/21/04</b>
1147	Review Terminator matrix spreadsheet	Tue 9/21/04	Tue 9/21/04
1148	Note: The data matrix task above covers the time needed for the matrix updates below	Tue 9/21/04	Tue 9/21/04
1149	Apply the matrix changes for Terminator	Tue 9/21/04	Tue 9/21/04
1150	Initial delivery of the Terminator matrix	Tue 9/21/04	Tue 9/21/04

ID	Task Name	Start	Finish
1151	<b>Update the Electric Tie Wire Matrix</b>	<b>Tue 9/21/04</b>	<b>Tue 9/21/04</b>
1152	Review Tie Wire matrix spreadsheet	Tue 9/21/04	Tue 9/21/04
1153	Apply the matrix changes for Tie Wire	Tue 9/21/04	Tue 9/21/04
1154	Initial delivery of the Tie Wire matrix	Tue 9/21/04	Tue 9/21/04
1155	<b>Update the Electric Voltage Regulator Matrix</b>	<b>Tue 9/21/04</b>	<b>Wed 9/22/04</b>
1156	Review Voltage Regulator matrix spreadsheet	Tue 9/21/04	Tue 9/21/04
1157	Log Voltage Regulator matrix changes into Elementool	Tue 9/21/04	Tue 9/21/04
1158	Apply the matrix changes for Voltage Regulator	Wed 9/22/04	Wed 9/22/04
1159	Initial delivery of the Voltage Regulator matrix	Tue 9/21/04	Tue 9/21/04
1160	<b>Define Data Migration Data Receipt and Acceptance Procedures</b>	<b>Mon 7/26/04</b>	<b>Fri 10/22/04</b>
1161	Create initial draft of data migration receipt and acceptance procedures	Mon 7/26/04	Wed 8/18/04
1162	Data migration automated QA tools/scripts should be in QA plan	Mon 9/20/04	Mon 9/20/04
1163	Update the migration receipt and acceptance procedures based on initial review	Fri 10/1/04	Fri 10/1/04
1164	Update the migration receipt and acceptance procedures based on interactive testing	Fri 10/1/04	Fri 10/1/04
1165	Update the migration receipt and acceptance procedures based on batch testing	Fri 10/22/04	Fri 10/22/04
1166	<b>Select Batch Migration QA Product</b>	<b>Mon 9/13/04</b>	<b>Mon 9/27/04</b>
1167	Demo of vendor automated testing software products	Mon 9/13/04	Mon 9/13/04
1168	Compare the two products and decide on next steps	Mon 9/27/04	Mon 9/27/04
1169	Purchase Automated QA Routine product	Mon 9/27/04	Mon 9/27/04
1170	<b>Develop the Migration Routines / Processes for Iteration 1</b>	<b>Mon 6/21/04</b>	<b>Fri 10/8/04</b>
1171	Data migration iteration 1 development tasks	Mon 6/21/04	Tue 9/14/04
1172	Meeting to review the deliverables from data migration vendor	Fri 9/17/04	Fri 9/17/04
1173	Migration iteration 1 delivery date	Wed 9/15/04	Wed 9/15/04
1174	Install the SQL backup file at NIPSCO	Wed 9/22/04	Fri 10/8/04
1175	<b>Test the Migrated Data</b>	<b>Wed 9/22/04</b>	<b>Fri 10/15/04</b>
1176	<b>Perform Interactive Testing of Migrated Data</b>	<b>Wed 9/22/04</b>	<b>Fri 10/15/04</b>
1177	Perform first pass interactive testing (test one of each feature type)	Wed 9/22/04	Mon 9/27/04
1178	Review & resolve errors from first pass interactive testing	Fri 10/1/04	Tue 10/5/04
1179	Submit Elementool tickets for first pass interactive testing	Tue 9/28/04	Tue 9/28/04
1180	Perform second pass interactive testing (test each subtype)	Fri 10/1/04	Thu 10/14/04
1181	Submit Elementool tickets for second pass interactive testing	Fri 10/15/04	Fri 10/15/04
1182	<b>Perform Batch Testing of Migrated Data</b>	<b>Wed 9/29/04</b>	<b>Wed 10/6/04</b>
1183	Run landbase tests against pilot data	Wed 9/29/04	Wed 9/29/04
1184	Run initial tests against the pilot data and deliver results	Mon 10/4/04	Mon 10/4/04
1185	Run Nipsco-specific tests for gas and electric and deliver results	Wed 10/6/04	Wed 10/6/04
1186	<b>GIS Data Migration - Miscellaneous Issues</b>	<b>Fri 8/27/04</b>	<b>Mon 10/25/04</b>
1187	Determine volume of data to migrate	Fri 8/27/04	Fri 8/27/04
1188	Determine final data migration data timeframe freeze	Tue 9/28/04	Tue 9/28/04
1189	Elementool ticket processing	Fri 9/17/04	Mon 10/25/04
1190	<b>Update the Electric Secondary Matrix</b>	<b>Mon 10/4/04</b>	<b>Mon 10/11/04</b>
1191	Review secondary matrix	Mon 10/4/04	Mon 10/4/04
1192	Log Secondary matrix changes into Elementool	Mon 10/4/04	Mon 10/4/04
1193	Apply the matrix changes for Secondary	Mon 10/11/04	Mon 10/11/04
1194	Initial delivery of the Secondary matrix	Mon 10/11/04	Mon 10/11/04
1195	<b>Update the Electric Sectionalizer Bank Matrix</b>	<b>Mon 10/11/04</b>	<b>Fri 10/15/04</b>
1196	Initial pass to populate spreadsheet	Mon 10/11/04	Mon 10/11/04

ID		Task Name	Start	Finish
1197	✓	Review Sectionalizer Bank matrix spreadsheet	Tue 10/12/04	Tue 10/12/04
1198	✓	Log Sectionalizer Bank matrix changes into Elementool	Wed 10/13/04	Wed 10/13/04
1199	✓	Apply the matrix changes for Sectionalizer Bank	Thu 10/14/04	Thu 10/14/04
1200	✓	Initial delivery of the Sectionalizer Bank matrix	Fri 10/15/04	Fri 10/15/04
1201	✓	<b>Update the Electric Discrepancy Matrix</b>	<b>Tue 10/12/04</b>	<b>Tue 10/12/04</b>
1202	✓	Review Discrepancy matrix spreadsheet	Tue 10/12/04	Tue 10/12/04
1203	✓	Log Discrepancy matrix changes into Elementool	Tue 10/12/04	Tue 10/12/04
1204	✓	Apply the matrix changes for Discrepancy	Tue 10/12/04	Tue 10/12/04
1205	✓	Initial delivery of the Discrepancy matrix	Tue 10/12/04	Tue 10/12/04
1206	✓	<b>Update the Electric Abandoned Conductor Matrix</b>	<b>Wed 10/13/04</b>	<b>Wed 10/13/04</b>
1207	✓	Review Abandoned Conductor matrix spreadsheet	Wed 10/13/04	Wed 10/13/04
1208	✓	Log Abandoned Conductor matrix changes into Elementool	Wed 10/13/04	Wed 10/13/04
1209	✓	Apply the matrix changes for Abandoned Conductor	Wed 10/13/04	Wed 10/13/04
1210	✓	Initial delivery of the Abandoned Conductor matrix	Wed 10/13/04	Wed 10/13/04
1211	✓	<b>Update the Padmount Matrix</b>	<b>Wed 10/13/04</b>	<b>Wed 10/13/04</b>
1212	✓	Review Padmount matrix spreadsheet	Wed 10/13/04	Wed 10/13/04
1213	✓	Log Padmount matrix changes into Elementool	Wed 10/13/04	Wed 10/13/04
1214	✓	Apply the matrix changes for Padmount	Wed 10/13/04	Wed 10/13/04
1215	✓	Initial delivery of the Padmount matrix	Wed 10/13/04	Wed 10/13/04
1216	✓	<b>Update the CP Section Matrix</b>	<b>Thu 10/14/04</b>	<b>Thu 10/14/04</b>
1217	✓	Review CP Section matrix spreadsheet	Thu 10/14/04	Thu 10/14/04
1218	✓	Log CP Section matrix changes into Elementool	Thu 10/14/04	Thu 10/14/04
1219	✓	Apply the matrix changes for CP Section	Thu 10/14/04	Thu 10/14/04
1220	✓	Initial delivery of the CP Section matrix	Thu 10/14/04	Thu 10/14/04
1221	✓	<b>Update the CP Test Point Matrix</b>	<b>Thu 10/14/04</b>	<b>Thu 10/14/04</b>
1222	✓	Review CP Test Point matrix spreadsheet	Thu 10/14/04	Thu 10/14/04
1223	✓	Log CP Test Point matrix changes into Elementool	Thu 10/14/04	Thu 10/14/04
1224	✓	Apply the matrix changes for CP Test Point	Thu 10/14/04	Thu 10/14/04
1225	✓	Initial delivery of the CP Test Point matrix	Thu 10/14/04	Thu 10/14/04
1226	✓	<b>Update the Gas Discrepancy Matrix</b>	<b>Fri 10/15/04</b>	<b>Fri 10/15/04</b>
1227	✓	Review Gas Discrepancy matrix spreadsheet	Fri 10/15/04	Fri 10/15/04
1228	✓	Log Gas Discrepancy matrix changes into Elementool	Fri 10/15/04	Fri 10/15/04
1229	✓	Apply the matrix changes for Gas Discrepancy	Fri 10/15/04	Fri 10/15/04
1230	✓	Initial delivery of the Gas Discrepancy matrix	Fri 10/15/04	Fri 10/15/04
1231	✓	<b>Update the Gas Main Location Matrix</b>	<b>Fri 10/15/04</b>	<b>Mon 10/25/04</b>
1232	✓	Review Gas Main Location matrix spreadsheet	Fri 10/15/04	Fri 10/15/04
1233	✓	Log Gas Main Location matrix changes into Elementool	Fri 10/15/04	Fri 10/15/04
1234	✓	Apply the matrix changes for Gas Main Location	Fri 10/15/04	Fri 10/15/04
1235	✓	Initial delivery of the Gas Main Location matrix	Fri 10/15/04	Fri 10/15/04
1236	✓	Elementool ticket processing	Fri 10/22/04	Mon 10/25/04
1237	✓	<b>Automated Testing Software Diagnostics Tool</b>	<b>Mon 10/25/04</b>	<b>Mon 10/25/04</b>
1238	✓	Evaluate Automated testing software diagnostics tool for reporting of deltas between data models	Mon 10/25/04	Mon 10/25/04
1239	✓	<b>GIS Data Migration - Iteration 2 (Small Area and All Feature Classes)</b>	<b>Thu 9/16/04</b>	<b>Mon 11/22/04</b>
1240	✓	<b>Develop the Migration Routines / Processes for iteration 2</b>	<b>Thu 9/16/04</b>	<b>Fri 11/5/04</b>
1241	✓	Data migration iteration 2 development tasks	Thu 9/16/04	Fri 10/29/04
1242	✓	Send data migration vendor a configured SDE SQL Backup file	Wed 10/20/04	Wed 10/20/04













ID		Task Name	Start	Finish
1243	✓	Process the data for migration delivery 2	Mon 10/18/04	Thu 11/4/04
1244	✓	Migration iteration 2 delivery date (SQL server backup version)	Fri 11/5/04	Fri 11/5/04
1245	✓	Install the SQL backup file at NIPSCO	Fri 11/5/04	Fri 11/5/04
1246	✓	<b>Test the Migrated Data (Batch and Interactive)</b>	<b>Mon 11/8/04</b>	<b>Wed 11/17/04</b>
1247	✓	Perform batch QA of migration iteration 2 delivery	Mon 11/8/04	Fri 11/12/04
1248	✓	Perform interactive QA of Gas for iteration 2 delivery	Fri 11/12/04	Fri 11/12/04
1249	✓	Perform interactive QA of Electric for iteration 2 delivery	Mon 11/15/04	Tue 11/16/04
1250	✓	Perform interactive QA of Land for iteration 2 delivery	Wed 11/17/04	Wed 11/17/04
1251	✓	Log Elementool issues for migration iteration 2 delivery	Mon 11/8/04	Tue 11/16/04
1252	✓	<b>Review the Matrix Issues and Apply Changes</b>	<b>Thu 11/18/04</b>	<b>Mon 11/22/04</b>
1253	✓	Process Elementool tickets	Thu 11/18/04	Mon 11/22/04
1254	✓	<b>GIS Data Migration - Iteration 3 (Entire Area and All Feature Classes)</b>	<b>Mon 11/1/04</b>	<b>Fri 1/28/05</b>
1255	✓	<b>Develop the Migration Routines / Processes for Iteration 3</b>	<b>Mon 11/1/04</b>	<b>Fri 12/17/04</b>
1256	✓	Data migration iteration 3 development tasks	Mon 11/1/04	Tue 12/14/04
1257	✓	Migration iteration 3 delivery date	Wed 12/15/04	Wed 12/15/04
1258	✓	Install the SQL backup file at NIPSCO	Thu 12/16/04	Fri 12/17/04
1259	✓	<b>Test the Migrated Data (via automated testing)</b>	<b>Thu 12/16/04</b>	<b>Wed 1/5/05</b>
1260	✓	Run automated tests	Thu 12/16/04	Mon 12/20/04
1261	✓	Install Beta Version / Re-Process / Testing	Fri 12/17/04	Tue 12/21/04
1262	✓	Evaluate Test Results	Fri 12/17/04	Wed 12/22/04
1263	✓	Log Elementool Ticket(s)	Thu 12/23/04	Thu 12/23/04
1264	✓	Resolve critical Elementool matrix issues from the automated testing	Wed 1/5/05	Wed 1/5/05
1265	✓	<b>Test the Migrated Data (via Interactive testing)</b>	<b>Fri 12/17/04</b>	<b>Fri 1/14/05</b>
1266	✓	Perform Electric Testing	Fri 12/17/04	Mon 12/20/04
1267	✓	Perform Gas Testing	Mon 12/20/04	Tue 12/21/04
1268	✓	Perform Land Testing	Wed 12/22/04	Wed 12/22/04
1269	✓	Log Elementool Ticket(s)	Wed 1/5/05	Wed 1/5/05
1270	✓	Resolve critical Elementool matrix issues	Thu 1/6/05	Thu 1/6/05
1271	✓	Update Interactive testing spreadsheet from Migration Delivery #2	Fri 1/14/05	Fri 1/14/05
1272	✓	Update Interactive testing spreadsheet	Fri 1/14/05	Fri 1/14/05
1273	✓	<b>Test the Migrated Electric Data (via Feeder Manager testing)</b>	<b>Wed 1/12/05</b>	<b>Thu 1/13/05</b>
1274	✓	Build Electric Network for Feeder Manager	Wed 1/12/05	Wed 1/12/05
1275	✓	Test the Electric connectivity using Feeder Manager	Thu 1/13/05	Thu 1/13/05
1276	✓	<b>Test the Migrated Data (via CADOPS / FeederAll testing)</b>	<b>Wed 1/12/05</b>	<b>Wed 1/12/05</b>
1277	✓	Write script to populate the circuit source for CADOPS / Feederall	Wed 1/12/05	Wed 1/12/05
1278	✓	<b>Test the Migrated Gas Data (via Gas Trace)</b>	<b>Mon 1/24/05</b>	<b>Tue 1/25/05</b>
1279	✓	Build Gas Network for Gas Trace	Mon 1/24/05	Mon 1/24/05
1280	✓	Document the process	Tue 1/25/05	Tue 1/25/05
1281	✓	<b>Correct Data Migration Elementool Tickets</b>	<b>Thu 1/13/05</b>	<b>Fri 1/28/05</b>
1282	✓	Process data migration elementool tickets	Thu 1/13/05	Fri 1/28/05
1283	✓	<b>Data Migration Iteration Acceptance</b>	<b>Fri 1/7/05</b>	<b>Fri 1/14/05</b>
1284	✓	Send notification of data migration iteration 1 and 2 acceptance	Fri 1/7/05	Fri 1/7/05
1285	✓	Meeting to review migration testing status	Fri 1/7/05	Fri 1/7/05
1286	✓	Send notification of acceptance / rejection	Fri 1/14/05	Fri 1/14/05
1287	✓	<b>GIS Data Migration - Delivery 4 (Entire Area with All EDFs Data Model Changes)</b>	<b>Mon 3/1/04</b>	<b>Fri 3/11/05</b>
1288	✓	<b>Data Migration Delivery 4 - Migrate the data</b>	<b>Mon 12/13/04</b>	<b>Wed 2/2/05</b>



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ID	Task Name	Start	Finish
1289	Provide landbase polygon data / research landbase polygon issues	Mon 12/13/04	Fri 12/17/04
1290	NIPSCO send data migration vendor new Outfield, .dwg, EDFS, Customer Points, Streetlight, GMMS data	Thu 1/13/05	Thu 1/13/05
1291	Modify existing DWGVerify for use in Migration counts	Fri 1/14/05	Fri 1/14/05
1292	Create Source counts for EDFS, .dwg, Outfield, GMMS, Sreetlights, Customer Points	Wed 1/12/05	Wed 1/12/05
1293	Development tasks	Thu 12/16/04	Mon 1/31/05
1294	Migr data delivery w/EDFS from data migration vendor	Tue 2/1/05	Tue 2/1/05
1295	Install the SQL backup file at NIPSCO	Tue 2/1/05	Tue 2/1/05
1296	Reject Delivery due to unlinked feature anno & missing dissolve	Tue 2/1/05	Tue 2/1/05
1297	Migr data delivery w/EDFS, Feature-linked anno & dissolve from data migration vendor	Wed 2/2/05	Wed 2/2/05
1298	Install the SQL backup file at NIPSCO	Wed 2/2/05	Wed 2/2/05
1299	<b>Data Migration Delivery 4 - QA</b>	<b>Mon 3/1/04</b>	<b>Fri 3/11/05</b>
1300	Pre-QA Review/identify updates to migration testing procedures	Tue 2/1/05	Tue 2/1/05
1301	Develop QA Test Plan	Tue 2/1/05	Tue 2/1/05
1302	Periodic updates of the QA Test Plan	Mon 2/14/05	Fri 2/25/05
1303	Review/Update migration testing procedures	Fri 2/18/05	Fri 2/18/05
1304	Environment Setup Tasks	Wed 2/2/05	Wed 2/2/05
1305	Delivery Checklist Tasks	Mon 3/1/04	Mon 3/1/04
1306	Automated Record Count Reconciliation QA	Fri 2/18/05	Tue 3/1/05
1307	Automated Attribute QA	Wed 2/2/05	Fri 2/18/05
1308	DEV environment Setup	Wed 2/16/05	Fri 2/18/05
1309	Electric Connectivity QA	Thu 3/10/05	Fri 3/11/05
1310	Gas Trace QA	Tue 3/1/05	Tue 3/1/05
1311	Interactive Feature Existence QA	Mon 2/14/05	Tue 2/15/05
1312	Interactive Detailed Attribute QA	Tue 2/8/05	Fri 2/11/05
1313	Review / quantify all data-related issues	Wed 2/23/05	Mon 2/28/05
1314	Post-QA Review / update the migration testing procedures	Wed 3/9/05	Wed 3/9/05
1315	Data Migration - Daily Status Meetings	Mon 2/7/05	Fri 3/4/05
1316	<b>GIS Data Migration - Delivery 4.1 (1 small tile)</b>	<b>Wed 4/13/05</b>	<b>Thu 4/28/05</b>
1317	<b>Data Migration 4.1 - Migrate the data</b>	<b>Wed 4/13/05</b>	<b>Fri 4/22/05</b>
1318	Development tasks/bug fixing	Wed 4/13/05	Fri 4/15/05
1319	NIPSCO Create Delta Instance for data migration vendor	Fri 4/15/05	Tue 4/19/05
1320	Create Source counts for EDFS, .dwg, Outfield, GMMS, Streetlights, Customer Points	Tue 4/19/05	Tue 4/19/05
1321	Migration process tasks	Tue 4/19/05	Thu 4/21/05
1322	Install the SQL backup file at NIPSCO	Fri 4/22/05	Fri 4/22/05
1323	<b>Data Migration Delivery 4.1 - QA</b>	<b>Thu 4/21/05</b>	<b>Thu 4/28/05</b>
1324	Environment Setup Tasks	Fri 4/22/05	Fri 4/22/05
1325	Delivery Checklist Tasks	Thu 4/21/05	Fri 4/22/05
1326	Record Count Reconciliation QA	Fri 4/22/05	Fri 4/22/05
1327	Automated Attribute QA	Thu 4/21/05	Fri 4/22/05
1328	Review & test exception reports	Fri 4/22/05	Mon 4/25/05
1329	Preliminary Acceptance to move to Dev	Mon 4/25/05	Mon 4/25/05
1330	DEV environment Setup	Mon 4/25/05	Thu 4/28/05
1331	Interactive Feature Existence QA	Mon 4/25/05	Tue 4/26/05
1332	Interactive Detailed Attribute QA	Tue 4/26/05	Wed 4/27/05
1333	Electric Connectivity QA	Wed 4/27/05	Wed 4/27/05
1334	Gas Trace QA	Wed 4/27/05	Wed 4/27/05









ID	Task Name	Start	Finish
1335	Review / quantify all data-related issues	Wed 4/27/05	Thu 4/28/05
1336	Post-QA Review / update the migration testing procedures	Thu 4/28/05	Thu 4/28/05
1337	<b>Data Migration Delivery 4.1 Acceptance</b>	<b>Tue 4/26/05</b>	<b>Tue 4/26/05</b>
1338	Send notification of acceptance/rejection	Tue 4/26/05	Tue 4/26/05
1339	<b>GIS Data Migration - Delivery 4.2 (1 small tile)</b>	<b>Wed 4/13/05</b>	<b>Fri 5/13/05</b>
1340	<b>Data Migration 4.2 - Migrate the Data</b>	<b>Wed 4/13/05</b>	<b>Fri 5/6/05</b>
1341	Development tasks/bug fixing	Wed 4/13/05	Fri 4/15/05
1342	NIPSCO Create Delta Instance for data migration vendor	Fri 4/15/05	Tue 4/19/05
1343	Create Source counts for EDFS, .dwg, Outfield, GMMS, Streetlights, Customer Points	Tue 4/19/05	Tue 4/19/05
1344	Migration process tasks	Tue 4/19/05	Thu 4/21/05
1345	Install the SQL backup file at NIPSCO	Fri 5/6/05	Fri 5/6/05
1346	<b>Data Migration Delivery 4.2 - QA</b>	<b>Mon 4/18/05</b>	<b>Fri 5/13/05</b>
1347	Review/Update migration testing procedures	Mon 4/18/05	Mon 4/18/05
1348	Environment Setup Tasks	Fri 5/6/05	Fri 5/6/05
1349	Delivery Checklist Tasks	Fri 5/6/05	Fri 5/6/05
1350	Record Count Reconciliation QA	Fri 5/6/05	Fri 5/6/05
1351	Automated Attribute QA	Fri 5/6/05	Fri 5/6/05
1352	Review & test exception reports	Fri 5/6/05	Mon 5/9/05
1353	Preliminary Acceptance to move to Dev	Mon 5/9/05	Mon 5/9/05
1354	DEV environment Setup	Mon 5/9/05	Thu 5/12/05
1355	Interactive Feature Existence QA	Mon 5/9/05	Tue 5/10/05
1356	Interactive Detailed Attribute QA	Tue 5/10/05	Wed 5/11/05
1357	Electric Connectivity QA	Wed 5/11/05	Thu 5/12/05
1358	Gas Trace QA	Thu 5/12/05	Thu 5/12/05
1359	Review / quantify all data-related issues	Thu 5/12/05	Fri 5/13/05
1360	Post-QA Review / update the migration testing procedures	Fri 5/13/05	Fri 5/13/05
1361	<b>Data Migration Delivery 4.1 Acceptance</b>	<b>Fri 5/13/05</b>	<b>Fri 5/13/05</b>
1362	Meeting to review migration testing status	Fri 5/13/05	Fri 5/13/05
1363	Send notification of acceptance / rejection	Fri 5/13/05	Fri 5/13/05
1364	<b>GIS Data Migration - Delivery 5 (Vaipo only)</b>	<b>Mon 5/2/05</b>	<b>Wed 8/31/05</b>
1365	<b>Data Migration Delivery 5 - Migrate the data</b>	<b>Mon 5/2/05</b>	<b>Fri 8/5/05</b>
1366	Development tasks/bug fixing/new data model & matrix updates	Mon 5/2/05	Fri 5/6/05
1367	NIPSCO Create Delta Instance for data migration vendor	Thu 5/5/05	Fri 5/6/05
1368	Create Source counts for EDFS, .dwg, Outfield, GMMS, Sreetlights, Customer Points	Mon 5/9/05	Mon 5/9/05
1369	Migration Pre-QA tasks	Mon 8/1/05	Fri 8/5/05
1370	Receive complete migration data delivery from migration vendor	Sun 7/31/05	Sun 7/31/05
1371	Install the SQL backup file at NIPSCO	Sun 7/31/05	Sun 7/31/05
1372	<b>Data Migration Delivery 5 - QA</b>	<b>Sun 7/31/05</b>	<b>Wed 8/31/05</b>
1373	Environment Setup Tasks	Sun 7/31/05	Sun 7/31/05
1374	Delivery Checklist Tasks	Sun 7/31/05	Mon 8/1/05
1375	Record Count Reconciliation QA	Sun 7/31/05	Mon 8/1/05
1376	Automated Attribute QA	Mon 8/1/05	Thu 8/4/05
1377	Preliminary Acceptance to move to Dev	Mon 8/15/05	Mon 8/15/05
1378	DEV environment Setup	Mon 8/15/05	Thu 8/18/05
1379	Interactive Feature Existence QA	Mon 8/15/05	Thu 8/18/05
1380	Interactive Detailed Attribute QA	Thu 8/18/05	Thu 8/25/05

ID		Task Name	Start	Finish
1381	✓	Electric Connectivity QA	Thu 8/25/05	Fri 8/26/05
1382	✓	Gas Trace QA	Fri 8/26/05	Mon 8/29/05
1383	✓	Review / quantify all data-related issues including exception reports	Mon 8/29/05	Tue 8/30/05
1384	✓	Post-QA Review / update the migration testing procedures	Wed 8/31/05	Wed 8/31/05
1385	✓	<b>Data Migration Delivery 5 Acceptance</b>	<b>Thu 8/4/05</b>	<b>Thu 8/4/05</b>
1386	✓	Meeting to review migration testing status	Thu 8/4/05	Thu 8/4/05
1387	✓	Send notification of acceptance/rejection	Thu 8/4/05	Thu 8/4/05
1388		<b>GIS Data Migration - Delivery 6 - (Full Territory and All Feature Classes)</b>	<b>Mon 3/1/04</b>	<b>Wed 5/2/07</b>
1389	✓	<b>Pre-Delivery to Data Migration Vendor Tasks</b>	<b>Mon 3/1/04</b>	<b>Wed 11/23/05</b>
1390	✓	Correct 5.0 issues, ETs, create scripts	Mon 8/22/05	Fri 10/28/05
1391	✓	Authorization to Proceed with the Delivery	Fri 10/28/05	Fri 10/28/05
1392	✓	<b>Data Cleanup</b>	<b>Wed 10/19/05</b>	<b>Fri 10/28/05</b>
1393	✓	Review all data from auto cleanup scripts (in test) and report results	Fri 10/28/05	Fri 10/28/05
1394	✓	Execute AutoCAD Source Data Count program	Thu 10/20/05	Thu 10/20/05
1395	✓	Manual clean up of AutoCAD Source Data Count	Wed 10/26/05	Fri 10/28/05
1396	✓	Manual cleanup of circuit breaker circuit number	Wed 10/26/05	Wed 10/26/05
1397	✓	Resolve final Elementool tickets	Wed 10/19/05	Fri 10/28/05
1398	✓	Development tasks/bug fixing/new data model & matrix updates	Thu 8/4/05	Wed 11/23/05
1399	✓ 	Identify automated tests that will be affected by migration matrix & model changes	Wed 11/2/05	Fri 11/4/05
1400	✓	Review removed automated tests - create automated test verification spreadsheet	Tue 11/1/05	Tue 11/1/05
1401	✓ 	Request as a deliverable from data migration vendor a list of tiles in each batch	Fri 10/21/05	Fri 10/21/05
1402	✓	Complete the review and updating the Migration Plan (Pre-delivery section only)	Fri 10/28/05	Fri 10/28/05
1403	✓	Assign/Adjust resources based on Updates to the Migration Plan	Wed 11/2/05	Wed 11/2/05
1404	✓ 	Merge 2 line annotation script (Gas B option)	Mon 10/24/05	Mon 10/24/05
1405	✓	Add automated test suites to the Delivery Checklist	Wed 11/2/05	Wed 11/2/05
1406	✓ 	Document street name alias issue decision	Tue 11/22/05	Tue 11/22/05
1407	✓ 	Determine Freeze Date for Migration 6.0	Fri 10/21/05	Fri 10/21/05
1408	✓	<b>Request IT Resources</b>	<b>Mon 3/1/04</b>	<b>Fri 10/28/05</b>
1409	✓	Notify DBA to Wipe Clean the Delta Instance 1 week in advance	Mon 3/1/04	Mon 3/1/04
1410	✓ 	Schedule DBA 1 week in advance of Delivery to data migration vendor to extract the .bak	Fri 10/28/05	Fri 10/28/05
1411	✓	Review data migration vendor migration reports - Document Essential vs Non-Essential	Fri 10/14/05	Fri 10/14/05
1412	✓ 	Resolve Text/Mtext issue	Mon 10/24/05	Mon 10/24/05
1413	✓	Count Summary.doc - Review along with other migration vendor reports	Thu 10/20/05	Thu 10/20/05
1414	✓ 	Create & finalize electric & gas snapping document specs	Tue 10/4/05	Mon 10/24/05
1415	✓ 	Verify we support many to many relationships between ancillary tables to feature classes	Wed 10/26/05	Wed 10/26/05
1416	✓	Verify there are no more outstanding ET's prior to preparing delivery to data migration vendor	Fri 10/28/05	Fri 10/28/05
1417	✓	<b>Prepare Delivery to Data Migration Vendor</b>	<b>Fri 10/28/05</b>	<b>Mon 11/7/05</b>
1418	✓	Freeze the data for Migration 6.0	Tue 11/1/05	Tue 11/1/05
1419	✓	Baseline the Data Model	Mon 10/31/05	Mon 10/31/05
1420	✓	Baseline the Migration Matrices	Mon 10/31/05	Mon 10/31/05
1421	✓	Baseline the .mxd & Anno spreadsheet	Mon 10/31/05	Mon 10/31/05
1422	✓ 	Baseline the Miscellaneous Migration Specifications	Mon 10/31/05	Mon 10/31/05
1423	✓	Prepare the Empty .BAK file	Fri 10/28/05	Fri 10/28/05
1424	✓ 	Prepare Outfield Source .DWG files and Get Feature Counts	Mon 10/31/05	Mon 11/7/05
1425	✓	Prepare EDFS Source Data and Get Feature Counts	Mon 10/31/05	Mon 10/31/05
1426	✓	Prepare GMMS and Get Feature Counts	Tue 11/1/05	Tue 11/1/05

ID	Task Name	Start	Finish
1427	Miscellaneous Polygon Source Data (placeholder - this will not change again)	Tue 11/1/05	Tue 11/1/05
1428	Prepare Streetlight Source Data and Get Feature Counts	Tue 11/1/05	Tue 11/1/05
1429	Package up the Files for Delivery to data migration vendor	Fri 11/4/05	Fri 11/4/05
1430	Place the Package on data migration vendor's FTP Server (and conduct verification)	Fri 11/4/05	Fri 11/4/05
1431	Notify data migration vendor that the Delivery is Available	Fri 11/4/05	Fri 11/4/05
1432	<b>Post-Data Delivery to Data Migration Vendor Tasks</b>	<b>Wed 10/19/05</b>	<b>Wed 5/2/07</b>
1433	Resolve Final Elementool tickets	Wed 10/19/05	Wed 11/30/05
1434	<b>Prepare Automated Test Suites</b>	<b>Fri 11/4/05</b>	<b>Fri 11/18/05</b>
1435	Review all automated tests to determine propriety	Fri 11/4/05	Mon 11/7/05
1436	Delete unnecessary automated tests	Tue 11/8/05	Wed 11/16/05
1437	Add missing automated tests (synch up with data model changes)	Tue 11/8/05	Wed 11/16/05
1438	Prepare Instructions for data migration vendor regarding Automated QA Routines	Thu 11/17/05	Fri 11/18/05
1439	<b>Week of November 21</b>	<b>Fri 11/4/05</b>	<b>Mon 1/30/06</b>
1440	Set up client sites (hardware) for the QA	Wed 11/23/05	Wed 11/23/05
1441	Create reports for Post-production cleanup	Mon 1/30/06	Mon 1/30/06
1442	Migration process tasks	Fri 11/4/05	Wed 11/23/05
1443	Perform Various QA Setup Tasks	Tue 11/22/05	Tue 11/22/05
1444	Meet with data migration vendor to consolidate the Delivery Checklist to 1 report	Tue 11/22/05	Tue 11/22/05
1445	<b>Week of November 28</b>	<b>Wed 11/23/05</b>	<b>Mon 12/5/05</b>
1446	Test split at tap on 5.0	Mon 12/5/05	Mon 12/5/05
1447	Plan the QA Workshop	Wed 11/23/05	Wed 11/23/05
1448	Notify IT Server Group regarding upcoming delivery & QA	Mon 11/28/05	Mon 11/28/05
1449	Review & Update the QA Tasks in the Migration Plan	Wed 11/30/05	Wed 11/30/05
1450	<b>Delivery From Data Migration Vendor Tasks</b>	<b>Wed 11/23/05</b>	<b>Wed 5/2/07</b>
1451	Deliver data migration 6.0	Wed 11/23/05	Wed 11/23/05
1452	Download data & files from FTP server	Mon 11/28/05	Mon 11/28/05
1453	High-level Review of Reports and Artifacts	Mon 11/28/05	Mon 11/28/05
1454	Copy migrated data & artifacts to a shared directory	Mon 11/28/05	Mon 11/28/05
1455	Restore the .BAK file	Mon 11/28/05	Mon 11/28/05
1456	Document the environment changes (based on the SDE Management Plan)	Wed 5/2/07	Wed 5/2/07
1457	Verify that the Schema of the Geodatabase from data migration vendor is Correct	Mon 11/28/05	Mon 11/28/05
1458	Review Finalized Migration Plan prior to QA	Tue 11/29/05	Tue 11/29/05
1459	Verify the Delivery Artifacts against the Delivery Checklist	Mon 11/28/05	Mon 11/28/05
1460	Pre-Populate the Interactive QA Spreadsheet	Mon 11/28/05	Mon 11/28/05
1461	Run automate tests against new data	Mon 11/28/05	Tue 11/29/05
1462	Compare NIPSCO automated test reports against data migration vendor reports	Tue 11/29/05	Tue 11/29/05
1463	Populate automated test tracklist with errors	Wed 11/30/05	Wed 11/30/05
1464	High Level Review to find obvious errors	Mon 11/28/05	Tue 11/29/05
1465	Make the Data Model Changes in Parallel Instance	Tue 11/29/05	Tue 11/29/05
1466	Make the schema changes for CC-023	Tue 11/29/05	Tue 11/29/05
1467	Make the schema changes for CC-025	Tue 11/29/05	Tue 11/29/05
1468	Run Scripts	Tue 11/29/05	Wed 11/30/05
1469	Conduct Mass Attribute Updates	Wed 11/30/05	Thu 12/1/05
1470	Run 2144	Thu 12/1/05	Thu 12/1/05
1471	Run Split at Tap Points & Document Results	Thu 12/8/05	Thu 12/8/05
1472	First Pass Connectivity QA	Fri 12/2/05	Mon 12/5/05

ID	Task Name	Start	Finish
1473	Configure environment	Mon 11/28/05	Mon 12/5/05
1474	<b>Create Tracklists for the Delivery</b>	<b>Mon 10/24/05</b>	<b>Wed 11/16/05</b>
1475	Synchronize All Tracklists with Data Model	Mon 10/24/05	Fri 10/28/05
1476	Intialize QA spreadsheets (Tracklists & QA Plan)	Wed 11/16/05	Wed 11/16/05
1477	CIS Customer Loading	Mon 10/24/05	Mon 10/24/05
1478	Review the Migration Plan Updates	Wed 11/2/05	Wed 11/2/05
1479	Print Graphics Specs Plots of Features (symbology legend) for QA team	Mon 10/31/05	Mon 10/31/05
1480	Schedule DBA to assist with the installation	Mon 11/21/05	Mon 11/21/05
1481	Verify any changes to the Environments (Instances) used for installation of migrated data	Tue 11/1/05	Tue 11/1/05
1482	Set up security and access permissions	Mon 11/7/05	Mon 11/7/05
1483	Document solutions for 1 tiewire connected to two transformer banks (post migration)	Tue 10/25/05	Thu 11/17/05
1484	Determine if we can fix the Install Dates for Gas Main & Retired Gas Main - scripts?	Tue 11/22/05	Wed 11/23/05
1485	Create a new ET based on tie wire to cleanup the data (post migration)	Wed 11/23/05	Wed 11/23/05
1486	Review and Cleanup all data from script reports - Manual	Mon 10/31/05	Mon 10/31/05
1487	<b>QA of Data Migration Vendor-Migrated Data</b>	<b>Mon 12/5/05</b>	<b>Tue 2/28/06</b>
1488	QA - Workshop	Mon 12/5/05	Mon 12/5/05
1489	Initial High-Level Review	Thu 12/8/05	Thu 12/8/05
1490	Feature Counts	Fri 12/9/05	Mon 12/12/05
1491	Automated QA	Fri 12/9/05	Wed 12/14/05
1492	Interactive QA	Fri 12/9/05	Tue 12/20/05
1493	Wrap Up	Tue 2/28/06	Tue 2/28/06
1494	<b>NIPSCO Parallel Migration Processing (Prod Environment)</b>	<b>Mon 12/12/05</b>	<b>Fri 3/17/06</b>
1495	Run Feeder Manager	Mon 12/19/05	Fri 12/23/05
1496	Review Feeder Manager Results	Mon 12/12/05	Tue 12/13/05
1497	QA Parallel Environment (Development)	Wed 2/1/06	Wed 3/1/06
1498	Re-test all scripts on unconfigured environment to provide execution timeframe	Mon 3/13/06	Fri 3/17/06
1499	<b>Acceptance of Data Migration Vendor Migrated Data</b>	<b>Fri 12/16/05</b>	<b>Tue 3/14/06</b>
1500	Meeting to review migration testing status	Fri 12/16/05	Fri 12/16/05
1501	Send notification of acceptance / rejection	Fri 12/16/05	Fri 12/16/05
1502	Receive data migration vendor's test results of the 5 corrected errors	Fri 1/13/06	Fri 1/13/06
1503	QA data migration vendor's corrections - failed	Mon 1/23/06	Tue 1/24/06
1504	Receive data migration vendor's test results of the 5 corrected errors	Mon 3/6/06	Mon 3/6/06
1505	Re-QA data migration vendor's corrections	Mon 3/13/06	Tue 3/14/06
1506	<b>GIS Data Migration - Delivery 7.0 Final Delivery Production Run</b>	<b>Mon 12/19/05</b>	<b>Wed 5/31/06</b>
1507	<b>Preliminary Preparation for Migration Process</b>	<b>Mon 12/19/05</b>	<b>Wed 5/31/06</b>
1508	Correct 6.0 issues, ETs, create scripts to fix/migrate data migration vendor's problems	Mon 12/19/05	Fri 5/5/06
1509	Complete 6.0 Essential Data Cleanup (Data Cleanup Spreadsheet)	Mon 12/19/05	Wed 5/31/06
1510	See Deployment Phase I Plan for Final Migration tasks	Tue 1/3/06	Fri 5/26/06
1511	<b>GIS Application and Interface Construction</b>	<b>Mon 3/1/04</b>	<b>Fri 12/15/06</b>
1512	<b>GIS Application and Interface Construction - Iteration 1 (Base GIS Configuration)</b>	<b>Mon 3/1/04</b>	<b>Fri 6/4/04</b>
1513	<b>Weeks 1-4 (Iteration Setup / Specifications)</b>	<b>Mon 3/1/04</b>	<b>Fri 3/26/04</b>
1514	<b>Conduct Kickoff meeting</b>	<b>Thu 3/4/04</b>	<b>Fri 3/5/04</b>
1515	Kickoff Meeting	Thu 3/4/04	Thu 3/4/04
1516	Write and distribute kickoff meeting notes	Thu 3/4/04	Thu 3/4/04
1517	Update iteration 1 plan	Thu 3/4/04	Fri 3/5/04
1518	<b>Document Typical Editing Scenarios</b>	<b>Thu 3/4/04</b>	<b>Wed 3/24/04</b>

ID		Task Name	Start	Finish
1519	✓	Review initial draft of editing scenarios	Thu 3/4/04	Thu 3/4/04
1520	✓	Document typical gas editing scenarios	Thu 3/4/04	Mon 3/8/04
1521	✓	Document typical land editing scenarios	Mon 3/8/04	Tue 3/9/04
1522	✓	Document typical electric editing scenarios (plus some for EDFs)	Tue 3/9/04	Fri 3/12/04
1523	✓	Review typical editing scenario documentation	Fri 3/12/04	Tue 3/23/04
1524	✓	Update and finalize the typical editing scenario documentation	Tue 3/23/04	Wed 3/24/04
1525	✓	Review and summarize editing scenario tasks for wrap-up report	Wed 3/24/04	Wed 3/24/04
1526	✓ 	<b>Setup for ArcFM Configuration</b>	<b>Thu 3/4/04</b>	<b>Mon 3/22/04</b>
1527	✓	Create primary display field document	Thu 3/4/04	Fri 3/5/04
1528	✓	Create feature class / subtype / symbol definition	Fri 3/5/04	Fri 3/12/04
1529	✓	Create annotation / labeling documentation	Mon 3/15/04	Wed 3/17/04
1530	✓	Create class level automation configuration documentation	Fri 3/5/04	Tue 3/9/04
1531	✓	Create field level automation configuration documentation	Tue 3/9/04	Thu 3/11/04
1532	✓	Define class and field model names	Thu 3/11/04	Mon 3/15/04
1533	✓	Define snapping properties and connectivity	Mon 3/15/04	Fri 3/19/04
1534	✓	Review and summarize pre-config tasks for wrap-up report	Mon 3/22/04	Mon 3/22/04
1535	✓ 	<b>Finish Data Migration Matrix</b>	<b>Mon 3/1/04</b>	<b>Fri 3/26/04</b>
1536	✓	<b>Electric Matrix Tasks</b>	<b>Mon 3/1/04</b>	<b>Fri 3/26/04</b>
1537	✓	<b>PT Member1 Matrix Assignments</b>	<b>Mon 3/1/04</b>	<b>Fri 3/19/04</b>
1538	✓	Miscellaneous electric matrix work	Mon 3/1/04	Wed 3/17/04
1539	✓	Finish conduit matrix	Thu 3/18/04	Thu 3/18/04
1540	✓	Finish electric discrepancy matrix	Thu 3/18/04	Thu 3/18/04
1541	✓	Finish manhole matrix	Thu 3/18/04	Thu 3/18/04
1542	✓	Finish primary open point matrix	Thu 3/18/04	Thu 3/18/04
1543	✓	Finish splice matrix	Fri 3/19/04	Fri 3/19/04
1544	✓	Finish substation matrix	Fri 3/19/04	Fri 3/19/04
1545	✓	Finish Substation Breaker matrix	Fri 3/19/04	Fri 3/19/04
1546	✓	Finish terminator matrix	Fri 3/19/04	Fri 3/19/04
1547	✓	<b>PT Member 2 Matrix Assignments</b>	<b>Mon 3/15/04</b>	<b>Thu 3/25/04</b>
1548	✓	Finish transformer matrix	Mon 3/15/04	Tue 3/16/04
1549	✓	Finish bus bar matrix	Tue 3/16/04	Wed 3/17/04
1550	✓	Finish customer generator matrix	Wed 3/17/04	Wed 3/17/04
1551	✓	Finish electric company use matrix	Thu 3/18/04	Thu 3/18/04
1552	✓	Finish voltage regulator matrix	Thu 3/18/04	Fri 3/19/04
1553	✓	Finish tie wire matrix	Fri 3/19/04	Fri 3/19/04
1554	✓	Finish recloser bank matrix	Mon 3/22/04	Tue 3/23/04
1555	✓	Finish fuse cutout bank matrix	Tue 3/23/04	Thu 3/25/04
1556	✓	Finish switch matrix	Thu 3/25/04	Thu 3/25/04
1557	✓	<b>PT Member3 Matrix Assignments</b>	<b>Fri 3/19/04</b>	<b>Fri 3/26/04</b>
1558	✓	Finish primary meter matrix	Fri 3/19/04	Fri 3/19/04
1559	✓	Finish switch gear matrix	Wed 3/24/04	Wed 3/24/04
1560	✓	Finish OH primary matrix	Wed 3/24/04	Thu 3/25/04
1561	✓	Finish secondary matrix	Thu 3/25/04	Fri 3/26/04
1562	✓	<b>PT Member4 Matrix Assignments</b>	<b>Thu 3/25/04</b>	<b>Fri 3/26/04</b>
1563	✓	Finish support structure matrix	Thu 3/25/04	Fri 3/26/04
1564	✓	<b>Gas Matrix Tasks</b>	<b>Mon 3/1/04</b>	<b>Thu 3/25/04</b>




ID		Task Name	Start	Finish
1565	<input checked="" type="checkbox"/>	<b>PT Member5 Assignments</b>	<b>Mon 3/1/04</b>	<b>Thu 3/18/04</b>
1566	<input checked="" type="checkbox"/>	Miscellaneous gas matrix tasks	Mon 3/1/04	Wed 3/10/04
1567	<input checked="" type="checkbox"/>	Finish drip matrix	Thu 3/11/04	Thu 3/11/04
1568	<input checked="" type="checkbox"/>	Finish pipeline marker matrix	Thu 3/11/04	Thu 3/11/04
1569	<input checked="" type="checkbox"/>	Finish service stub matrix	Thu 3/11/04	Thu 3/11/04
1570	<input checked="" type="checkbox"/>	Finish casing matrix	Thu 3/11/04	Thu 3/11/04
1571	<input checked="" type="checkbox"/>	Finish CP rectifier matrix	Thu 3/11/04	Thu 3/11/04
1572	<input checked="" type="checkbox"/>	Finish CP section matrix	Thu 3/11/04	Fri 3/12/04
1573	<input checked="" type="checkbox"/>	Finish CP test point matrix	Fri 3/12/04	Fri 3/12/04
1574	<input checked="" type="checkbox"/>	Finish emergency valve mark matrix	Fri 3/12/04	Fri 3/12/04
1575	<input checked="" type="checkbox"/>	Finish gas discrepancy matrix	Fri 3/12/04	Fri 3/12/04
1576	<input checked="" type="checkbox"/>	Finish squeeze off matrix	Fri 3/12/04	Mon 3/15/04
1577	<input checked="" type="checkbox"/>	Finish fitting matrix	Mon 3/15/04	Mon 3/15/04
1578	<input checked="" type="checkbox"/>	Finish the gas main matrix	Mon 3/15/04	Tue 3/16/04
1579	<input checked="" type="checkbox"/>	Finish the regulator station matrix	Tue 3/16/04	Thu 3/18/04
1580	<input checked="" type="checkbox"/>	<b>PT Member6 Assignments</b>	<b>Mon 3/22/04</b>	<b>Thu 3/25/04</b>
1581	<input checked="" type="checkbox"/>	Finish gas valve matrix	Mon 3/22/04	Mon 3/22/04
1582	<input checked="" type="checkbox"/>	Finish distribution main matrix	Mon 3/22/04	Tue 3/23/04
1583	<input checked="" type="checkbox"/>	Finish regulator station matrix	Tue 3/23/04	Thu 3/25/04
1584	<input checked="" type="checkbox"/>	<b>Review / Cleanup Matrices</b>	<b>Thu 3/25/04</b>	<b>Fri 3/26/04</b>
1585	<input checked="" type="checkbox"/> 	Review/finalize gas data matrix	Thu 3/25/04	Fri 3/26/04
1586	<input checked="" type="checkbox"/> 	Review/finalize electric data matrix	Thu 3/25/04	Fri 3/26/04
1587	<input checked="" type="checkbox"/>	Review and summarize data matrix tasks for wrap-up report	Fri 3/26/04	Fri 3/26/04
1588	<input checked="" type="checkbox"/> 	<b>Migrate Sample Data Area</b>	<b>Thu 3/4/04</b>	<b>Thu 3/25/04</b>
1589	<input checked="" type="checkbox"/>	Create sample data migration delivery schedule	Thu 3/4/04	Thu 3/4/04
1590	<input checked="" type="checkbox"/>	<b>Migrate Sample Gas Data</b>	<b>Thu 3/4/04</b>	<b>Fri 3/12/04</b>
1591	<input checked="" type="checkbox"/>	Migrate sample gas data	Thu 3/4/04	Wed 3/10/04
1592	<input checked="" type="checkbox"/>	Test sample gas data	Wed 3/10/04	Thu 3/11/04
1593	<input checked="" type="checkbox"/>	Fix and re-deliver sample gas data	Thu 3/11/04	Fri 3/12/04
1594	<input checked="" type="checkbox"/>	<b>Migrate Sample Electric Data</b>	<b>Thu 3/4/04</b>	<b>Tue 3/16/04</b>
1595	<input checked="" type="checkbox"/>	Migrate sample electric data	Thu 3/4/04	Fri 3/12/04
1596	<input checked="" type="checkbox"/>	Test sample electric data	Fri 3/12/04	Mon 3/15/04
1597	<input checked="" type="checkbox"/>	Fix and re-deliver sample electric data	Mon 3/15/04	Tue 3/16/04
1598	<input checked="" type="checkbox"/>	<b>Migrate Sample Land Data</b>	<b>Thu 3/4/04</b>	<b>Fri 3/5/04</b>
1599	<input checked="" type="checkbox"/>	Migrate sample land data	Thu 3/4/04	Thu 3/4/04
1600	<input checked="" type="checkbox"/>	Test sample land data	Thu 3/4/04	Thu 3/4/04
1601	<input checked="" type="checkbox"/>	Fix and re-deliver sample land data	Fri 3/5/04	Fri 3/5/04
1602	<input checked="" type="checkbox"/>	<b>Final Sample Data Migration Tasks</b>	<b>Tue 3/16/04</b>	<b>Thu 3/25/04</b>
1603	<input checked="" type="checkbox"/>	<b>Build Gas Network</b>	<b>Tue 3/16/04</b>	<b>Tue 3/23/04</b>
1604	<input checked="" type="checkbox"/> 	QA gas data and address discrepancies	Tue 3/16/04	Fri 3/19/04
1605	<input checked="" type="checkbox"/> 	Build gas trace weights	Mon 3/22/04	Mon 3/22/04
1606	<input checked="" type="checkbox"/>	Build gas geometric network	Tue 3/23/04	Tue 3/23/04
1607	<input checked="" type="checkbox"/>	Review gas network build errors and address issues	Tue 3/23/04	Tue 3/23/04
1608	<input checked="" type="checkbox"/>	<b>Build Electric Network</b>	<b>Tue 3/16/04</b>	<b>Thu 3/25/04</b>
1609	<input checked="" type="checkbox"/> 	QA electric data and address discrepancies	Tue 3/16/04	Tue 3/23/04
1610	<input checked="" type="checkbox"/> 	Build electric trace weights	Wed 3/24/04	Wed 3/24/04

ID	Task Name	Start	Finish
1611	Build electric geometric network	Thu 3/25/04	Thu 3/25/04
1612	Review electric network build errors and address issues	Thu 3/25/04	Thu 3/25/04
1613	<b>Finalize the Data RFP</b>	<b>Thu 3/4/04</b>	<b>Fri 3/26/04</b>
1614	Add data migration to the RFP	Thu 3/4/04	Thu 3/18/04
1615	Review the draft RFP	Fri 3/19/04	Mon 3/22/04
1616	Notify the vendors that they will be receiving an RFP	Tue 3/23/04	Tue 3/23/04
1617	Meet to review/finalize data RFP / eval criteria	Tue 3/23/04	Tue 3/23/04
1618	Revise the data RFP	Tue 3/23/04	Fri 3/26/04
1619	<b>Weeks 5-6 (ArcFM Configuration)</b>	<b>Mon 3/29/04</b>	<b>Fri 4/9/04</b>
1620	<b>Re-Training / Refresher Course</b>	<b>Mon 3/29/04</b>	<b>Tue 3/30/04</b>
1621	Re-training / refresher course	Mon 3/29/04	Mon 3/29/04
1622	Document notes from the refresher class	Tue 3/30/04	Tue 3/30/04
1623	<b>Send RFP Out for Bid</b>	<b>Mon 3/29/04</b>	<b>Tue 3/30/04</b>
1624	Apply final RFP changes	Mon 3/29/04	Mon 3/29/04
1625	Final review of the RFP	Mon 3/29/04	Mon 3/29/04
1626	Send out the RFP	Mon 3/29/04	Mon 3/29/04
1627	Review and summarize Data RFP tasks for wrap-up report	Tue 3/30/04	Tue 3/30/04
1628	<b>Final Sample Data Migration</b>	<b>Mon 3/29/04</b>	<b>Wed 4/7/04</b>
1629	Final migration runs after matrix and data model freeze	Mon 3/29/04	Thu 4/1/04
1630	Import personal geodatabase to SDE	Thu 4/1/04	Thu 4/1/04
1631	Apply miscellaneous data fixes	Thu 4/1/04	Wed 4/7/04
1632	Review and summarize sample area data migration tasks for wrap-up report	Wed 4/7/04	Wed 4/7/04
1633	<b>Base ArcFM Configuration</b>	<b>Tue 3/30/04</b>	<b>Fri 4/9/04</b>
1634	<b>Review Pre-Configuration Spreadsheets</b>	<b>Tue 3/30/04</b>	<b>Fri 4/2/04</b>
1635	Gas configuration spreadsheet review	Tue 3/30/04	Tue 3/30/04
1636	Electric configuration spreadsheet review	Wed 3/31/04	Wed 3/31/04
1637	Land configuration spreadsheet review	Thu 4/1/04	Thu 4/1/04
1638	Symbology spreadsheet review	Thu 4/1/04	Thu 4/1/04
1639	Session manager configuration review	Fri 4/2/04	Fri 4/2/04
1640	<b>ArcFM Configuration Tasks</b>	<b>Mon 4/5/04</b>	<b>Thu 4/8/04</b>
1641	ArcCatalog - Configure feature class properties based on specification	Mon 4/5/04	Thu 4/8/04
1642	ArcMap - Create initial set of stored displays	Mon 4/5/04	Tue 4/6/04
1643	ArcMap - Create initial set of page templates	Wed 4/7/04	Thu 4/8/04
1644	<b>Final Review</b>	<b>Fri 4/9/04</b>	<b>Fri 4/9/04</b>
1645	Review ArcMap feature class properties	Fri 4/9/04	Fri 4/9/04
1646	Review data items identified during configuration	Fri 4/9/04	Fri 4/9/04
1647	Prep for functional analysis	Fri 4/9/04	Fri 4/9/04
1648	Review and summarize ArcFM Config tasks for wrap-up report	Fri 4/9/04	Fri 4/9/04
1649	<b>Data RFP Week 5-6 Tasks</b>	<b>Mon 3/29/04</b>	<b>Fri 4/9/04</b>
1650	Vendor review of the RFP	Mon 3/29/04	Fri 4/2/04
1651	Conduct data vendor conference call	Mon 4/5/04	Mon 4/5/04
1652	Research of data vendor questions	Mon 4/5/04	Tue 4/6/04
1653	Prepare Q/A summary sheets for data vendors	Tue 4/6/04	Wed 4/7/04
1654	Vendors work on their proposals	Mon 4/5/04	Fri 4/9/04
1655	<b>Week 7 (Functional Analysis)</b>	<b>Mon 4/12/04</b>	<b>Fri 4/16/04</b>
1656	<b>Base ArcFM Functional Analysis</b>	<b>Mon 4/12/04</b>	<b>Fri 4/16/04</b>



ID	Task Name	Start	Finish
1657	Review editing scenarios - Gas, Elec, Land	Mon 4/12/04	Fri 4/16/04
1658	Review editing scenarios - EDFS	Fri 4/16/04	Fri 4/16/04
1659	<b>Data RFP Week 7 Tasks</b>	<b>Mon 4/12/04</b>	<b>Fri 4/16/04</b>
1660	Vendors work on their proposals	Mon 4/12/04	Fri 4/16/04
1661	Notify internal audit	Thu 4/15/04	Thu 4/15/04
1662	Prepare for proposal delivery	Thu 4/15/04	Thu 4/15/04
1663	<b>Week 8 (Proposal Review - Functional Analysis Follow-on)</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1664	<b>Data RFP Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1665	Vendors deliver proposals	Mon 4/19/04	Mon 4/19/04
1666	Bid opening	Tue 4/20/04	Tue 4/20/04
1667	Distribute proposals to the team	Tue 4/20/04	Tue 4/20/04
1668	Prepare comparison spreadsheet	Tue 4/20/04	Thu 4/22/04
1669	Review all data proposals	Tue 4/20/04	Fri 4/23/04
1670	Meeting to determine reference checks	Thu 4/22/04	Thu 4/22/04
1671	Start checking references	Thu 4/22/04	Thu 4/22/04
1672	Week 8 Data RFP Status Meeting	Fri 4/23/04	Fri 4/23/04
1673	<b>Functional Analysis Follow-on Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1674	<b>PT Member1 Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1675	Review data model change candidates	Mon 4/19/04	Mon 4/19/04
1676	Configure the autoupdaters for transformers by sub-type	Tue 4/20/04	Tue 4/20/04
1677	Review all relationship requirements not covered by func analysis	Thu 4/22/04	Fri 4/23/04
1678	<b>PT Member2 Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1679	Update field order for electric attributes	Mon 4/19/04	Mon 4/19/04
1680	Add electric primary display fields	Mon 4/19/04	Mon 4/19/04
1681	Finish annotation spreadsheet	Tue 4/20/04	Wed 4/21/04
1682	Add mask to Regulator symbols	Wed 4/21/04	Wed 4/21/04
1683	Add mask to Primary open point symbols	Wed 4/21/04	Wed 4/21/04
1684	Remove rotation on capacitor bank	Wed 4/21/04	Wed 4/21/04
1685	Apply "geometric" symbol rotation	Wed 4/21/04	Thu 4/22/04
1686	Update data matrix based on symbol rotation	Thu 4/22/04	Fri 4/23/04
1687	<b>PT Member3 Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1688	Prioritize the auto updater candidates	Mon 4/19/04	Mon 4/19/04
1689	Investigate different ways to locate an intersection	Mon 4/19/04	Mon 4/19/04
1690	Start implementation of annotation AU's	Tue 4/20/04	Tue 4/20/04
1691	Document coding standards and guidelines	Wed 4/21/04	Thu 4/22/04
1692	Implement selected AutoUpdaters	Fri 4/23/04	Fri 4/23/04
1693	<b>PT Member4 Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Fri 4/23/04</b>
1694	Review data model change candidates	Mon 4/19/04	Tue 4/20/04
1695	Finish selected data mapping matrix sheets	Tue 4/20/04	Fri 4/23/04
1696	Add transformer jumper details to matrix	Fri 4/23/04	Fri 4/23/04
1697	<b>PT Member5 Week 8 Tasks</b>	<b>Mon 4/19/04</b>	<b>Wed 4/21/04</b>
1698	Update field order for gas attributes	Mon 4/19/04	Mon 4/19/04
1699	Update field order for land attributes	Mon 4/19/04	Mon 4/19/04
1700	Add gas primary display fields	Mon 4/19/04	Tue 4/20/04
1701	Plot sample maps to test colors and page template	Tue 4/20/04	Wed 4/21/04
1702	Investigate whether or not reclosers can be connected to UG	Wed 4/21/04	Wed 4/21/04

ID	Task Name	Start	Finish
1703	Add Add FuseUnit, TransformerUnit and PrimSecdCondInfo to the template	Wed 4/21/04	Wed 4/21/04
1704	Change snapping to be in DB units instead of pixels	Wed 4/21/04	Wed 4/21/04
1705	<b>Week 9 (Vendor Shortlist / Func Analysis Follow-on)</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1706	<b>Data RFP Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1707	Create consolidated questions spreadsheet	Mon 4/26/04	Mon 4/26/04
1708	Send clarification questions to the vendors	Mon 4/26/04	Mon 4/26/04
1709	Vendors answer clarification questions	Mon 4/26/04	Wed 4/28/04
1710	Continue reference checks	Mon 4/26/04	Wed 4/28/04
1711	Review Proposals	Mon 4/26/04	Wed 4/28/04
1712	Review vendors answers to clarification questions	Thu 4/29/04	Thu 4/29/04
1713	Shortlist selection process	Thu 4/29/04	Fri 4/30/04
1714	Inform all vendors regarding their status	Fri 4/30/04	Fri 4/30/04
1715	<b>Functional Analysis Follow-on Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1716	<b>PT Member1 Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1717	Update configuration spreadsheets with workshop notes	Mon 4/26/04	Tue 4/27/04
1718	Review and summarize Functional Analysis tasks for wrap-up report	Wed 4/28/04	Thu 4/29/04
1719	Review relationship requirements	Fri 4/30/04	Fri 4/30/04
1720	Start Integration testing / cleanup	Mon 4/26/04	Fri 4/30/04
1721	Defect tracking tool investigation	Wed 4/28/04	Wed 4/28/04
1722	<b>PT Member2 Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1723	Research tools to apply data model changes to existing data	Mon 4/26/04	Mon 4/26/04
1724	Apply selected data model edits	Tue 4/27/04	Tue 4/27/04
1725	Resolve C# install issues	Wed 4/28/04	Wed 4/28/04
1726	Add ref_point and ref_line feature classes	Wed 4/28/04	Wed 4/28/04
1727	Misc annotation cleanup / validation	Wed 4/28/04	Wed 4/28/04
1728	Finalize electric field order	Thu 4/29/04	Thu 4/29/04
1729	Research font requirements	Fri 4/30/04	Fri 4/30/04
1730	<b>PT Member3 Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1731	Complete programming standards and guidelines	Mon 4/26/04	Mon 4/26/04
1732	Complete the Regulator Station edit task	Mon 4/26/04	Tue 4/27/04
1733	Organize remaining AU's and present to the team	Tue 4/27/04	Tue 4/27/04
1734	Code selected high-priority AU's	Tue 4/27/04	Fri 4/30/04
1735	<b>PT Member4 Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1736	Data matrix - Manhole	Mon 4/26/04	Tue 4/27/04
1737	Data matrix - Field Inventory Light	Tue 4/27/04	Wed 4/28/04
1738	Data matrix - Transmission Conductor	Wed 4/28/04	Thu 4/29/04
1739	Data matrix - Terminator	Thu 4/29/04	Fri 4/30/04
1740	<b>PT Member5 Week 9 Tasks</b>	<b>Mon 4/26/04</b>	<b>Fri 4/30/04</b>
1741	Recloser investigation	Mon 4/26/04	Mon 4/26/04
1742	Cross-train on data model changes	Mon 4/26/04	Mon 4/26/04
1743	Apply Gas data model changes	Tue 4/27/04	Tue 4/27/04
1744	Finalize display order for gas and land object	Tue 4/27/04	Wed 4/28/04
1745	Review hardcopy plots	Wed 4/28/04	Wed 4/28/04
1746	Apply changes based on hardcopy review	Thu 4/29/04	Thu 4/29/04
1747	Field Browser Monthly Update	Thu 4/29/04	Fri 4/30/04
1748	<b>Week 10 (RFP Review / Documentation)</b>	<b>Mon 5/3/04</b>	<b>Fri 5/7/04</b>

ID		Task Name	Start	Finish
1749	<input checked="" type="checkbox"/>	<b>Miscellaneous Week 10 Tasks</b>	<b>Mon 5/3/04</b>	<b>Fri 5/7/04</b>
1750	<input checked="" type="checkbox"/>	Receive SynerGEE Interface proposals	Mon 5/3/04	Mon 5/3/04
1751	<input checked="" type="checkbox"/>	Receive CADOPS / FeederAll Interface Proposals	Mon 5/3/04	Mon 5/3/04
1752	<input checked="" type="checkbox"/>	Investigate defect tracking systems	Mon 5/3/04	Fri 5/7/04
1753	<input checked="" type="checkbox"/>	Investigate remote access for off-site vendors	Mon 5/3/04	Fri 5/7/04
1754	<input checked="" type="checkbox"/>	Move Source Safe to the new server	Mon 5/3/04	Wed 5/5/04
1755	<input checked="" type="checkbox"/>	C# installation tasks	Mon 5/3/04	Fri 5/7/04
1756	<input checked="" type="checkbox"/>	Functional analysis wrap-up report	Mon 5/3/04	Mon 5/3/04
1757	<input checked="" type="checkbox"/>	<b>Data RFP Week 10 Tasks</b>	<b>Mon 5/3/04</b>	<b>Fri 5/7/04</b>
1758	<input checked="" type="checkbox"/>	Vendors prepare for presentations	Mon 5/3/04	Fri 5/7/04
1759	<input checked="" type="checkbox"/>	Setup logistics for the vendor presentations	Mon 5/3/04	Fri 5/7/04
1760	<input checked="" type="checkbox"/>	Expert Choice workshops	Tue 5/4/04	Wed 5/5/04
1761	<input checked="" type="checkbox"/>	Review data related risk list items	Wed 5/5/04	Wed 5/5/04
1762	<input checked="" type="checkbox"/>	<b>Create Documentation</b>	<b>Mon 5/3/04</b>	<b>Fri 5/7/04</b>
1763	<input checked="" type="checkbox"/>	Team meeting to determine documentation requirements	Tue 5/4/04	Tue 5/4/04
1764	<input checked="" type="checkbox"/>	Start user guides / training manuals / on-line help	Mon 5/3/04	Fri 5/7/04
1765	<input checked="" type="checkbox"/>	Start administrator's guide	Mon 5/3/04	Fri 5/7/04
1766	<input checked="" type="checkbox"/>	Start testing documentation	Mon 5/3/04	Fri 5/7/04
1767	<input checked="" type="checkbox"/>	<b>Week 11 (Data Vendor Selection / Technical Wrap-Up)</b>	<b>Mon 5/10/04</b>	<b>Fri 5/14/04</b>
1768	<input checked="" type="checkbox"/>	<b>Miscellaneous week 11 tasks</b>	<b>Mon 5/10/04</b>	<b>Mon 5/10/04</b>
1769	<input checked="" type="checkbox"/>	Review CADOPS/FeederAll proposals	Mon 5/10/04	Mon 5/10/04
1770	<input checked="" type="checkbox"/>	Review SynerGEE proposals	Mon 5/10/04	Mon 5/10/04
1771	<input checked="" type="checkbox"/>	Team meeting to review CADOPS/FeederAll/SynerGEE interface proposals	Mon 5/10/04	Mon 5/10/04
1772	<input checked="" type="checkbox"/> 	<b>Data RFP Week 11 Tasks</b>	<b>Tue 5/11/04</b>	<b>Fri 5/14/04</b>
1773	<input checked="" type="checkbox"/>	Vendor 1 presentation	Tue 5/11/04	Tue 5/11/04
1774	<input checked="" type="checkbox"/>	Vendor 1 wrap-up meeting	Tue 5/11/04	Tue 5/11/04
1775	<input checked="" type="checkbox"/>	Vendor 2 presentation	Wed 5/12/04	Wed 5/12/04
1776	<input checked="" type="checkbox"/>	Expert Choice - Vendor 1 vs 2	Wed 5/12/04	Wed 5/12/04
1777	<input checked="" type="checkbox"/>	Vendor 3 presentation	Thu 5/13/04	Thu 5/13/04
1778	<input checked="" type="checkbox"/>	Expert Choice - Vendor 1 vs 3 and 2 vs 3	Thu 5/13/04	Thu 5/13/04
1779	<input checked="" type="checkbox"/>	Prepare summary report / recommendation for data vendor	Thu 5/13/04	Fri 5/14/04
1780	<input checked="" type="checkbox"/>	Final data vendor selection	Fri 5/14/04	Fri 5/14/04
1781	<input checked="" type="checkbox"/>	<b>Finish Iteration 1 Documentation</b>	<b>Mon 5/10/04</b>	<b>Fri 5/14/04</b>
1782	<input checked="" type="checkbox"/>	Finish user guides	Mon 5/10/04	Fri 5/14/04
1783	<input checked="" type="checkbox"/>	Finish administrator's guide	Mon 5/10/04	Fri 5/14/04
1784	<input checked="" type="checkbox"/>	Finish test case documentation	Mon 5/10/04	Fri 5/14/04
1785	<input checked="" type="checkbox"/> 	<b>Integration Testing / Rework</b>	<b>Mon 5/10/04</b>	<b>Fri 5/14/04</b>
1786	<input checked="" type="checkbox"/>	Perform integration testing	Mon 5/10/04	Fri 5/14/04
1787	<input checked="" type="checkbox"/>	Fix bugs that are found	Mon 5/10/04	Fri 5/14/04
1788	<input checked="" type="checkbox"/>	<b>Setup Production Servers</b>	<b>Tue 5/11/04</b>	<b>Wed 5/12/04</b>
1789	<input checked="" type="checkbox"/>	Install ESRI/M&M software on new production server	Tue 5/11/04	Tue 5/11/04
1790	<input checked="" type="checkbox"/>	Install / Configure SQL Server	Tue 5/11/04	Wed 5/12/04
1791	<input checked="" type="checkbox"/>	Document SQL Server Configuration	Wed 5/12/04	Wed 5/12/04
1792	<input checked="" type="checkbox"/>	<b>Week 12 (Iteration Wrap-Up)</b>	<b>Mon 5/17/04</b>	<b>Fri 6/4/04</b>
1793	<input checked="" type="checkbox"/>	<b>Week 12 Data RFP Tasks</b>	<b>Mon 5/17/04</b>	<b>Fri 5/21/04</b>
1794	<input checked="" type="checkbox"/>	Answer vendor questions	Mon 5/17/04	Mon 5/17/04

ID	Task Name	Start	Finish
1795	Contract negotiations	Mon 5/17/04	Fri 5/21/04
1796	<b>Miscellaneous Wrap-Up Tasks</b>	<b>Tue 5/18/04</b>	<b>Fri 5/21/04</b>
1797	Setup defect tracking software	Tue 5/18/04	Tue 5/18/04
1798	Review data model change candidates	Tue 5/18/04	Wed 5/19/04
1799	Update data model	Wed 5/19/04	Fri 5/21/04
1800	Review Vision document	Tue 5/18/04	Tue 5/18/04
1801	Review high level requirements	Tue 5/18/04	Tue 5/18/04
1802	Review procedures and guidelines	Tue 5/18/04	Tue 5/18/04
1803	Review sample data errors list	Tue 5/18/04	Tue 5/18/04
1804	Review Source Safe directory structure	Tue 5/18/04	Tue 5/18/04
1805	Review team leads spreadsheet	Tue 5/18/04	Tue 5/18/04
1806	Create Quick Start user's guide	Wed 5/19/04	Wed 5/19/04
1807	Review data model issues with team	Wed 5/19/04	Wed 5/19/04
1808	Review risk list	Thu 5/20/04	Thu 5/20/04
1809	Review communication plan	Thu 5/20/04	Thu 5/20/04
1810	<b>Iteration Wrap-Up Meeting</b>	<b>Fri 5/21/04</b>	<b>Fri 5/21/04</b>
1811	Iteration 1 wrap up meeting	Fri 5/21/04	Fri 5/21/04
1812	Finalize the wrap-up report	Fri 5/21/04	Fri 5/21/04
1813	<b>Recurring Tasks</b>	<b>Mon 5/24/04</b>	<b>Fri 6/4/04</b>
1814	Project management tasks	Mon 5/24/04	Fri 6/4/04
1815	<b>Iteration 2 Prep Tasks</b>	<b>Mon 5/24/04</b>	<b>Fri 5/28/04</b>
1816	Apply data model changes	Mon 5/24/04	Fri 5/28/04
1817	CADOPS/FeederAll Planning	Mon 5/24/04	Fri 5/28/04
1818	EDFS/ArcFM/MAPPS Planning	Mon 5/24/04	Fri 5/28/04
1819	Data Migration / Rectification Planning	Mon 5/24/04	Fri 5/28/04
1820	Setup VPN	Wed 5/26/04	Wed 5/26/04
1821	Setup Defect Tracking	Thu 5/27/04	Thu 5/27/04
1822	Finalize Team Leads Spreadsheet	Thu 5/27/04	Thu 5/27/04
1823	Data review	Wed 5/26/04	Thu 5/27/04
1824	Finish component specs	Mon 5/24/04	Thu 5/27/04
1825	<b>GIS Application and Interface Construction - Iteration 2 (GIS Customizations and Interfaces)</b>	<b>Mon 6/7/04</b>	<b>Mon 9/13/04</b>
1826	<b>CADOPS / FeederAll Interface</b>	<b>Mon 6/7/04</b>	<b>Mon 8/16/04</b>
1827	<b>Week 1 CADOPS / FeederAll Interface Tasks</b>	<b>Mon 6/7/04</b>	<b>Fri 6/11/04</b>
1828	Iteration 2 kickoff meeting	Mon 6/7/04	Mon 6/7/04
1829	<b>CADOPS / FeederAll Interface Workshops</b>	<b>Tue 6/8/04</b>	<b>Thu 6/10/04</b>
1830	Kickoff meeting	Tue 6/8/04	Tue 6/8/04
1831	Review Network Adapter	Tue 6/8/04	Tue 6/8/04
1832	Finalize Data Mapping Matrix (GIS-ABB)	Tue 6/8/04	Wed 6/9/04
1833	Finalize Interface Specification	Thu 6/10/04	Thu 6/10/04
1834	Organize workshop notes	Fri 6/11/04	Fri 6/11/04
1835	Deliver the notes to NIPSCO	Fri 6/11/04	Fri 6/11/04
1836	<b>Week 2 CADOPS / FeederAll Interface Tasks</b>	<b>Mon 6/14/04</b>	<b>Fri 6/18/04</b>
1837	Prepare draft design and requirements documents	Mon 6/14/04	Thu 6/17/04
1838	Review with Analyst	Fri 6/18/04	Fri 6/18/04
1839	Deliver requirements and design to NIPSCO	Fri 6/18/04	Fri 6/18/04
1840	<b>Week 3-4 CADOPS / FeederAll Interface Tasks</b>	<b>Mon 6/21/04</b>	<b>Fri 7/2/04</b>


ID	Task Name	Start	Finish
1841	Review requirements and design	Mon 6/21/04	Wed 6/23/04
1842	Update and finalize requirements and design	Thu 6/24/04	Thu 6/24/04
1843	CADOPS / FeederAll requirements conference call	Thu 6/24/04	Thu 6/24/04
1844	Meeting to determine how to support new data requirements	Wed 6/30/04	Wed 6/30/04
1845	Final review and approval of specs	Fri 7/2/04	Fri 7/2/04
1846	<b>Weeks 5-9 CADOPS / FeederAll Interface Tasks</b>	<b>Mon 7/5/04</b>	<b>Tue 8/10/04</b>
1847	<b>Develop CADOPS / FeederAll Interfaces</b>	<b>Mon 7/5/04</b>	<b>Tue 8/10/04</b>
1848	Geodatabase Export via Network Adapter	Mon 7/5/04	Wed 7/14/04
1849	Create test data for Network Adapter functionality	Thu 7/15/04	Thu 7/15/04
1850	Additional Translation (Type Numbers, Special Processing, Default Values)	Wed 7/14/04	Fri 7/23/04
1851	Meeting to determine resolution to devices at the end point of an edge	Fri 7/23/04	Fri 7/23/04
1852	Prep for code review meeting	Mon 7/26/04	Mon 7/26/04
1853	Code review for CADOPS / FeederAll interface code	Mon 7/26/04	Mon 7/26/04
1854	CADOPS / FeederAll Testing and Rework	Mon 7/26/04	Wed 8/4/04
1855	Documentation (user guide, training, test cases, admin guide)	Thu 8/5/04	Tue 8/10/04
1856	Prepare for Delivery of the CADOPS / FeederAll interface	Thu 8/5/04	Thu 8/5/04
1857	<b>Demonstrate the CADOPS and FeederAll Interfaces</b>	<b>Fri 7/23/04</b>	<b>Fri 8/6/04</b>
1858	Demo #1 - CADOPS and FeederAll interface webcast demo / review	Fri 7/23/04	Fri 7/23/04
1859	Demo #2 - CADOPS and FeederAll interface webcast demo / review	Fri 7/30/04	Fri 7/30/04
1860	Demo #3 - CADOPS and FeederAll interface webcast demo / review	Fri 8/6/04	Fri 8/6/04
1861	<b>Week 10 CADOPS / FeederAll Interface Tasks</b>	<b>Wed 8/11/04</b>	<b>Mon 8/16/04</b>
1862	<b>Install and Test the CADOPS / FeederAll Interface</b>	<b>Wed 8/11/04</b>	<b>Mon 8/16/04</b>
1863	Configure CADOPS / FeederAll interface at NIPSCO	Wed 8/11/04	Wed 8/11/04
1864	Test CADOPS / FeederAll interface	Thu 8/12/04	Thu 8/12/04
1865	Review CADOPS / FeederAll user documentation	Fri 8/13/04	Fri 8/13/04
1866	Acceptance testing of the CADOPS / FeederAll interface	Mon 8/16/04	Mon 8/16/04
1867	<b>Complete CADOPS / FeederAll Open Issues</b>	<b>Mon 8/9/04</b>	<b>Mon 8/9/04</b>
1868	Ability to export assemblies on support structures	Mon 8/9/04	Mon 8/9/04
1869	Additional issues as documented in the workshop notes	Mon 8/9/04	Mon 8/9/04
1870	<b>Data Modeling Tasks</b>	<b>Mon 6/14/04</b>	<b>Fri 9/10/04</b>
1871	<b>Data Model Review</b>	<b>Thu 6/17/04</b>	<b>Fri 7/2/04</b>
1872	<b>Gather the Data Model Requirements</b>	<b>Thu 6/17/04</b>	<b>Fri 6/18/04</b>
1873	Data model issue review meeting	Thu 6/17/04	Thu 6/17/04
1874	Review CADOPS / FeederAll data model issues	Thu 6/17/04	Thu 6/17/04
1875	Transmission versus distribution modeling - make consistent	Thu 6/17/04	Thu 6/17/04
1876	OH versus UG modeling - make consistent	Thu 6/17/04	Thu 6/17/04
1877	Look at linear features and related point data	Thu 6/17/04	Thu 6/17/04
1878	Decide if transmission switch feature class should be created or handled with existing model	Fri 6/18/04	Fri 6/18/04
1879	Decide how to handle DOT Indicator for abandoned transmission main	Fri 6/18/04	Fri 6/18/04
1880	Decide how to categorize primary and transmission conductors - e.g., 34KV	Fri 6/18/04	Fri 6/18/04
1881	Decide if some common fields should be removed from the data model	Fri 6/18/04	Fri 6/18/04
1882	<b>Apply the Data Model Changes</b>	<b>Tue 6/22/04</b>	<b>Fri 7/2/04</b>
1883	Review data model candidates in Elementool	Tue 6/22/04	Tue 6/22/04
1884	Update the electric data model with current list of approved changes	Tue 6/22/04	Tue 6/29/04
1885	Apply the gas and land data model normalization changes	Wed 6/30/04	Wed 6/30/04
1886	Review the Elementool entries for duplicates	Thu 7/1/04	Thu 7/1/04

ID	Task Name	Start	Finish
1887	Review the data model normalization changes	Thu 7/1/04	Fri 7/2/04
1888	Finalize the data model normalization changes and check in the files	Fri 7/2/04	Fri 7/2/04
1889	Apply data model normalization changes to the sample data	Fri 7/2/04	Fri 7/2/04
1890	<b>Custom Lighting Service</b>	<b>Thu 6/24/04</b>	<b>Fri 7/2/04</b>
1891	<b>Gather the Data Model Requirements for Custom Lighting Services</b>	<b>Thu 6/24/04</b>	<b>Mon 6/28/04</b>
1892	Meet to determine lighting service requirements	Thu 6/24/04	Thu 6/24/04
1893	Document custom lighting services requirements	Mon 6/28/04	Mon 6/28/04
1894	Log the custom lighting service data model requirements in Elementool	Mon 6/28/04	Mon 6/28/04
1895	<b>Apply Data Model Changes for Custom Lighting Services</b>	<b>Tue 6/29/04</b>	<b>Fri 7/2/04</b>
1896	Review lighting service data model candidates in Elementool	Tue 6/29/04	Tue 6/29/04
1897	Update the data model with the list of approved lighting service changes	Thu 7/1/04	Thu 7/1/04
1898	Finalize the lighting service data model changes and check in the files	Fri 7/2/04	Fri 7/2/04
1899	Apply the lighting service data model changes to the sample data	Fri 7/2/04	Fri 7/2/04
1900	<b>EDFS</b>	<b>Mon 6/14/04</b>	<b>Tue 7/6/04</b>
1901	<b>Gather the Data Model Requirements for EDFs</b>	<b>Mon 6/14/04</b>	<b>Mon 6/14/04</b>
1902	Review the EDFs spreadsheet / requirements	Mon 6/14/04	Mon 6/14/04
1903	Determine all EDFs data model requirements	Mon 6/14/04	Mon 6/14/04
1904	Log the EDFs data model requirements in Elementool	Mon 6/14/04	Mon 6/14/04
1905	<b>Apply Data Model Changes for EDFs</b>	<b>Tue 6/29/04</b>	<b>Tue 7/6/04</b>
1906	Review EDFs data model candidates in Elementool	Tue 6/29/04	Tue 6/29/04
1907	Update the data model with the list of approved EDFs changes	Tue 6/29/04	Wed 6/30/04
1908	Finalize the EDFs data model changes and check in the files	Fri 7/2/04	Fri 7/2/04
1909	Apply the EDFs data model changes to the sample data	Fri 7/2/04	Fri 7/2/04
1910	Review remaining EDFs data model candidates and determine next steps	Tue 7/6/04	Tue 7/6/04
1911	<b>Merge the Schemas Into ArcSDE</b>	<b>Mon 7/12/04</b>	<b>Fri 7/16/04</b>
1912	Merge schemas from the three geodatabases into one SDE database	Mon 7/12/04	Tue 7/13/04
1913	Identify all single precision fields that need to be changed	Wed 7/14/04	Wed 7/14/04
1914	Update single precision fields to double precision	Thu 7/15/04	Thu 7/15/04
1915	Deliver merged data model to data migration vendor	Fri 7/16/04	Fri 7/16/04
1916	<b>Setup Tasks</b>	<b>Tue 7/6/04</b>	<b>Mon 8/16/04</b>
1917	Review/assign all un-assigned data model candidates in Elementool	Tue 7/6/04	Wed 7/7/04
1918	Update the logical data model	Fri 7/16/04	Fri 7/23/04
1919	Define the Data Model Rules	Mon 8/16/04	Mon 8/16/04
1920	<b>Legacy Data</b>	<b>Mon 8/16/04</b>	<b>Fri 9/10/04</b>
1921	Define Legacy elements	Mon 8/16/04	Mon 8/16/04
1922	Review data model to verify Legacy elements & identify any new legacy elements	Tue 8/17/04	Tue 8/17/04
1923	Update data model for land legacy elements	Thu 8/19/04	Thu 8/19/04
1924	Update data model for gas legacy elements	Wed 9/1/04	Wed 9/1/04
1925	Update data model for electric legacy elements	Fri 9/10/04	Fri 9/10/04
1926	Apply data model changes to the data migration matrix	Fri 9/10/04	Fri 9/10/04
1927	<b>Annotation</b>	<b>Thu 6/24/04</b>	<b>Thu 9/2/04</b>
1928	<b>Gather the Data Model Requirements for Annotation</b>	<b>Thu 6/24/04</b>	<b>Wed 7/28/04</b>
1929	Review the annotation spreadsheet / requirements (add items to Elementool)	Thu 6/24/04	Thu 6/24/04
1930	Add features to test annotation for team review	Thu 7/1/04	Thu 7/1/04
1931	Log known annotation data model problems in Elementool	Mon 7/26/04	Wed 7/28/04
1932	<b>Apply data model changes for annotation</b>	<b>Tue 8/24/04</b>	<b>Thu 9/2/04</b>

ID	Task Name	Start	Finish
1933	Process Annotation Elementool tickets	Tue 8/24/04	Thu 9/2/04
1934	Process remaining data model Elementool tickets	Fri 7/30/04	Fri 9/10/04
1935	<b>ArcFM customization / EDFs / MAPPS Planning</b>	<b>Mon 6/7/04</b>	<b>Fri 9/10/04</b>
1936	<b>Design of EDFs Integration and MAPPS Interface</b>	<b>Mon 6/7/04</b>	<b>Fri 9/10/04</b>
1937	Process Miscellaneous EDFs Elementool Tickets	Wed 8/18/04	Wed 8/18/04
1938	<b>Finish Prep for EDFs</b>	<b>Mon 6/7/04</b>	<b>Fri 6/25/04</b>
1939	Review existing EDFs database and documentation	Mon 6/7/04	Fri 6/11/04
1940	Demo EDFs	Thu 6/24/04	Thu 6/24/04
1941	Review existing EDFs documentation	Wed 6/23/04	Fri 6/25/04
1942	Document requirements for historical info	Mon 6/14/04	Mon 6/14/04
1943	Data mapping of EDFs to ArcGIS data model	Mon 6/14/04	Tue 6/15/04
1944	<b>Draft EDFs/MAPPS Requirements Documents</b>	<b>Tue 6/15/04</b>	<b>Fri 9/10/04</b>
1945	<b>Create the EDFs Transformer / Regulator Requirements Document</b>	<b>Tue 6/15/04</b>	<b>Mon 8/30/04</b>
1946	<b>Create the EDFs Transformer / Regulator document</b>	<b>Tue 6/15/04</b>	<b>Wed 7/7/04</b>
1947	Create the EDFs requirements document template	Tue 6/15/04	Tue 6/15/04
1948	Review and finalize the EDFs requirements document template	Wed 6/16/04	Wed 6/16/04
1949	Create requirements document for EDFs Unit of Property Management	Fri 6/18/04	Mon 6/21/04
1950	Put the EDFs Unit of Property Management requirements into standard format	Wed 6/23/04	Wed 6/23/04
1951	Review the EDFs standard format requirements document	Thu 6/24/04	Thu 6/24/04
1952	Create standard design document template	Tue 6/29/04	Tue 6/29/04
1953	Populate the standard design template with Unit of Property information	Wed 6/30/04	Thu 7/1/04
1954	Review Unit of Property document	Fri 7/2/04	Fri 7/2/04
1955	Decide on next steps for the EDFs requirements documents	Wed 7/7/04	Wed 7/7/04
1956	Additional review of Transformer / Regulator requirements document	Wed 7/28/04	Fri 8/13/04
1957	Finalize Transformer / Regulator requirements document	Fri 8/20/04	Fri 8/27/04
1958	Send the final EDFs Transformer / Regulator Requirements Document to the vendors	Mon 8/30/04	Mon 8/30/04
1959	<b>EDFs Daily Report Requirements</b>	<b>Tue 7/27/04</b>	<b>Thu 8/26/04</b>
1960	Create EDFs daily report requirement documents	Tue 7/27/04	Wed 7/28/04
1961	Project Team Review of EDFs Daily Report Requirements Documents	Thu 8/26/04	Thu 8/26/04
1962	Finalize the Daily Report requirements document	Thu 8/26/04	Thu 8/26/04
1963	Send out the EDFs daily report requirements document to the vendors	Thu 8/26/04	Thu 8/26/04
1964	<b>EDFs Annual Report Requirements</b>	<b>Tue 7/27/04</b>	<b>Thu 8/26/04</b>
1965	Create the EDFs annual report requirements documents	Tue 7/27/04	Wed 7/28/04
1966	Project Team Review of EDFs Annual Report Requirements Documents	Thu 7/29/04	Thu 7/29/04
1967	Finalize the Annual Report requirements document	Thu 7/29/04	Thu 7/29/04
1968	Send out the EDFs annual report requirements document to the vendors	Thu 8/26/04	Thu 8/26/04
1969	<b>Create the EDFs Capacitor Requirements Document</b>	<b>Mon 8/30/04</b>	<b>Fri 9/10/04</b>
1970	Create EDFs capacitor requirement documents	Mon 8/30/04	Fri 9/3/04
1971	Project Team Review of EDFs Capacitor Requirements Documents	Thu 9/9/04	Thu 9/9/04
1972	Finalize the Capacitor requirements document	Thu 9/9/04	Thu 9/9/04
1973	Send approved EDFs Capacitor Requirements Document to the vendors	Fri 9/10/04	Fri 9/10/04
1974	<b>Miscellaneous Auto Updaters - Batch #1</b>	<b>Mon 6/7/04</b>	<b>Thu 7/1/04</b>
1975	<b>Previously Created Auto Updaters</b>	<b>Tue 6/8/04</b>	<b>Wed 6/16/04</b>
1976	Meeting to determine locator tool requirements	Wed 6/9/04	Wed 6/9/04
1977	Re-install M&M interop code on NIPSCO machines	Thu 6/10/04	Thu 6/10/04
1978	Resolve M&M software issues with AU's (requires M&M software re-install)	Tue 6/8/04	Wed 6/16/04

ID	Task Name	Start	Finish
1979	<b>New Auto Updaters</b>	<b>Mon 6/7/04</b>	<b>Wed 6/23/04</b>
1980	Review the "Elaboration" component specs	Mon 6/7/04	Mon 6/7/04
1981	Update, finalize, and approve the Gas AU component specs	Thu 6/10/04	Thu 6/10/04
1982	Code / test / doc - Gas valve - valve number	Wed 6/16/04	Thu 6/17/04
1983	Code / test / doc - Casing needs the related main OID	Thu 6/17/04	Fri 6/18/04
1984	Code / test / doc - Abandoned devices - device type (concat 2 fields)	Mon 6/21/04	Wed 6/23/04
1985	<b>Install All Auto Updaters</b>	<b>Mon 6/28/04</b>	<b>Thu 7/1/04</b>
1986	Resolve bug with installing AU on the client machine	Mon 6/28/04	Mon 6/28/04
1987	Install AU's in NIPSCO dev environment (test / revise admin guides)	Thu 7/1/04	Thu 7/1/04
1988	<b>Miscellaneous Auto Updaters - Batch #2</b>	<b>Fri 7/16/04</b>	<b>Tue 8/24/04</b>
1989	<b>Admin / Misc AU tasks</b>	<b>Wed 8/11/04</b>	<b>Tue 8/24/04</b>
1990	Review Meeting for AutoUpdaters	Thu 8/12/04	Thu 8/12/04
1991	Update customization candidate list spreadsheet & check candidates into VSS & Elementool	Wed 8/11/04	Wed 8/11/04
1992	Review data model changes/determine effects on previously written AUs	Mon 8/23/04	Mon 8/23/04
1993	Update component specs/code	Mon 8/23/04	Tue 8/24/04
1994	<b>ReferenceFeaturesRemovalTool</b>	<b>Mon 7/19/04</b>	<b>Tue 7/27/04</b>
1995	Create component spec for ReferenceFeaturesRemovalTool	Mon 7/19/04	Mon 7/19/04
1996	Review component spec for ReferenceFeaturesRemovalTool	Thu 7/22/04	Thu 7/22/04
1997	Finalize the component spec for ReferenceFeaturesRemovalTool	Mon 7/26/04	Mon 7/26/04
1998	Code / unit test for ReferenceFeaturesRemovalTool	Fri 7/23/04	Tue 7/27/04
1999	<b>GasMainCrossoverHumpAU</b>	<b>Tue 7/20/04</b>	<b>Wed 7/28/04</b>
2000	Create component spec for GasMainCrossoverHumpAU	Tue 7/20/04	Tue 7/20/04
2001	Review component spec for GasMainCrossoverHumpAU	Thu 7/22/04	Thu 7/22/04
2002	Finalize the component spec for GasMainCrossoverHumpAU	Tue 7/27/04	Tue 7/27/04
2003	Code / unit test for GasMainCrossoverHumpAU	Tue 7/27/04	Wed 7/28/04
2004	<b>GasMainPipeChangeIndicatorAU</b>	<b>Fri 7/16/04</b>	<b>Mon 8/9/04</b>
2005	Create component spec for GasMainPipeChangeIndicatorAU	Fri 7/16/04	Fri 7/16/04
2006	Review component spec for GasMainPipeChangeIndicatorAU	Tue 7/20/04	Tue 7/20/04
2007	Finalize the component spec for GasMainPipeChangeIndicatorAU	Thu 7/22/04	Thu 7/22/04
2008	Code / unit test for GasMainPipeChangeIndicatorAU	Thu 7/29/04	Tue 8/3/04
2009	Update GasMainPipeChangeIndicatorAU based on data model changes for Elementool #367	Mon 8/9/04	Mon 8/9/04
2010	<b>CPSectionCorrosionControlNumberAU</b>	<b>Mon 7/19/04</b>	<b>Fri 8/6/04</b>
2011	Create component spec for CPSectionCorrosionControlNumberAU	Mon 7/19/04	Mon 7/19/04
2012	Review component spec for CPSectionCorrosionControlNumberAU	Thu 7/22/04	Thu 7/22/04
2013	Resolve issue of what to do when Gas Main crossed more than 1 DG Grid	Fri 7/30/04	Fri 7/30/04
2014	Update and finalize the component spec based on what to do when main crosses more than 1 DG Grid	Mon 8/2/04	Mon 8/2/04
2015	Code / unit test for CPSectionCorrosionControlNumberAU	Wed 8/4/04	Fri 8/6/04
2016	<b>CPSectionMaintenanceTool (specs only)</b>	<b>Wed 7/21/04</b>	<b>Fri 8/6/04</b>
2017	Create component spec for CPSectionMaintenanceTool	Wed 7/21/04	Wed 7/21/04
2018	Review component spec for CPSectionMaintenanceTool	Fri 7/23/04	Fri 7/23/04
2019	Finalize the component spec for CPSectionMaintenanceTool	Mon 7/26/04	Mon 7/26/04
2020	Code / unit test for CPSectionMaintenance Tool AU	Mon 8/2/04	Fri 8/6/04
2021	<b>UniqueDistribRefNumberCheckerAU (specs only)</b>	<b>Wed 7/21/04</b>	<b>Wed 7/28/04</b>
2022	Create component spec for UniqueDistribRefNumberCheckerAU	Wed 7/21/04	Wed 7/21/04
2023	Review component spec for UniqueDistribRefNumberCheckerAU	Thu 7/22/04	Thu 7/22/04
2024	Finalize the component spec for UniqueDistribRefNumberCheckerAU	Wed 7/28/04	Wed 7/28/04



ID		Task Name	Start	Finish
2025	 	<b>UniqueDistribRefNumberValidationRule (specs only)</b>	<b>Wed 7/21/04</b>	<b>Thu 7/29/04</b>
2026		Create component spec for UniqueDistribRefNumberValidationRule	Wed 7/21/04	Wed 7/21/04
2027		Review component spec for UniqueDistribRefNumberValidationRule	Thu 7/22/04	Thu 7/22/04
2028		Finalize component spec for UniqueDistribRefNumberValidationRule	Thu 7/29/04	Thu 7/29/04
2029	 	<b>DistribRefNumber8DigitsAU (specs only)</b>	<b>Thu 7/22/04</b>	<b>Tue 8/3/04</b>
2030		Create component spec for DistribRefNumber8DigitsAU	Thu 7/22/04	Thu 7/22/04
2031		Review component spec for DistribRefNumber8DigitsAU	Fri 7/23/04	Fri 7/23/04
2032		Finalize component spec for DistribRefNumber8DigitsAU	Tue 8/3/04	Tue 8/3/04
2033	 	<b>Location Description Custom Field Editor (specs only)</b>	<b>Thu 7/22/04</b>	<b>Mon 8/2/04</b>
2034		Create component spec for LocationDescriptionCustomFieldEditor	Thu 7/22/04	Thu 7/22/04
2035		Review component spec for LocationDescriptionCustomFieldEditor	Fri 7/23/04	Fri 7/23/04
2036		Finalize component spec for LocationDescriptionCustomFieldEditor	Mon 8/2/04	Mon 8/2/04
2037		<b>Code Review for All Batch #2 Auto Updaters</b>	<b>Wed 8/18/04</b>	<b>Fri 8/20/04</b>
2038		Code review of all batch #2 AU's	Wed 8/18/04	Wed 8/18/04
2039		Finalize and check-in the AU's	Fri 8/20/04	Fri 8/20/04
2040		<b>Miscellaneous AU</b>	<b>Fri 8/13/04</b>	<b>Tue 8/24/04</b>
2041		Configuration related Elementool Tickets	Fri 8/13/04	Fri 8/13/04
2042	 	<b>Implement the AU for Valves/Symbology Attributes</b>	<b>Mon 8/23/04</b>	<b>Tue 8/24/04</b>
2043		Create component spec	Mon 8/23/04	Mon 8/23/04
2044		Review component spec	Mon 8/23/04	Mon 8/23/04
2045		Code / unit test AU for Valves/symbology attributes	Mon 8/23/04	Tue 8/24/04
2046		<b>Elementool Setup</b>	<b>Wed 6/9/04</b>	<b>Fri 7/2/04</b>
2047		Create the Elementool Account	Wed 6/9/04	Wed 6/9/04
2048		Upgrade our Elementool account & check configuration	Wed 6/9/04	Wed 6/9/04
2049		Load Elementool with the data model spreadsheet info	Fri 6/11/04	Tue 6/15/04
2050		Review the Elementool procedures and forms (related to TYPE field)	Tue 6/29/04	Tue 6/29/04
2051		Evaluate how to update Elementool forms	Tue 6/29/04	Tue 6/29/04
2052		Update the Elementool procedures and forms based on TYPE field	Tue 6/29/04	Tue 6/29/04
2053		Decide on team lead for Elementool admin tasks	Thu 7/1/04	Thu 7/1/04
2054		Create draft of Elementool backup procedures	Wed 6/30/04	Wed 6/30/04
2055		Review and finalize the Elementool backup procedures	Fri 7/2/04	Fri 7/2/04
2056		<b>Field Browser Interface Preparation</b>	<b>Mon 7/19/04</b>	<b>Fri 7/23/04</b>
2057		Test the existing demo environment	Mon 7/19/04	Mon 7/19/04
2058		Determine Field Browser hardware replacement	Mon 7/19/04	Mon 7/19/04
2059		Demo the ArcReader prototype to the team	Tue 7/20/04	Tue 7/20/04
2060		Verify hardware rollout schedule	Fri 7/23/04	Fri 7/23/04
2061		<b>CH Interface Tasks</b>	<b>Mon 6/14/04</b>	<b>Wed 8/18/04</b>
2062		<b>Completed CH Interface Tasks</b>	<b>Mon 6/14/04</b>	<b>Wed 8/18/04</b>
2063	 	CH interface planning meeting	Mon 6/14/04	Mon 6/14/04
2064	 	CH interface kickoff meeting	Tue 6/15/04	Tue 6/15/04
2065	 	CH interface data model and interface workshop meetings	Mon 6/28/04	Thu 7/1/04
2066		Enter Elementool issues from the CH workshops	Fri 7/2/04	Fri 7/2/04
2067		Deliver clean copy of new database to the CH team	Fri 7/2/04	Fri 7/2/04
2068		Get list of CH reserved words	Tue 7/27/04	Tue 7/27/04
2069		Get the CH project plan	Wed 7/28/04	Wed 7/28/04
2070		Meet to solve the reserved word issue	Fri 8/6/04	Fri 8/6/04

ID	Task Name	Start	Finish
2071	CH Update Meeting	Wed 8/18/04	Wed 8/18/04
2072	<b>Source Safe Tasks</b>	<b>Mon 6/14/04</b>	<b>Wed 8/4/04</b>
2073	<b>Miscellaneous Source Safe Setup Tasks</b>	<b>Mon 6/14/04</b>	<b>Wed 6/23/04</b>
2074	Check-in all AU code and technical documents	Mon 6/14/04	Mon 6/14/04
2075	Find / document duplicate files in Source Safe	Tue 6/22/04	Tue 6/22/04
2076	Send out details regarding duplicate file issues	Wed 6/23/04	Wed 6/23/04
2077	Establish list of Source Safe directory review assignments based on Team Leads / Backups	Wed 6/23/04	Wed 6/23/04
2078	<b>Delete duplicate Source Safe Files</b>	<b>Mon 6/28/04</b>	<b>Fri 7/30/04</b>
2079	Send out the information regarding duplicate Source Safe files	Mon 6/28/04	Mon 6/28/04
2080	Delete duplicate Source Safe files based on information from the team	Fri 7/30/04	Fri 7/30/04
2081	<b>Review Source Safe Directory Structure (Each team lead reviews their own areas)</b>	<b>Fri 7/23/04</b>	<b>Wed 8/4/04</b>
2082	ArcFM configuration	Mon 8/2/04	Mon 8/2/04
2083	ArcFM customization	Mon 8/2/04	Mon 8/2/04
2084	Data migration / rectification	Fri 7/23/04	Fri 7/23/04
2085	Data modeling	Mon 7/26/04	Mon 7/26/04
2086	Dev/test/prod env	Fri 7/30/04	Fri 7/30/04
2087	Documentation	Wed 8/4/04	Wed 8/4/04
2088	Elementool	Mon 7/26/04	Mon 7/26/04
2089	Interface development	Mon 8/2/04	Mon 8/2/04
2090	Project management	Fri 7/30/04	Fri 7/30/04
2091	Source Safe admin	Fri 7/23/04	Fri 7/23/04
2092	System architecture	Fri 7/30/04	Fri 7/30/04
2093	Testing / QA / QC	Mon 7/26/04	Mon 7/26/04
2094	Training	Mon 7/26/04	Mon 7/26/04
2095	<b>GIS to DXF Export (CAD Interoperability)</b>	<b>Wed 6/30/04</b>	<b>Fri 7/9/04</b>
2096	Get license costs / options	Wed 6/30/04	Wed 6/30/04
2097	Purchase one license of FME & install on a common machine	Fri 7/9/04	Fri 7/9/04
2098	<b>Documentation wrap-up tasks</b>	<b>Tue 6/8/04</b>	<b>Mon 9/13/04</b>
2099	<b>Create Test Cases for Iteration 1 Functionality</b>	<b>Tue 6/8/04</b>	<b>Tue 8/17/04</b>
2100	Finalize the test plan ("Vision" doc for testing)	Tue 6/8/04	Tue 6/8/04
2101	Review and approve the Test Plan	Wed 6/9/04	Wed 6/9/04
2102	Meeting to determine the sample Regulator Station test case	Tue 7/13/04	Tue 7/13/04
2103	Create initial test case template based on Regulator Station test case	Tue 7/13/04	Tue 7/13/04
2104	Finalize the test case template	Thu 7/15/04	Thu 7/15/04
2105	Estimate time needed to create all test cases	Tue 7/20/04	Tue 7/20/04
2106	Create the test case spreadsheet for Iteration 1 functionality	Tue 7/20/04	Wed 7/28/04
2107	Review the test case spreadsheet for Iteration 1 functionality	Thu 7/29/04	Wed 8/4/04
2108	Update and finalize the test case spreadsheet	Tue 8/17/04	Tue 8/17/04
2109	<b>User Guides / On-Line Help for Iteration 1 Functionality</b>	<b>Tue 6/8/04</b>	<b>Mon 9/13/04</b>
2110	<b>Establish Procedures/Guidelines for User Guides / On-Line Help</b>	<b>Wed 6/9/04</b>	<b>Thu 6/17/04</b>
2111	Determine / document procedure for updating help files	Wed 6/9/04	Wed 6/9/04
2112	Update guidelines and procedures for on-line help	Thu 6/10/04	Thu 6/10/04
2113	Determine NIPSCO standard for HTML authoring	Fri 6/11/04	Fri 6/11/04
2114	Determine authoring tool to use	Fri 6/11/04	Fri 6/11/04
2115	Create procedure for submitting new documents	Thu 6/17/04	Thu 6/17/04
2116	<b>Establish Prototype/Sample On-Line Help System</b>	<b>Tue 6/8/04</b>	<b>Thu 7/1/04</b>

ID	Task Name	Start	Finish
2117	✓ Demo the on-line help prototype / sample	Tue 6/8/04	Tue 6/8/04
2118	✓ Research how to invoke the NIPSCO help from within ArcMap	Mon 6/14/04	Thu 6/17/04
2119	✓ Update the 'Help Menu Item' Component Spec	Wed 6/16/04	Wed 6/16/04
2120	✓ Update the demo/sample on-line help with final standards and templates	Wed 6/23/04	Wed 6/23/04
2121	✓ Knowledge transfer regarding on-line help standards and templates	Wed 6/23/04	Wed 6/23/04
2122	✓ Self-study on DreamWeaver and the current on-line help prototype	Fri 6/25/04	Thu 7/1/04
2123	✓ <b>Create Templates for User Guides / On-Line Help</b>	<b>Wed 6/9/04</b>	<b>Thu 6/10/04</b>
2124	✓ Review and comment on sample Regulator Station user guide	Wed 6/9/04	Wed 6/9/04
2125	✓ Finalize user guide template	Thu 6/10/04	Thu 6/10/04
2126	✓ <b>Create Initial User Guides for Iteration 1</b>	<b>Fri 6/25/04</b>	<b>Mon 9/13/04</b>
2127	✓ Define SDE	Fri 6/25/04	Fri 6/25/04
2128	✓ Define ArcMap	Fri 6/25/04	Fri 6/25/04
2129	✓ How to start an edit session	Fri 6/25/04	Fri 6/25/04
2130	✓ How to open ArcMap	Thu 7/1/04	Thu 7/1/04
2131	✓ Define ESRI	Thu 7/1/04	Thu 7/1/04
2132	✓ Define ArcGIS	Thu 7/1/04	Thu 7/1/04
2133	✓ Define SessionManager.htm	Tue 7/13/04	Tue 7/13/04
2134	✓ Define AboutNIPSCOGIS.htm	Tue 7/13/04	Tue 7/13/04
2135	✓ Build the Help System Index	Mon 9/13/04	Mon 9/13/04
2136	✓ Re-organize the Help System Contents tab	Mon 9/13/04	Mon 9/13/04
2137	✓ Incorporate new user guides into the on-line help	Wed 9/1/04	Fri 9/10/04
2138	✓ <b>Create Admin Guides for Iteration 1 functionality</b>	<b>Wed 7/14/04</b>	<b>Fri 9/10/04</b>
2139	✓ <b>First Draft Admin Guides for Iteration 1</b>	<b>Wed 7/14/04</b>	<b>Wed 7/14/04</b>
2140	✓ Create database configuration admin guide	Wed 7/14/04	Wed 7/14/04
2141	✓ Create database permissions admin guide	Wed 7/14/04	Wed 7/14/04
2142	✓ <b>Second Draft Admin Guides for Iteration 1</b>	<b>Thu 9/9/04</b>	<b>Fri 9/10/04</b>
2143	✓ Database Configuration	Thu 9/9/04	Thu 9/9/04
2144	✓ Database Permissions	Thu 9/9/04	Thu 9/9/04
2145	✓ Visual Source Safe (VSS)	Thu 9/9/04	Thu 9/9/04
2146	✓ Database SDE	Thu 9/9/04	Thu 9/9/04
2147	✓ Help Resources	Fri 9/10/04	Fri 9/10/04
2148	✓ Software Requirements	Fri 9/10/04	Fri 9/10/04
2149	✓ Custom Components	Fri 9/10/04	Fri 9/10/04
2150	✓ <b>Miscellaneous Tasks</b>	<b>Thu 6/10/04</b>	<b>Fri 8/27/04</b>
2151	✓ Install all ESRI/M&M components needed for .NET environment	Thu 6/10/04	Thu 6/10/04
2152	✓ Determine position of transformer	Mon 7/12/04	Mon 7/12/04
2153	✓ Identify corporate standards for historical information	Fri 8/13/04	Fri 8/13/04
2154	✓ Process miscellaneous Elementool tickets	Tue 7/13/04	Tue 7/27/04
2155	✓ Configure cardinality for land	Fri 8/27/04	Fri 8/27/04
2156	✓ <b>Iteration 2 Integration Testing / Rework</b>	<b>Fri 8/20/04</b>	<b>Fri 8/20/04</b>
2157	✓ Determine what needs to be tested	Fri 8/20/04	Fri 8/20/04
2158	✓ <b>Iteration 2 Performance Tuning and Environment Setup</b>	<b>Mon 6/7/04</b>	<b>Fri 9/10/04</b>
2159	✓ <b>Performance Tuning</b>	<b>Fri 9/10/04</b>	<b>Fri 9/10/04</b>
2160	✓ Note: No performance tuning will be done in this iteration	Fri 9/10/04	Fri 9/10/04
2161	✓ <b>Environment Setup Tasks</b>	<b>Mon 6/7/04</b>	<b>Fri 8/27/04</b>
2162	✓ <b>Environment - Initial Setup Tasks</b>	<b>Mon 6/7/04</b>	<b>Wed 7/21/04</b>

ID	Task Name	Start	Finish
2163	Investigate Source Safe to see if we can take snapshot at a later date	Mon 6/7/04	Mon 6/7/04
2164	Set up new desktop in vacant cubicle with Maps & Records software	Fri 6/18/04	Fri 6/18/04
2165	Determine how off-site development will be managed	Wed 7/21/04	Wed 7/21/04
2166	<b>Environment - Workshop</b>	<b>Mon 8/23/04</b>	<b>Fri 8/27/04</b>
2167	Prep for workshop	Mon 8/23/04	Mon 8/23/04
2168	Attend Workshop with Miner & Miner	Tue 8/24/04	Fri 8/27/04
2169	<b>GIS Application and Interface Construction - Iteration 3 (GIS Customizations and Interfaces)</b>	<b>Mon 9/13/04</b>	<b>Mon 4/10/06</b>
2170	<b>Iteration 2 Wrap-Up / Iteration 3 Kick-off</b>	<b>Tue 9/14/04</b>	<b>Fri 10/29/04</b>
2171	Iteration 2 wrap up / Iteration 3 kick-off meeting	Tue 9/14/04	Tue 9/14/04
2172	<b>Product Demonstrations</b>	<b>Wed 9/29/04</b>	<b>Wed 9/29/04</b>
2173	Cadops & Feederall Demo	Wed 9/29/04	Wed 9/29/04
2174	GIS Product Demo includes AutoUpdaters - Install-Configure	Wed 9/29/04	Wed 9/29/04
2175	<b>Create Wrap-up Report</b>	<b>Fri 10/29/04</b>	<b>Fri 10/29/04</b>
2176	Create, Review, finalize and distribute the wrap-up report	Fri 10/29/04	Fri 10/29/04
2177	<b>CADOPS / FeederAll interface</b>	<b>Mon 9/13/04</b>	<b>Mon 9/27/04</b>
2178	ABB issues resolution	Mon 9/13/04	Mon 9/20/04
2179	Update ArcFM Configuration for FeederAllOpenPoint	Mon 9/27/04	Mon 9/27/04
2180	Final approval / sign-off on application	Mon 9/20/04	Mon 9/20/04
2181	<b>Iteration 2 Integration Testing / Rework</b>	<b>Wed 9/29/04</b>	<b>Tue 10/19/04</b>
2182	Install & Configure demo AUs on test box	Wed 9/29/04	Wed 9/29/04
2183	Configure ArcFM Deltas to match current data model - gas	Fri 10/1/04	Fri 10/1/04
2184	Configure ArcFM Deltas to match current data model - electric	Mon 10/18/04	Tue 10/19/04
2185	<b>Environment Setup Tasks</b>	<b>Tue 10/5/04</b>	<b>Tue 12/7/04</b>
2186	<b>Environment Maintenance Tasks</b>	<b>Thu 10/21/04</b>	<b>Mon 10/25/04</b>
2187	Update the Schema for Development instance	Fri 10/22/04	Mon 10/25/04
2188	Update configuration for Development instance	Thu 10/21/04	Thu 10/21/04
2189	<b>Install &amp; Configure AU's on Project Team Machines</b>	<b>Mon 11/8/04</b>	<b>Mon 11/8/04</b>
2190	Install & configure AU's on all computers	Mon 11/8/04	Mon 11/8/04
2191	<b>Development Instance</b>	<b>Tue 10/5/04</b>	<b>Thu 11/18/04</b>
2192	Create SQL user accounts for ArcSDE Development	Tue 10/5/04	Tue 10/5/04
2193	Create a list of user and roles for ArcSDE Development	Tue 10/5/04	Tue 10/5/04
2194	Lock down user accounts for Development	Wed 10/13/04	Wed 10/13/04
2195	Initialize ArcSDE Development User accounts	Thu 10/14/04	Thu 10/14/04
2196	Export configuration from development instance (XML export)	Mon 11/15/04	Mon 11/15/04
2197	Wipe the database clean / re-create SDE tables	Mon 11/15/04	Mon 11/15/04
2198	Restore the backup file	Mon 11/15/04	Mon 11/15/04
2199	Update the schema from Visio based on the latest data model changes	Mon 11/15/04	Mon 11/15/04
2200	Build all ArcFM tables	Mon 11/15/04	Mon 11/15/04
2201	Convert to ArcFM objects - expands out of the box ArcGIS objects	Mon 11/15/04	Mon 11/15/04
2202	Check and/or build and re-link user roles	Mon 11/15/04	Mon 11/15/04
2203	Grant permissions to the M&M system tables	Mon 11/15/04	Mon 11/15/04
2204	Import all configurations (XML import)	Tue 11/16/04	Tue 11/16/04
2205	Import sybology (.mxd) to create Stored Displays	Tue 11/16/04	Tue 11/16/04
2206	Re-initialize user IDs with the updated instance	Thu 11/18/04	Thu 11/18/04
2207	<b>Test Instance</b>	<b>Tue 10/5/04</b>	<b>Tue 12/7/04</b>
2208	Create SQL user accounts for ArcSDE Test	Wed 10/13/04	Wed 10/13/04

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ID	Task Name	Start	Finish
2209	Create a list of user and roles for ArcSDE Test	Tue 10/5/04	Tue 10/5/04
2210	Lock down user accounts for Test and Production	Wed 10/13/04	Wed 10/13/04
2211	Perform .bak & restore of Development Environment	Fri 10/29/04	Fri 10/29/04
2212	Create Test Instance	Wed 11/17/04	Wed 11/17/04
2213	Install Service	Thu 11/18/04	Thu 11/18/04
2214	Relink SQL user accounts for ArcSDE Test	Thu 11/18/04	Thu 11/18/04
2215	Create .bak from dev and restore into test	Thu 11/18/04	Thu 11/18/04
2216	Initialize ArcSDE User accounts	Tue 12/7/04	Tue 12/7/04
2217	<b>Migration Instance</b>	<b>Fri 11/5/04</b>	<b>Fri 11/5/04</b>
2218	Create Migration Instance	Fri 11/5/04	Fri 11/5/04
2219	Relink SQL user accounts	Fri 11/5/04	Fri 11/5/04
2220	Create a list of user and roles	Fri 11/5/04	Fri 11/5/04
2221	Initialize ArcSDE User accounts	Fri 11/5/04	Fri 11/5/04
2222	Lock down user accounts	Fri 11/5/04	Fri 11/5/04
2223	Download .bak file from migration vendor	Fri 11/5/04	Fri 11/5/04
2224	Restore the .bak file that we received from migration vendor	Fri 11/5/04	Fri 11/5/04
2225	Check and/or build and re-link user roles	Fri 11/5/04	Fri 11/5/04
2226	<b>Delta Instance</b>	<b>Thu 10/14/04</b>	<b>Tue 11/9/04</b>
2227	Delete the SDE and ArcFM databases from the instance	Thu 10/14/04	Thu 10/14/04
2228	Recreate the SDE and ArcFM databases	Thu 10/21/04	Fri 10/22/04
2229	Import the Visio models	Tue 10/19/04	Tue 10/19/04
2230	Import the Annotation spreadsheet	Tue 10/19/04	Tue 10/19/04
2231	Create Delta Instance	Tue 10/19/04	Tue 10/19/04
2232	Create SQL user accounts for ArcSDE Test	Tue 10/19/04	Tue 10/19/04
2233	Create a list of user and roles for ArcSDE Test	Tue 10/19/04	Tue 10/19/04
2234	Lock down user accounts for Test and Production	Tue 10/19/04	Tue 10/19/04
2235	Initialize ArcSDE Test User accounts	Tue 10/19/04	Tue 10/19/04
2236	<b>Populate Delta Instance for Migration Delivery</b>	<b>Fri 11/5/04</b>	<b>Tue 11/9/04</b>
2237	Drop and re-create the ArcFM and SDE databases	Fri 11/5/04	Fri 11/5/04
2238	Freeze the Visio data model	Mon 11/8/04	Mon 11/8/04
2239	Review Visio data model for Annotation / Symbology impacts	Mon 11/8/04	Mon 11/8/04
2240	Export to XMI, Run Semantics Checker, and import the XMI into the blank personal geodatabase	Mon 11/8/04	Mon 11/8/04
2241	Import the Annotation Spreadsheet into the Personal Geodatabase	Mon 11/8/04	Mon 11/8/04
2242	Apply any remaining Data Migration Matrix changes	Tue 11/9/04	Tue 11/9/04
2243	Re-create all SDE tables	Tue 11/9/04	Tue 11/9/04
2244	Import the XMI files and Annotation spreadsheets into the Delta Instance	Tue 11/9/04	Tue 11/9/04
2245	Create SQL version of .MXD file	Tue 11/9/04	Tue 11/9/04
2246	Create a .BAK	Tue 11/9/04	Tue 11/9/04
2247	Send the .BAK and .MXD to data migration vendor	Tue 11/9/04	Tue 11/9/04
2248	<b>Environment - SDE Management Plan</b>	<b>Tue 10/5/04</b>	<b>Mon 11/1/04</b>
2249	Create ArcSDE Management plan Phase I	Tue 10/5/04	Fri 10/29/04
2250	Finalize changes to ArcSDE Management Plan	Mon 11/1/04	Mon 11/1/04
2251	<b>Data Model Updates</b>	<b>Sat 9/18/04</b>	<b>Thu 10/21/04</b>
2252	Process various Data Model Elementool changes	Sat 9/18/04	Thu 10/21/04
2253	<b>Facility Browser-Phase I</b>	<b>Fri 10/8/04</b>	<b>Mon 4/10/06</b>
2254	Conduct Facility Browser demo	Fri 10/8/04	Fri 10/8/04

AEDR Construction Phase I Project Plan

ID	Task Name	Start	Finish
2255	Make decision on direction for Facility Browser	Fri 10/8/04	Fri 10/8/04
2256	Contact vendor for project initiation	Wed 10/20/04	Wed 10/20/04
2257	Document requirements	Wed 10/20/04	Wed 10/20/04
2258	Review Facility Browser vendor overview	Mon 10/25/04	Mon 10/25/04
2259	Create Project Plan / Schedule for the work	Fri 11/5/04	Fri 11/5/04
2260	Normalize Gas Service Cards - ArcIMS Facility Browser - Create Backup of Data	Fri 11/19/04	Fri 11/19/04
2261	<b>Facility Browser Miscellaneous Setup Tasks</b>	<b>Wed 12/22/04</b>	<b>Mon 4/10/06</b>
2262	Research hardware needed for ArcIMS	Wed 12/22/04	Wed 12/22/04
2263	Provide 12/17 .BAK file to vendor	Mon 1/10/05	Mon 1/10/05
2264	Notify vendor of the CIS interface changes	Fri 1/21/05	Fri 1/21/05
2265	Reconfig of the application based on 12/17 .BAK	Thu 1/27/05	Fri 1/28/05
2266	Build CIS schema into Visio diagram	Thu 2/10/05	Thu 2/10/05
2267	Generate Customer Data (Sample Data for Testing)	Fri 2/18/05	Fri 2/18/05
2268	Provide 5.0 .BAK file to vendor	Fri 8/19/05	Fri 8/19/05
2269	Reconfig of the application based on 5.0 .BAK	Fri 8/19/05	Tue 8/23/05
2270	Update Data Model Change Interface Impact Grid	Fri 3/31/06	Fri 3/31/06
2271	Review ArcIMS Symbology document and decide on direction	Tue 2/7/06	Tue 2/7/06
2272	Create Intersection Point Layer custom code	Wed 3/8/06	Tue 3/14/06
2273	Run Intersection Point Layert & distribute the data	Fri 3/17/06	Fri 3/17/06
2274	Decision on run frequency & batch management	Mon 4/10/06	Mon 4/10/06
2275	<b>ArcIMS Facility Browser</b>	<b>Wed 11/10/04</b>	<b>Fri 3/31/06</b>
2276	Review/Design	Wed 11/10/04	Wed 11/10/04
2277	Development Part 1	Thu 11/11/04	Wed 11/24/04
2278	Development Part 2	Mon 12/13/04	Fri 1/7/05
2279	Development Part 3 (updates for .BAK and CIS Data)	Mon 2/14/05	Fri 2/25/05
2280	Development Part 4 (Updates to correct deficiencies)	Thu 2/16/06	Fri 3/31/06
2281	<b>Normalize Gas Service Cards</b>	<b>Mon 12/13/04</b>	<b>Mon 4/10/06</b>
2282	Design Review	Mon 12/13/04	Mon 12/13/04
2283	Development	Mon 12/27/04	Wed 1/5/05
2284	Run Application 1-time (throw-away code) / QAQC	Wed 1/26/05	Fri 1/28/05
2285	QA/QC Results	Mon 2/14/05	Mon 2/14/05
2286	Restore Gas Service Cards to Server	Fri 3/31/06	Fri 3/31/06
2287	Integrate scanned backlog service cards	Mon 4/10/06	Mon 4/10/06
2288	<b>CIS to GIS Interface for Customers, XY's and Service Cards</b>	<b>Fri 12/17/04</b>	<b>Mon 4/10/06</b>
2289	Evaluate common data across interfaces to eliminate redundancy	Fri 12/17/04	Fri 12/17/04
2290	Evaluate current interface data and applications for validity	Fri 1/21/05	Fri 1/21/05
2291	Define methods for data transfer	Mon 1/24/05	Mon 1/24/05
2292	Create design framework & data model design	Mon 1/31/05	Wed 2/9/05
2293	Update Data Model Change Interface Impact Grid	Wed 2/9/05	Wed 2/9/05
2294	Create design specs	Tue 2/8/05	Tue 2/8/05
2295	Review & approve the design specs	Mon 2/28/05	Mon 2/28/05
2296	Notify CIS that June 12 is our go-live date and set up final meeting	Thu 3/30/06	Thu 3/30/06
2297	Finalize the design specs	Mon 2/28/05	Mon 2/28/05
2298	Create test plans & documentation	Fri 3/17/06	Mon 3/20/06
2299	Code & unit test applications / database triggers	Tue 3/1/05	Wed 3/2/05
2300	Install application at NIPSCO	Mon 4/10/06	Mon 4/10/06

ID	Task Name	Start	Finish
2301	System test application	Mon 4/10/06	Mon 4/10/06
2302	<b>Field Browser - Phase I</b>	<b>Fri 11/12/04</b>	<b>Fri 11/19/04</b>
2303	<b>Field Browser Requirements and Design</b>	<b>Fri 11/12/04</b>	<b>Fri 11/19/04</b>
2304	Identify end users	Fri 11/12/04	Fri 11/12/04
2305	Send candidate list of end users out for review	Thu 11/18/04	Thu 11/18/04
2306	Approve end user list	Fri 11/19/04	Fri 11/19/04
2307	<b>EDFS / MAPPS Requirements</b>	<b>Mon 9/13/04</b>	<b>Fri 10/8/04</b>
2308	<b>EDFS Overhead and Underground/Luminaire Requirements Document</b>	<b>Mon 9/13/04</b>	<b>Mon 9/20/04</b>
2309	Create EDFs Overhead and Underground requirement documents	Mon 9/13/04	Mon 9/13/04
2310	Review the EDFs Overhead and Underground requirement documents	Mon 9/13/04	Mon 9/13/04
2311	Finalize the EDFs Overhead and Underground requirements document based on review comments	Mon 9/13/04	Mon 9/13/04
2312	Send out the EDFs OH and UG requirements document to the vendors	Mon 9/20/04	Mon 9/20/04
2313	<b>Vendor Selection</b>	<b>Tue 10/5/04</b>	<b>Fri 10/8/04</b>
2314	Proposals are due	Tue 10/5/04	Tue 10/5/04
2315	Review EDFs Integration Proposals	Tue 10/5/04	Wed 10/6/04
2316	Vendor walk-through	Thu 10/7/04	Thu 10/7/04
2317	Select Vendor	Fri 10/8/04	Fri 10/8/04
2318	<b>EDFS Integration #1</b>	<b>Mon 10/11/04</b>	<b>Mon 12/13/04</b>
2319	<b>Design Phase</b>	<b>Mon 10/11/04</b>	<b>Mon 12/13/04</b>
2320	<b>Prep for workshops</b>	<b>Mon 10/11/04</b>	<b>Thu 10/21/04</b>
2321	Prepare for Workshop	Mon 10/11/04	Fri 10/15/04
2322	Client Server vs Web and conductor meeting	Thu 10/21/04	Thu 10/21/04
2323	<b>Design Workshops</b>	<b>Mon 10/18/04</b>	<b>Mon 12/13/04</b>
2324	<b>Transformer/Regulator</b>	<b>Mon 10/18/04</b>	<b>Tue 10/19/04</b>
2325	Data Modeling & Migration Planning	Mon 10/18/04	Mon 10/18/04
2326	Sage Tool & Batch Design	Mon 10/18/04	Tue 10/19/04
2327	<b>Capacitor</b>	<b>Tue 10/19/04</b>	<b>Wed 10/20/04</b>
2328	Data Modeling & Migration Planning	Tue 10/19/04	Tue 10/19/04
2329	Sage Tool & Batch Design	Wed 10/20/04	Wed 10/20/04
2330	<b>Overhead &amp; Underground</b>	<b>Thu 10/21/04</b>	<b>Fri 10/29/04</b>
2331	Data Modeling & Migration Planning	Thu 10/21/04	Thu 10/28/04
2332	Sage Tool & Batch Design	Fri 10/29/04	Fri 10/29/04
2333	<b>Validation &amp; Domain Management</b>	<b>Fri 10/29/04</b>	<b>Wed 11/3/04</b>
2334	Data Modeling & Migration Planning	Fri 10/29/04	Wed 11/3/04
2335	<b>Coordinator Management Tools</b>	<b>Tue 11/2/04</b>	<b>Fri 11/5/04</b>
2336	Sage Tool Design	Tue 11/2/04	Fri 11/5/04
2337	<b>Reports</b>	<b>Tue 11/2/04</b>	<b>Thu 11/4/04</b>
2338	Choose Presentation Technology	Wed 11/3/04	Wed 11/3/04
2339	Review Data Sources	Tue 11/2/04	Thu 11/4/04
2340	<b>Create Detailed Design (Component Specs)</b>	<b>Mon 11/8/04</b>	<b>Mon 12/13/04</b>
2341	Data Model Changes	Mon 11/8/04	Fri 11/12/04
2342	Application Components: SAGE & ArcFM	Mon 11/15/04	Wed 12/1/04
2343	Design Interface for MLOG, MAPPS, General Ledger	Wed 12/8/04	Wed 12/8/04
2344	Review Detailed Design	Mon 12/6/04	Fri 12/10/04
2345	Review EDFs Interface Design	Fri 12/10/04	Fri 12/10/04
2346	Review Data Model candidates	Mon 12/13/04	Mon 12/13/04

ID	Task Name	Start	Finish
2347	<b>Non-EDFS AutoUpdaters / Miscellaneous Customizations</b>	<b>Mon 9/13/04</b>	<b>Thu 12/16/04</b>
2348	<b>Distrib Ref Number - 8 Digit AU</b>	<b>Mon 9/13/04</b>	<b>Tue 9/14/04</b>
2349	Create component spec	Mon 9/13/04	Mon 9/13/04
2350	Review component spec	Mon 9/13/04	Mon 9/13/04
2351	Finalize component spec	Mon 9/13/04	Mon 9/13/04
2352	Code / unit test	Mon 9/13/04	Tue 9/14/04
2353	<b>Transformer - Prevent Deletion if Units Related AU</b>	<b>Wed 9/22/04</b>	<b>Thu 9/23/04</b>
2354	Create component spec	Wed 9/22/04	Thu 9/23/04
2355	Review component spec	Wed 9/22/04	Wed 9/22/04
2356	Code / unit test	Thu 9/23/04	Thu 9/23/04
2357	<b>Transformer - Temporary Install Field AU</b>	<b>Thu 9/23/04</b>	<b>Fri 9/24/04</b>
2358	Create component spec	Thu 9/23/04	Thu 9/23/04
2359	Review component spec	Thu 9/23/04	Thu 9/23/04
2360	Code / unit test	Fri 9/24/04	Fri 9/24/04
2361	<b>Capacitor - Prevent Delete AU</b>	<b>Mon 9/27/04</b>	<b>Mon 9/27/04</b>
2362	Create component spec	Mon 9/27/04	Mon 9/27/04
2363	Review component spec	Mon 9/27/04	Mon 9/27/04
2364	Code / unit test	Mon 9/27/04	Mon 9/27/04
2365	<b>Switch - Symbology Configuration Code AU</b>	<b>Tue 9/14/04</b>	<b>Wed 9/15/04</b>
2366	Create component spec	Tue 9/14/04	Wed 9/15/04
2367	Review component spec	Tue 9/14/04	Tue 9/14/04
2368	Code / unit test	Wed 9/15/04	Wed 9/15/04
2369	<b>Fuse Cutout Bank - Symbology Configuration Code AU</b>	<b>Wed 9/15/04</b>	<b>Thu 9/16/04</b>
2370	Create component spec	Wed 9/15/04	Wed 9/15/04
2371	Review component spec	Wed 9/15/04	Wed 9/15/04
2372	Code / unit test	Thu 9/16/04	Thu 9/16/04
2373	<b>Sectionalizer Bank - Symbology Configuration Code AU</b>	<b>Thu 9/16/04</b>	<b>Thu 9/16/04</b>
2374	Create component spec	Thu 9/16/04	Thu 9/16/04
2375	Review component spec	Thu 9/16/04	Thu 9/16/04
2376	Code / unit test	Thu 9/16/04	Thu 9/16/04
2377	<b>Conductors - Cross Over Arc AU</b>	<b>Thu 10/21/04</b>	<b>Fri 10/22/04</b>
2378	Create component spec	Thu 10/21/04	Thu 10/21/04
2379	Review component spec	Thu 10/21/04	Thu 10/21/04
2380	Code / unit test	Fri 10/22/04	Fri 10/22/04
2381	<b>Voltage Regulator</b>	<b>Mon 10/4/04</b>	<b>Mon 10/4/04</b>
2382	Create component spec	Mon 10/4/04	Mon 10/4/04
2383	Review component spec	Mon 10/4/04	Mon 10/4/04
2384	Code / unit test	Mon 10/4/04	Mon 10/4/04
2385	<b>Fuse CutoutBank - Offset AU</b>	<b>Mon 10/4/04</b>	<b>Wed 10/20/04</b>
2386	Create component spec	Mon 10/4/04	Mon 10/4/04
2387	Review component spec	Tue 10/12/04	Fri 10/15/04
2388	Code / unit test	Wed 10/20/04	Wed 10/20/04
2389	<b>Voltage Regulator - Offset AU</b>	<b>Tue 10/12/04</b>	<b>Wed 10/20/04</b>
2390	Create component spec	Tue 10/12/04	Tue 10/12/04
2391	Review component spec	Tue 10/12/04	Tue 10/12/04
2392	Code / unit test	Wed 10/20/04	Wed 10/20/04



ID		Task Name	Start	Finish
2393	✓	<b>Switch Offset AU</b>	<b>Tue 10/26/04</b>	<b>Tue 10/26/04</b>
2394	✓	Create component spec	Tue 10/26/04	Tue 10/26/04
2395	✓	Review component spec	Tue 10/26/04	Tue 10/26/04
2396	✓	Code / unit test	Tue 10/26/04	Tue 10/26/04
2397	✓	<b>Capacitor Bank Offset AU</b>	<b>Tue 10/12/04</b>	<b>Tue 10/26/04</b>
2398	✓	Create component spec	Tue 10/12/04	Tue 10/12/04
2399	✓	Review component spec	Wed 10/20/04	Wed 10/20/04
2400	✓	Code / unit test	Tue 10/26/04	Tue 10/26/04
2401	✓	<b>Reclosure Bank Offset AU</b>	<b>Tue 10/26/04</b>	<b>Tue 10/26/04</b>
2402	✓	Create component spec	Tue 10/26/04	Tue 10/26/04
2403	✓	Review component spec	Tue 10/26/04	Tue 10/26/04
2404	✓	Code / unit test	Tue 10/26/04	Tue 10/26/04
2405	✓	<b>Gas Main - Split On Tap AU</b>	<b>Mon 9/13/04</b>	<b>Thu 10/7/04</b>
2406	✓	Create component spec	Mon 9/13/04	Mon 9/13/04
2407	✓	Review component spec	Mon 9/13/04	Mon 9/13/04
2408	✓	Resolve M&M core software bug	Wed 9/29/04	Wed 9/29/04
2409	✓	Code / unit test	Wed 10/6/04	Thu 10/7/04
2410	✓	<b>Transformer Lead Creation AU</b>	<b>Wed 9/29/04</b>	<b>Wed 11/3/04</b>
2411	✓	Research with M&M to come up with estimates	Wed 9/29/04	Wed 9/29/04
2412	✓	Create component spec	Mon 10/25/04	Mon 10/25/04
2413	✓	Review component spec	Mon 10/25/04	Mon 10/25/04
2414	✓	Code / unit test	Mon 11/1/04	Wed 11/3/04
2415	✓	<b>Conductor - Split at Tap Point AU</b>	<b>Mon 10/25/04</b>	<b>Thu 10/28/04</b>
2416	✓	Create component spec	Mon 10/25/04	Mon 10/25/04
2417	✓	Review component spec	Mon 10/25/04	Mon 10/25/04
2418	✓	Code / unit test	Wed 10/27/04	Thu 10/28/04
2419	✓	<b>Configure ArcFM to Include all AUs</b>	<b>Thu 10/21/04</b>	<b>Thu 11/4/04</b>
2420	✓	Import into ArcSDE	Thu 10/21/04	Thu 10/21/04
2421	✓	Install and configure the AUs for land	Mon 11/1/04	Mon 11/1/04
2422	✓	Install and configure the AUs for gas	Mon 11/1/04	Mon 11/1/04
2423	✓	Install and configure the AUs for electric	Mon 11/1/04	Mon 11/1/04
2424	✓	Review and resolve AU installation issues	Wed 11/3/04	Wed 11/3/04
2425	✓	Additional AU configuration work based on changes made for data model updates, etc	Wed 11/3/04	Thu 11/4/04
2426	✓	<b>Miscellaneous Customizations</b>	<b>Tue 9/28/04</b>	<b>Mon 10/25/04</b>
2427	✓	Fix CPSection Maintenance Tool bug	Tue 9/28/04	Tue 9/28/04
2428	✓	ArcFm Properties Manager FieldInfo Settings	Mon 10/4/04	Mon 10/4/04
2429	✓	Determine how to prevent stored displays from being changed	Mon 10/25/04	Mon 10/25/04
2430	✓	<b>Conductor - Prevent Delete AU</b>	<b>Tue 11/2/04</b>	<b>Thu 11/4/04</b>
2431	✓	Create component spec	Tue 11/2/04	Tue 11/2/04
2432	✓	Review component spec	Tue 11/2/04	Tue 11/2/04
2433	✓	Code / unit test	Thu 11/4/04	Thu 11/4/04
2434	✓	<b>Configure Cardinality Rules</b>	<b>Tue 11/2/04</b>	<b>Tue 11/2/04</b>
2435	✓	Modify cardinality rule information (gas only)	Tue 11/2/04	Tue 11/2/04
2436	✓	Configure cardinality for gas	Tue 11/2/04	Tue 11/2/04
2437	✓	<b>Change for AbandonedGasDeviceAU</b>	<b>Fri 11/19/04</b>	<b>Fri 11/19/04</b>
2438	✓	Review and approve the change	Fri 11/19/04	Fri 11/19/04

ID	Task Name	Start	Finish
2439	Update the AbandonedGasDeviceAU	Fri 11/19/04	Fri 11/19/04
2440	<b>Meta Data Tasks</b>	<b>Tue 11/23/04</b>	<b>Thu 12/9/04</b>
2441	Identify SOX requirements	Tue 11/23/04	Tue 11/23/04
2442	Meeting to determine the additional metadata that needs to be tracked	Wed 12/8/04	Wed 12/8/04
2443	Compile list of data that must be manually generated, auto generated, and not collected	Wed 12/8/04	Thu 12/9/04
2444	<b>Distrib Ref Number AU</b>	<b>Tue 9/28/04</b>	<b>Thu 12/16/04</b>
2445	Document solutions for DistribRefNumber-Uniqueness	Tue 9/28/04	Tue 9/28/04
2446	Review DistribRefNum solutions document	Wed 10/6/04	Wed 10/6/04
2447	Approve DistribRefNum document	Mon 11/1/04	Mon 11/1/04
2448	Create component spec	Wed 11/3/04	Wed 11/3/04
2449	Review component spec	Mon 11/8/04	Mon 11/8/04
2450	Revise component spec based on decisions	Fri 11/19/04	Fri 11/19/04
2451	Code / unit test population, etc	Wed 12/15/04	Thu 12/16/04
2452	<b>OH Prim - Conductor Offset AU</b>	<b>Tue 9/28/04</b>	<b>Wed 10/20/04</b>
2453	Research with M&M to come up with estimates	Tue 9/28/04	Tue 9/28/04
2454	Create component spec	Tue 10/19/04	Tue 10/19/04
2455	Code / unit test population, etc	Tue 10/19/04	Wed 10/20/04
2456	<b>Reference Features - Do Not Post To Parent</b>	<b>Fri 11/19/04</b>	<b>Fri 12/3/04</b>
2457	Demo ArcFM Session Manager and document options	Fri 11/19/04	Fri 11/19/04
2458	Make decision on Session Manager option to use	Mon 11/22/04	Mon 11/22/04
2459	Create component spec	Wed 12/1/04	Wed 12/1/04
2460	Code / unit test population, etc	Thu 12/2/04	Fri 12/3/04
2461	<b>Gas OMS</b>	<b>Fri 10/8/04</b>	<b>Fri 10/8/04</b>
2462	Prototype the Gas OMS application	Fri 10/8/04	Fri 10/8/04
2463	Conduct Gas OMS demo	Fri 10/8/04	Fri 10/8/04
2464	<b>CIS Interface</b>	<b>Wed 10/27/04</b>	<b>Fri 10/29/04</b>
2465	Create CIS Interface Spreadsheet	Wed 10/27/04	Wed 10/27/04
2466	Evaluate CIS Interface Options	Fri 10/29/04	Fri 10/29/04
2467	<b>SynerGEE interface #1</b>	<b>Wed 10/20/04</b>	<b>Fri 12/17/04</b>
2468	Review Overview	Mon 10/25/04	Mon 10/25/04
2469	Export personal GDB	Wed 10/27/04	Wed 10/27/04
2470	Analysis Phase	Wed 10/20/04	Mon 10/25/04
2471	Create DataPrep Install (First Half)	Fri 11/5/04	Fri 11/5/04
2472	Package up latest design docs for checkpoint review	Fri 12/10/04	Fri 12/10/04
2473	Review existing data model and suggest data model changes needed for SynerGEE	Fri 11/5/04	Fri 12/17/04
2474	Develop DataPrep Design Document	Fri 11/5/04	Fri 12/17/04
2475	Application Interface Design - Part 1	Mon 11/8/04	Fri 12/10/04
2476	DataPrep Development - Part 1	Mon 11/8/04	Fri 12/10/04
2477	<b>Review / Revise the User Guides</b>	<b>Thu 9/16/04</b>	<b>Tue 12/7/04</b>
2478	<b>Completed User Guide Tasks</b>	<b>Thu 9/16/04</b>	<b>Tue 12/7/04</b>
2479	How to relate Features/Objects	Fri 9/17/04	Fri 9/17/04
2480	Demo the updated sample on-line help system	Thu 9/16/04	Thu 9/16/04
2481	Review the user guides for iteration 1, 2, 3	Fri 9/24/04	Fri 10/15/04
2482	Revise the user guides for iteration 1, 2, 3	Mon 10/18/04	Mon 10/18/04
2483	Provide full list of remaining user guide documents to be created	Mon 10/25/04	Mon 10/25/04
2484	Create 'How to Install' template and 'How to Retire' template	Fri 9/24/04	Fri 9/24/04

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ID	Task Name	Start	Finish
2485	Review user guide work that has been completed	Mon 11/22/04	Mon 11/22/04
2486	Create initial "How to Login to ArcMap" user guide	Mon 11/22/04	Mon 11/22/04
2487	Create initial "How to Select Features" user guide	Mon 11/22/04	Mon 11/22/04
2488	Create initial "How to Sketch using ESRI Sketch tools" user guide	Tue 11/23/04	Tue 11/23/04
2489	Create initial "How to Perform a Cathodic Protection Trace" user guide	Tue 11/23/04	Tue 11/23/04
2490	Create initial "How to Install a Pressure Control Fitting" user guide	Mon 11/29/04	Tue 11/30/04
2491	Create initial "How to Install Gas Transmission Mains" user guide	Tue 11/30/04	Tue 11/30/04
2492	Create initial "How to Install Gas Distribution Mains" user guide	Tue 11/30/04	Tue 11/30/04
2493	Create initial "How to Install Gas Service Stub" user guide	Tue 11/30/04	Wed 12/1/04
2494	Create initial "How to Install a Capacitor" user guide	Fri 12/3/04	Fri 12/3/04
2495	Create initial "How to Install a Splice" user guide	Fri 12/3/04	Fri 12/3/04
2496	Create initial "How to Install an Overhead Transformer" user guide	Fri 12/3/04	Fri 12/3/04
2497	Create initial "How to Install an Overhead Conductor" user guide	Mon 12/6/04	Mon 12/6/04
2498	Create initial "How to Install Street Centerlines (details of all attributes/sketch etc)" user guide	Tue 12/7/04	Tue 12/7/04
2499	Create initial "How to Install Street Right-of-Way" user guide	Tue 12/7/04	Tue 12/7/04
2500	Create initial "How to Install Railroad Centerline" user guide	Tue 12/7/04	Tue 12/7/04
2501	Create initial "How to Railroad Right-of-Way" user guide	Tue 12/7/04	Tue 12/7/04
2502	Create initial "How to Install an Electric Deadend" user guide	Tue 12/7/04	Tue 12/7/04
2503	Create initial "How to Install an Underground Conductor" user guide	Tue 12/7/04	Tue 12/7/04
2504	Create initial "How to Install a Tie Wire" user guide	Tue 12/7/04	Tue 12/7/04
2505	<b>Iteration 3 Integration Testing / Rework</b>	<b>Mon 11/22/04</b>	<b>Fri 12/10/04</b>
2506	<b>Perform the Integration Testing</b>	<b>Mon 11/22/04</b>	<b>Fri 12/10/04</b>
2507	Perform configuration changes on the ArcSDE Database	Mon 11/22/04	Thu 11/25/04
2508	Prepare AUs for integration testing	Fri 11/26/04	Fri 11/26/04
2509	Test AUs, log bugs, work on resolutions	Mon 11/29/04	Fri 12/3/04
2510	Special testing of UniqueDistribRefNumbersAU	Fri 12/3/04	Fri 12/3/04
2511	Re-testing of all AU updates	Tue 12/7/04	Tue 12/7/04
2512	Testing / rework support	Mon 11/29/04	Tue 12/7/04
2513	Conduct integration testing on the ArcSDE database	Wed 12/8/04	Fri 12/10/04
2514	<b>Iteration 3 Performance Tuning</b>	<b>Wed 12/1/04</b>	<b>Fri 12/3/04</b>
2515	Conduct tuning workshop - day 1 (Create Perf. Test Scripts)	Wed 12/1/04	Wed 12/1/04
2516	Conduct tuning workshop - day 2 (Spatial Tuning, Indexes)	Thu 12/2/04	Fri 12/3/04
2517	<b>GIS Application and Interface Construction</b>	<b>Mon 3/1/04</b>	<b>Fri 12/15/06</b>
2518	Post Bulk load CIS customers into the interface table	Mon 2/13/06	Mon 2/13/06
2519	Populate the feature class for customers in the geodatabase	Mon 12/5/05	Mon 12/5/05
2520	<b>Iteration 3 Integration Testing Wrap-Up Tasks</b>	<b>Mon 12/13/04</b>	<b>Fri 12/24/04</b>
2521	Conduct integration testing on the ArcSDE database	Mon 12/13/04	Thu 12/23/04
2522	Update testing artifacts	Fri 12/24/04	Fri 12/24/04
2523	<b>Iteration 3 Wrap-Up / Iteration 4 Kickoff</b>	<b>Wed 1/5/05</b>	<b>Wed 1/12/05</b>
2524	Prep for demos / presentations	Wed 1/5/05	Wed 1/5/05
2525	Conduct demos and presentations	Thu 1/6/05	Thu 1/6/05
2526	Create wrap-up report	Wed 1/12/05	Wed 1/12/05
2527	<b>Performance (Core Mapping &amp; EDFS Replacement Functionality Only)</b>	<b>Mon 3/1/04</b>	<b>Fri 8/19/05</b>
2528	<b>Performance Tuning Initial Tasks</b>	<b>Mon 6/20/05</b>	<b>Fri 8/19/05</b>
2529	Review ESRI's White Paper	Mon 6/20/05	Mon 6/20/05
2530	Write-up results of tuning workshop	Mon 6/27/05	Mon 6/27/05

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ID	Task Name	Start	Finish
2531	Create a Performance Plan	Mon 6/27/05	Mon 7/18/05
2532	Develop base tuning configuration	Fri 8/5/05	Fri 8/19/05
2533	<b>Performance Testing</b>	<b>Mon 3/1/04</b>	<b>Wed 12/22/04</b>
2534	Generate data for use in future performance tests	Thu 12/16/04	Wed 12/22/04
2535	Hardware Setup	Mon 3/1/04	Mon 3/1/04
2536	Exercise the test plan - 1 user	Mon 3/1/04	Fri 3/5/04
2537	<b>Performance Tuning Re-Work</b>	<b>Mon 3/1/04</b>	<b>Fri 3/5/04</b>
2538	Rework configuration based on results of scripts	Mon 3/1/04	Fri 3/5/04
2539	<b>Performance Maintenance Strategies</b>	<b>Mon 3/1/04</b>	<b>Fri 1/7/05</b>
2540	Version Management Decisions	Mon 3/1/04	Mon 3/1/04
2541	Integrate Perf Tuning into SDE management plan	Fri 1/7/05	Fri 1/7/05
2542	<b>Conductor Information Utility Tools</b>	<b>Fri 1/14/05</b>	<b>Fri 1/14/05</b>
2543	Review documentation and update	Fri 1/14/05	Fri 1/14/05
2544	<b>Data Model / Matrix Updates</b>	<b>Mon 12/13/04</b>	<b>Tue 4/12/05</b>
2545	Research issues on transmission main	Mon 12/13/04	Mon 12/13/04
2546	Research questions on CPSection and GasMain	Fri 12/17/04	Fri 12/17/04
2547	Move CisSite feature class and Cis Services table to a new Data Model	Tue 12/28/04	Tue 12/28/04
2548	Review spatial extent and precision	Tue 12/28/04	Tue 12/28/04
2549	Review OhConductor / UgConductor - LegacyCircuitNumber	Tue 12/28/04	Tue 12/28/04
2550	Generate pick lists for SupportStructure	Tue 12/28/04	Tue 12/28/04
2551	<b>Streetlights</b>	<b>Fri 12/31/04</b>	<b>Fri 12/31/04</b>
2552	New table to track Assembly History	Fri 12/31/04	Fri 12/31/04
2553	Create new domain for Cable Company	Fri 12/31/04	Fri 12/31/04
2554	Create new domain for conductor attribution	Fri 12/31/04	Fri 12/31/04
2555	Track installation history for Capacitors	Fri 12/31/04	Fri 12/31/04
2556	Create table to track removed capacitors	Fri 12/31/04	Fri 12/31/04
2557	Create table to track transfers of capacitors between central stores	Fri 12/31/04	Fri 12/31/04
2558	Create table to track SIN numbers for capacitors	Fri 12/31/04	Fri 12/31/04
2559	Ttrack CompanyLocation on TransformerUnit	Fri 12/31/04	Fri 12/31/04
2560	Create domain for Storeroom Numbers	Fri 12/31/04	Fri 12/31/04
2561	Create domain for Phone Companies	Fri 12/31/04	Fri 12/31/04
2562	Provide solution for condemnation of a transformer	Fri 12/31/04	Fri 12/31/04
2563	Create new lookup table for SIN numbers for transformers	Fri 12/31/04	Fri 12/31/04
2564	Modify Field Inventory Light Feature Class	Fri 12/31/04	Fri 12/31/04
2565	Overhead Primary Conductor Data Migration Matrix Review Issue	Fri 12/31/04	Fri 12/31/04
2566	Transformer ticket	Fri 12/31/04	Fri 12/31/04
2567	Allow nulls to ActiveRetiredServiceCd	Fri 12/31/04	Fri 12/31/04
2568	Link streetlights to an SAA	Fri 12/31/04	Fri 12/31/04
2569	Track information on manhole mountings	Fri 12/31/04	Fri 12/31/04
2570	Track support structures where there are two poles	Fri 12/31/04	Fri 12/31/04
2571	Add relationship between service wire and transformer unit or bank	Fri 12/31/04	Fri 12/31/04
2572	Move traffic light demand to a separate table	Fri 12/31/04	Fri 12/31/04
2573	Manage transformer install and remove events	Wed 12/15/04	Wed 12/15/04
2574	Manage sale and lease of transformers	Fri 12/31/04	Fri 12/31/04
2575	Track work request information	Fri 12/31/04	Fri 12/31/04
2576	Create field specs for the EdfsCapacitorStoreItem	Fri 12/31/04	Fri 12/31/04

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ID		Task Name	Start	Finish
2577	✓	Create field Specs for the EdfsConductor Table	Fri 12/31/04	Fri 12/31/04
2578	✓	Create field specs for the EdfsCapacitorInstall table	Fri 12/31/04	Fri 12/31/04
2579	✓	Create spec for the ConductorMaterialCd field	Fri 12/31/04	Fri 12/31/04
2580	✓	Create field specs for the FieldInventoryLight table	Fri 12/31/04	Fri 12/31/04
2581	✓	Create field specs for TransformerStoreItem table	Fri 12/31/04	Fri 12/31/04
2582	✓	Create field specs for EdfsRetiredAssembly table	Fri 12/31/04	Fri 12/31/04
2583	✓	Investigate solutions for RecloserUnit table questions	Wed 12/15/04	Wed 12/15/04
2584	✓	Investigate solutions for JointUseAttachment table questions	Fri 12/31/04	Fri 12/31/04
2585	✓	Secondary Conductor	Fri 12/31/04	Fri 12/31/04
2586	✓	Create proposal for handling pole symbol classification	Fri 12/31/04	Fri 12/31/04
2587	✓	Resolve Assembly Object Class-EDFS issue	Fri 1/7/05	Fri 1/7/05
2588	✓	Apply sequence number for Blanket WO's	Fri 1/7/05	Fri 1/7/05
2589	✓	Perform TransformerUnit attribute verification	Fri 1/7/05	Fri 1/7/05
2590	✓	Resolve issue with TransformerUnit-LegacyDistribRefNumber	Fri 1/7/05	Fri 1/7/05
2591	✓	Create a domain for FuseUnit.CutoutAmperageValue	Fri 1/7/05	Fri 1/7/05
2592	✓	JointUseAttachment AttachmentCompanyName & AttachmentTypeCd	Fri 1/7/05	Mon 1/10/05
2593	✓	Apply data model Change for Conductors	Fri 1/7/05	Fri 1/7/05
2594	✓	Annotation Review - Padmount Transformer	Fri 1/7/05	Fri 1/7/05
2595	✓	Landbase - verify layers	Fri 1/7/05	Fri 1/7/05
2596	✓	Investigate solution for Transmission Primary Meter	Wed 1/5/05	Wed 1/5/05
2597	✓	Apply data model change for DmSecondaryOperatingVoltage and DmPrimaryOperatingVoltage	Tue 1/4/05	Tue 1/4/05
2598	✓	Resolve issues with Padmount - LegacyDistribRefNumTermId	Thu 1/6/05	Thu 1/6/05
2599	✓	Create a new Annotation Class: SectionalizerBank_Anno	Fri 1/7/05	Fri 1/7/05
2600	✓	Investigate solution for RetireWorkOrderNumber	Fri 1/7/05	Fri 1/7/05
2601	✓	Delete column legacyCompanyLocationID in CapacitorUnit	Fri 1/7/05	Fri 1/7/05
2602	✓	AbstractClass:UnitObject on Objects Page, set PhaseDesignation - AllowNulls=True	Mon 1/10/05	Mon 1/10/05
2603	✓	Set RetiredPadMount.LegacyDistribRefNumTermId AllowNulls=True	Mon 1/10/05	Mon 1/10/05
2604	✓	Recreate values in DmConductorOHSizeCd	Wed 1/12/05	Wed 1/12/05
2605	✓	Create Data Model Change Interface Impact Grid	Fri 1/14/05	Fri 1/14/05
2606	✓	Review existing annotation and identify required changes	Tue 1/11/05	Tue 1/11/05
2607	✓	Log the annotation data model requirements	Mon 12/20/04	Mon 12/20/04
2608	✓	Apply Taxing Unit data model changes	Thu 1/6/05	Thu 1/6/05
2609	✓	Create field specs for the CircuitSource table	Thu 1/13/05	Thu 1/13/05
2610	✓	Apply data model change for TransformerBank	Thu 1/13/05	Thu 1/13/05
2611	✓	Apply data model changes to Pedestal - ShortPedestalNumber	Thu 1/6/05	Thu 1/6/05
2612	✓	Apply data model changes to LotNumber	Tue 1/11/05	Tue 1/11/05
2613	✓	Create domain for CapacitorBank.UnitNumber	Wed 1/12/05	Wed 1/12/05
2614	✓	Create a domain for SectionalizerBank	Wed 1/12/05	Wed 1/12/05
2615	✓	AbstractClass:UnitObject on Objects Page, set PhaseDesignation - AllowNulls=True	Thu 1/6/05	Fri 1/21/05
2616	✓	Miscellaneous Gas Data Model Changes	Tue 1/11/05	Wed 1/12/05
2617	✓	Fields to be removed from RetiredSupportStructure	Mon 1/10/05	Mon 1/10/05
2618	✓	Additional logic for PhaseDesignationCd field - Various Features	Fri 1/7/05	Fri 1/7/05
2619	✓	Update domains on SupportStructure	Tue 1/11/05	Tue 1/11/05
2620	✓	OpenClosedStatusCd field needs Precision tag value	Mon 1/10/05	Mon 1/10/05
2621	✓	OhConductor subtype - Moved to new Package OhConductorInfo	Fri 1/7/05	Fri 1/7/05
2622	✓	CapacitorUnit - Delete Column LegacyCompanyLocationId	Mon 1/10/05	Mon 1/10/05

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ID	Task Name	Start	Finish
2623	Update domain logic for CapacitorUnit.ManufacturerName	Thu 1/6/05	Thu 1/6/05
2624	Add value to Domain DmCapacitorUnitKVAR	Mon 1/10/05	Mon 1/10/05
2625	AbstractClass ObjectCommonData on the Objects page determine WOSequenceNumbers	Mon 1/10/05	Mon 1/10/05
2626	AbstractClass:UnitObject on Objects Page, set PhaseDesignation - AllowNulls=True	Mon 1/10/05	Mon 1/10/05
2627	Update migration logic for CISAccountNumber	Thu 1/6/05	Thu 1/6/05
2628	Remove PadMount fields from matrix	Thu 1/6/05	Thu 1/6/05
2629	Set RetiredPadMount.LegacyDistribRefNumTermId AllowNulls=True	Mon 1/10/05	Mon 1/10/05
2630	Recreate values in DmConductorOHSizeCd	Tue 1/11/05	Tue 1/11/05
2631	Assign DmConductorOHMaterialCd to ConductorInfo and LegacyConductorInfo WireMaterialCd fields	Tue 1/11/05	Tue 1/11/05
2632	Update Migration Logic for ConductorDefinition.CategoryCd	Thu 1/6/05	Thu 1/6/05
2633	TransformerRegulatorStoresItem - Field datatype changes	Fri 1/7/05	Fri 1/21/05
2634	Add a subtype to SwitchGear feature class	Mon 1/10/05	Mon 1/10/05
2635	Document determining factor for a domain to be defined as an Integer type verses a String type	Tue 1/11/05	Tue 1/11/05
2636	Added tags to Relationship Classes	Fri 1/7/05	Fri 1/21/05
2637	Rename the VoltageReg_VoltageRegInstall Relationship Class	Fri 1/7/05	Fri 1/7/05
2638	Data Model Change for SubstationBreaker	Tue 1/11/05	Tue 1/11/05
2639	Update Matrix - Value for JointUseAttachment.DataSourceCd	Tue 1/11/05	Tue 1/11/05
2640	Update migration logic for Assembly	Tue 1/11/05	Tue 1/11/05
2641	Update Assembly.InstallWorkOrderNumber - AllowNulls=true	Wed 1/12/05	Wed 1/12/05
2642	Update domain for RetiredSupportStructure.PoleMaterialTypecd	Wed 1/12/05	Wed 1/12/05
2643	Update AssemblyNumber to AllowNulls for RetiredSwitchGear and SwitchGear	Wed 1/12/05	Wed 1/12/05
2644	Update matrix logic for TransformerUnit.ManufacturerName	Tue 1/11/05	Tue 1/11/05
2645	Update matrix for TransformerKvaValue --> KvaValue	Tue 1/11/05	Tue 1/11/05
2646	Set Terminator.PhaseDesignation default value to 7	Fri 1/14/05	Fri 1/14/05
2647	Apply data model change for DmCapacitorBankKVAR	Fri 1/14/05	Fri 1/14/05
2648	CADOPS/FeederAll missing fields LoaNumber and GridCd	Fri 1/14/05	Fri 1/14/05
2649	CADOPS/FeederAll missing field: SectionalizerBank.SectionalizerAmpRating	Fri 1/14/05	Fri 1/14/05
2650	Added WireSizeCd and WireMaterialCd to Conductor Features	Fri 1/14/05	Fri 1/14/05
2651	Annotation - multiple annotations on features	Fri 1/14/05	Fri 1/14/05
2652	Apply changes for DmForeignOwnerNameCd, DmPhoneCompanyCd, DmUtilityCompanyCd, DmCableCompanyCd	Fri 1/21/05	Fri 1/21/05
2653	Establish GMMS links to GasMain feature	Fri 1/21/05	Fri 1/21/05
2654	Apply data model changes to UgConductor - WireMaterialCd	Fri 1/21/05	Fri 1/21/05
2655	<b>Review the Data Model &amp; Matrix</b>	<b>Tue 2/22/05</b>	<b>Tue 4/12/05</b>
2656	Full data model / matrix review - Day #1	Tue 2/22/05	Tue 2/22/05
2657	Full data model / matrix review - Day #2	Wed 2/23/05	Wed 2/23/05
2658	Full data model / matrix review - Day #3	Thu 2/24/05	Thu 2/24/05
2659	Full data model / matrix review - Day #4	Fri 2/25/05	Fri 2/25/05
2660	Full data model / matrix review - Day #5	Mon 2/28/05	Mon 2/28/05
2661	Full data model / matrix review - Day #6	Tue 3/1/05	Tue 3/1/05
2662	Full data model / matrix review - Day #7	Wed 3/2/05	Wed 3/2/05
2663	Full data model / matrix review - Day #8	Thu 3/3/05	Thu 3/3/05
2664	Full data model / matrix review - Day #9	Fri 3/4/05	Fri 3/4/05
2665	Full data model / matrix review - Day #10	Tue 3/8/05	Tue 3/8/05
2666	Full data model / matrix review - Day #11	Wed 3/9/05	Wed 3/9/05
2667	Summarize data model changes	Thu 3/10/05	Mon 3/14/05
2668	Review and finalize data model changes	Tue 3/15/05	Tue 3/15/05

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ID	Task Name	Start	Finish
2669	Send finalized data model to vendors & request impact estimates	Wed 3/16/05	Wed 3/16/05
2670	Receive Impact Estimates from Vendors by noon	Mon 3/21/05	Mon 3/21/05
2671	Review impact estimates from vendors & approve changes	Mon 3/21/05	Mon 3/21/05
2672	Apply the approved data model changes	Mon 3/21/05	Wed 3/23/05
2673	Apply the approved matrix changes	Wed 3/23/05	Fri 3/25/05
2674	Final freeze of the data model	Tue 4/12/05	Tue 4/12/05
2675	Send the final data model/matrix to all vendors	Tue 4/12/05	Tue 4/12/05
2676	<b>Environment Setup Tasks</b>	<b>Mon 12/13/04</b>	<b>Fri 6/9/06</b>
2677	<b>SDE Management Plan Remaining Tasks</b>	<b>Thu 12/16/04</b>	<b>Tue 5/3/05</b>
2678	Review the Plan and provide comments	Thu 12/16/04	Thu 12/16/04
2679	Finalize the Plan	Wed 1/12/05	Wed 1/12/05
2680	SDE Management Plan Updates	Tue 5/3/05	Tue 5/3/05
2681	<b>Environment Planning / Research / Setup / Testing Tasks</b>	<b>Fri 1/7/05</b>	<b>Fri 6/9/06</b>
2682	Create a list of users and roles for ArcSDE Production	Tue 2/1/05	Tue 2/1/05
2683	Upgrade ArcSDE to SP2	Fri 1/7/05	Fri 1/7/05
2684	Upgrade SQL Server to SP3a	Fri 1/7/05	Fri 1/7/05
2685	Create list of environment research topics	Fri 1/14/05	Fri 1/14/05
2686	Upgrade to ArcFM 9.01 (server side tasks)	Mon 1/10/05	Tue 1/11/05
2687	Review misc env tasks / assign resource and estimates	Tue 1/18/05	Tue 1/18/05
2688	Upgrade to ArcFM 9.01 (all remaining client machines)	Fri 1/21/05	Fri 1/21/05
2689	Determine the mix of users thick client and citrix	Wed 1/19/05	Wed 1/19/05
2690	Finalize Citrix ArcFM upgrades to 9.0.1 and test the ICA client for refresh improvement	Mon 1/24/05	Mon 1/24/05
2691	Finalize Citrix ArcFM upgrades to 9.0.1 for all other machines	Fri 2/4/05	Fri 2/4/05
2692	<b>Create Production Control Procedures</b>	<b>Tue 2/21/06</b>	<b>Tue 2/21/06</b>
2693	Inform IT server group of architecture and support roles / requirements	Tue 2/21/06	Tue 2/21/06
2694	Define DBA and SDE administrator roles for production and SOX	Tue 2/21/06	Tue 2/21/06
2695	Identify & document production control procedures	Tue 2/21/06	Tue 2/21/06
2696	<b>Installation Tasks</b>	<b>Wed 2/2/05</b>	<b>Fri 6/9/06</b>
2697	Determine distribution of ICA clients and software installs	Wed 2/2/05	Wed 2/2/05
2698	Document Installation Procedures	Fri 6/9/06	Fri 6/9/06
2699	<b>AEDRDBSQLP01 - Production Instance - Repeating Refresh Steps</b>	<b>Fri 1/7/05</b>	<b>Fri 1/28/05</b>
2700	Create .bak from dev and restore into Prod	Fri 1/7/05	Fri 1/7/05
2701	Initialize ArcSDE User accounts	Tue 1/11/05	Tue 1/11/05
2702	Lock down user accounts for Prod	Tue 1/11/05	Tue 1/11/05
2703	Check on impact of not locking down accounts for other instances	Fri 1/28/05	Fri 1/28/05
2704	<b>AEDRDBSQLP01 - Test Instance - Repeating Refresh Steps</b>	<b>Fri 1/7/05</b>	<b>Fri 1/7/05</b>
2705	Create .bak from dev and restore into prod	Fri 1/7/05	Fri 1/7/05
2706	<b>AEDRMAPGIS01 - Development Instance Repeating Refresh Steps</b>	<b>Mon 12/13/04</b>	<b>Wed 1/5/05</b>
2707	Export any configuration from development instance (XML export)	Mon 12/13/04	Mon 12/13/04
2708	Wipe the database clean / re-create SDE tables	Mon 12/13/04	Mon 12/13/04
2709	Restore the backup file	Mon 12/13/04	Mon 12/13/04
2710	Update the schema from Visio based on the latest data model changes	Fri 12/17/04	Mon 12/20/04
2711	Build all ArcFM tables	Mon 12/20/04	Mon 12/20/04
2712	Convert to ArcFM objects - expands out of the box ArcGIS objects	Mon 12/20/04	Mon 12/20/04
2713	Import all configurations (XML import)	Mon 12/20/04	Mon 12/20/04
2714	Import symbology (.mxd) to create Stored Displays	Mon 12/20/04	Mon 12/20/04

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ID	Task Name	Start	Finish
2715	Check and/or build and re-link user roles	Mon 12/20/04	Mon 12/20/04
2716	Grant permissions to the M&M system tables	Mon 12/20/04	Mon 12/20/04
2717	Re-initialize user IDs with the updated instance	Wed 1/5/05	Wed 1/5/05
2718	<b>AEDRMAPGIS01 - Test Instance - Repeating Refresh Steps</b>	<b>Mon 1/10/05</b>	<b>Fri 4/15/05</b>
2719	Create .bak from dev and restore into test	Mon 1/10/05	Mon 1/10/05
2720	Move the test configuration to development environment	Fri 4/15/05	Fri 4/15/05
2721	<b>AEDRMAPGIS01 - Migration Instance - Repeating Refresh Steps</b>	<b>Wed 1/5/05</b>	<b>Tue 2/1/05</b>
2722	Correct the Migration Instance	Wed 1/5/05	Wed 1/5/05
2723	Create .bak from prod and restore into migration	Fri 1/7/05	Fri 1/7/05
2724	Download .bak file from migration vendor	Tue 2/1/05	Tue 2/1/05
2725	Restore the .bak file that we received from migration vendor	Tue 2/1/05	Tue 2/1/05
2726	Check and/or build and re-link user roles	Tue 2/1/05	Tue 2/1/05
2727	<b>AEDRMAPGIS01- Delta Instance - Repeating Refresh Steps</b>	<b>Thu 7/7/05</b>	<b>Thu 7/14/05</b>
2728	Prepare Feature Counts	Thu 7/7/05	Thu 7/7/05
2729	Drop and re-create the ArcFM and SDE databases	Thu 7/7/05	Thu 7/7/05
2730	Freeze the Visio data model	Fri 7/8/05	Fri 7/8/05
2731	Review Visio data model for Annotation / Symbology impacts	Fri 7/8/05	Fri 7/8/05
2732	Export to XMI, Run Semantics Checker, and import the XMI into the blank personal geodatabase	Mon 7/11/05	Mon 7/11/05
2733	Import the Annotation Spreadsheet into the Personal Geodatabase	Tue 7/12/05	Tue 7/12/05
2734	Apply any remaining Data Migration Matrix changes	Wed 7/13/05	Wed 7/13/05
2735	Import the XMI files and Annotation spreadsheets into the Delta Instance	Wed 7/13/05	Wed 7/13/05
2736	Resolve last minute import issues and migration vendor data model problems	Thu 7/14/05	Thu 7/14/05
2737	Create SQL version of .MXD file	Thu 7/14/05	Thu 7/14/05
2738	Create a .BAK	Thu 7/14/05	Thu 7/14/05
2739	Send the .BAK .MXD .dwg Outfield, EDFs, Customer Points, Streelights to migration vendor	Thu 7/14/05	Thu 7/14/05
2740	<b>Setup Client Machines for Dev/Test/Prod</b>	<b>Fri 12/17/04</b>	<b>Mon 2/7/05</b>
2741	Dev/test/prod client setup - Hardware	Fri 12/17/04	Fri 12/17/04
2742	Dev/test/prod client setup - Software / AU's	Tue 12/21/04	Tue 12/21/04
2743	Dev/test/prod client setup - Create/enhance matrix schema compare tool	Mon 2/7/05	Mon 2/7/05
2744	Dev/test/prod client setup - Create delta creation checksheet	Mon 2/7/05	Mon 2/7/05
2745	<b>Citrix Configuration</b>	<b>Fri 12/17/04</b>	<b>Tue 12/21/04</b>
2746	Citrix Server Team responsibility	Fri 12/17/04	Tue 12/21/04
2747	<b>CIS and EAIF Interface #2</b>	<b>Mon 3/1/04</b>	<b>Tue 3/1/05</b>
2748	Review design proposal from CIS	Fri 12/17/04	Fri 12/17/04
2749	Install, configure and test db2 connect - part 1	Fri 1/14/05	Fri 1/14/05
2750	Install, configure and test db2 connect - part 2	Fri 1/21/05	Fri 1/21/05
2751	Update Data Model Change Interface Impact Grid	Tue 3/1/05	Tue 3/1/05
2752	Create test plans & documentation	Mon 3/1/04	Mon 3/1/04
2753	Test data transfer	Mon 3/1/04	Mon 3/1/04
2754	<b>CIS to GIS for Customers, XY's and Service Cards</b>	<b>Fri 12/17/04</b>	<b>Thu 3/3/05</b>
2755	Evaluate common data across interfaces to eliminate redundancy	Fri 12/17/04	Fri 12/17/04
2756	Evaluate current interface data and applications for validity	Fri 1/21/05	Fri 1/21/05
2757	Define methods for data transfer	Mon 1/24/05	Mon 1/24/05
2758	Create design framework & data model design	Mon 1/31/05	Wed 2/9/05
2759	Update Data Model Change Interface Impact Grid	Wed 2/9/05	Wed 2/9/05
2760	Create design specs	Tue 2/8/05	Tue 2/8/05



ID	Task Name	Start	Finish
2761	Review & approve the design specs	Mon 2/28/05	Mon 2/28/05
2762	Finalize the design specs	Mon 2/28/05	Mon 2/28/05
2763	Map Data fields to the form	Mon 2/28/05	Mon 2/28/05
2764	Create test plans & documentation	Mon 2/28/05	Tue 3/1/05
2765	Code & unit test applications or database triggers	Tue 3/1/05	Wed 3/2/05
2766	Install application at NIPSCO	Thu 3/3/05	Thu 3/3/05
2767	System test application	Thu 3/3/05	Thu 3/3/05
2768	<b>CIS to GIS for Life Support by Circuit</b>	<b>Fri 12/17/04</b>	<b>Mon 3/7/05</b>
2769	Evaluate current interface data and applications for validity	Fri 12/17/04	Fri 12/17/04
2770	Evaluate common data across interfaces to eliminate redundancy	Fri 12/17/04	Fri 12/17/04
2771	Define methods for data transfer	Fri 1/28/05	Fri 1/28/05
2772	Create design framework & data model design	Wed 2/9/05	Wed 2/9/05
2773	Update Data Model Change Interface Impact Grid	Wed 2/9/05	Wed 2/9/05
2774	Create design specs	Wed 3/2/05	Wed 3/2/05
2775	Review & approve the design specs	Thu 3/3/05	Thu 3/3/05
2776	Code & unit test applications or database triggers	Thu 3/3/05	Fri 3/4/05
2777	Create test plans & documentation	Fri 3/4/05	Mon 3/7/05
2778	Install application at NIPSCO	Mon 3/7/05	Mon 3/7/05
2779	System acceptance test application	Mon 3/7/05	Mon 3/7/05
2780	<b>EDFS Integration #2</b>	<b>Mon 3/1/04</b>	<b>Thu 5/5/05</b>
2781	Update Design with any changes	Mon 12/13/04	Tue 12/14/04
2782	MILESTONE: Design review and signoff	Mon 12/20/04	Tue 12/21/04
2783	Review permissions for ArcFM to only allow a coordinator to delete	Wed 2/9/05	Wed 2/9/05
2784	Review permissions information	Mon 2/28/05	Mon 2/28/05
2785	<b>Develop Phase</b>	<b>Mon 3/1/04</b>	<b>Thu 5/5/05</b>
2786	NIPSCO compile & deliver Final Geodatabase & EDFS Data	Fri 12/17/04	Fri 12/17/04
2787	<b>Data Tasks</b>	<b>Mon 12/20/04</b>	<b>Tue 3/1/05</b>
2788	Implement Data Model Updates	Mon 12/20/04	Wed 12/29/04
2789	Migrate EDFS Data into Geodatabase	Thu 12/30/04	Wed 1/12/05
2790	Create Matrices for migration vendor	Mon 12/20/04	Tue 12/21/04
2791	Update Data Model Change Interface Impact Grid	Tue 3/1/05	Tue 3/1/05
2792	<b>ArcFM Auto Updaters</b>	<b>Tue 1/4/05</b>	<b>Fri 1/28/05</b>
2793	Design, Infrastructure, Reuse	Tue 1/4/05	Mon 1/10/05
2794	1-OnCreate - ReplicateSinkVa	Tue 1/11/05	Wed 1/12/05
2795	2-OnUpdate - UpdateSinkVa	Wed 1/12/05	Thu 1/13/05
2796	3-OnCreate - AssetInstallation	Wed 1/12/05	Thu 1/13/05
2797	4-OnUpdate - AssetRemoval	Thu 1/13/05	Fri 1/14/05
2798	5-OnUpdate - CapacitorRemoval	Fri 1/14/05	Mon 1/17/05
2799	6-OnDelete - ResetAssetToStock	Fri 1/14/05	Mon 1/17/05
2800	7-OnDelete - ResetAssetToInstalled	Mon 1/17/05	Tue 1/18/05
2801	11-OnCreate, OnUpdate - ValidateConductorProperties	Thu 1/20/05	Fri 1/21/05
2802	12-OnRetire, OnDelete - PreventDeletionIfRelatedAssets	Fri 1/21/05	Mon 1/24/05
2803	13-OnRetire - SupportStructureRetirement	Mon 1/24/05	Tue 1/25/05
2804	8-OnCreate, OnUpdate - ValidateWorkOrderNumber	Tue 1/18/05	Wed 1/19/05
2805	9-OnCreate, OnUpdate - ValidateAssemblyNumber	Wed 1/19/05	Thu 1/20/05
2806	10-OnCreate, OnUpdate - ValidateReferencedAssembly	Wed 1/19/05	Thu 1/20/05

ID	Task Name	Start	Finish
2807	14-OnRetire - ReplicateRetirementData	Tue 1/25/05	Wed 1/26/05
2808	15-OnRetire - ReplicateSpatialData	Thu 1/27/05	Fri 1/28/05
2809	<b>ArcFM GIS Tools</b>	<b>Thu 2/17/05</b>	<b>Mon 2/21/05</b>
2810	SupportStructure and PadMount Replace Tool	Thu 2/17/05	Mon 2/21/05
2811	<b>SAGE</b>	<b>Thu 12/23/04</b>	<b>Thu 3/3/05</b>
2812	Infrastructure	Thu 12/23/04	Mon 1/3/05
2813	Authentication & Authorization	Tue 1/4/05	Tue 1/4/05
2814	<b>Screen Development</b>	<b>Wed 1/19/05</b>	<b>Thu 3/3/05</b>
2815	Coordinator Dashboard Screens	Wed 1/19/05	Thu 1/27/05
2816	Coordinator Access Screens	Tue 2/8/05	Thu 2/10/05
2817	Transformer Screens	Thu 2/10/05	Thu 2/17/05
2818	Regulator Screens	Thu 2/17/05	Thu 2/24/05
2819	Capacitor Screens	Thu 2/24/05	Wed 3/2/05
2820	Reports Screens	Wed 3/2/05	Thu 3/3/05
2821	<b>Reports</b>	<b>Wed 1/26/05</b>	<b>Wed 2/16/05</b>
2822	Template Creation (Formatting & Data Sources)	Wed 1/26/05	Wed 2/16/05
2823	<b>Conductor Info Management Tools</b>	<b>Mon 2/7/05</b>	<b>Fri 3/18/05</b>
2824	Create Component Spec	Mon 2/7/05	Wed 2/9/05
2825	NIPSCO Review	Wed 2/9/05	Wed 2/9/05
2826	Update Component Spec	Wed 2/9/05	Thu 2/10/05
2827	Coding	Thu 2/10/05	Fri 2/18/05
2828	User Guide	Fri 2/18/05	Mon 2/21/05
2829	Operations Guide	Mon 2/21/05	Tue 2/22/05
2830	Deploy	Mon 3/7/05	Fri 3/18/05
2831	<b>Batch Data Management and Reporting</b>	<b>Tue 1/11/05</b>	<b>Thu 3/3/05</b>
2832	Batch Reconcile and Post for SAGE Version	Tue 1/11/05	Thu 1/13/05
2833	MAPPS/GIS Transaction Processing	Tue 2/22/05	Mon 2/28/05
2834	Batch Report Generator	Wed 2/16/05	Tue 2/22/05
2835	Structure to Conductor Join	Thu 2/24/05	Wed 3/2/05
2836	Duplicate Domains for SAGE Use	Tue 3/1/05	Thu 3/3/05
2837	<b>Establish External System Interfaces</b>	<b>Mon 3/1/04</b>	<b>Fri 3/11/05</b>
2838	MAPPS	Mon 1/31/05	Thu 3/10/05
2839	GL	Mon 1/31/05	Fri 3/11/05
2840	MLOG	Mon 1/31/05	Fri 3/11/05
2841	CIS	Mon 1/31/05	Fri 3/11/05
2842	EAIF	Mon 3/1/04	Mon 3/1/04
2843	Tax Department (This is not an interface, it is a 1-time dump)	Mon 1/31/05	Fri 3/11/05
2844	<b>Documentation</b>	<b>Thu 3/3/05</b>	<b>Mon 3/28/05</b>
2845	AU Documentation	Thu 3/3/05	Fri 3/11/05
2846	Reports Documentation	Fri 3/11/05	Fri 3/18/05
2847	SAGE Documentation	Fri 3/18/05	Mon 3/28/05
2848	<b>Code Reviews</b>	<b>Mon 2/28/05</b>	<b>Mon 2/28/05</b>
2849	AU Code Review	Mon 2/28/05	Mon 2/28/05
2850	SAGE Code Review	Mon 2/28/05	Mon 2/28/05
2851	<b>Webcast Demos</b>	<b>Fri 3/4/05</b>	<b>Fri 3/4/05</b>
2852	AU Webcast Demo	Fri 3/4/05	Fri 3/4/05

ID	Task Name	Start	Finish
2853	Reports Webcast Demo	Fri 3/4/05	Fri 3/4/05
2854	SAGE Webcast Demo	Fri 3/4/05	Fri 3/4/05
2855	Integration Testing	Tue 3/29/05	Thu 4/7/05
2856	MILESTONE: Development Complete	Thu 4/7/05	Thu 4/7/05
2857	<b>Deploy Phase</b>	<b>Fri 4/8/05</b>	<b>Thu 5/5/05</b>
2858	Prepare for Delivery (Installers, Scripts, etc)	Fri 4/8/05	Thu 4/14/05
2859	Create Acceptance Test Plans	Fri 4/8/05	Thu 4/14/05
2860	Install Onsite at NIPSCO	Fri 4/15/05	Tue 4/19/05
2861	Onsite Testing	Wed 4/20/05	Thu 4/21/05
2862	Onsite SAT	Fri 4/22/05	Thu 4/28/05
2863	Train Users	Fri 4/29/05	Thu 5/5/05
2864	MILESTONE: Deployment Signoff	Thu 5/5/05	Thu 5/5/05
2865	<b>EDFS Related AU's</b>	<b>Tue 1/11/05</b>	<b>Tue 1/11/05</b>
2866	<b>Transformer Unit - Location History AU</b>	<b>Tue 1/11/05</b>	<b>Tue 1/11/05</b>
2867	Create component spec	Tue 1/11/05	Tue 1/11/05
2868	Review component spec	Tue 1/11/05	Tue 1/11/05
2869	Code / unit test	Tue 1/11/05	Tue 1/11/05
2870	<b>Capacitor Unit - Location History AU</b>	<b>Tue 1/11/05</b>	<b>Tue 1/11/05</b>
2871	Create component spec	Tue 1/11/05	Tue 1/11/05
2872	Review component spec	Tue 1/11/05	Tue 1/11/05
2873	Code / unit test	Tue 1/11/05	Tue 1/11/05
2874	<b>Voltage Regulator Unit - Location History AU</b>	<b>Tue 1/11/05</b>	<b>Tue 1/11/05</b>
2875	Create component spec	Tue 1/11/05	Tue 1/11/05
2876	Review component spec	Tue 1/11/05	Tue 1/11/05
2877	Code / unit test	Tue 1/11/05	Tue 1/11/05
2878	<b>EDFS Integration Reconfiguration (Based on new frozen data model changes)</b>	<b>Mon 2/13/06</b>	<b>Fri 12/15/06</b>
2879	EDFS coding & rework	Mon 11/20/06	Fri 12/15/06
2880	EDFS Integration System Acceptance Testing	Mon 2/13/06	Fri 2/17/06
2881	<b>Field Browser Application - Part 1</b>	<b>Mon 1/10/05</b>	<b>Wed 4/26/06</b>
2882	<b>Requirements and Design</b>	<b>Mon 1/10/05</b>	<b>Tue 2/8/05</b>
2883	Contact users to setup demo day/time	Mon 1/10/05	Mon 1/10/05
2884	Prepare for demo	Mon 1/24/05	Mon 1/24/05
2885	Demo ArcReader to select end users / set expectations	Fri 1/28/05	Fri 1/28/05
2886	Research Field Browser requirements	Mon 2/7/05	Tue 2/8/05
2887	<b>Component Specifications</b>	<b>Wed 2/9/05</b>	<b>Mon 4/17/06</b>
2888	Document current Field Browser	Wed 2/9/05	Wed 2/9/05
2889	Document required fields	Thu 2/17/05	Fri 2/18/05
2890	Research and configure GDB extraction tool	Thu 2/17/05	Fri 2/18/05
2891	Document extraction tool process	Mon 2/28/05	Mon 2/28/05
2892	Document fields destined for removal	Fri 4/14/06	Fri 4/14/06
2893	Review and approve the Field Browser component specs	Mon 4/17/06	Mon 4/17/06
2894	<b>Apply Configuration Changes</b>	<b>Mon 4/17/06</b>	<b>Fri 4/21/06</b>
2895	Populate PGD with SDE fields per component spec	Mon 4/17/06	Wed 4/19/06
2896	Unit test Field Browser	Wed 4/19/06	Thu 4/20/06
2897	Performance tune Field Browser	Thu 4/20/06	Fri 4/21/06
2898	<b>Demo for the Field Supervisors</b>	<b>Fri 4/21/06</b>	<b>Wed 4/26/06</b>


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ID	Task Name	Start	Finish
2899	Prepare for demo	Fri 4/21/06	Mon 4/24/06
2900	Document additional requirements during demo	Mon 4/24/06	Mon 4/24/06
2901	Prioritize additional requirements with field supervisors during demo	Mon 4/24/06	Mon 4/24/06
2902	Populate PGD with SDE fields per additional requirements doc	Mon 4/24/06	Tue 4/25/06
2903	Unit test/performance tune Field Browser	Tue 4/25/06	Wed 4/26/06
2904	Update component specs with results	Wed 4/26/06	Wed 4/26/06
2905	<b>Mapping / Hardcopy</b>	<b>Mon 3/1/04</b>	<b>Tue 3/29/05</b>
2906	Develop list of paper maps to be generated - None Needed	Tue 3/29/05	Tue 3/29/05
2907	Develop templates for title blocks	Mon 3/1/04	Mon 3/1/04
2908	<b>CADOPS / FeederAll Reconfiguration (based on new frozen data model)</b>	<b>Mon 3/1/04</b>	<b>Fri 12/23/05</b>
2909	Re-work CADOPS code for data model changes	Mon 12/19/05	Fri 12/23/05
2910	Research with MM any performance improvements for Network Adapter	Mon 3/1/04	Mon 3/1/04
2911	<b>SynerGEE Interface #2</b>	<b>Mon 12/13/04</b>	<b>Thu 3/3/05</b>
2912	<b>Completed Tasks</b>	<b>Mon 12/13/04</b>	<b>Thu 1/27/05</b>
2913	SynerGEE - Remaining data model changes	Mon 12/13/04	Wed 12/22/04
2914	SynerGEE - Remaining DataPrep Design document	Mon 12/13/04	Wed 12/22/04
2915	SynerGEE - Remaining Application Interface Design - Part 1	Mon 12/13/04	Wed 12/22/04
2916	SynerGEE - Remaining DataPrep Development - Part 1	Mon 12/13/04	Wed 12/22/04
2917	SynerGEE - Application Interface Design - Part 2	Wed 12/22/04	Wed 12/29/04
2918	SynerGEE - DataPrep Development - Part 2	Wed 12/22/04	Wed 12/29/04
2919	SynerGEE - Review DataPrep Design Document	Fri 12/31/04	Fri 12/31/04
2920	SynerGEE - Revise & Finalize DataPrep Design Document	Fri 12/31/04	Fri 12/31/04
2921	SynerGEE - Approve DataPrep Design Document	Fri 12/31/04	Fri 12/31/04
2922	SynerGEE - DataPrep Development Tasks - Week of 1/17	Wed 1/19/05	Thu 1/20/05
2923	SynerGEE - DataPrep Development Tasks - Week of 1/24	Wed 1/26/05	Thu 1/27/05
2924	<b>Remaining Tasks</b>	<b>Mon 2/28/05</b>	<b>Thu 3/3/05</b>
2925	SynerGEE - Code Review	Mon 2/28/05	Mon 2/28/05
2926	SynerGEE - DataPrep Testing	Mon 2/28/05	Mon 2/28/05
2927	SynerGEE - Create Acceptance Testing Criteria	Mon 2/28/05	Tue 3/1/05
2928	SynerGEE - Develop DataPrep Documentation	Tue 3/1/05	Thu 3/3/05
2929	SynerGEE - Create DataPrep Install (Second Half)	Thu 3/3/05	Thu 3/3/05
2930	<b>Business Process (Maps &amp; Records Dept.) Change</b>	<b>Mon 4/3/06</b>	<b>Mon 4/3/06</b>
2931	Business process change - Update IRTH & IUPPS buffer creation procedures for ESRI	Mon 4/3/06	Mon 4/3/06
2932	Business process change - Identify all Maps & Records existing business processes for potential change	Mon 4/3/06	Mon 4/3/06
2933	<b>ArcFM Configuration Updates / Fixes</b>	<b>Wed 12/15/04</b>	<b>Tue 5/2/06</b>
2934	Change Annotation Color	Wed 1/12/05	Wed 1/12/05
2935	Configuration changes for RecloserBank	Wed 1/12/05	Wed 1/12/05
2936	Configuration changes for Voltage Regulators	Wed 1/12/05	Wed 1/12/05
2937	Mass Attribute Update - correct problems	Wed 1/12/05	Wed 1/12/05
2938	Configuration change for Gas Network	Tue 1/18/05	Tue 1/18/05
2939	Configuration Changes for Switches	Tue 1/18/05	Tue 1/18/05
2940	Configuration Changes for Fuses	Tue 1/18/05	Tue 1/18/05
2941	Phase of the device should match the phase of the conductor	Tue 1/18/05	Tue 1/18/05
2942	Configuration Changes for TransformerBank	Tue 1/18/05	Tue 1/18/05
2943	TransformerUnit creation for TransformerBank	Tue 1/18/05	Tue 1/18/05
2944	Configuration Change for SupportStructure	Tue 1/18/05	Tue 1/18/05

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ID		Task Name	Start	Finish
2945	✓	Configuration Change for PrimaryMeter	Tue 1/18/05	Tue 1/18/05
2946	✓	Configuration Changes for SectionalizerBank	Tue 1/18/05	Tue 1/18/05
2947	✓	Configuration Changes for TieWire	Tue 1/18/05	Tue 1/18/05
2948	✓	Error when creating a new Tie Wire	Tue 1/18/05	Tue 1/18/05
2949	✓	Configuration Changes for Terminator	Tue 1/18/05	Tue 1/18/05
2950	✓	Configuration Changes for PadMount	Tue 1/18/05	Tue 1/18/05
2951	✓	Configuration Changes for OpenPoint	Tue 1/18/05	Tue 1/18/05
2952	✓	Configuration Changes for Splice	Tue 1/18/05	Tue 1/18/05
2953	✓	Configuration Changes for Pedestals	Tue 1/18/05	Tue 1/18/05
2954	✓	Configuration Changes for ElectricDeadEnd	Tue 1/18/05	Tue 1/18/05
2955	✓	Configuration Changes for Manhole	Tue 1/18/05	Tue 1/18/05
2956	✓	Configuration Changes for Secondary	Tue 1/18/05	Tue 5/2/06
2957	✓	Configuration Changes for SwitchGear	Tue 1/18/05	Tue 1/18/05
2958	✓	Configuration Changes for GasMain	Mon 1/24/05	Mon 1/24/05
2959	✓	Configuration Changes for GasValves	Mon 1/24/05	Mon 1/24/05
2960	✓	Configuration Changes for Fittings	Mon 1/24/05	Mon 1/24/05
2961	✓	Configuration Changes for GasMainLocation	Mon 1/24/05	Mon 1/24/05
2962	✓	Configuration Changes for PipeExposure	Mon 1/24/05	Mon 1/24/05
2963	✓	Configuration Changes for PipelineMarker	Mon 1/24/05	Mon 1/24/05
2964	✓	Configuration Changes for Drip	Mon 1/24/05	Mon 1/24/05
2965	✓	Configuration Changes for Casing	Mon 1/24/05	Mon 1/24/05
2966	✓	Configuration Changes for GasDeadEnd	Mon 1/24/05	Mon 1/24/05
2967	✓	Configuration Changes for Regulator Station	Fri 1/28/05	Fri 1/28/05
2968	✓	Configuration Changes for TakeStation	Fri 1/28/05	Fri 1/28/05
2969	✓	Configuration Changes for StreetCenterLine	Fri 1/28/05	Fri 1/28/05
2970	✓	Configuration changes for StreetROW	Fri 1/28/05	Fri 1/28/05
2971	✓	Configuration changes for Easement	Fri 1/28/05	Fri 1/28/05
2972	✓	Configuration Changes for Railroad.	Fri 1/28/05	Fri 1/28/05
2973	✓	Configuration Changes for LotLine	Fri 1/28/05	Fri 1/28/05
2974	✓	Configuration Chhanges for LotNumber	Fri 1/28/05	Fri 1/28/05
2975	✓	Configuration Changes for Bridge	Fri 1/28/05	Fri 1/28/05
2976	✓	Configuration Changes for Linear Water	Fri 1/28/05	Fri 1/28/05
2977	✓	Configuration Changes for LOA	Fri 1/28/05	Fri 1/28/05
2978	✓	Miscellaneous Land and Point Feature could not be created	Fri 1/28/05	Fri 1/28/05
2979	✓	Error Running automated tests	Fri 1/21/05	Tue 5/2/06
2980	✓	Log new base configuration Elementool tickets based on the test results	Fri 1/28/05	Fri 1/28/05
2981	✓	Part 1 Check Annotation for all feature classes - Integration testing	Fri 1/21/05	Fri 1/21/05
2982	✓	Symbol Offset for TransformerBank	Mon 1/31/05	Mon 1/31/05
2983	✓	Add WireSizeCd and WireMaterialCd to Conductor Features	Fri 2/11/05	Fri 2/11/05
2984	✓	Pad number Annotation - Problems with Annotation	Fri 2/11/05	Fri 2/11/05
2985	✓	Part 2 Check Annotation for all feature classes - Integration testing	Mon 2/28/05	Mon 2/28/05
2986	✓	Troubleshoot all annotation related issues on the DEV instance	Mon 2/14/05	Tue 2/15/05
2987	✓	Build & document all Stored Displays	Tue 5/2/06	Tue 5/2/06
2988		Correct Symbol Rotation Configuration to be compatible with both migration and ArcFM	Mon 2/28/05	Mon 2/28/05
2989	✓	Symbology for FuseCutoutBanks	Wed 1/11/06	Wed 1/11/06
2990	✓	Symbology for OpenPoint	Wed 1/11/06	Wed 1/11/06

ID	Task Name	Start	Finish
2991	Symbology for TakeStation	Wed 1/11/06	Wed 1/11/06
2992	Symbology for Fittings	Wed 1/11/06	Wed 1/11/06
2993	Annotation & Symbol review of Migration 3	Fri 9/2/05	Fri 9/2/05
2994	Test 1 - Iteration 3 QA – Land NIPSCO Migration issues	Tue 7/5/05	Tue 7/5/05
2995	Test 3 & 4 - Iteration 3 QA – Land NIPSCO Migration issues	Tue 7/5/05	Tue 7/5/05
2996	AbandonGasDevice	Mon 4/4/05	Mon 4/4/05
2997	Annotation Not Updating	Mon 1/16/06	Mon 1/16/06
2998	Correct the Configuration Requirements for CPRectifier	Wed 3/1/06	Wed 3/1/06
2999	Correct configuration requirements for CPTestPoint	Wed 12/15/04	Wed 12/15/04
3000	Correct configuration requirements for ServiceStub	Wed 3/2/05	Wed 3/2/05
3001	Identify Composite Favorites	Wed 3/2/05	Wed 3/2/05
3002	Correct configuration on FeederAllOpenPoint	Wed 3/2/05	Wed 3/2/05
3003	<b>ArcFM Configuration Testing</b>	<b>Fri 2/18/05</b>	<b>Thu 3/3/05</b>
3004	Test updated configuration	Fri 2/18/05	Wed 2/23/05
3005	Generate ET's based on configuration testing	Thu 2/24/05	Tue 3/1/05
3006	Resolve ETs	Wed 3/2/05	Thu 3/3/05
3007	<b>Auto Updater / Miscellaneous Customization Tasks</b>	<b>Tue 12/14/04</b>	<b>Fri 1/20/06</b>
3008	<b>FuseCutoutBank – SymbologyConfigurationCd AU</b>	<b>Thu 1/20/05</b>	<b>Wed 1/11/06</b>
3009	Create component spec	Thu 1/20/05	Thu 1/20/05
3010	Review component spec	Fri 1/21/05	Fri 1/21/05
3011	Code / unit test	Fri 1/21/05	Fri 1/21/05
3012	Acceptance test	Wed 1/11/06	Wed 1/11/06
3013	<b>All LOA fields - LOA AU</b>	<b>Fri 1/7/05</b>	<b>Mon 1/16/06</b>
3014	Create component spec	Fri 1/7/05	Fri 1/7/05
3015	Review component spec	Fri 1/7/05	Fri 1/7/05
3016	Code / unit test	Fri 1/7/05	Fri 1/7/05
3017	Determine the general LOA population approach	Tue 1/18/05	Tue 1/18/05
3018	Determine objectclasses that need LOA information	Tue 1/18/05	Tue 1/18/05
3019	Acceptance Test	Mon 1/16/06	Mon 1/16/06
3020	<b>Reference Features - Do Not Post To Parent</b>	<b>Tue 12/14/04</b>	<b>Fri 1/20/06</b>
3021	Review component spec	Tue 12/14/04	Tue 12/14/04
3022	Code / unit test (depends on Session Mgr)	Tue 12/14/04	Fri 12/17/04
3023	Acceptance test	Fri 1/20/06	Fri 1/20/06
3024	<b>Elementool #165 - FeederAllOpenPoint Deletions</b>	<b>Thu 1/27/05</b>	<b>Fri 1/20/06</b>
3025	Create component spec	Thu 1/27/05	Thu 1/27/05
3026	Review component spec	Fri 2/4/05	Fri 2/4/05
3027	Code / unit test	Fri 2/11/05	Fri 2/11/05
3028	Acceptance Test	Fri 1/20/06	Fri 1/20/06
3029	<b>DistribRefNumber AU</b>	<b>Fri 2/4/05</b>	<b>Mon 1/16/06</b>
3030	Code / unit test - admin tool	Fri 2/4/05	Fri 2/4/05
3031	Acceptance Test	Mon 1/16/06	Mon 1/16/06
3032	<b>NIPSCO Custom Toolbar</b>	<b>Mon 2/7/05</b>	<b>Mon 1/16/06</b>
3033	Create component spec	Mon 2/7/05	Mon 2/7/05
3034	Review component spec	Mon 2/7/05	Mon 2/7/05
3035	Code / unit test	Mon 2/7/05	Mon 2/7/05
3036	Acceptance Test	Mon 1/16/06	Mon 1/16/06


ID		Task Name	Start	Finish
3037	✓	<b>AU UpstreamGasMainOID</b>	<b>Wed 2/2/05</b>	<b>Mon 1/16/06</b>
3038	✓	Create component spec	Wed 2/2/05	Wed 2/2/05
3039	✓	Review component spec	Thu 2/3/05	Thu 2/3/05
3040	✓	Code / unit test	Fri 2/4/05	Fri 2/4/05
3041	✓	Acceptance Test	Mon 1/16/06	Mon 1/16/06
3042	✓	AU On-site Work #1 - Install AU's on test machine	Tue 1/4/05	Tue 1/4/05
3043	✓	AU On-site Work #1 - Configure at NIPSCO	Tue 1/4/05	Wed 1/5/05
3044	✓	AU On-site Work #1 - Create AU tracking spreadsheet	Wed 1/5/05	Wed 1/5/05
3045	✓	AU On-site Work #1 - Review AU tracking spreadsheet	Wed 1/5/05	Wed 1/5/05
3046	✓	AU On-site Work #1 - Test AU's at NIPSCO	Wed 1/5/05	Fri 1/7/05
3047	✓	AU On-site Work #1 - Follow-on tasks from site visit	Tue 1/11/05	Thu 1/13/05
3048	✓	AU On-site Work #1 - Fix SDE Maximum Streams Exceeded Error (All AU's)	Wed 1/19/05	Wed 1/19/05
3049	✓	AU On-site Work #1 - Fix SplitAtTap problem	Fri 1/21/05	Fri 1/21/05
3050	✓	AU On-site Work #2 - Configure remaining AU's	Mon 1/24/05	Mon 1/24/05
3051	✓	AU On-site Work #2 - Test AU's and update tracking spreadsheet	Mon 1/24/05	Thu 1/27/05
3052	✓	AU On-site Work #2 - Resolve AU Elementool tickets	Fri 1/28/05	Fri 1/28/05
3053	✓	AU On-site Work #2 - Follow-on tasks from visit	Mon 2/7/05	Tue 2/8/05
3054	✓	<b>Elementool Ticket Review &amp; Work</b>	<b>Mon 4/17/06</b>	<b>Wed 4/19/06</b>
3055	✓	Review all critical and high priority ETs	Mon 4/17/06	Tue 4/18/06
3056	✓	Resolve the critical & high priority ETs.	Wed 4/19/06	Wed 4/19/06
3057	✓	<b>Session Manager Tasks</b>	<b>Mon 4/5/04</b>	<b>Fri 1/28/05</b>
3058	✓	Configuration	Mon 1/10/05	Fri 1/14/05
3059	✓	Installation at NIPSCO	Mon 1/17/05	Tue 1/18/05
3060	✓	Finalize documentation & store in Source Safe	Fri 1/28/05	Fri 1/28/05
3061	✓	<b>Design Business Process Using Session Manager / Versions</b>	<b>Mon 4/5/04</b>	<b>Wed 4/7/04</b>
3062	✓	Design workflow including roles (QA/QC)	Mon 4/5/04	Mon 4/5/04
3063	✓	Document business process & procedures	Tue 4/6/04	Wed 4/7/04
3064	✓	<b>Create User Guides</b>	<b>Mon 1/16/06</b>	<b>Mon 4/24/06</b>
3065	✓	<b>Create Online User Guides</b>	<b>Mon 1/16/06</b>	<b>Mon 4/24/06</b>
3066	✓	Define requirements	Mon 1/16/06	Wed 1/18/06
3067	✓	Create NIMS Online Help	Wed 2/8/06	Mon 3/6/06
3068	✓	Document Online Help	Thu 1/19/06	Wed 2/1/06
3069	✓	Add Screenshots to Online Help	Fri 4/21/06	Mon 4/24/06

Appendix A-3


AEDR Deployment Phase I Project Plan





## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
1		<b>NIPSCO AEDR Phase I Deployment</b>	<b>Mon 2/2/04</b>	<b>Mon 3/26/07</b>
2	✓	<b>GIS Data Migration - Final Delivery</b>	<b>Tue 1/3/06</b>	<b>Wed 6/7/06</b>
3	✓	<b>Pre-Delivery to Migration Vendor Tasks</b>	<b>Tue 1/3/06</b>	<b>Fri 4/21/06</b>
4	✓	Pre-final migration data cleanup	Tue 3/28/06	Mon 4/10/06
5	✓	Authorization to proceed with the delivery of data to migration vendor	Fri 3/31/06	Fri 3/31/06
6	✓	Verify the deliverable from data migration vendor; a list of tiles in each batch	Fri 3/31/06	Fri 3/31/06
7	✓	Review and update the migration plan	Wed 3/29/06	Wed 3/29/06
8	✓	Assign/adjust resources based on updates to the migration plan	Tue 4/11/06	Tue 4/11/06
9	✓	Correct critical 6.0 issues, ETs, create scripts	Tue 1/3/06	Mon 4/17/06
10	✓	Complete 6.1 essential data cleanup (Data Cleanup Spreadsheet)	Fri 4/21/06	Fri 4/21/06
11	✓	Run QA reports	Mon 3/20/06	Mon 3/20/06
12	✓	Finalize all automated QA from data and migration scripts	Tue 1/3/06	Tue 1/24/06
13	✓	Prepare automated test suites for migration vendor - see Migration Plan	Thu 4/20/06	Thu 4/20/06
14	✓	Prepare instructions for the automated QA Routines -Mig Plan	Thu 4/20/06	Thu 4/20/06
15	✓	Complete the review and updating the Migration Plan (Pre-delivery section only)	Mon 4/10/06	Mon 4/10/06
16	✓	Identify resources for migration QA effort	Mon 3/27/06	Mon 3/27/06
17	✓	Add automated test suites to the Delivery Checklist	Fri 4/21/06	Fri 4/21/06
18	✓	Determine freeze date for Final Migration	Mon 3/27/06	Mon 3/27/06
19	✓	Notify record clerks & other users of impending freeze date - 4/24	Fri 3/31/06	Fri 3/31/06
20	✓	Request IT resources	Thu 4/13/06	Thu 4/13/06
21	✓	Verify there are no more outstanding medium/critical ET's prior to preparing delivery to migration vendor	Mon 4/17/06	Mon 4/17/06
22	✓	<b>Prepare Delivery to Migration Vendor - Mig Plan</b>	<b>Mon 4/17/06</b>	<b>Mon 5/1/06</b>
23	✓	Notification to record clerks to finalize all work orders & announce freeze date again	Mon 4/17/06	Mon 4/17/06
24	✓	Freeze the AutoCAD/EDFS data & applications	Mon 4/24/06	Mon 4/24/06
25	✓	Set up Source Safe files	Mon 4/24/06	Mon 4/24/06
26	✓	Baseline the data model (Visio file)	Mon 4/24/06	Mon 4/24/06
27	✓	Baseline the data migration matrices	Mon 4/24/06	Mon 4/24/06
28	✓	Baseline the .MXD file & annotation spreadsheet	Mon 4/24/06	Mon 4/24/06
29	✓	Baseline the miscellaneous migration specifications	Mon 4/24/06	Mon 4/24/06
30	✓	<b>Prepare Source Data &amp; Counts</b>	<b>Mon 4/24/06</b>	<b>Thu 4/27/06</b>
31	✓	Prepare Outfield source DWG files and prepare feature counts	Mon 4/24/06	Wed 4/26/06
32	✓	Prepare EDFs source data and feature counts	Wed 4/26/06	Thu 4/27/06
33	✓	Prepare GMMS and feature counts	Thu 4/27/06	Thu 4/27/06
34	✓	Prepare Streetlight source data and feature counts	Thu 4/27/06	Thu 4/27/06
35	✓	<b>Delivery / Notification Tasks</b>	<b>Fri 4/28/06</b>	<b>Mon 5/1/06</b>
36	✓	Package up the files for delivery	Fri 4/28/06	Fri 4/28/06
37	✓	Place the package on data migration vendor's FTP server	Mon 5/1/06	Mon 5/1/06
38	✓	Notify migration vendor that the delivery is available	Fri 4/28/06	Fri 4/28/06
39	✓	<b>Post-Delivery to Data Migration Vendor Tasks</b>	<b>Mon 5/1/06</b>	<b>Mon 6/5/06</b>
40	✓	Perform various QA set-up tasks	Thu 5/11/06	Thu 5/11/06
41	✓	Create tracklists for the delivery	Thu 5/18/06	Thu 5/18/06
42	✓	Print graphic specs plot for the features (symbolology legend)	Tue 5/16/06	Fri 5/19/06
43	✓	Update feature count tracklists	Fri 5/19/06	Fri 5/19/06


## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
44	✓	Set Up X: drive folders	Mon 5/1/06	Thu 5/18/06
45	✓	Schedule DBA to assist with the installation	Mon 5/1/06	Tue 5/16/06
46	✓	Verify any changes to the environments (instances)	Fri 5/12/06	Fri 5/12/06
47	✓	Setup hardware for the QA team	Wed 5/3/06	Mon 5/22/06
48	✓	Notify IT server group regarding upcoming delivery & QA	Mon 5/1/06	Tue 5/16/06
49	✓	CIS customer loading (ref ET 2146)	Mon 6/5/06	Mon 6/5/06
50	✓	Verify with CIS that they have now implemented the incremental updates	Fri 6/2/06	Fri 6/2/06
51	✓	<b>Migration Vendor Tasks</b>	<b>Wed 4/26/06</b>	<b>Tue 5/16/06</b>
52	✓	Migrate and create new data	Wed 4/26/06	Tue 5/16/06
53	✓	Notify NIPSCO of the delivery of migrated data	Tue 5/16/06	Tue 5/16/06
54	✓	<b>Install and Conduct High Level QA</b>	<b>Tue 5/16/06</b>	<b>Fri 5/19/06</b>
55	✓	<b>Installation Tasks</b>	<b>Tue 5/16/06</b>	<b>Wed 5/17/06</b>
56	✓	Download data and files from FTP server	Tue 5/16/06	Tue 5/16/06
57	✓	High-level review of reports and artifacts	Wed 5/17/06	Wed 5/17/06
58	✓	Copy migrated data and artifacts to a shared directory	Wed 5/17/06	Wed 5/17/06
59	✓	Restore the .BAK file	Wed 5/17/06	Wed 5/17/06
60	✓	<b>Final Delivery Compliance QA</b>	<b>Wed 5/17/06</b>	<b>Fri 5/19/06</b>
61	✓	Check for missing tiles	Wed 5/17/06	Wed 5/17/06
62	✓	Document the environment change per the SDE Management Plan	Wed 5/17/06	Wed 5/17/06
63	✓	Verify correct schema	Wed 5/17/06	Wed 5/17/06
64	✓	Verify delivery artifacts against checklist	Wed 5/17/06	Wed 5/17/06
65	✓	Review and process EDFS/Outfield mismatch report	Wed 5/17/06	Wed 5/17/06
66	✓	Run the source count compare script	Fri 5/19/06	Fri 5/19/06
67	✓	Pre-populate the interactive QA spreadsheet	Fri 5/19/06	Fri 5/19/06
68	✓	Conduct object existence test	Thu 5/18/06	Fri 5/19/06
69	✓	Run automated testing against new data	Wed 5/17/06	Thu 5/18/06
70	✓	Compare NIPSCO automated reports against migration vendor's same automated reports	Wed 5/17/06	Thu 5/18/06
71	✓	<b>NIPSCO Parallel Migration Processing</b>	<b>Wed 5/17/06</b>	<b>Wed 6/7/06</b>
72	✓	Build the parallel instance	Wed 5/17/06	Sat 5/20/06
73	✓	Run data cleanup and NIPSCO migration scripts	Thu 5/25/06	Thu 5/25/06
74	✓	Run data cleanup and NIPSCO migration scripts - manual effort	Thu 5/25/06	Thu 5/25/06
75	✓	Configure the geodatabase	Thu 5/25/06	Fri 6/2/06
76	✓	<b>QA of Parallel Migration Processing</b>	<b>Fri 6/2/06</b>	<b>Wed 6/7/06</b>
77	✓	Conduct Ready for Review	Fri 6/2/06	Tue 6/6/06
78	✓	Conduct QA of data cleanup & test scripts	Wed 6/7/06	Wed 6/7/06
79	✓	<b>QA of Migrated Data from Migration Vendor</b>	<b>Thu 5/18/06</b>	<b>Wed 6/7/06</b>
80	✓	QA - Remaining High-Level review	Wed 6/7/06	Wed 6/7/06
81	✓	QA - Conduct Ready for Review	Thu 6/1/06	Wed 6/7/06
82	✓	QA - Feature Counts	Fri 5/19/06	Wed 5/24/06
83	✓	QA - Automated QA	Thu 5/18/06	Wed 5/24/06
84	✓	QA - Interactive QA of critical features	Tue 5/23/06	Wed 5/24/06
85	✓	QA - First Pass Connectivity QA	Mon 5/22/06	Fri 5/26/06
86	✓	QA - Second Pass Connectivity QA	Mon 6/5/06	Mon 6/5/06













## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
87	✓	QA - Wrap Up	Fri 5/26/06	Fri 5/26/06
88		<b>GIS Application and Interface Construction</b>	<b>Mon 2/2/04</b>	<b>Mon 3/26/07</b>
89	✓	<b>Open Elementool Issues Medium-Critical Priority</b>	<b>Mon 3/13/06</b>	<b>Fri 4/14/06</b>
90	✓	Review & re-categorize all ET's that can be resolved post-production	Mon 3/13/06	Mon 3/13/06
91	✓	Resolve 34 ET's - project team member 1	Mon 3/20/06	Wed 4/12/06
92	✓	Assign/Resolve 17 ET's - project team member 2	Fri 3/17/06	Thu 3/23/06
93	✓	Resolve 8 ET's project team member 3	Mon 3/13/06	Wed 3/15/06
94	✓	Resolve 32 ET's project team member 4	Tue 3/21/06	Mon 4/3/06
95	✓	Resolve 10 ET's project team member 5	Mon 3/27/06	Fri 4/14/06
96	✓	<b>Performance Testing</b>	<b>Tue 3/21/06</b>	<b>Tue 4/25/06</b>
97	✓	Planning	Tue 3/21/06	Thu 3/23/06
98	✓	Hardware Setup	Wed 4/19/06	Wed 4/19/06
99	✓	<b>Exercise the Performance Test Plan</b>	<b>Mon 4/10/06</b>	<b>Tue 4/25/06</b>
100	✓	2 users	Mon 4/10/06	Mon 4/10/06
101	✓	Tuning rework	Mon 4/10/06	Mon 4/10/06
102	✓	Small Group of 7	Tue 4/11/06	Thu 4/13/06
103	✓	Tuning rework	Fri 4/14/06	Mon 4/17/06
104	✓	32 Users	Fri 4/21/06	Fri 4/21/06
105	✓	Improvement investigation and ET documentation	Mon 4/24/06	Tue 4/25/06
106		<b>Performance Maintenance Strategies</b>	<b>Fri 1/7/05</b>	<b>Fri 1/7/05</b>
107		Integrate performance tuning into SDE Management Plan	Fri 1/7/05	Fri 1/7/05
108	✓	<b>EDFS Integration Reconfiguration #2</b>	<b>Mon 3/20/06</b>	<b>Mon 4/24/06</b>
109	✓	EDFS Coding & Rework	Mon 3/20/06	Fri 3/24/06
110	✓	EDFS Integration System Acceptance Testing	Mon 4/3/06	Fri 4/7/06
111	✓	Pre-Production - Configure SAGE database in production	Mon 4/24/06	Mon 4/24/06
112	✓	Pre-Production - Load security updates to EDFs	Mon 4/24/06	Mon 4/24/06
113	✓	Upon freeze - disable update to legacy EDFs and enable inquiry only	Fri 4/21/06	Fri 4/21/06
114	✓	<b>EDFS Interim Data Transaction System</b>	<b>Tue 1/3/06</b>	<b>Wed 4/26/06</b>
115	✓	Design	Tue 1/3/06	Mon 1/9/06
116	✓	Code	Mon 3/6/06	Fri 3/10/06
117	✓	MDS Onsite Installation & SAT	Mon 3/27/06	Thu 3/30/06
118	✓	MDS Onsite Installation & SAT Support	Mon 3/27/06	Mon 3/27/06
119	✓	Train Stores Clerks on MDS & SAGE	Tue 4/25/06	Wed 4/26/06
120	✓	<b>SynerGEE Interface #2</b>	<b>Mon 3/13/06</b>	<b>Fri 3/17/06</b>
121	✓	NIPSCO Acceptance Tests DataPrep	Mon 3/13/06	Fri 3/17/06
122	✓	Revise and Finalize DataPrep per NIPSCO test results	Thu 3/16/06	Fri 3/17/06
123	✓	Update Data Model Change Interface Impact Grid - verify Skye's assumptions	Fri 3/17/06	Fri 3/17/06
124	✓	<b>CAD Interoperability - GIS to DWF,DWG Export #2</b>	<b>Wed 3/22/06</b>	<b>Mon 3/26/07</b>
125	✓	Decide on product	Wed 3/22/06	Wed 3/22/06
126	✓	Configure/code/test product	Mon 5/8/06	Fri 5/12/06
127	✓	Create the admin/user documentation	Mon 5/15/06	Mon 5/15/06
128	✓	Move documentation to Source Safe	Mon 3/26/07	Mon 3/26/07
129	✓	<b>MLOG Interface (Replacement for Cook Hurbert) - Interim</b>	<b>Mon 1/9/06</b>	<b>Tue 3/21/06</b>



























## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
130	✓	Re-design the AEDR Phase I interface to MLOG	Mon 1/9/06	Mon 1/9/06
131	✓	Develop the interface	Mon 1/9/06	Mon 1/9/06
132	✓	Unit test the Interface	Tue 3/21/06	Tue 3/21/06
133	✓	<b>Facility Browser Application - Phase I</b>	<b>Mon 3/13/06</b>	<b>Mon 3/13/06</b>
134	✓	Moved to AEDR Phase II	Mon 3/13/06	Mon 3/13/06
135	✓	<b>Gas &amp; Elec Service Request Application</b>	<b>Tue 2/15/05</b>	<b>Tue 2/15/05</b>
136	✓	Moved to AEDR Phase II	Tue 2/15/05	Tue 2/15/05
137	✓	<b>Field Browser Application</b>	<b>Mon 3/13/06</b>	<b>Mon 3/13/06</b>
138	✓	Moved to AEDR Phase II	Mon 3/13/06	Mon 3/13/06
139	✓	<b>CADOPS Reconfiguration (based on new frozen data model)</b>	<b>Mon 1/23/06</b>	<b>Thu 5/25/06</b>
140	✓	Install the reconfigured CADOPS / FeederAll Onsite	Mon 1/23/06	Mon 1/23/06
141	✓	Test the reconfigured CADOPS Onsite	Mon 1/23/06	Mon 1/30/06
142	✓	Complete the cleanup and finalize the territory for NORS	Mon 1/30/06	Mon 3/20/06
143	✓	Support User Data Changes for NORS	Tue 3/21/06	Thu 5/25/06
144	✓	<b>FeederAll Reconfiguration (based on new frozen data model)</b>	<b>Fri 10/6/06</b>	<b>Fri 10/6/06</b>
145	✓	Moved to AEDR Phase II	Fri 10/6/06	Fri 10/6/06
146	✓	<b>ArcFM Configuration Updates / Fixes</b>	<b>Mon 3/20/06</b>	<b>Mon 5/1/06</b>
147	✓	<b>Miscellaneous</b>	<b>Fri 3/31/06</b>	<b>Mon 5/1/06</b>
148	✓	Modify Stored Displays as needed for performance	Mon 5/1/06	Mon 5/1/06
149	✓	<b>Symbology Rotation Problem Resolution</b>	<b>Fri 3/31/06</b>	<b>Fri 3/31/06</b>
150	✓	Re-write the scripts that adjust the rotation to back out the adjustments	Fri 3/31/06	Fri 3/31/06
151	✓	Disable AutoAngle Setter AU	Fri 3/31/06	Fri 3/31/06
152	✓	Run the new scripts in the Dev environment	Fri 3/31/06	Fri 3/31/06
153	✓	<b>ArcFM Configuration Testing</b>	<b>Mon 3/20/06</b>	<b>Thu 4/6/06</b>
154	✓	Test configuration using the Online Help Documents - ET any errors	Mon 3/20/06	Mon 3/20/06
155	✓	Test configuration using the Online Help Documents - ET any errors	Tue 3/21/06	Fri 3/24/06
156	✓	Create new test cases for configuration not addressed by Online Help	Mon 4/3/06	Tue 4/4/06
157	✓	Test configuration residing outside the online files - ET any errors	Wed 4/5/06	Wed 4/5/06
158	✓	Export baseline configuration and check into SourceSafe	Wed 4/5/06	Wed 4/5/06
159	✓	Review & correct configuration errors and synchronize Online Help	Mon 3/27/06	Thu 4/6/06
160	✓	<b>ArcFM Configuration Review</b>	<b>Fri 4/7/06</b>	<b>Fri 4/7/06</b>
161	✓	Final configuration review of custom code components	Fri 4/7/06	Fri 4/7/06
162	✓	<b>Remaining Install and Configure AU tasks</b>	<b>Mon 1/16/06</b>	<b>Mon 3/27/06</b>
163	✓	AU On-site Work #3 - Develop/test installation process that will work via e-mail	Mon 1/16/06	Mon 1/16/06
164	✓	AU On-site Work #3 - Make sure AU's are installed on all machines	Mon 1/16/06	Mon 1/16/06
165	✓	AU On-site Work #3 - Configure and test remaining AUs	Tue 1/17/06	Fri 1/20/06
166	✓	AU On-site Work #3 - Acceptance test entire suite of Aus	Mon 1/16/06	Fri 1/20/06
167	✓	Configure AU resulting from ET 2433	Mon 3/6/06	Mon 3/6/06
168	✓	Install & Test AU from ET 2433	Mon 3/27/06	Mon 3/27/06
169	✓	<b>Miscellaneous Customizations</b>	<b>Wed 3/30/05</b>	<b>Wed 3/30/05</b>
170	✓	<b>Remaining Tasks</b>	<b>Wed 3/30/05</b>	<b>Wed 3/30/05</b>
171	✓	Customize the ArcGIS toolbar so that it has the functions needed by the record clerks	Wed 3/30/05	Wed 3/30/05
172	✓	<b>System Acceptance Testing (SAT) Tasks Reside in Each Component Section</b>	<b>Mon 3/13/06</b>	<b>Mon 3/13/06</b>

## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
173		See individual component sections	Mon 3/13/06	Mon 3/13/06
174		<b>Integration Testing (IT) / Rework on Fully Configured Environment</b>	<b>Mon 3/13/06</b>	<b>Fri 5/19/06</b>
175		IT - Standard configuration (create / maintain features)	Mon 5/8/06	Fri 5/12/06
176		IT - Auto Updaters	Mon 5/8/06	Fri 5/12/06
177		IT - CADOPS (Tested previously)	Fri 5/19/06	Fri 5/19/06
178		IT - FeederAll -Not tested - delayed by IT interface until post-AEDR implementation	Mon 3/13/06	Mon 3/13/06
179		IT - Gas & Elec Service Cards	Thu 5/11/06	Thu 5/11/06
180		IT - Facility Browser - Not tested - delayed to Phase II	Thu 5/11/06	Thu 5/11/06
181		IT - Gas & Elec Service Card Application - Not tested - delayed to Phase II	Thu 5/11/06	Fri 5/12/06
182		IT - Field Browser Export - Not tested - Delayed to Phase II	Fri 5/12/06	Fri 5/12/06
183		IT - Session Manager	Tue 5/9/06	Thu 5/11/06
184		<b>Integration testing - EDFS &amp; Interfaces</b>	<b>Mon 5/8/06</b>	<b>Fri 5/19/06</b>
185		IT - EDFS SAGE & ArcFM	Mon 5/8/06	Fri 5/19/06
186		IT - MLOG Interface	Mon 5/8/06	Fri 5/19/06
187		IT - GL Interface	Mon 5/8/06	Fri 5/19/06
188		IT - MAPPS Interface	Mon 5/8/06	Fri 5/19/06
189		IT - EAIF Interface	Mon 5/8/06	Fri 5/19/06
190		IT - CIS Interface	Mon 5/8/06	Fri 5/19/06
191		IT - GIS to DWG Export (tested stand-alone in CAD Converter section)	Fri 5/12/06	Fri 5/12/06
192		IT - NPMS	Fri 5/12/06	Fri 5/12/06
193		<b>User Acceptance Testing (UAT) on Fully Configured Environment</b>	<b>Mon 5/15/06</b>	<b>Fri 5/19/06</b>
194		UAT - Standard configuration (create/maintain features)	Mon 5/15/06	Fri 5/19/06
195		UAT - Auto Updaters	Mon 5/15/06	Fri 5/19/06
196		UAT - CADOPS - Tested Previously	Mon 5/15/06	Mon 5/15/06
197		UAT - FeederAll - Not tested - delayed to Phase II	Tue 5/16/06	Tue 5/16/06
198		UAT - Facility Browser - Not tested - delayed to Phase II	Tue 5/16/06	Tue 5/16/06
199		UAT - Field Browser - Not tested - delayed to Phase II	Wed 5/17/06	Wed 5/17/06
200		UAT - SynerGEE - Tested Previously	Tue 5/16/06	Tue 5/16/06
201		<b>UAT - EDFS Replacement</b>	<b>Tue 5/16/06</b>	<b>Fri 5/19/06</b>
202		UAT - EDFS SAGE & ArcFM	Tue 5/16/06	Wed 5/17/06
203		UAT - MLOG Interface	Thu 5/18/06	Thu 5/18/06
204		UAT - GL Interface	Thu 5/18/06	Thu 5/18/06
205		UAT - MAPPS Interface	Thu 5/18/06	Thu 5/18/06
206		UAT - EAIF Interface	Thu 5/18/06	Thu 5/18/06
207		UAT - CIS Interface	Fri 5/19/06	Fri 5/19/06
208		UAT - GIS to DWG Export	Tue 5/16/06	Tue 5/16/06
209		<b>Data Model Changes Based on Testing Re-Work</b>	<b>Mon 2/2/04</b>	<b>Mon 5/22/06</b>
210		Completion of electric domain approvals	Mon 2/2/04	Fri 6/4/04
211		Completion of land and gas domain verification	Wed 3/22/06	Fri 5/19/06
212		Apply Data Model Changes	Mon 4/10/06	Mon 5/22/06
213		<b>Work Arounds</b>	<b>Mon 5/22/06</b>	<b>Mon 5/22/06</b>
214		Domain Changes	Mon 5/22/06	Mon 5/22/06
215		<b>Aerial Photography</b>	<b>Mon 3/13/06</b>	<b>Mon 3/13/06</b>

## AEDR Deployment Phase I Project Plan

ID		Task Name	Start	Finish
216		Determine where these files will permanently reside	Mon 3/13/06	Mon 3/13/06
217		<b>Disaster Recovery Plan</b>	<b>Mon 5/15/06</b>	<b>Mon 5/15/06</b>
218		Develop the disaster recovery plan	Mon 5/15/06	Mon 5/15/06
219		<b>Training Program</b>	<b>Mon 10/17/05</b>	<b>Tue 6/13/06</b>
220		Design - Develop Training Plan	Mon 10/17/05	Wed 10/19/05
221		Conduct training needs assessment	Mon 2/20/06	Wed 2/22/06
222		Assign userID's to SQL instance	Mon 4/10/06	Fri 4/28/06
223		Test hardware & document recommendation	Mon 4/3/06	Fri 4/28/06
224		Determine training instance - (CITRIX)	Mon 4/3/06	Fri 4/28/06
225		Create & deliver training manuals for GIS Team	Mon 2/27/06	Mon 4/17/06
226		Develop training environment	Mon 4/17/06	Tue 5/2/06
227		Train GIS staff	Mon 4/17/06	Thu 4/20/06
228		Train record clerks week 1	Mon 5/1/06	Fri 5/5/06
229		Train record clerks week 2	Mon 5/15/06	Fri 5/19/06
230		Assist record clerks in Practice 1	Mon 5/15/06	Thu 5/18/06
231		Assist record clerks in Practice 2	Fri 5/19/06	Tue 6/13/06
232		<b>Implementation Plan</b>	<b>Wed 12/21/05</b>	<b>Fri 5/26/06</b>
233		Develop first draft of the plan	Wed 12/21/05	Wed 12/21/05
234		Review & adjust the Implementation Plan tasks	Mon 3/13/06	Mon 3/13/06
235		Develop white board of Implementation Plan tasks	Mon 3/20/06	Mon 3/20/06
236		On-going implementation plan adjustments	Mon 3/20/06	Fri 5/26/06
237		<b>Transition Phase - Production Rollout</b>	<b>Mon 4/24/06</b>	<b>Fri 12/29/06</b>
238		Execute the Implementation Plan	Mon 4/24/06	Fri 6/30/06
239		Address data cleanup concerns from critical mismatch reports	Fri 12/29/06	Fri 12/29/06
240		Install SynerGEE on users PC and run Data Prep	Mon 6/12/06	Mon 6/12/06
241		Application production rollout support	Mon 6/12/06	Mon 8/7/06

## Appendix B

### Migration QA Plan Checklist

**Migration QA Plan Checklist**

<b>Start</b>	<b>End</b>	<b>% Complete</b>	<b>Test Steps</b>	<b>Resources</b>	<b>Notes / Results</b>
			<b>Pre-QA Setup</b>		<b>The purpose for this task is to prepare both the QA environment and the QA team.</b>
5/16 - 8:00am	5/18 - noon	0%	Perform various QA setup tasks		
5/12 - noon	5/19 - 9:00pm	0%	Create tracklists for the delivery		
5/19 - 2:00pm	5/19 - 2:30pm	0%	Print graphic specs plot for the features (symbology legend)		
5/19 - 8:00am	5/19 - 5:00pm	0%	Update feature count QA tracklists with the counts		
5/18 - 8:00am	5/18 - noon	0%	Set up X drive folders		
5/16 - 11:30am	5/16 - 11:30am	0%	Schedule DBA to assist with the installation		
5/12 - noon	5/12 - noon	0%	Verify any changes to the instances used for the installation of migrated data		
5/19 - 12:30pm	5/22 - 11:25am	0%	Set up the hardware for QA team		
5/16 - 8:30am	5/16 - 8:30am	0%	Notify IT server group regarding upcoming delivery and QA		
<b>STEP 1</b>			<b>Install the Data in the Test/Migration Instance &amp; Prod/Test Instance</b>		<b>The purpose for this task is to prepare the data for QA processing.</b>
5/16 - 8:30am	5/16 - noon	0%	Download data and files from FTP server		
5/16 - noon	5/17 - 3:00	0%	High level review of reports & artifacts		
5/16 - 8:30	5/17 - noon	0%	Copy migrated data and artifacts to a shared directory		
5/16 - 4:00am	5/17 - noon	0%	Restore the BAK file to Mig & Prod		
<b>STEP 2</b>			<b>High Level/Preliminary QA</b>		<b>The purpose for this set of tasks is to make sure that vendor delivered everything that will be required for the migration QA.</b>
5/17-am	5/17-am	0%	Document the environment change per the SDE Management Plan		
5/18 - 7:00am	5/18 - 7:15am	0%	Verify that the schema of the geodatabase from vendor is correct		



**Migration QA Plan Checklist**

<b>Start</b>	<b>End</b>	<b>% Complete</b>	<b>Test Steps</b>	<b>Resources</b>	<b>Notes / Results</b>
5/17-am	5/17-am	0%	Verify the delivery artifacts against the Delivery Checklist		
5/19 - am	5/19 - am	0%	Run the source count compare script		
5/18 - pm	5/19 - 9:00pm	0%	Pre-populate the Interactive & Object Existence QA spreadsheets		
5/17 - 8:30am	5/17 - 4:00pm	0%	Check for missing tiles		
5/18 - 8:45am	5/19 - 4:00pm	0%	Conduct object existence test		
5/17 - 11:30am	5/18 - 9:30am	0%	Run automated QA routines against new data		
5/17 - 11:30am	5/18 - 9:30am	0%	Compare NIPSCO automated QA reports against vendor automated QA reports		
5/22 - 7:30am	5/22 - 8:00	0%	Setup individual QA folders & assignment spreadsheet		
		0%	CHECKPOINT: Authorization to proceed with QA or rejection of the delivery		
			<b>Build Production Instance</b>		<b>The purpose for this set of tasks is to prepare the production instance for parallel processing</b>
5/18 - noon	5/20 - 11:00	0%	Build the parallel production instance		
5/20 - 11:00 am	5/25 - 8:55 am	0%	Run data cleanup and NIPSCO migration scripts		
5/25 - 9:00 am	6/2 - 7:30am	0%	Configure the geodatabase		

**Migration QA Plan Checklist**

<b>Start</b>	<b>End</b>	<b>% Complete</b>	<b>Test Steps</b>	<b>Resources</b>	<b>Notes / Results</b>
6/2 - 9:30am	6/7 - 5:00	0%	QA parallel production instance		
<b>STEP 3</b>			<b>Detail Level QA</b>		<b>The purpose for this set of tasks is to verify the accuracy of the delivered data using multiple types of QA processes</b>
5/22 - 9:00	6/7 - 12:30pm	0%	Ready for review of corrected items from previous deliveries		
			<b>Feature Count QA - Electric</b>		<b>The purpose of this task is to provide a baseline count of electric data sent for comparison of data returned to ensure data is not missing nor added</b>
5/19 - 10:00am	5/21 - 1:00pm	0%	Count ArcGIS objects from Outfield and update the tracklist		
5/22 - 1:00pm	5/24 - 3:00pm	0%	Count ArcGIS objects from EDFs and update the tracklist		
5/22 - 4:00pm	5/22 - 5:30	0%	Count ArcGIS objects from annotation and update the tracklist		
			<b>Feature Count QA - Gas</b>		<b>The purpose of this task is to provide a baseline count of gas data sent for comparison of data returned to ensure data is not missing nor added</b>
5/22 - 9:30am	5/22 - 3:00pm	0%	Count ArcGIS objects from Outfield and update tracklist		
5/22 - 3:00pm	5/23 - 1:30pm	0%	Count ArcGIS objects from annotation and update the tracklist		
			<b>Feature Count QA - Land</b>		<b>The purpose of this task is to provide a baseline count of land data sent for comparison of data returned to ensure data is not missing nor added</b>

**Migration QA Plan Checklist**

<b>Start</b>	<b>End</b>	<b>% Complete</b>	<b>Test Steps</b>	<b>Resources</b>	<b>Notes / Results</b>
5/23 - 1:30pm	5/24 - 10:30am	0%	Count ArcGIS objects from Outfield and update tracklist		
5/23 - 4:00pm	5/24 - 10:30am	0%	Count ArcGIS objects from annotation and update the tracklist		
			<b>Feature Count QA - Reconcile Counts</b>		<b>Verify vendor delivered data is not missing features or introducing features not previously sent</b>
5/24 - 11:00am	5/24 - 11:30am	0%	Apply the dissolve and split counts to the tracklist		
5/24 - 11:00am	5/24 - 11:30am	0%	Compare internal source target counts and compare with vendor counts		
			<b>Automated QA</b>		<b>The purpose of this task is to quickly identify data anomalies through the use of automated routines. Data may fail an automated routine, yet may still be valid, therefore visual inspection is necessary.</b>
5/18 - 10:00am	5/19 - 12:00pm	0%	Copy all failed electric test info into the tracklist		
5/18 - 10:00am	5/19 - 12:00pm	0%	Copy all failed gas test info into the tracklist		
5/18 - 10:00am	5/19 - 12:00pm	0%	Copy all failed land test info into the tracklist		
5/22 - 10:00am	5/25 - 6:00pm	0%	Automated QA - Electric		
5/22 - 10:00am	5/24 - 6:00pm	0%	Automated QA - Gas		
5/22 - 2:30pm	5/24 - 6:00pm	0%	Automated QA - Land		
			<b>First Pass Connectivity</b>		<b>The purpose of this task is to determine geometric connectivity. (High Level)</b>
5/22 - 1:00	5/26 - 5:30 PM	0%	Determine sample set of gas and electric networks across LOAs and batches		

**Migration QA Plan Checklist**

<b>Start</b>	<b>End</b>	<b>% Complete</b>	<b>Test Steps</b>	<b>Resources</b>	<b>Notes / Results</b>
5/22 - 1:00	5/26 - 5:30 PM	0%	Trace each sample network and record the total features traced in the tracklist		
5/22 - 1:00	5/26 - 5:30 PM	0%	Test each stop point and determine if the stop points are valid		
			<b>Second Pass Connectivity</b>		<b>The purpose of this task is to determine geometric connectivity. (Low Level)</b>
6/5 - 1:00 PM	6/5 - 4:30 PM	0%	Determine sample set of gas and electric networks across LOAs and batches		
6/5 - 1:00 PM	6/5 - 4:30 PM	0%	Examine each sample network		
			<b>Interactive QA</b>		<b>The purpose of this task is to visually inspect the appropriate sample of the data to determine accuracy and completeness</b>
5/23 - 9:00am	5/26 - 1:30pm	0%	Interactive QA Electric		
5/23 - 10:00am	5/24 - 6:00pm	0%	Interactive QA Gas		
5/24 - 8:00am	5/24 - 6:00pm	0%	Interactive QA Land		
<b>STEP 8</b>			<b>Miscellaneous</b>		
5/26 - noon		0%	Team summary review of all QA testing and determination if any additional items or issues need to be investigated.		

## Appendix C

### GIS System Performance Testing

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# 1. Introduction

## 1.1. Purpose

The purpose of this document is to present the results of a GIS Performance Testing initiative for the NIPSCO AEDR implementation. The NIPSCO AEDR will utilize Microsoft's SQL Server Relational Database Management System (RDBMS) with ESRI's ArcSDE for spatial database management. The AEDR will incorporate ESRI's ArcGIS and Miner and Miner's ArcFM products for the client front-end, as well as an ASP.NET Web application for non-graphical data updates.

## 1.2. Scope and Process

The scope of this document is limited to the performance testing of the SDE / SQL Server database server.

For this GIS Performance Testing initiative, NIPSCO gathered 32 users to simulate the workload that is expected once the system is fully utilized in production. Several test scripts were written by NIPSCO project team personnel, and these scripts were randomly given to the test users. All testing occurred on **Friday, April 21, 2006** during an all-day testing event.

The performance tuning test period was broken down into two sessions. The first session (from 8am until lunch) was a "training" session for the users. Since most of the users had not been trained on ArcGIS or ArcFM, this session allowed them to become acquainted with the system and to practice their test scripts. The second session (from 1pm until 4pm) was the live "testing" session where performance statistics were gathered on the servers while users performed the actions in their test scripts.

Performance statistics were gathered using Microsoft's PERFMON utility, as well as SQL Server's PROFILER application. PERFMON allows statistics to be gathered against any user-defined criteria on the server, measuring hardware and software performance. The SQL Profiler allows a DBA to capture all SQL calls performed by the database, as well as database execution plans and response times for those SQL queries.

## 1.3. Document Overview

This document is divided into the following sections:

- **Section 1** Introduction — States the document's purpose and scope, and provides a high-level overview of the rest of the document.
- **Section 2** System Environment — defines the system environment under which the System Performance Testing was performed.
- **Section 3** Test Results – presents the performance testing initiative results
- **Section 4** Recommendations – presents any recommendations for tuning the ArcSDE / SQL Server database server.

---

## 2. System Environment

### 2.1. ArcSDE / SQL Server

The system specifications of the ArcSDE / SQL Server production server are as follows:

Characteristic	Value
Server Name	aedrdbsqlp01
Server Make/Model	IBM X445
Server CPUs	4 CPUs @ 2.8 GHz
Physical RAM	4 GB
OS	Windows 2003 Server with Service Pack 1
SQL Server	Microsoft SQL Server 2000 with Service Pack 4
Physical Disks	2 x 36GB mirrored for Operating System.
Data files	All data files located on SAN
ArcSDE Version	8.3 with Service Pack 3

### 2.2. ArcSDE Configuration

The following file contains the ArcSDE configuration parameters:

LAYERS 500 - maximum number of layers  
REGISTRATIONS 1000 - maximum number of registered tables  
CONNECTIONS 64 - maximum number of connections  
STATELOCKS 10000 - maximum number of state locks  
MAXTABLELOCKS 10000 - maximum number of table locks  
OBJECTLOCKS 10000 - maximum number of object locks  
RASTERCOLUMNS 500 - maximum number of raster columns  
RASTERBUFSIZE 102400 - maximum raster buffer size

Increase the MINBUFSIZE and the MAXBUFSIZE when mass loading data. These values will provide optimum loading performance for most SDE servers.

MINBUFSIZE 409600 - minimum buffer size > 4096  
MAXBUFSIZE 819200 - maximum buffer size > MINBUFSIZE

Decrease the MINBUFSIZE and MAXBUFSIZE after the database has been loaded and before it is opened to the general public. Take caution when increasing the size of MAXBUFSIZE since SDE allocates MAXBUFSIZE bytes for each stream a SDE client has opened. For instance, if 50 users are connected to SDE and each has 5 streams opened and the MAXBUFSIZE is set 64 kilobytes, 16000 kilobytes of server memory are allocated to the transport buffers.



---

MINBUFSIZE 16384 - minimum buffer size > 4096  
 MAXBUFSIZE 65536 - maximum buffer size > MINBUFSIZE  
 MINBUFOBJECTS 512 - minimum objects per buffer  
 LOCKS 10000 - total number of locks for the system  
 MAXTIMEDIFF -1 - maximum client/server time difference (seconds)  
 MAXBLOBSIZE 1000000 - Maximum BLOB size allowed for storage  
 BLOBMEM 1000000 - Maximum BLOB size for in-memory storage  
 AUTOCOMMIT 1000 - Auto-commit frequency within user transaction  
 MAXINITIALFEATS 10000 - Max. Initial Features/Layer  
 MAXDISTINCT 512 - Max. number of unique values for attribute stats  
 MAXSTREAMS 25 - Max. number of streams  
 SHAPEPTSBUFSIZE 400000 - Shape POINTS array buffer size  
 ATTRBUFSIZE 50000 - Attribute array buffer size  
 MAXARRAYSIZE 100 - Max. array fetch size  
 MAXARRAYBYTES 550000 - Max. array bytes allocated per stream  
 STREAMPOOLSIZE 3 - number of streams in a pool  
 STATECACHING TRUE - Toggles state caching on or off  
 TCPKEEPALIVE FALSE - TCP keepalive on client connections on or off.  
 READONLY FALSE - ArcSDE service is or is not read only.

### 2.3. ArcSDE DBTUNE file

The following lists the ArcSDE DBTUNE parameters. These parameters define storage characteristics for the SDE data stored in SQL Server:

```

##DATA_DICTIONARY
B_CLUSTER_ROWID 0
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
MVTABLES_MODIFIED_INDEX"WITH FILLFACTOR = 75"
MVTABLES_MODIFIED_TABLE ""
STATE_LINEAGES_INDEX "WITH FILLFACTOR = 75"
STATE_LINEAGES_TABLE ""
STATES_INDEX "WITH FILLFACTOR = 75"
STATES_TABLE ""
UI_TEXT ""
VERSIONS_INDEX "WITH FILLFACTOR = 75"
VERSIONS_TABLE ""
END
  
```

```

##DEFAULTS
A_CLUSTER_ROWID 0
A_CLUSTER_SHAPE 1
A_CLUSTER_STATEID0
A_CLUSTER_USER 0
A_INDEX_ROWID "WITH FILLFACTOR = 75"
A_INDEX_SHAPE "WITH FILLFACTOR = 75"
A_INDEX_STATEID "WITH FILLFACTOR = 75"
A_INDEX_USER "WITH FILLFACTOR = 75"
A_STORAGE ""
A_TEXT_IN_ROW 256
  
```

---

```

AUX_CLUSTER_COMPOSITE 1
AUX_INDEX_COMPOSITE "WITH FILLFACTOR = 75"
AUX_STORAGE ""
B_CLUSTER_ROWID 0
B_CLUSTER_SHAPE 1
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_SHAPE "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
B_TEXT_IN_ROW 256
BLK_CLUSTER_COMPOSITE 1
BLK_INDEX_COMPOSITE "WITH FILLFACTOR = 75"
BLK_STORAGE ""
BND_CLUSTER_COMPOSITE 0
BND_CLUSTER_ID 0
BND_INDEX_COMPOSITE "WITH FILLFACTOR = 75"
BND_INDEX_ID "WITH FILLFACTOR = 75"
BND_STORAGE ""
CROSS_DB_QUERY_FILTER 0
D_CLUSTER_ALL 0
D_CLUSTER_DELETED_AT 1
D_INDEX_ALL "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT "WITH FILLFACTOR = 75"
D_STORAGE ""
F_CLUSTER_FID 1
F_INDEX_AREA "WITH FILLFACTOR = 75"
F_INDEX_FID "WITH FILLFACTOR = 75"
F_INDEX_LEN "WITH FILLFACTOR = 75"
F_STORAGE ""
F_TEXT_IN_ROW 256
NUM_DEFAULT_CURSORS -1
RAS_CLUSTER_ID 1
RAS_INDEX_ID "WITH FILLFACTOR = 75"
RAS_STORAGE ""
S_CLUSTER_ALL 1
S_CLUSTER_SP_FID 0
S_INDEX_ALL "WITH FILLFACTOR = 75"
S_INDEX_SP_FID "WITH FILLFACTOR = 75"
S_STORAGE ""
UI_TEXT ""
END

```

```

###IMS_METADATA
B_CLUSTER_ROWID 0
B_CLUSTER_SHAPE 1
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_SHAPE "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
B_TEXT_IN_ROW 256
COMMENT "The IMS metadata feature class"
F_CLUSTER_FID 1

```

---

```
F_INDEX_AREA      "WITH FILLFACTOR = 75"  
F_INDEX_FID      "WITH FILLFACTOR = 75"  
F_INDEX_LEN      "WITH FILLFACTOR = 75"  
F_STORAGE        ""  
F_TEXT_IN_ROW    256  
S_CLUSTER_ALL    1  
S_CLUSTER_SP_FID 0  
S_INDEX_ALL      "WITH FILLFACTOR = 75"  
S_INDEX_SP_FID   "WITH FILLFACTOR = 75"  
S_STORAGE        ""  
UI_TEXT          ""  
END
```

```
##IMS_METADATAARELATIONSHIPS  
B_CLUSTER_ROWID  0  
B_CLUSTER_USER   1  
B_INDEX_ROWID    "WITH FILLFACTOR = 75"  
B_INDEX_USER     "WITH FILLFACTOR = 75"  
B_STORAGE        ""  
UI_TEXT          ""  
END
```

```
##IMS_METADATAATAGS  
B_CLUSTER_ROWID  1  
B_CLUSTER_USER   0  
B_INDEX_ROWID    "WITH FILLFACTOR = 75"  
B_INDEX_USER     "WITH FILLFACTOR = 75"  
B_STORAGE        ""  
UI_TEXT          ""  
END
```

```
##IMS_METADATAATHUMBNAILS  
B_CLUSTER_ROWID  0  
B_CLUSTER_USER   1  
B_INDEX_ROWID    "WITH FILLFACTOR = 75"  
B_INDEX_USER     "WITH FILLFACTOR = 75"  
B_STORAGE        ""  
B_TEXT_IN_ROW    256  
UI_TEXT          ""  
END
```

```
##IMS_METADATAUSERS  
B_CLUSTER_ROWID  1  
B_CLUSTER_USER   0  
B_INDEX_ROWID    "WITH FILLFACTOR = 75"  
B_INDEX_USER     "WITH FILLFACTOR = 75"  
B_STORAGE        ""  
UI_TEXT          ""  
END
```

```
##IMS_METADATAVALUES  
B_CLUSTER_ROWID  0  
B_CLUSTER_USER   1  
B_INDEX_ROWID    "WITH FILLFACTOR = 75"
```

---

```
B_INDEX_USER "WITH FILLFACTOR = 75"  
B_STORAGE ""  
UI_TEXT ""  
END
```

```
##IMS_METADATAWORDINDEX
```

```
B_CLUSTER_ROWID 0  
B_CLUSTER_USER 1  
B_INDEX_ROWID "WITH FILLFACTOR = 75"  
B_INDEX_USER "WITH FILLFACTOR = 75"  
B_STORAGE ""  
UI_TEXT ""  
END
```

```
##IMS_METADATAWORDS
```

```
B_CLUSTER_ROWID 1  
B_CLUSTER_USER 0  
B_INDEX_ROWID "WITH FILLFACTOR = 75"  
B_INDEX_USER "WITH FILLFACTOR = 75"  
B_STORAGE ""  
UI_TEXT ""  
END
```

```
###LOGFILE_DEFAULTS
```

```
LD_CLUSTER_ALL 0  
LD_CLUSTER_DATA_ID 0  
LD_CLUSTER_ROWID 1  
LD_INDEX_ALL "WITH FILLFACTOR = 75"  
LD_INDEX_DATA_ID "WITH FILLFACTOR = 75"  
LD_INDEX_ROWID "WITH FILLFACTOR = 75"  
LD_STORAGE ""  
LF_CLUSTER_DATA_ID 0  
LF_CLUSTER_ID 0  
LF_CLUSTER_NAME 0  
LF_INDEX_DATA_ID "WITH FILLFACTOR = 75"  
LF_INDEX_ID "WITH FILLFACTOR = 75"  
LF_INDEX_NAME "WITH FILLFACTOR = 75"  
LF_STORAGE ""  
UI_TEXT ""  
END
```

```
###NETWORK_DEFAULTS
```

```
A_CLUSTER_ROWID 0  
A_CLUSTER_SHAPE 1  
A_CLUSTER_STATEID 0  
A_CLUSTER_USER 0  
A_INDEX_ROWID "WITH FILLFACTOR = 75"  
A_INDEX_SHAPE "WITH FILLFACTOR = 75"  
A_INDEX_STATEID "WITH FILLFACTOR = 75"  
A_INDEX_USER "WITH FILLFACTOR = 75"  
A_STORAGE ""  
A_TEXT_IN_ROW 256  
B_CLUSTER_ROWID 0  
B_CLUSTER_SHAPE 1
```

---

```

B_CLUSTER_USER      0
B_INDEX_ROWID      "WITH FILLFACTOR = 75"
B_INDEX_SHAPE      "WITH FILLFACTOR = 75"
B_INDEX_USER       "WITH FILLFACTOR = 75"
B_STORAGE          ""
B_TEXT_IN_ROW      256
COMMENT            "The base system initialization parameters for NETWORK_DEFAULTS"
D_CLUSTER_ALL      0
D_CLUSTER_DELETED_AT  1
D_INDEX_ALL        "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT  "WITH FILLFACTOR = 75"
D_STORAGE          ""
F_CLUSTER_FID      1
F_INDEX_AREA       "WITH FILLFACTOR = 75"
F_INDEX_FID        "WITH FILLFACTOR = 75"
F_INDEX_LEN        "WITH FILLFACTOR = 75"
F_STORAGE          ""
F_TEXT_IN_ROW      256
S_CLUSTER_ALL      1
S_CLUSTER_SP_FID   0
S_INDEX_ALL        "WITH FILLFACTOR = 75"
S_INDEX_SP_FID     "WITH FILLFACTOR = 75"
S_STORAGE          ""
UI_NETWORK_TEXT    "The network default configuration"
END

```

```
##NETWORK_DEFAULTS::DESC
```

```

A_CLUSTER_ROWID    1
A_CLUSTER_STATEID 0
A_CLUSTER_USER     0
A_INDEX_ROWID      "WITH FILLFACTOR = 75"
A_INDEX_STATEID    "WITH FILLFACTOR = 75"
A_INDEX_USER       "WITH FILLFACTOR = 75"
A_STORAGE          ""
A_TEXT_IN_ROW      256
B_CLUSTER_ROWID    1
B_CLUSTER_USER     0
B_INDEX_ROWID      "WITH FILLFACTOR = 75"
B_INDEX_USER       "WITH FILLFACTOR = 75"
B_STORAGE          ""
B_TEXT_IN_ROW      256
D_CLUSTER_ALL      0
D_CLUSTER_DELETED_AT  1
D_INDEX_ALL        "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT  "WITH FILLFACTOR = 75"
D_STORAGE          ""
END

```

```
##NETWORK_DEFAULTS::NETWORK
```

```

A_CLUSTER_ROWID    1
A_CLUSTER_STATEID 0
A_CLUSTER_USER     0
A_INDEX_ROWID      "WITH FILLFACTOR = 75"
A_INDEX_STATEID    "WITH FILLFACTOR = 75"

```

```

A_INDEX_USER "WITH FILLFACTOR = 75"
A_STORAGE ""
A_TEXT_IN_ROW 256
B_CLUSTER_ROWID 1
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
B_TEXT_IN_ROW 256
D_CLUSTER_ALL 0
D_CLUSTER_DELETED_AT 1
D_INDEX_ALL "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT "WITH FILLFACTOR = 75"
D_STORAGE ""
END

```

```

###SURVEY_MULTI_BINARY
UI_TEXT ""
END

```

```

###TOPOLOGY_DEFAULTS
A_CLUSTER_ROWID 0
A_CLUSTER_SHAPE 1
A_CLUSTER_STATEID 0
A_CLUSTER_USER 0
A_INDEX_ROWID "WITH FILLFACTOR = 75"
A_INDEX_SHAPE "WITH FILLFACTOR = 75"
A_INDEX_STATEID "WITH FILLFACTOR = 75"
A_INDEX_USER "WITH FILLFACTOR = 75"
A_STORAGE ""
A_TEXT_IN_ROW 256
B_CLUSTER_ROWID 0
B_CLUSTER_SHAPE 1
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_SHAPE "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
B_TEXT_IN_ROW 256
D_CLUSTER_ALL 0
D_CLUSTER_DELETED_AT 1
D_INDEX_ALL "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT "WITH FILLFACTOR = 75"
D_STORAGE ""
F_CLUSTER_FID 1
F_INDEX_AREA "WITH FILLFACTOR = 75"
F_INDEX_FID "WITH FILLFACTOR = 75"
F_INDEX_LEN "WITH FILLFACTOR = 75"
F_STORAGE ""
F_TEXT_IN_ROW 256
S_CLUSTER_ALL 1
S_CLUSTER_SP_FID 0
S_INDEX_ALL "WITH FILLFACTOR = 75"
S_INDEX_SP_FID "WITH FILLFACTOR = 75"

```

---

```
S_STORAGE ""
UI_TOPOLOGY_TEXT "The topology default configuration"
END
```

```
##TOPOLOGY_DEFAULTS::DIRTYAREAS
A_CLUSTER_ROWID 0
A_CLUSTER_SHAPE 1
A_CLUSTER_STATEID 0
A_CLUSTER_USER 0
A_INDEX_ROWID "WITH FILLFACTOR = 75"
A_INDEX_SHAPE "WITH FILLFACTOR = 75"
A_INDEX_STATEID "WITH FILLFACTOR = 75"
A_INDEX_USER "WITH FILLFACTOR = 75"
A_STORAGE ""
A_TEXT_IN_ROW 256
B_CLUSTER_ROWID 0
B_CLUSTER_SHAPE 1
B_CLUSTER_USER 0
B_INDEX_ROWID "WITH FILLFACTOR = 75"
B_INDEX_SHAPE "WITH FILLFACTOR = 75"
B_INDEX_USER "WITH FILLFACTOR = 75"
B_STORAGE ""
B_TEXT_IN_ROW 256
D_CLUSTER_ALL 0
D_CLUSTER_DELETED_AT 1
D_INDEX_ALL "WITH FILLFACTOR = 75"
D_INDEX_DELETED_AT "WITH FILLFACTOR = 90"
D_STORAGE ""
F_CLUSTER_FID 1
F_INDEX_AREA "WITH FILLFACTOR = 75"
F_INDEX_FID "WITH FILLFACTOR = 75"
F_INDEX_LEN "WITH FILLFACTOR = 75"
F_STORAGE ""
F_TEXT_IN_ROW 256
S_CLUSTER_ALL 1
S_CLUSTER_SP_FID 0
S_INDEX_ALL "WITH FILLFACTOR = 75"
S_INDEX_SP_FID "WITH FILLFACTOR = 75"
S_STORAGE ""
END
```

### 3. Test Results

Based on the statistics collected during the performance testing period, the ArcSDE / SQL Server RDBMS server named aedrdbsqlp01 is already adequately tuned and is currently responding to queries as well as it can. Below are several performance indicators that show how well the server and database is performing.

#### 3.1. Hardware Utilization

Figure C-1 shows three key hardware performance monitoring statistics that were captured during the performance testing period. Each of these statistics are described and analyzed below.

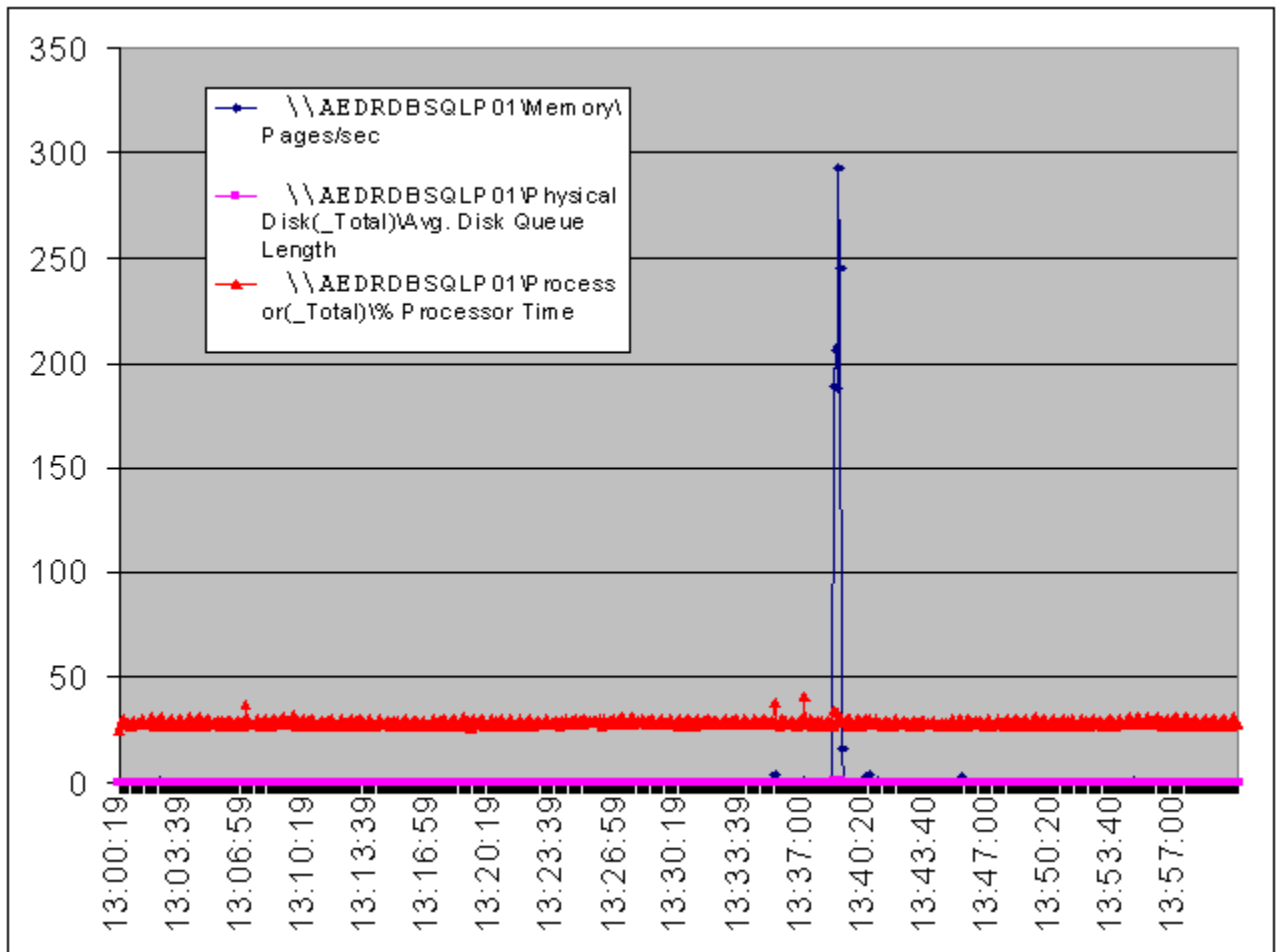


Figure C-1. Hardware performance monitoring statistics



---

### 3.1.1. CPU Utilization

The red line shown in Figure C-1 illustrates the CPU utilization during the performance testing period. This is a measure of how “active” the CPUs in the server are during our performance testing. Between the hours of 1:00PM and 2:00pm on our testing day, CPU utilization averaged 28.8%. This shows that the server is not over-utilized, and it actually has the capacity to perform a much higher workload.

### 3.1.2. Physical Disk Queue

The magenta line shown in Figure C-1 describes the Physical Disk Queue during the performance testing period. This is a measure of how many disk requests (both read and write requests) are sent to a queue while waiting on previous disks requests to complete. Essentially, this statistic indicates whether there is contention for the hard drives in the server. Between the hours of 1:00PM and 2:00PM on our testing day, there was no disk contention, as our average physical disk queue was 0.0138.

### 3.1.3. Memory Pages

The blue line shown in Figure C-1 represents the Memory Pages / Second during the performance testing period. This performance indicator represents the rate at which memory pages are written to or read from disk. While there was one brief spike in the data (at approximately 1:39PM), there is no cause for concern. The average memory pages per second during our 1:00PM to 2:00PM time slice was only 1.6 pages per second. This indicates the server is utilizing its physical RAM properly and not writing memory pages to disk.

**All three hardware performance indicators described above signify that the server (AEDRDBSQLP01) is performing well and is properly utilizing all major hardware subsystems (CPU, physical disk and physical memory).**

## 3.2. SQL Performance Indicators

Figure C-2 shows two key SQL performance indicators captured on AEDRDBSQLP01 during our performance testing period. These two indicators are described and analyzed below.

### 3.2.1. Buffer Cache Hit Ratio

The first key indicator portrayed in Figure C-2 is the Buffer Cache Hit Ratio. This ratio defines what percentage of database pages were already found in memory (as opposed to being read from disk) and is recommended to run > 90% for best performance results. During our testing period, our Buffer Cache Hit Ratio averaged > 98%. Figure 3.2 illustrates the period between 1:00PM and 2:00PM, where the Buffer Cache Hit Ratio averaged 99.858%.

### 3.2.2. Cache Hit Ratio

The second key indicator in the graph below is the Cache Hit Ratio. This ratio is recommended to run > 70% for best performance results. The Cache Hit Ratio indicates how well the SQL that ArcSDE sends to the database can be “re-used”, rather than “looked up”. During our test period, the Cache Hit Ratio averaged 72.4%.

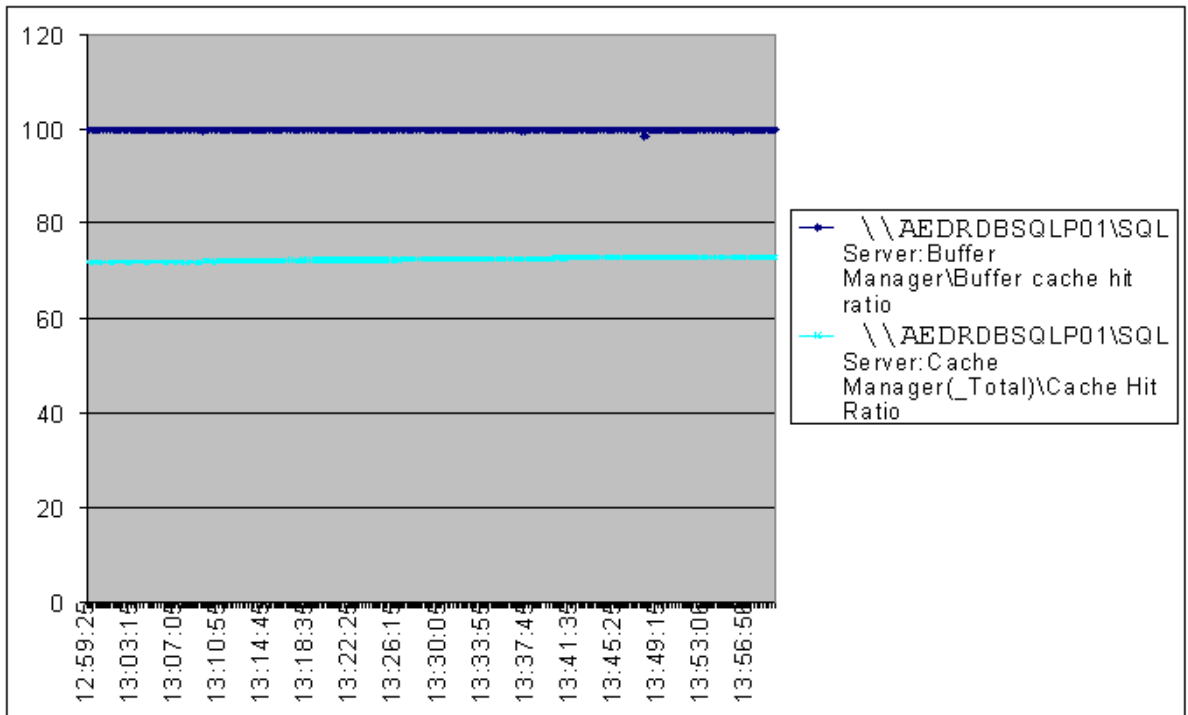


Figure C.2 – SQL Performance monitoring statistics

Both of these SQL performance metrics indicate that the SQL Server database is utilizing physical memory correctly.

### 3.3. SQL Response Times

During one period of testing, the SQL Profiler application was enabled, and all SQL queries into the database were monitored for execution plans and response times. The SQL Profiler output trace file was analyzed using a utility called “Read80Trace”, a Microsoft utility available for download from their website.

#### 3.3.1. Individual by Batch\_Duration

Table C-1 shows individual SQL:BatchCompleted/RPC:Completed events with the longest duration. During the SQL Profiler tracing period, the longest running SQL statement was 110 milliseconds, or 0.110 seconds. This is an excellent query response time.

Duration (ms)	CPU (ms)	Reads	Writes	Query Format
110	94	15576	0	DELETE FROM ARCFM8.LANDBASE.S144 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO WHERE ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S144.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A250 WHERE ARCFM8.LANDBASE.A250.SHAPE = ARCFM8.LANDBASE.S144.SP_FID)
96	0	121	0	SDE.SDE.SDE_TABLE_LOCK_DEF_INSERT
93	15	6083	2	DELETE FROM ARCFM8.LANDBASE.S143 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM

				ARCFM8.LANDBASE.PLSSECTION_SECTIONNUMBER_ANNO WHERE ARCFM8.LANDBASE.PLSSECTION_SECTIONNUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S143.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A249 WHERE ARCFM8.LANDBASE.A249.SHAPE = ARCFM8.LANDBASE.S143.SP_FID)
80	63	303	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.ELECTRIC.A203 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.ELECTRIC.D203 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
76	62	315	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.ELECTRIC.A109 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.ELECTRIC.D109 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
66	62	379	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A187 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D187 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
66	62	589	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A178 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D178 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
66	31	5045	0	DELETE FROM ARCFM8.LANDBASE.S146 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.DGGRID_NUMBER_ANNO WHERE ARCFM8.LANDBASE.DGGRID_NUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S146.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A252 WHERE ARCFM8.LANDBASE.A252.SHAPE = ARCFM8.LANDBASE.S146.SP_FID)
66	46	199	0	DELETE FROM ARCFM8.LANDBASE.S84 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.LOTLINE WHERE ARCFM8.LANDBASE.LOTLINE.SHAPE = ARCFM8.LANDBASE.S84.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A190 WHERE ARCFM8.LANDBASE.A190.SHAPE = ARCFM8.LANDBASE.S84.SP_FID)
66	46	221	0	DELETE FROM ARCFM8.ELECTRIC.S27 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.ELECTRIC.SUBSTATION WHERE ARCFM8.ELECTRIC.SUBSTATION.SHAPE = ARCFM8.ELECTRIC.S27.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.ELECTRIC.A109 WHERE ARCFM8.ELECTRIC.A109.SHAPE = ARCFM8.ELECTRIC.S27.SP_FID)
63	62	377	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A252 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D252 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	46	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A171 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D171 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	47	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A175 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D175 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	63	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A249 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D249 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	62	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A247 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D247 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID =

---

			D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
--	--	--	---

**Table C-1 Events with the longest duration**

### 3.3.2. Individual by Batch\_CPU

Table C-2 shows individual SQL:BatchCompleted/RPC:Completed events with the highest CPU utilization. During the SQL Profiler tracing period, the highest CPU utilization was 94 milliseconds, or 0.094 seconds of CPU usage. This represents very low CPU utilization for such complex queries.

Duration (ms)	CPU (ms)	Reads	Writes	Query Format
110	94	15576	0	DELETE FROM ARCFM8.LANDBASE.S144 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO WHERE ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S144.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A250 WHERE ARCFM8.LANDBASE.A250.SHAPE = ARCFM8.LANDBASE.S144.SP_FID)
80	63	303	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.ELECTRIC.A203 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.ELECTRIC.D203 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	63	262	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A189 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D189 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	63	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A180 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D180 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	63	377	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A185 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D185 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	63	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A249 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D249 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
76	62	315	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.ELECTRIC.A109 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.ELECTRIC.D109 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	62	365	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A247 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D247 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
66	62	379	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A187 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D187 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
60	62	363	0	UPDATE A SET SDE_STATE_ID = {##} FROM ARCFM8.LANDBASE.A183 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D183 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)

63	62	375	0	UPDATE A SET SDE_STATE_ID = {###} FROM ARCFM8.LANDBASE.A184 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D184 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
66	62	589	0	UPDATE A SET SDE_STATE_ID = {###} FROM ARCFM8.LANDBASE.A178 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D178 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
63	62	377	0	UPDATE A SET SDE_STATE_ID = {###} FROM ARCFM8.LANDBASE.A252 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D252 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)
46	47	197	0	DELETE FROM ARCFM8.LANDBASE.S83 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.STREETROW WHERE ARCFM8.LANDBASE.STREETROW.SHAPE = ARCFM8.LANDBASE.S83.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A189 WHERE ARCFM8.LANDBASE.A189.SHAPE = ARCFM8.LANDBASE.S83.SP_FID)
46	47	299	0	UPDATE A SET SDE_STATE_ID = {###} FROM ARCFM8.LANDBASE.A189 A WHERE A.SDE_STATE_ID IN(SELECT ) AND NOT EXISTS (SELECT * FROM (SELECT SDE_DELETES_ROW_ID,SDE_STATE_ID FROM ARCFM8.LANDBASE.D189 WHERE DELETED_AT IN(SELECT )) D WHERE A.OBJECTID = D.SDE_DELETES_ROW_ID AND A.SDE_STATE_ID = D.SDE_STATE_ID)

**Table C-2 Events with the highest CPU utilization**

### 3.3.3. Individual by Batch\_Reads

Table C-3 shows individual SQL:BatchCompleted/RPC:Completed events with the most logical reads. Even though several queries had very large numbers of reads, they were still executed in only 110 milliseconds.

Duration (ms)	CPU (ms)	Reads	Writes	Query Format
110	94	15576	0	DELETE FROM ARCFM8.LANDBASE.S144 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO WHERE ARCFM8.LANDBASE.QUARTERTOWNSHIPGRID_NUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S144.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A250 WHERE ARCFM8.LANDBASE.A250.SHAPE = ARCFM8.LANDBASE.S144.SP_FID)
93	15	6083	2	DELETE FROM ARCFM8.LANDBASE.S143 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.PLSSECTION_SECTIONNUMBER_ANNO WHERE ARCFM8.LANDBASE.PLSSECTION_SECTIONNUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S143.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A249 WHERE ARCFM8.LANDBASE.A249.SHAPE = ARCFM8.LANDBASE.S143.SP_FID)
66	31	5045	0	DELETE FROM ARCFM8.LANDBASE.S146 WHERE SP_FID IN(SELECT ) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.DGGRID_NUMBER_ANNO WHERE ARCFM8.LANDBASE.DGGRID_NUMBER_ANNO.SHAPE = ARCFM8.LANDBASE.S146.SP_FID) AND NOT EXISTS (SELECT SHAPE FROM ARCFM8.LANDBASE.A252 WHERE ARCFM8.LANDBASE.A252.SHAPE = ARCFM8.LANDBASE.S146.SP_FID)
13	0	1101	0	JOININDEXSEARCH
0	0	1101	0	JOININDEXSEARCH
16	0	1101	0	JOININDEXSEARCH
16	0	1101	0	JOININDEXSEARCH
16	0	1101	0	JOININDEXSEARCH
20	0	1101	0	JOININDEXSEARCH
16	0	1101	0	JOININDEXSEARCH
0	0	1101	0	JOININDEXSEARCH
13	0	1101	0	JOININDEXSEARCH
13	0	1101	0	JOININDEXSEARCH
16	0	1101	0	JOININDEXSEARCH
13	0	1101	0	JOININDEXSEARCH

**Table C-3 Events containing the most logical reads**

---

### 3.4. SQL Execution Plans

A database Execution Plan shows how the database will perform a given query. For example, SQL Server can JOIN a table using three different techniques: nested loop, hash, and merge. Generally, the fastest type of join is a nested loop, but if that is not feasible, then a hash JOIN or merge JOIN is used (as appropriate), both of which tend to be slower than the nested JOIN.

Several SQL Execution plans were pulled from the SQL Profiler output. These execution plans were examined to ensure that the SQL Server query optimizer was taking the most efficient route to get the requested data.

While it is not possible to examine every single SQL query and its execution plan, several hundred queries were analyzed for this report. No specific query execution plans were shown to be deficient in how they were accessing the requested data. The majority of execution plans utilized the most efficient “Nested Loops” JOIN.

Shown below is an example of such an execution plan.

#### Execution Tree

```
-----  
Nested Loops(Inner Join, OUTER REFERENCES:([ly].[srid]))  
  |--Clustered Index Seek(OBJECT:([sde].[sde].[SDE_layers].[layers_pk] AS [ly]),  
    SEEK:([ly].[database_name]='ARCFM8' AND  
      [ly].[table_name]='UGPRIMARY_SIZEMATERIAL_ANNO' AND [ly].[owner]='ELECTRIC'  
      AND [ly].[spatial_column]='SHAPE') ORDERED FORWARD)  
  |--Clustered Index Seek(OBJECT:([sde].[sde].[SDE_spatial_references].[spatial_ref_pk] AS [sr]),  
    SEEK:([sr].[srid]=[ly].[srid]) ORDERED FORWARD)
```



---

## 4. Recommendations

Based on the results presented in section 3, the ArcSDE / SQL Server database server (AEDRDBSQLP01) is currently processing SQL statements as efficiently as possible.

**There are no recommendations for making any configuration changes to AEDRDBSQLP01 at this time.**

### 4.1. Assumptions

The fact that there are no recommended configuration changes is based on a couple of assumptions. These assumptions can also be taken as things to monitor before going live into production with this system.

#### 4.1.1. Final Production Database

The database that was utilized during this performance testing initiative was NOT the final, production database that will be delivered from the conversion vendor. Therefore, some items should be considered when the final production database is delivered.

##### 4.1.1.1. Spatial Indexes

The spatial index Grid Size should be analyzed on the production database. This grid size can have a significant impact on performance, and is calculated per layer. For example, here are the spatial index statistics for the OHCONDUCTOR layer shown in Table C-4.

```
ArcSDE 8.3 SQL Server  Build 1136 Tue Aug 19 15:52:51 PDT 2003
Layer      Administration Utility
-----
Layer 15 Spatial Index Statistics:
Level 1,   Grid Size 800
|-----|
| Grid Records: 281809 |
| Feature Records: 169094 |
| Grids/Feature Ratio: 1.67 |
| Avg. Features per Grid: 4.01 |
| Max. Features per Grid: 64 |
| % of Features Wholly Inside 1 Grid: 69.17 |
|-----|
|           Spatial Index Record Count By Group |
| Grids:    <=4   >4   >10  >25  >50  >100  >250  >500 |
|-----|
| Features: 165819  3275  1196  409  186  73  18  3 |
| % Total:   98%   2%   1%   0%   0%   0%   0%   0% |
|-----|
```

**Table C-4. Spatial index statistics**

---

These statistics indicate that this layer is currently using a grid size of 800. Based on the number of features that are located in more than 4 grids, this grid size **\*may\*** be too small. The only way to determine for sure is to benchmark some queries at the grid size of 800, alter the grid size to a larger number (ie, 2000 would be reasonable), and benchmark the same queries.

The proper spatial index grid size for all feature classes should be calculated/set once the final production database is available.

#### **4.1.1.2. Data Model**

One item to consider is the potential to break the Landbase, Electric and Gas data sets into separate physical SQL databases. This would allow more SQL file groups to be utilized to help distribute the I/O load even more. Since we did not see any serious disk contention during the testing period, this is not a critical issue, but just something to consider moving forward.

# Appendix D

## 1 AutoCAD (Outfield)

The new GIS will replace all mapping requirements from the AutoCAD based Outfield system.

## 2 EDFS Replacement – Electric Distribution Facility (Asset) System

The new GIS will encompass all EDFS asset management and reporting functionality.

**Table D-1. EDFS functional requirements**

ID	Requirements
RE-EDFS-001	Supply Record Clerks with one application to perform all tasks.
RE-EDFS-002	The GIS electric data model must support retirement and history records equivalent to those currently in EDFS for migration of existing EDFS records. This is a legal requirement. Records must be kept for Support Structure (Poles, Tower, H-Frames) Pedestals SwitchGear (Box) Manhole Voltage Regulators Transformers Regulators Reclosers Fuse Cutouts Sectionalizer Capacitors Switches Primary Conductor Transmission Conductor Secondary Conductor Street Lights
RE-EDFS-003	Creation of a retirement/history record shall be triggered by replacement or removal of the feature and a change to an assembly.
RE-EDFS-004	The GIS must allow a feature to be retired and have its attributes placed into a retirement record.
RE-EDFS-005	The GIS electric data model must define a relationship between a transformer bank and the pole on which it is located.
RE-EDFS-006	The GIS electric data model must define a relationship between a conductor record and the poles to which it is attached.
RE-EDFS-007	The GIS electric data model must define a relationship between a primary conductor record and the poles to which it is attached.
RE-EDFS-008	The GIS electric data model must define a relationship between a secondary conductor record and the poles to which it is attached.

RE-EDFS-009	The GIS must provide efficient tools that allow updates within 24 hours of receipt of the as-built drawing in the records department.
RE-EDFS-010	The GIS must provide the capability to condemn and reverse condemned transformers.
RE-EDFS-011	The GIS must provide the capability to replace a transformer while maintaining the transformer location ID and related records.
RE-EDFS-012	The GIS must provide the capability to replace a capacitor while maintaining the capacitor location ID and related records.
RE-EDFS-013	The GIS must provide the capability to replace a pole while maintaining the pole location ID and related records.
RE-EDFS-014	The GIS must provide the capability to track assembly units for poles and other features.
RE-EDFS-015	The GIS must provide the capability to import pole inspection information received from the inspection contractor.
RE-EDFS-016	The GIS must support the transfer of features between LOA's when LOA boundaries change.
RE-EDFS-017	The GIS electric data model must support the ability to track multiple cable TV companies.
RE-EDFS-018	The GIS electric data model and the GIS must support Circuit ID's for features that are part of the electric network. This includes the automatic re-assignment of Circuit ID's when feeders undergo a configuration change due to switching.
RE-EDFS-019	Where appropriate, the GIS electric data model must have "stores item number" as an attribute.
RE-EDFS-020	Where appropriate, the GIS electric data model must have "installed cost" as an attribute.
RE-EDFS-021	Where appropriate, the GIS electric data model must have "company number" as an attribute.
RE-EDFS-022	Where appropriate, the GIS electric data model must have "serial number" as an attribute.
RE-EDFS-023	Where appropriate, the GIS electric data model must have "adjustment dollars" as an attribute.
RE-EDFS-024	The GIS electric data model must have "SF number" as an attribute for switches.
RE-EDFS-025	The GIS must support the generation of "Year End - FERC Form 1".
RE-EDFS-026	The GIS must support the daily reconciliation reporting between Stores and the GIS. Every removal in the GIS must have a corresponding stores entry or condemnation record.
RE-EDFS-027	The GIS must require the entry of a valid work order number before a change to a capital item can be made.

RE-EDFS-028	The GIS must support the generation of the PadMount transformer inspection form.
RE-EDFS-029	The GIS must support limited access by storeroom personnel.
RE-EDFS-030	The GIS electric data model must support the Company Sites such as substations, storerooms, and the training center.

### 3 CADOPS – NIPSCO Outage and Restoration System (NORS)

**Table D-2. NORS functional requirements**

ID	Requirements
RE-NORS-001	The application shall create a series of comma delimited files for line, device, load, node, capacitor, and source (i.e. CADOPS input files) representing distribution features and the network hierarchy from the NIPSCO MS SQL Server geodatabase.
RE-NORS-002	The application shall be capable of supporting an Oracle RDBMS.
RE-NORS-003	The application shall be capable of utilizing the existing Oracle scripts to bulk load the CADOPS input files.
RE-NORS-004	The application shall be capable of bulk loading the CADOPS input files manually.
RE-NORS-005	The application shall be capable of bulk loading the CADOPS input files via an automated process.
RE-NORS-006	The application shall be capable of supplying tiled DXF files containing land base features extracted from the GIS.
RE-NORS-007	The application shall provide Phasing and KVAR rating (i.e. Size) as input to the MAPNAME.CAP table.
RE-NORS-008	The application must support CADOPS 2003.
RE-NORS-009	The application must support an Oracle RDBMS
RE-NORS-010	The GIS electric data model must support the ability to de-energize one phase of a three phase line.
RE-NORS-011	The application must assign Type Numbers to conductors and devices to enable CADOPS to determine the electrical characteristics of each entity. The type numbers are based on specific attributes of each GIS feature and must match the Type Numbers found in the DEVTYPE, LINETYPE, and REGTYPE CADOPS tables.

## 4 FeederAll – Electric Distribution Planning System (Load Study)

The GIS should provide an export of the GIS electric network data.

**Table D-3. FeederAll functional requirements**

ID	Requirements
RE-FDRA-001	The application shall extract distribution and transmission data from the NIPSCO MS SQL Server geodatabase and import it into the FeederAll Oracle database tables.
RE-FDRA-002	The GIS electric data model shall support the ability to determine conductor configuration
RE-FDRA-003	The application shall support the ability to extract conductor configuration data from the NIPSCO MS SQL Server geodatabase and import it into the appropriate FeederAll Oracle database table.
RE-FDRA-004	The GIS electric data model shall support the representation of a 3 single phase regulator setting versus the current representation as 3 individual regulator settings
RE-FDRA-005	The GIS electric data model shall store "Source" attributes such as positive and negative sequence resistances in a database table that can be related to either a breaker or a substation transformer.
RE-FDRA-006	The application shall support the ability to extract "Source" data from the NIPSCO MS SQL Server geodatabase and import it into the appropriate FeederAll Oracle database table.
RE-FDRA-007	The GIS electric data model shall represent substation transformers.
RE-FDRA-008	The GIS electric data model shall represent customer owned generation.
RE-FDRA-009	In addition to data currently extracted from CADOPS, the application shall extract Fuse Size, Regulator Bank Size, Capacitor Bank Size and Type (fixed vs. switched), and Transformer Bank Size from the NIPSCO MS SQL Server geodatabase.
RE-FDRA-010	The GIS electric data model shall represent both switched and fixed capacitor banks.

## 5 EAIF (Engineering Accounts Information File)

EAIF is a transformer load and analysis program. The GIS should provide current transformer installation data via an interface.

**Table D-4. EAIF functional requirements**

ID	Requirements
RE-EAIF-001	The application shall extract customer load information from CIS for a transformer using "Load Number" as the basis for the match between GIS and CIS.
RE-EAIF-002	The application shall use the extracted load information to determine a KVA demand for transformers.
RE-EAIF-003	The application shall support an EAIF report showing the KWH for each service point on a transformer or set of transformers along with a sum of the KWH values for the transformer(s) based on a month provided by the user.
RE-EAIF-004	The application shall support selection of transformers for load analysis by an on-screen pick, a locate, a trace, or any other method that results in a selected set of transformers.
RE-EAIF-005	The application shall support the ability to determine usage by phase for a selected subset of a circuit or an entire circuit.
RE-EAIF-006	The application shall support an EAIF report showing overloaded transformers.

## 6 SynerGEE

SynerGEE is a gas distribution planning (load study) system. The GIS should provide an export of the GIS gas network data.

**Table D-5. SynerGEE functional requirements**

ID	Requirements
RE-SYNG-001	The application shall support the extraction of the entire gas distribution system from the NIPSCO MS SQL Server geodatabase and import it into the SYNERGEE Gas modeling application.
RE-SYNG-002	The GIS gas data model must support the ability to determine correct flow direction through regulator stations.

## 7 Facility Browser

Facility Browser provides a web based representation of the GIS. The GIS should provide functionality to supply spatial data to the greater organization via the intranet.

**Table D-6. Facility Browser functional requirements**

ID	Requirements
RE-FABR-001	The application shall support the extraction of the entire electric, land, and gas distribution system from the NIPSCO MS SQL Server geodatabase and import it into the a web based application that can be made available to the entire NIPSCO organization.
RE- FABR -002	The application shall allow the user to view the GIS maps with standard pan, zoom, and navigation functions.
RE- FABR -003	The application shall provide layer visibility toggles to allow the user to de-clutter the graphics in congested areas.
RE- FABR -004	The application shall allow the user to search for CIS installed services records.
RE- FABR -005	The application shall allow the user to view scanned images of Gas Service cards that are related to CIS installed services.

## 8 Field Browser

The Field Browser resides on a stand alone laptop containing a recent version of the GIS data. The GIS shall provide functionality to supply spatial data to a stand alone application that can be distributed onto field laptops. The application must also be distributable to individuals requiring installation of the Field Browser application on non-stand alone Field Browser laptops/desktops.

**Table D-7. Field Browser functional requirements**

ID	Requirements
RE-FIBR-001	The application shall support the extraction of the entire electric, land, and gas distribution system from the NIPSCO MS SQL Server geodatabase and import it into the a stand alone application that can be run disconnected from the NIPSCO network.
RE- FIBR -002	The application shall allow the user to view the GIS maps with standard pan, zoom, and navigation functions.
RE- FIBR -003	The application shall provide layer visibility toggles to allow the user to de-clutter the graphics in congested areas.



## 9 MAPPS (Material Accounts Payable and Purchasing) Interface

Material accounts payable and purchasing. The new GIS shall maintain an interface to MAPPS equivalent to the EDFS-MAPPS interface including handling capital asset add, issue, removal, condemn, reverse-condemn, and transfer transactions.

**Table D-8. MAPPS functional requirements**

ID	Requirements
RE-MAPP-001	The MAPPS/GIS interface must support the Add (Receipt) Transaction: Add new item into inventory.
RE-MAPP-002	The MAPPS/GIS interface must support the Condemn Transaction: Removal from the field.
RE-MAPP-003	The MAPPS/GIS interface must support the Issue Transaction: Move from inventory to the field.
RE-MAPP-004	The MAPPS/GIS interface must support the Removal Transaction.
RE-MAPP-005	The MAPPS/GIS interface must support the Return Transaction: Move from field to inventory.
RE-MAPP-006	The MAPPS/GIS interface must support the Transfer Transaction: Move from one inventory to another inventory.
RE-MAPP-007	The MAPPS/GIS interface must support the Reverse Condemn Transaction

## 10 IRTH One Call

IRTH One Call is an application used by Indiana Underground Plant Protection Services (IUPPS) to support the location and delivery of One Call tickets. The application is also used by NIPSCO to aid the locate screening group. The GIS should provide data including buffers to aid this interface.

**Table D-9. IRTH functional requirements**

ID	Requirements
RE-IRTH-001	IRTH is currently using ArcView 8.3 and all requirements are being met.

## 11 MLOG (Material and Labor Online Guide) Interface

The Material and Labor Online Guide manages assemblies. The GIS must support the assignment of MLOG assembly numbers to various features and should allow for the real time validation of these numbers against the MLOG system.

**Table D-10. MLOG functional requirements**

ID	Requirements
RE-MLOG-001	The application shall support the assignment of assemblies to GIS features (SupportStructure, Pedestals, Switchgear, and Manholes) during the entry of work order information into the GIS.
RE-MLOG-002	The GIS electric data model must support the storage of assembly information in an object table.

RE-MLOG-003	The GIS electric data model must support a relationship between assembly object records and features.
RE-MLOG-004	The GIS electric data model must support up to 8 assemblies per instance of a feature.
RE-MLOG-005	The GIS must validate entered assembly records against MLOG assembly records in real time.

## 12 CIS (Customer Information System) Interface

The new GIS should maintain an interface to the CIS equivalent to the EDFS-CIS interface including transfer of service account, site, pole, pad, and transformer data.

**Table D-11. CIS functional requirements**

ID	Requirements
RE-CISI-001	The interface shall be based on the attribute "Load Number" that is common to both systems.
RE-CISI-002	The interface shall support the ability to enter a Load Number in the GIS and return a list of customer accounts from the CIS.
RE-CISI-003	The interface shall support the ability to enter a street light service account in the GIS and return a customer name.
RE-CISI-004	The interface shall populate the GIS pole location description for Load Numbers in the CIS.
RE-CISI-005	The interface shall continue to maintain the link between the customer and the transformer serving the transformer.

## 13 DXF Export for Design Engineering

The new GIS must be able to export AutoCAD DXF files with enough detail for the engineering department to complete its work design process.

**Table D-12. DXF export functional requirements**

ID	Requirements
RE-DXFE-001	The tool must produce a DXF file from the ArcSDE Geodatabase.
RE-DXFE-002	The tool must export CAD Layer Name information from a "CADLayerName" field.
RE-DXFE-003	The tool must export CAD Block Name information from a "CADBlockName" field.
RE-DXFE-004	The tool must export Block Rotation values from a "CADBlockRotation" field.
RE-DXFE-005	The tool must export Block scale from a "CADBlockScale" field.
RE-DXFE-006	The tool must be configurable.

RE-DXFE-007	The tool must be able to schedule the export of the DXF files from the GIS (i.e., must support batch processing).
RE-DXFE-008	The tool must specify color as "By Layer" and "By Block".
RE-DXFE-009	The tool must support Line Weight.
RE-DXFE-010	The tool must be able to store and process multiple configurations.
RE-DXFE-011	The tool must support the export of True Arc Information a.k.a. "bulge factor" (i.e., "hops" over a gas main). AutoCAD and ArcSDE treat arcs and polylines differently.

## 14 Pipeline Integrity

The new GIS shall handle the externally mandated requirements of managing the integrity of NIPSCO's gas pipelines.

**Table D-13. Pipeline integrity functional requirements**

ID	Requirements
RE-PINT-001	The application shall support landbase features, recreational areas, total impact zones, and high consequence area (HCA) definitions.
RE-PINT-002	The application shall support the recording of inline inspection (ILI) data results in GIS.
RE-PINT-003	The application shall support recording of direct assessment (DA) data results into GIS.
RE-PINT-004	The application shall support emergency response planning.
RE-PINT-005	The application shall support survey planning.
RE-PINT-006	The application shall support corrosion control management.
RE-PINT-007	The application shall support land management and rights of way.

# Appendix E

**Table E-1. Electric ArcFM configuration**

[arcfm8.ELECTRIC.AbandonedConductor](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: ArcFM Delete Related Conductor Info

Before Split Event: ArcFM Save Related Objects

On Split Event:

After Split Event: ArcFM Restore Related Objects

Metadata Editor:

Custom Configuration Editor:

Extended Data Definition Table:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install Work Order	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	TRUE	TRUE	TRUE	FALSE		
Retire Work Order	TRUE	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid Code	TRUE	TRUE	FALSE	FALSE		
In Conduit	TRUE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CREATIONDATE	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
SHAPE.len	FALSE					

[arcfm8.ELECTRIC.Assembly](#)

ArcFM Display Field: ASSEMBLYID

Create Edit Task:

On Create Event: EDFs Validate Assembly Number

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Assembly Number

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:  
Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Assembly ID	TRUE	TRUE	FALSE	FALSE		
Assembly Count	TRUE	TRUE	FALSE	FALSE		
Primary Assembly	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Related SupportStructure Object Id	TRUE	FALSE	TRUE	FALSE		
Pole Number	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	TRUE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	TRUE	TRUE	FALSE		ArcFM User Name
Work Order Number Sequence Number	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.CapacitorBank](#)

ArcFM Display Field: CAPACITORTYPECD

Create Edit Task: NIPSCO.Electric.FeatureOffset

On Create Event: ArcFM Segment Split

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

On Update Event: NIPSCO.LOANamePropogation

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Bank KVAR	TRUE	TRUE	FALSE	FALSE		
Unit Number	TRUE	TRUE	FALSE	FALSE		
Capacitor Type	TRUE	TRUE	FALSE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
ANCILLARYROLE	FALSE	TRUE	TRUE	FALSE		

Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
SIZE	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.CapacitorStoresItem](#)

ArcFM Display Field: STORESITEMNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
SIN	TRUE	FALSE	FALSE	FALSE		
Bushings	TRUE	FALSE	TRUE	FALSE		
KVAR	TRUE	FALSE	TRUE	FALSE		
KV	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.CapacitorUnit](#)

ArcFM Display Field: COMPANYNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
SIN	TRUE	FALSE	TRUE	FALSE		
Status	TRUE	FALSE	TRUE	FALSE		
Disposition	TRUE	FALSE	TRUE	FALSE		
P.O. Number	TRUE	FALSE	TRUE	FALSE		
RECEIVEDATE	TRUE	FALSE	TRUE	FALSE		
Manufacturer	TRUE	FALSE	TRUE	FALSE		
Serial Number	TRUE	FALSE	TRUE	FALSE		
Fluid Type	TRUE	FALSE	TRUE	FALSE		
Warranty	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
STATUSTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.CapacitorUnitInstall](#)

ArcFM Display Field: RELCAPACITORUNITCOMPANYNUMBER

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

On Delete Event: EDFs Reset Asset To Stock

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
Substation Id	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
WO Number	TRUE	TRUE	FALSE	FALSE		
Misc Order Id	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	TRUE	FALSE		
Direction	TRUE	TRUE	TRUE	FALSE		
Voltage	TRUE	TRUE	TRUE	FALSE		
Stage Number	TRUE	TRUE	TRUE	FALSE		
Installation Status	TRUE	TRUE	FALSE	FALSE		
Oil Switch	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	TRUE	FALSE	FALSE		
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Related Capacitor Bank Object Id	TRUE	FALSE	TRUE	FALSE		
Pole Number	TRUE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

INSTALLTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	FALSE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	FALSE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.CapacitorUnitRemove](#)

ArcFM Display Field: REMOVALDATE

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

On Delete Event: EDFs Reset Capacitor Asset To Installed

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
REMOVALDATE	TRUE	FALSE	FALSE	FALSE		
Reason	TRUE	FALSE	TRUE	FALSE		
WO Number	TRUE	FALSE	FALSE	FALSE		
Misc Order Id	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
REMOVALTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
LEGACYINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.CapacitorUnitStock](#)

ArcFM Display Field: STOCKDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
STOCKDATE	TRUE	FALSE	TRUE	FALSE		
Store Room Number	TRUE	FALSE	TRUE	FALSE		
Transfer Number	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
STOCKTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM	



					Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.CircuitSource](#)

ArcFM Display Field: CIRCUITSOURCEID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Circuit Number	TRUE	TRUE	FALSE	FALSE		
Circuit Name	TRUE	TRUE	TRUE	FALSE		
Substation Name	TRUE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Nominal Voltage	TRUE	TRUE	TRUE	FALSE		
Operating Voltage	TRUE	TRUE	TRUE	FALSE		
Connection Configuration	TRUE	TRUE	TRUE	FALSE		
Emergency Capacity kW	TRUE	TRUE	TRUE	FALSE		
Ground Reactance	TRUE	TRUE	TRUE	FALSE		
Ground Resistance	TRUE	TRUE	TRUE	FALSE		
Maximum Capacity kW	TRUE	TRUE	TRUE	FALSE		
Maximum kVAR	TRUE	TRUE	TRUE	FALSE		
Minimum kVAR	TRUE	TRUE	TRUE	FALSE		
Maximum Positive Sequence Reactance	TRUE	TRUE	TRUE	FALSE		
Maximum Positive Sequence Resistance	TRUE	TRUE	TRUE	FALSE		
Maximum Zero Sequence Impedance	TRUE	TRUE	TRUE	FALSE		
Maximum Zero Sequence Resistance	TRUE	TRUE	TRUE	FALSE		
Negative Sequence Reactance	TRUE	TRUE	TRUE	FALSE		
Voltage Angle	TRUE	TRUE	TRUE	FALSE		
Feeder Source Information	TRUE	TRUE	TRUE	FALSE		
Related Substation Breaker Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.CompanyStreetlight](#)

ArcFM Display Field: ASSEMBLYID

Create Edit Task:

On Create Event:

On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Assembly Id	TRUE	TRUE	FALSE	FALSE		
Assembly Count	TRUE	TRUE	FALSE	FALSE		
Construction	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
Rate Schedule	TRUE	TRUE	FALSE	FALSE		
CIS Account Number	TRUE	TRUE	FALSE	FALSE		
Legacy XRef	FALSE	TRUE	TRUE	FALSE		
Related Support Structure Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Pole Number	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.CompanyUseLocation](#)

ArcFM Display Field: COMPANYLOCATIONTYPECD

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Location Id	TRUE	TRUE	FALSE	FALSE		
Location Type	TRUE	TRUE	FALSE	FALSE		
Description	TRUE	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	TRUE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM	

					Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.ConductorDefinition](#)

ArcFM Display Field: CATEGORYCD

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Category	TRUE	FALSE	TRUE	FALSE		
Location	TRUE	FALSE	TRUE	FALSE		
Wire Type	TRUE	FALSE	TRUE	FALSE		
Wire Size	TRUE	FALSE	TRUE	FALSE		
Wire Material	TRUE	FALSE	TRUE	FALSE		
Legacy Calculation Cd	FALSE	TRUE	TRUE	FALSE		
Legacy Conductor Number	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.CustomerGenerator](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: NIPSCO.NormalPositionSymbol

On Update Event: NIPSCO.NormalPositionSymbol

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
LOA	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Subtype	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current	

					Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Symbol Rotation	FALSE	TRUE	FALSE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Disconnect Location	TRUE	TRUE	TRUE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
Customer Name	TRUE	TRUE	TRUE	FALSE		
Nominal Voltage	TRUE	TRUE	TRUE	FALSE		
Customer Substation ID	TRUE	TRUE	TRUE	FALSE		
Maximum Positive Sequence Resistance	TRUE	TRUE	TRUE	FALSE		
Maximum Positive Sequence Reactance	TRUE	TRUE	TRUE	FALSE		
Negative Sequence Reactance	TRUE	TRUE	TRUE	FALSE		
Maximum Zero Sequence Resistance	TRUE	TRUE	TRUE	FALSE		
Maximum Zero Sequence Impedance	TRUE	TRUE	TRUE	FALSE		
Maximum KVAR	TRUE	TRUE	TRUE	FALSE		
Minimum KVAR	TRUE	TRUE	TRUE	FALSE		
Primary Operating Voltage	TRUE	TRUE	TRUE	FALSE		
Symbol Configuration Cd	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.CustomerStreetlight](#)

ArcFM Display Field: LUMINAIRETYPECD

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Pole Type	TRUE	TRUE	FALSE	FALSE		
Luminaire Type	TRUE	TRUE	FALSE	FALSE		
Luminaire Count	TRUE	TRUE	FALSE	FALSE		
Wattage	TRUE	TRUE	FALSE	FALSE		
INVENTORYDATE	TRUE	TRUE	FALSE	FALSE		
CIS Account Number	TRUE	TRUE	FALSE	FALSE		
Load Number	FALSE	TRUE	TRUE	FALSE		
Related Pad Mount Object Id	TRUE	FALSE	TRUE	FALSE		
Related Support Structure Object Id	TRUE	FALSE	TRUE	FALSE		

OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Legacy XRef	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.DeadEndElectric](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Symbol Rotation	FALSE	FALSE	FALSE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.ElectricDiscrepancy](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Metadata Editor:

Custom Configuration Editor:

Extended Data Definition Table:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Subtype	TRUE	TRUE	FALSE	FALSE		
Error Description	TRUE	TRUE	TRUE	FALSE		

Shape	FALSE	TRUE	TRUE	FALSE		
CREATIONDATE	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.FeederAllOpenPoint](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: ArcFM Segment Split

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.FuseCutoutBank](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task:

On Create Event: ArcFM Segment Split

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Create Event: NIPSCO.NormalPositionSymbol

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

On Update Event: NIPSCO.NormalPositionSymbol

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date

Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Fuse Link Amperage Rating	TRUE	TRUE	FALSE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Section Fuse Number	TRUE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Related SwitchGear Object Id	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
LAYER	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Symbol Configuration Cd	FALSE	TRUE	TRUE	FALSE		
FUSNUM	FALSE	TRUE	TRUE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.FuseUnit](#)

ArcFM Display Field: PHASEDESIGNATION

Create Edit Task:

On Create Event: EDFS Validate Work Order Number 2

On Update Event: EDFS Validate Work Order Number 2

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Cutout Amperage	TRUE	TRUE	FALSE	FALSE		
Fuse Link Amperage	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Sectionalizer Fuse Number	TRUE	TRUE	TRUE	FALSE		

INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
Related Fuse Cutout Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.GisMappsTransactionQueue](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Company Number	TRUE	FALSE	FALSE	FALSE		
Transaction Type	TRUE	FALSE	FALSE	FALSE		
LOA	TRUE	FALSE	FALSE	FALSE		
SIN	TRUE	FALSE	FALSE	FALSE		
TRANSACTIONDATE	TRUE	FALSE	TRUE	FALSE		
Condemnation Number	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.JointUseAttachment](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task:

On Create Event: ArcFM Relate/Create Feeder Object

On Update Event: ArcFM Relate/Update Feeder Object

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		



Company Name	TRUE	TRUE	FALSE	FALSE		
Bound Indicator	TRUE	TRUE	FALSE	FALSE		
Related SupportStructure Object ID	TRUE	FALSE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.LegacyOhConductorInfo](#)

ArcFM Display Field: WIRETYPECD

Create Edit Task:

On Create Event: EDFs Validate OH Primary Properties

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate OH Primary Properties

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	FALSE	FALSE	FALSE		
From Pole Number	TRUE	FALSE	FALSE	FALSE		
To Pole Number	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	FALSE	TRUE	FALSE		
Install WO Number	TRUE	FALSE	TRUE	FALSE		
Install Misc Order Id	TRUE	FALSE	TRUE	FALSE		
RETIREDATE	FALSE	FALSE	TRUE	FALSE		
Retire WO Number	FALSE	FALSE	TRUE	FALSE		
Retire Misc Order Id	FALSE	FALSE	TRUE	FALSE		
Wire Size	TRUE	FALSE	TRUE	FALSE		
Wire Material	TRUE	FALSE	TRUE	FALSE		
Wire Type	TRUE	FALSE	TRUE	FALSE		
Circuit Number	TRUE	TRUE	FALSE	FALSE		
Conductor Span Count	TRUE	TRUE	FALSE	FALSE		
Span Length	FALSE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Legacy Conductor Number	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.LegacyUgConductorInfo](#)

ArcFM Display Field: WIRETYPECD

Create Edit Task:  
 On Create Event: EDFs Validate UG Primary Properties  
 On Create Event: EDFs Validate Work Order Number 2  
 On Update Event: EDFs Validate UG Primary Properties  
 On Update Event: EDFs Validate Work Order Number 2  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	FALSE	FALSE	FALSE		
From Pole/Pad Number	TRUE	FALSE	FALSE	FALSE		
To Structure Id	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	FALSE	TRUE	FALSE		
Install WO Number	TRUE	FALSE	TRUE	FALSE		
Install Misc Order Id	TRUE	FALSE	TRUE	FALSE		
RETIREDATE	FALSE	FALSE	TRUE	FALSE		
Retire WO Number	FALSE	FALSE	TRUE	FALSE		
Retire Misc Order Id	FALSE	FALSE	TRUE	FALSE		
Wire Size	TRUE	FALSE	TRUE	FALSE		
Wire Material	TRUE	FALSE	TRUE	FALSE		
Wire Type	TRUE	FALSE	TRUE	FALSE		
In Conduit	TRUE	FALSE	TRUE	FALSE		
Circuit Number	TRUE	TRUE	FALSE	FALSE		
Conductor Span Count	TRUE	TRUE	FALSE	FALSE		
Span Length	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Legacy Conductor Number	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.Manhole](#)  
 ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	FALSE	FALSE	NIPSCO.Lo aName	NIPSCO.LoNa me

Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Manhole Number	TRUE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
MTGNUM	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.OhConductor](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: ArcFM Create Feeder Object

On Create Event: NIPSCO.SplitAtTapPoint

On Update Event: ArcFM Update Feeder Object

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: ArcFM OH - Delete Feeder Conductor/Units

On Split Event: ArcFM Split Feeder Object

On Abandon Event:

Before Split Event: EDFs Turn WOMO Validation Off

Before Split Event: ArcFM Save Related Objects

Before Split Event: EDFs Turn WOMO Validation On

After Split Event: EDFs Turn WOMO Validation Off

After Split Event: ArcFM Restore Related Objects

After Split Event: EDFs Turn WOMO Validation On

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA Number	TRUE	FALSE	TRUE	FALSE	NIPSCO.Lo aName	NIPSCO.LoNa me
Grid	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Primary Operating Voltage	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		

Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Measured Length	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
SHAPE.len	FALSE					
Owner	TRUE	TRUE	FALSE	FALSE		
Legacy Circuit Number	FALSE	TRUE	TRUE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.OhConductorInfo](#)

ArcFM Display Field: WIREMATERIALCD

Create Edit Task:

On Create Event: ArcFM Create Feeder Object

On Create Event: EDFs Validate OH Primary Properties

On Create Event: EDFs Validate Work Order Number 2

On Update Event: ArcFM Update Feeder Object

On Update Event: EDFs Validate OH Primary Properties

On Update Event: EDFs Validate Work Order Number 2

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
Wire Type	TRUE	TRUE	FALSE	FALSE		
Measured Length	FALSE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
From Pole Number	FALSE	TRUE	TRUE	FALSE		
To Pole Number	FALSE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
Related Oh Conductor Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.OpenPoint](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:  
 On Create Event: ArcFM Segment Split  
 On Create Event: ArcFM Create Feeder Object  
 On Update Event: ArcFM Update Feeder Object  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Grid	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	FALSE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
LAYER	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.PadMount](#)

ArcFM Display Field: DISTRIBREFNUMBER

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Create Event: NIPSCO.UniqueDistribRefNumber-OnCreate

On Delete Event: EDFs Prevent Deletion if Related Assets

On Abandon Event:

On Update Event: EDFs Validate Work Order Number 2

On Update Event: NIPSCO.UniqueDistribRefNumber-OnUpdate

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class: arcfm8.ELECTRIC.RetiredPadMount

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
-------------	---------	----------	-------------------	--------------------	-------------------	-------------------

Subtype	TRUE	TRUE	FALSE	FALSE		
Long Pad Number	TRUE	TRUE	FALSE	FALSE		
Location Description	TRUE	TRUE	FALSE	FALSE		
Print Id	TRUE	TRUE	FALSE	FALSE		
Owner Indicator	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Type	TRUE	TRUE	TRUE	FALSE		
Service PointType	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	FALSE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Legacy Termination Pole Id	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
REMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	

[arcfm8.ELECTRIC.Pedestal](#)

ArcFM Display Field: LONGPEDESTALNUMBER

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Delete Event: EDFs Prevent Deletion if Related Assets

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Long Pedestal Number	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	FALSE	FALSE	NIPSCO	NIPSCO

					LoaName	LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.PowerTransformer](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.PrimaryMeter](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Update Event: EDFs Validate Work Order Number 1

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		

LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Grid	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Distribution Reference Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
Related Pad Mount Object Id	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.RecloserBank](#)

ArcFM Display Field: OBJECTID

Create Edit Task: NIPSCO.Electric.FeatureOffset

On Abandon Event:

On Create Event: ArcFM Segment Split

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: ArcFM Delete Feeder Object

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Recloser Type	TRUE	TRUE	FALSE	FALSE		
Recloser Size	TRUE	TRUE	FALSE	FALSE		
Bypass Status	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		



AncillaryRole Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
Setting	TRUE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.RecloserUnit](#)

ArcFM Display Field: COMPANYNUMBER

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Company Number	TRUE	TRUE	FALSE	FALSE		
Recloser Amperage	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Sectionalizer Fuse Number	TRUE	TRUE	TRUE	FALSE		
Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
Related Recloser Bank Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM	

					Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.RegulatorFunctionTest](#)

ArcFM Display Field: FUNCTIONTESTDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
FUNCTIONTESTDATE	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE	FALSE		
Updated By	FALSE	TRUE	FALSE	FALSE		

[arcfm8.ELECTRIC.RegulatorOilTest](#)

ArcFM Display Field: OILTESTDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
OILTESTDATE	TRUE	FALSE	FALSE	FALSE		
Test Type	TRUE	FALSE	FALSE	FALSE		
PPM	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE	FALSE		
Updated By	FALSE	TRUE	FALSE	FALSE		

[arcfm8.ELECTRIC.RegulatorUnit](#)

ArcFM Display Field: COMPANYNUMBER

Create Edit Task:

On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
SIN	TRUE	FALSE	TRUE	FALSE		
Status	TRUE	FALSE	TRUE	FALSE		
Disposition	TRUE	FALSE	TRUE	FALSE		
P.O. Number	TRUE	FALSE	TRUE	FALSE		
RECEIVEDATE	TRUE	FALSE	TRUE	FALSE		
Impedance	TRUE	FALSE	TRUE	FALSE		
Weight	TRUE	FALSE	TRUE	FALSE		
Installation Cost	TRUE	FALSE	TRUE	FALSE		
Polarity	TRUE	FALSE	TRUE	FALSE		
Gallons of Oil	TRUE	FALSE	TRUE	FALSE		
Manufacturer	TRUE	FALSE	TRUE	FALSE		
Serial Number	TRUE	FALSE	TRUE	FALSE		
Warranty	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
DISPOSITIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
STATUSTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.RegulatorUnitCondemn](#)

ArcFM Display Field: CONDEMNDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
CONDEMNDATE	TRUE	FALSE	TRUE	FALSE		
Condemn Number	TRUE	FALSE	TRUE	FALSE		
Type	TRUE	FALSE	TRUE	FALSE		
Reason	TRUE	FALSE	TRUE	FALSE		
Approved	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	

Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
CONDEMNTIMESTAMP	FALSE	TRUE	FALSE	FALSE		

[arcfm8.ELECTRIC.RegulatorUnitInstall](#)

ArcFM Display Field: RELREGULATORUNITCOMPANYNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: EDFs Reset Asset To Stock

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
Company Use Location Id	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	FALSE	TRUE	FALSE		
Material Ticket	TRUE	TRUE	FALSE	FALSE		
Circuit Number	FALSE	FALSE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
KVA	TRUE	FALSE	TRUE	FALSE		
Installation Status	TRUE	TRUE	FALSE	FALSE		
Installation Type	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Pole Number	TRUE	TRUE	FALSE	FALSE		
Related Voltage Regulator Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.RegulatorUnitRemove](#)

ArcFM Display Field: REMOVALDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: EDFs Reset Transformer/Regulator Asset To Installed

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
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Company Number	TRUE	FALSE	FALSE	FALSE		
REMOVALDATE	TRUE	FALSE	TRUE	FALSE		
Reason	TRUE	FALSE	TRUE	FALSE		
Material Ticket	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
REMOVALTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
LEGACYINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.RegulatorUnitSoldOrLeased](#)

ArcFM Display Field: SOLDLEASEDDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
Sold/Leased	TRUE	FALSE	TRUE	FALSE		
SOLDLEASEDDATE	TRUE	FALSE	TRUE	FALSE		
Material Ticket	TRUE	FALSE	TRUE	FALSE		
Receiver	TRUE	FALSE	TRUE	FALSE		
Lease Terminated	TRUE	FALSE	TRUE	FALSE		
LEASETERMINATEDDATE	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
SOLDLEASEDTIMESTAMP	FALSE	TRUE	FALSE	FALSE		

[arcfm8.ELECTRIC.RegulatorUnitStock](#)

ArcFM Display Field: STOCKDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
Store Room Number	TRUE	FALSE	TRUE	FALSE		
STOCKDATE	TRUE	FALSE	TRUE	FALSE		
Transfer Number	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
STOCKTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.RetiredPadMount](#)

ArcFM Display Field: DISTRIBREFNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Pad Number	TRUE	TRUE	TRUE	FALSE		
Subtype	TRUE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	TRUE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE	FALSE		
Updated By	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	TRUE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	TRUE	FALSE		
Install WO Number	TRUE	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	TRUE	FALSE		
RETIREDATE	TRUE	TRUE	TRUE	FALSE		
Retire WO Number	TRUE	TRUE	TRUE	FALSE		
Retire Misc Order Id	TRUE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Type	TRUE	TRUE	TRUE	FALSE		
Owner Indicator	TRUE	TRUE	TRUE	FALSE		
Long Pad Number	FALSE	TRUE	TRUE	FALSE		
Legacy Distribution Reference Number Termination Id	FALSE	TRUE	TRUE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Print Id	TRUE	TRUE	TRUE	FALSE		
Location Description	TRUE	TRUE	TRUE	FALSE		
Service PointType	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.RetiredSupportStructure](#)

ArcFM Display Field: DISTRIBREFNUMBER

Create Edit Task:

On Update Event: EDFs Validate Work Order Number 2

On Update Event: NIPSCO.UniqueDistribRefNumber-

OnCreate

On Delete Event:

On Abandon Event:

On Create Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Pole Number	TRUE	FALSE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	TRUE	FALSE		
Install WO Number	TRUE	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	TRUE	FALSE		
RETIREDATE	TRUE	TRUE	TRUE	FALSE		
Retire WO Number	TRUE	TRUE	TRUE	FALSE		
Retire Misc Order Id	TRUE	TRUE	TRUE	FALSE		
LOA	TRUE	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	TRUE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
Owner Type	TRUE	TRUE	TRUE	FALSE		
Location Description	TRUE	TRUE	TRUE	FALSE		
Pole Height	TRUE	TRUE	TRUE	FALSE		
Pole Material	TRUE	TRUE	FALSE	FALSE		
Transmission Structure Number	TRUE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Primary Pole Number	TRUE	TRUE	TRUE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
REMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Telephone Company	TRUE	TRUE	TRUE	FALSE		
First Cable Company	TRUE	TRUE	TRUE	FALSE		
Second Cable Company	TRUE	TRUE	TRUE	FALSE		
Utility Company	TRUE	TRUE	TRUE	FALSE		
Fiber Company	TRUE	TRUE	TRUE	FALSE		
Other Company	TRUE	TRUE	TRUE	FALSE		
Transformer Company Number 1	FALSE	TRUE	TRUE	FALSE		
Transformer Company Number 2	FALSE	TRUE	TRUE	FALSE		
Transformer Company Number 3	FALSE	TRUE	TRUE	FALSE		
Transformer Company Number 4	FALSE	TRUE	TRUE	FALSE		
Foreign Owner Name	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	TRUE	FALSE		
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Service Point Type	TRUE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.RetiredSwitchGear](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task:

On Create Event:

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
KV	TRUE	TRUE	TRUE	FALSE		
Operation Type	TRUE	TRUE	TRUE	FALSE		
Front Kind	TRUE	TRUE	TRUE	FALSE		
Used Compartment Count	TRUE	TRUE	TRUE	FALSE		
Pad Number	TRUE	TRUE	FALSE	FALSE		
Assembly Number	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	TRUE	FALSE		
Install WO Number	TRUE	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	TRUE	FALSE		
RETIREDATE	TRUE	TRUE	TRUE	FALSE		
Retire WO Number	TRUE	TRUE	TRUE	FALSE		
Retire Misc Order Id	TRUE	TRUE	TRUE	FALSE		
LOA	TRUE	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	TRUE	FALSE		
Grid	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE		
Created By	FALSE	TRUE	FALSE	FALSE		
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.RetiredWoodPoleEvents](#)

ArcFM Display Field: OBJECTID

[arcfm8.ELECTRIC.RetiredWoodPoleInfo](#)

ArcFM Display Field: OBJECTID

[arcfm8.ELECTRIC.Secondary](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Split Event:

On Abandon Event:

Before Split Event: EDFs Turn WOMO Validation Off

Before Split Event: ArcFM Save Related Objects

Before Split Event: EDFs Turn WOMO Validation On

After Split Event: EDFs Turn WOMO Validation Off

After Split Event: ArcFM Restore Related Objects



After Split Event: EDFS Turn WOMO Validation On  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Secondary Operating Voltage	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	FALSE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Grid	TRUE	TRUE	FALSE	FALSE		
Streetlight Indicator	TRUE	TRUE	TRUE	FALSE		
From Outfield Indicator	TRUE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
SHAPE.len	FALSE					
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.SECONDARYCONDUCTORINFO](#)

ArcFM Display Field: WIREMATERIALCD

Create Edit Task:

On Create Event: EDFS Validate Secondary Properties  
 On Create Event: EDFS Validate Work Order Number 2  
 On Update Event: EDFS Validate Secondary Properties  
 On Update Event: EDFS Validate Work Order Number 2  
 On Delete Event: NIPSCO.Prevent Delete If Units Related  
 On Abandon Event:

Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
Wire Type	TRUE	TRUE	FALSE	FALSE		
In Conduit	TRUE	TRUE	FALSE	FALSE		
Measured Length	FALSE	TRUE	TRUE	FALSE		
Secondary Operating VoltageValue	TRUE	TRUE	FALSE	FALSE		
Conductor Span Count	TRUE	FALSE	TRUE	FALSE		
Span Length	FALSE	TRUE	TRUE	FALSE		
Install Date	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
Retire Date	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Rel Secondary Object Id	TRUE	FALSE	TRUE	FALSE		

From Pole/Pad Number	TRUE	FALSE	TRUE	FALSE		
To Pole/Pad Number	TRUE	TRUE	TRUE	FALSE		
To Alternate Number	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Date Created	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
Date Updated	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy WR Install Timestamp	FALSE	TRUE	TRUE	FALSE		
Legacy WR Removal Timestamp	FALSE	TRUE	TRUE	FALSE		
Timestamp	FALSE	TRUE	TRUE	FALSE		
Legacy Conductor Number	FALSE	TRUE	TRUE	FALSE		
AVI_STATCD	FALSE	TRUE	TRUE	FALSE		
AVI_LOCCD	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.SectionalizerBank](#)

ArcFM Display Field: OBJECTID

Create Edit Task: NIPSCO.Electric.FeatureOffset

On Create Event: ArcFM Segment Split

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Create Event: NIPSCO.NormalPositionSymbol

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

On Update Event: NIPSCO.NormalPositionSymbol

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Section Fuse Number	TRUE	TRUE	TRUE	FALSE		
Sectionalizer Count	TRUE	TRUE	FALSE	FALSE		
Rated Amperage	TRUE	TRUE	FALSE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date

Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Symbol Configuration Cd	FALSE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
FUS_NUM	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.SectionalizerUnit](#)

ArcFM Display Field: PHASEDESIGNATION

Create Edit Task: ArcFM Manual Angle Setter

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
Related Sectionalizer Bank Object Id	TRUE	FALSE	TRUE	FALSE		

Section Fuse Number	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.ServiceConductorInfo](#)

ArcFM Display Field: WIREMATERIALCD

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Create Event: EDFs Validate Service Properties

On Update Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Service Properties

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
Wire Type	TRUE	TRUE	FALSE	FALSE		
In Conduit	TRUE	TRUE	FALSE	FALSE		
Load Number	FALSE	TRUE	TRUE	FALSE		
Take Off Structure Number	FALSE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Conductor Span Count	TRUE	TRUE	FALSE	FALSE		
Span Length	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Legacy Conductor Number	FALSE	TRUE	TRUE	FALSE		
Related Load Pad Mount Object Id	FALSE	TRUE	TRUE	FALSE		
Related Take Off Pad Mount Object Id	FALSE	TRUE	TRUE	FALSE		
Related Take Off Pedestal Object Id	FALSE	TRUE	TRUE	FALSE		
Related Load Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Related Take Off Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.Splice](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Create Event: ArcFM Create Feeder Object  
 On Update Event: ArcFM Update Feeder Object  
 On Delete Event: ArcFM Delete Feeder Object  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
ANCILLARYROLE	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
C_L	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.StoreRoom](#)

ArcFM Display Field: STOREROOMNUMBER

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Store Room Number	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	TRUE	FALSE	FALSE		
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	

Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.StreetlightSwitch](#)

ArcFM Display Field: AMPERAGEVALUE

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Type	TRUE	TRUE	TRUE	FALSE		
Amperage	TRUE	TRUE	TRUE	FALSE		
Voltage	TRUE	TRUE	TRUE	FALSE		
Pole Number	FALSE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Related Support Structure Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.Electric.StructureToStructureLength](#)

ArcFM Display Field:

Create Edit Task:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
OBJECTID	TRUE	TRUE	TRUE	FALSE		
CREATIONDATE	TRUE	TRUE	TRUE	FALSE		
CREATIONUSERID	TRUE	TRUE	FALSE	FALSE		

UPDATEDATE	TRUE	TRUE	TRUE	FALSE		
UPDATEUSERID	TRUE	TRUE	TRUE	FALSE		
REMOVALTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
REMOVALDATE	TRUE	TRUE	TRUE	FALSE		
REMOVALCD	TRUE	TRUE	TRUE	FALSE		
MATERIALTICKETNUMBER	TRUE	TRUE	TRUE	FALSE		
LEGACYINSTALLTIMESTAMP	TRUE	TRUE	TRUE	FALSE		
RELTRANSFORMERUNITCOMPANYNUMBER	TRUE	TRUE	TRUE	FALSE		
SDE_STATE_ID	TRUE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.Substation](#)

ArcFM Display Field: SUBSTATIONNAME

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Substation Name	TRUE	TRUE	FALSE	FALSE		
Substation Number	TRUE	TRUE	FALSE	FALSE		
Substation Owner	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	TRUE	FALSE		
Legacy EES Number	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.SubstationBreaker](#)

ArcFM Display Field: FEEDERID

Create Edit Task:

On Create Event: NIPSCO Substation Relate

On Create Event: ArcFM Create Feeder Object

On Update Event: NIPSCO Substation Relate

On Update Event: ArcFM Update Feeder Object

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
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Subtype	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Grid	TRUE	TRUE	FALSE	FALSE		
Normal Position	TRUE	TRUE	FALSE	FALSE		
Related Substation Object Id	FALSE	TRUE	TRUE	FALSE		
Related Power Transformer Object Id	FALSE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
Legacy Feeder ID	FALSE	TRUE	TRUE	FALSE		
S_L	FALSE	TRUE	TRUE	FALSE		
S_L2	FALSE	TRUE	TRUE	FALSE		
SUBNUM	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.SupportStructure](#)

ArcFM Display Field: DISTRIBREFNUMBER

Create Edit Task: ArcFM Linear Point

On Create Event: EDFS Validate Work Order Number 2

On Create Event: NIPSCO.UniqueDistribRefNumber-OnCreate

On Delete Event: EDFS Prevent Deletion if Related Assets

On Abandon Event:

On Update Event: EDFS Validate Work Order Number 2

On Update Event: NIPSCO.UniqueDistribRefNumber-

OnUpdate

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class: arcfm8.ELECTRIC.RetiredSupportStructure

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Pole Number	TRUE	TRUE	FALSE	FALSE		
Primary Pole Number	TRUE	TRUE	TRUE	FALSE		
Location Description	TRUE	TRUE	FALSE	FALSE		
Foreign Owner Name	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		



Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Pole Material	TRUE	TRUE	FALSE	FALSE		
Pole Height	TRUE	TRUE	FALSE	FALSE		
Transmission Structure Number	TRUE	TRUE	TRUE	FALSE		
Service PointType	TRUE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	TRUE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
REMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.Switch](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

- On Create Event: ArcFM Segment Split
- On Create Event: NIPSCO Structure Relate
- On Create Event: ArcFM Create Feeder Object
- On Create Event: NIPSCO.NormalPositionSymbol
- On Update Event: NIPSCO Structure Relate
- On Update Event: ArcFM Update Feeder Object
- On Update Event: NIPSCO.NormalPositionSymbol
- On Delete Event: NIPSCO.Prevent Delete If Units Related
- On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Switch ID Number	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
A Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
B Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
C Phase Normal Position	TRUE	TRUE	FALSE	FALSE		
Primary Operating Voltage	TRUE	TRUE	FALSE	FALSE		
Tie Switch Indicator	TRUE	TRUE	TRUE	FALSE		
Load Break Indicator	TRUE	TRUE	TRUE	FALSE		

Circuit Number	TRUE	FALSE	TRUE	FALSE		
Circuit Number 2	TRUE	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
Related Substation Object Id	FALSE	TRUE	TRUE	FALSE		
Related Switch Gear Object Id	FALSE	TRUE	TRUE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
LAYER	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Symbol Configuration Cd	FALSE	TRUE	TRUE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
P_LT	FALSE	TRUE	TRUE	FALSE		
C_L	FALSE	TRUE	TRUE	FALSE		
C_LT	FALSE	TRUE	TRUE	FALSE		
FDR	FALSE	TRUE	TRUE	FALSE		
FDR_T	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
LOA	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.SwitchGear](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: NIPSCO Structure Relate

On Update Event: NIPSCO Structure Relate

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class: arcfm8.ELECTRIC.RetiredSwitchGear

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Operation Type	TRUE	TRUE	TRUE	FALSE		
Front Kind	TRUE	TRUE	TRUE	FALSE		

Used Compartment Count	TRUE	TRUE	TRUE	FALSE		
Voltage Rating Value	TRUE	TRUE	FALSE	FALSE		
Assembly Number	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Related Pad Mount Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Legacy Pad Number	FALSE	TRUE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.SwitchUnit](#)

ArcFM Display Field: PHASEDESIGNATION

Create Edit Task:

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate Work Order Number 2

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Type	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Amperage	TRUE	TRUE	FALSE	FALSE		
Switch ID Number	TRUE	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		

Related Switch Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
LEGACYWRINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
LEGACYWRREMOVALTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
ASSOCIATIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.Terminator](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: ArcFM Create Feeder Object

On Update Event: ArcFM Update Feeder Object

On Delete Event: ArcFM Delete Feeder Object

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
ANCILLARYROLE	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
C_L	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.TieBus](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: NIPSCO.SplitAtTapPoint

On Create Event: ArcFM Create Feeder Object  
 On Update Event: ArcFM Update Feeder Object  
 On Delete Event: ArcFM Delete Feeder Object  
 Before Split Event:  
 On Split Event: ArcFM Split Feeder Object  
 After Split Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Phase	TRUE	TRUE	FALSE	FALSE		
Primary Operating Voltage	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
SHAPE.len	FALSE					
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.TrafficLightDemand](#)

ArcFM Display Field: DEMANDWATTAGEVALUE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Load Number	FALSE	TRUE	TRUE	FALSE		
DEMANDDATE	TRUE	TRUE	FALSE	FALSE		
Demand Wattage	TRUE	TRUE	FALSE	FALSE		
CIS Account Number	TRUE	TRUE	FALSE	FALSE		

Related PadMount Object Id	FALSE	FALSE	TRUE	FALSE		
Related SupportStructure Object Id	FALSE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
Legacy XRef	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerBank](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: ArcFM Segment Split

On Create Event: NIPSCO Structure Relate

On Create Event: ArcFM Create Feeder Object

On Update Event: NIPSCO Structure Relate

On Update Event: ArcFM Update Feeder Object

On Update Event: NIPSCO.LOANamePropagation

On Abandon Event:

On Delete Event: NIPSCO.Prevent Delete If Units Related

On Delete Event: NIPSCO Delete Attached Transformer Lead

On Delete Event: ArcFM Delete Feeder Object

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Bank KVA	TRUE	TRUE	FALSE	FALSE		
Live Front Indicator	TRUE	TRUE	FALSE	FALSE		
Non-Metered Service Point Indicator	TRUE	TRUE	FALSE	FALSE		
Fault Indicator Present Indicator	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
AncillaryRole	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		

Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Secondary Pad Metering Indicator	TRUE	TRUE	FALSE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	TRUE	TRUE	FALSE		
LegacyPole/Pad Number	FALSE	FALSE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Related Pad Mount Object Id	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.TransformerFunctionTest](#)

ArcFM Display Field: FUNCTIONTESTDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
FUNCTIONTESTDATE	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	TRUE	FALSE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerOilTest](#)

ArcFM Display Field: OILTESTDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
OILTESTDATE	TRUE	FALSE	FALSE	FALSE		
Test Type	TRUE	FALSE	FALSE	FALSE		
PPM	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	

Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	TRUE	FALSE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerRegulatorStoresItem](#)

ArcFM Display Field: STORESITEMNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
SIN	TRUE	FALSE	FALSE	FALSE		
Type	TRUE	FALSE	FALSE	FALSE		
Location	TRUE	FALSE	FALSE	FALSE		
Phase Count	TRUE	FALSE	FALSE	FALSE		
KVA	TRUE	FALSE	FALSE	FALSE		
Amperage	TRUE	FALSE	FALSE	FALSE		
Primary Voltage	TRUE	FALSE	FALSE	FALSE		
Secondary Voltage	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerUnit](#)

ArcFM Display Field: COMPANYNUMBER

Create Edit Task:

On Create Event:

On Update Event: EDFS Update SIN KVA

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
SIN	TRUE	FALSE	FALSE	FALSE		
Manufacturer	TRUE	FALSE	FALSE	FALSE		
Serial Number	TRUE	FALSE	FALSE	FALSE		
Status	TRUE	FALSE	TRUE	FALSE		
Disposition	TRUE	FALSE	TRUE	FALSE		
RECEIVEDATE	TRUE	FALSE	FALSE	FALSE		
P.O. Number	TRUE	FALSE	FALSE	FALSE		
Impedance	TRUE	FALSE	FALSE	FALSE		
Weight	TRUE	FALSE	FALSE	FALSE		



Installation Cost	TRUE	FALSE	FALSE	FALSE		
Polarity	TRUE	FALSE	FALSE	FALSE		
Gallons of Oil	TRUE	FALSE	FALSE	FALSE		
Warranty	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
STATUSTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
DISPOSITIONTIMESTAMP	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	FALSE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerUnitCondemn](#)

ArcFM Display Field: CONDEMNDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
Condemn Number	TRUE	FALSE	TRUE	FALSE		
Type	TRUE	FALSE	FALSE	FALSE		
CONDEMNDATE	TRUE	FALSE	FALSE	FALSE		
Reason	TRUE	FALSE	FALSE	FALSE		
Approved	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CONDEMNNTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerUnitInstall](#)

ArcFM Display Field: RELTRANSFORMERUNITCOMPANYNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: EDFs Reset Asset To Stock

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null	Clear After Create	On Feature Create	On Feature Update
-------------	---------	----------	------------	--------------------	-------------------	-------------------

			Values			
Company Number	TRUE	FALSE	FALSE	FALSE		
Company Use Location Id	TRUE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	FALSE	FALSE	FALSE		
Material Ticket	TRUE	TRUE	FALSE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
Installation Status	TRUE	TRUE	FALSE	FALSE		
Installation Type	TRUE	TRUE	FALSE	FALSE		
KVA	TRUE	FALSE	TRUE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		
Pole/Pad Number	TRUE	TRUE	FALSE	FALSE		
Related Transformer Bank Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
INSTALLTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerUnitRemove](#)

ArcFM Display Field: REMOVALDATE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: EDFs Reset Transformer/Regulator Asset To Installed

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
REMOVALDATE	TRUE	FALSE	FALSE	FALSE		
Reason	TRUE	FALSE	FALSE	FALSE		
Material Ticket	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
REMOVALTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
LEGACYINSTALLTIMESTAMP	FALSE	TRUE	TRUE	FALSE		

[arcfm8.ELECTRIC.TransformerUnitSoldOrLeased](#)

ArcFM Display Field: SOLDLEASEDDATE

Create Edit Task:

On Create Event:

On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
SOLDLEASEDTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
Sold/Leased	TRUE	FALSE	FALSE	FALSE		
SOLDLEASEDDATE	TRUE	FALSE	FALSE	FALSE		
Material Ticket	TRUE	FALSE	FALSE	FALSE		
Receiver	TRUE	FALSE	FALSE	FALSE		
Lease Terminated	TRUE	FALSE	TRUE	FALSE		
LEASETERMINATEDDATE	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.TransformerUnitStock](#)

ArcFM Display Field: STOCKDATE

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Company Number	TRUE	FALSE	FALSE	FALSE		
STOCKDATE	TRUE	FALSE	FALSE	FALSE		
Store Room Number	TRUE	FALSE	FALSE	FALSE		
Transfer Number	TRUE	FALSE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
STOCKTIMESTAMP	FALSE	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.UgConductor](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: ArcFM Create Feeder Object  
 On Create Event: NIPSCO.SplitAtTapPoint  
 On Update Event: ArcFM Update Feeder Object  
 On Delete Event: NIPSCO.Prevent Delete If Units Related  
 On Delete Event: NIPSCO.FeederAllOpenPointDelete  
 On Delete Event: ArcFM OH - Delete Feeder Conductor/Units  
 On Split Event: ArcFM Split Feeder Object  
 On Abandon Event:  
 Before Split Event: EDFs Turn WOMO Validation Off  
 Before Split Event: ArcFM Save Related Objects  
 Before Split Event: EDFs Turn WOMO Validation On  
 After Split Event: EDFs Turn WOMO Validation Off  
 After Split Event: ArcFM Restore Related Objects  
 After Split Event: EDFs Turn WOMO Validation On  
 Abandon Feature Class: arcfm8.ELECTRIC.AbandonedConductor  
 Abandon Subtype: 1  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA Number	TRUE	FALSE	FALSE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Grid	TRUE	TRUE	FALSE	FALSE		
Primary Operating Voltage	TRUE	TRUE	FALSE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Phase	TRUE	TRUE	FALSE	FALSE		
In Conduit	TRUE	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Measured Length	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
FeederAll Phase	FALSE	TRUE	TRUE	FALSE		
SHAPE.len	FALSE					
Owner	TRUE	TRUE	FALSE	FALSE		
Legacy Circuit Number	FALSE	TRUE	TRUE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.UgConductorInfo](#)

ArcFM Display Field: WIREMATERIALCD

Create Edit Task:

On Create Event: EDFs Validate UG Primary Properties

On Create Event: EDFs Validate Work Order Number 2

On Update Event: EDFs Validate UG Primary Properties  
 On Update Event: EDFs Validate Work Order Number 2  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
Wire Size	TRUE	TRUE	FALSE	FALSE		
Wire Material	TRUE	TRUE	FALSE	FALSE		
Wire Type	TRUE	TRUE	FALSE	FALSE		
In Conduit	TRUE	TRUE	FALSE	FALSE		
Measured Length	FALSE	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE	FALSE		
Install WO Number	TRUE	TRUE	FALSE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE	FALSE		
RETIREDATE	FALSE	TRUE	TRUE	FALSE		
Retire WO Number	FALSE	TRUE	TRUE	FALSE		
Retire Misc Order Id	FALSE	TRUE	TRUE	FALSE		
Circuit Number	FALSE	TRUE	TRUE	FALSE		
From Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
To Pole/Pad Number	FALSE	TRUE	TRUE	FALSE		
Related Ug Conductor Object Id	TRUE	FALSE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.VoltageRegulator](#)

ArcFM Display Field: OBJECTID  
 Create Edit Task: NIPSCO.Electric.FeatureOffset  
 On Create Event: ArcFM Segment Split  
 On Create Event: NIPSCO Structure Relate  
 On Create Event: ArcFM Create Feeder Object  
 On Update Event: NIPSCO Structure Relate  
 On Update Event: ArcFM Update Feeder Object  
 On Update Event: NIPSCO.LOANamePropogation  
 On Delete Event: NIPSCO.Prevent Delete If Units Related  
 On Delete Event: ArcFM Delete Feeder Object  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE	FALSE		
LOA	TRUE	FALSE	TRUE	FALSE	NIPSCO LoaName	NIPSCO LoaName
Tax Unit	TRUE	TRUE	FALSE	FALSE		
Grid	TRUE	TRUE	FALSE	FALSE		

Phase	TRUE	TRUE	FALSE	FALSE		
KVA	TRUE	TRUE	FALSE	FALSE		
Regulator Type	TRUE	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE	FALSE		
ANCILLARYROLE	FALSE	TRUE	TRUE	FALSE		
Enabled	FALSE	TRUE	TRUE	FALSE		
CreationDate	FALSE	TRUE	FALSE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name
Electric Trace Weight	FALSE	TRUE	TRUE	FALSE		
Feeder Manager Non-Traceable	FALSE	TRUE	TRUE	FALSE		
Circuit Number	TRUE	FALSE	TRUE	FALSE		
Circuit Number 2	FALSE	TRUE	TRUE	FALSE		
Feeder Information	FALSE	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE	FALSE		
Legacy Node 2	FALSE	TRUE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE	FALSE		
Legacy Pole Number	FALSE	TRUE	TRUE	FALSE		
Related Support Structure Object Id	FALSE	TRUE	TRUE	FALSE		
Related Regulator Bank Object Id	FALSE	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	TRUE	FALSE		
DCSID	FALSE	TRUE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE	FALSE		
TILENAME	FALSE	TRUE	TRUE	FALSE		
REGTYPE	FALSE	TRUE	TRUE	FALSE		
Rated Amperage	TRUE	TRUE	TRUE	FALSE		
P_L	FALSE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.VoltageRegulatorBank](#)

ArcFM Display Field: BANKKVAVALUE

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event: ArcFM Delete Related Conductor Info

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Bank KVA	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE	FALSE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE	FALSE		ArcFM User Name

[arcfm8.ELECTRIC.WoodPoleEvents](#)

ArcFM Display Field: EVENTTYPECD

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Related Distribution Reference Number	FALSE	TRUE	TRUE	FALSE		
Event Type	TRUE	TRUE	FALSE	FALSE		
Pole Inspection Year	TRUE	TRUE	TRUE	FALSE		
Pole Inspection Pass/Fail Code	TRUE	TRUE	TRUE	FALSE		
WOODPOLEREINFORCEDDATE	TRUE	TRUE	TRUE	FALSE		
WOODPOLEGNDTREATDATE	TRUE	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

[arcfm8.ELECTRIC.WoodPoleInfo](#)

ArcFM Display Field: RELDISTRIBREFNUMBER

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	Clear After Create	On Feature Create	On Feature Update
Related Distribution Reference Number	FALSE	TRUE	TRUE	FALSE		
Pole Class	TRUE	TRUE	FALSE	FALSE		
Pole Type	TRUE	TRUE	FALSE	FALSE		
Pole Original Treatment Type	TRUE	TRUE	FALSE	FALSE		
Wood Setting	TRUE	TRUE	FALSE	FALSE		
OBJECTID	TRUE	FALSE	FALSE	FALSE		

**Table E-2. Electric Relationship Class configuration.  
Classes that did not have any configuration have been excluded**

<a href="#">CapacitorStoresItem_CapacitorUnit</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">SupportStruct_CompanyStreetlight</a>
On Relationship Created Event: EDFS Validate Referenced Assembly 2
On Relationship Deleted Event:
<a href="#">RegulatorUnit_RegulatorUnitRemove</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">CapacitorUnit_CapacitorUnitStock</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfUnit_TransfUnitSL</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfUnit_TransfUnitCondemn</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfBank_TransfUnitInstall</a>
On Relationship Created Event: NIPSCO.Common.LoaNameRetrieval
On Relationship Deleted Event: EDFS Transformer/Regulator Asset Removal
<a href="#">RegulatorUnit_RegulatorUnitStock</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfUnit_TransfFunctionTest</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">RegulatorUnit_RegulatorUnitSL</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransRegStoresItem_RegulatorUnit</a>
On Relationship Created Event: EDFS Relate SIN KVA
On Relationship Deleted Event: EDFS Relate SIN KVA
<a href="#">VoltageReg_RegulatorUnitInstall</a>



On Relationship Created Event: NIPSCO.Common.LoaNameRetrieval
On Relationship Deleted Event: EDFS Transformer/Regulator Asset Removal
<a href="#">RegUnit_RegFunctionTest</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">SubBreaker_CircuitSource</a>
On Relationship Created Event: ArcFM Relate Feeder Object
On Relationship Deleted Event: ArcFM Relate Feeder Object
<a href="#">TransfUnit_TransfUnitInstall</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">CapacitorUnit_CapacitorUnitRemove</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfUnit_TransfUnitStock</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">RegUnit_RegOilTest</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfRegStoresItem_TransfUnit</a>
On Relationship Created Event: EDFS Relate SIN KVA
On Relationship Deleted Event: EDFS Relate SIN KVA
<a href="#">CapacitorUnit_CapacitorUnitInstall</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">CapacitorBank_CapacitorUnitInstall</a>
On Relationship Created Event: NIPSCO.Common.LoaNameRetrieval
On Relationship Deleted Event: EDFS Capacitor Asset Removal
<a href="#">TransfUnit_TransfOilTest</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">RegulatorUnit_RegulatorUnitCondemn</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete

<a href="#">RegulatorUnit_RegulatorUnitInstall</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete
<a href="#">TransfUnit_TransfUnitRemove</a>
On Relationship Created Event:
On Relationship Deleted Event: EDFS Prevent Relationship Delete

**Table E-3. Contains all ArcFM Model Name assignments for both the base and custom configuration**

*AbandonedConductor*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
AbandonedConductor	MMABANDONED
AbandonedConductor	LOCATABLEOBJECT
AbandonedConductor	MMREMOVABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_1
GRIDCD	AT_2
INCONDUITIND	AT_3
SHAPE	AT_SHAPE

*Assembly*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Assembly	ASSEMBLY
Assembly	EDFS RETIREMENT INFO
Assembly	EDFS WORKORDER 2

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
UPDATEDATE	RETIREDATE
SUBTYPECD	SUBTYPECD
DISTRIBREFNUMBER	DISTRIBREFNUMBER
ASSEMBLYID	ASSEMBLYID
ASSEMBLYCOUNT	ASSEMBLYCOUNT
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIRESWORKORDERNUMBER	RETIRESWORKORDERNUMBER
RETIRESMISCORDERID	RETIRESMISCORDERID
RELSUPPORTSTRUCTUREOBJECTID	RELSUPPORTSTRUCTUREOBJECTID

*CapacitorBank*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CapacitorBank	CADOPS
CapacitorBank	CAPACITORBANK
CapacitorBank	EDFS ASSETFEATURE
CapacitorBank	EDFS STRUCTURE PREVENT DELETION

CapacitorBank	FEEDERALL
CapacitorBank	LOCATABLEOBJECT

*Field Model Names*

Field	Model Name
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
BANKKVARVALUE	CADOPS
BANKKVARVALUE	FEEDERALL
CAPACITORTYPECD	CADOPS
CAPACITORTYPECD	FEEDERALL

*CapacitorStoresItem*

*Object Class Model Names*

Object Class	Model Name
CapacitorStoresItem	CADOPS
CapacitorStoresItem	FEEDERALL
CapacitorStoresItem	NABACKWARD

*Field Model Names*

Field	Model Name
KVARVALUE	FEEDERALL
KVARVALUE	CADOPS

*CapacitorUnit*

*Object Class Model Names*

Object Class	Model Name
CapacitorUnit	FEEDERALL
CapacitorUnit	LOCATABLEOBJECT
CapacitorUnit	NABACKWARD
CapacitorUnit	CADOPS
CapacitorUnit	CAPACITORUNIT
CapacitorUnit	EDFS ASSETUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
RELSTORESITEMNUMBER	RELSTORESITEMNUMBER
COMPANYNUMBER	COMPANYNUMBER
STATUSCD	STATUSCD
STATUSTIMESTAMP	STATUSTIMESTAMP
DISPOSITIONCD	DISPOSITIONCD

*CapacitorUnitInstall*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CapacitorUnitInstall	EDFS WORKORDER
CapacitorUnitInstall	FEEDERALL
CapacitorUnitInstall	CADOPS
CapacitorUnitInstall	CAPACITORUNITINSTALL
CapacitorUnitInstall	EDFS ASSETINSTALL

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
TAXUNITCD	TAXUNITCD
GRIDCD	GRIDCD
INSTALLTIMESTAMP	INSTALLTIMESTAMP
INSTALLDATE	INSTALLDATE
PHASEDESIGNATION	CADOPS
PHASEDESIGNATION	FEEDERALL
PHASEDESIGNATION	PHASEDESIGNATION
INSTALLATIONSTATUSCD	INSTALLATIONSTATUSCD
WORKORDERNUMBER	WORKORDERNUMBER
MISCORDERID	MISCORDERID
DISTRIBREFNUMBER	DISTRIBREFNUMBER
CIRCUITNUMBER	CIRCUITNUMBER
RELCAPACITORBANKOBJECTID	RELATEDBANKOID
RELCAPACITORUNITCOMPANYNUMBER	COMPANYNUMBER

*CapacitorUnitRemove*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CapacitorUnitRemove	CAPACITORUNITREMOVE
CapacitorUnitRemove	EDFS ASSETREMOVE
CapacitorUnitRemove	EDFS WORKORDER

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
REMOVALTIMESTAMP	REMOVALTIMESTAMP
REMOVALDATE	REMOVALDATE
REMOVALCD	REMOVALCD

MISCORDERID	MISCORDERID
WORKORDERNUMBER	WORKORDERNUMBER
RELCAPACITORUNITCOMPANYNUMBER	COMPANYNUMBER

*CapacitorUnitStock*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CapacitorUnitStock	EDFS ASSETSTOCK

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
STOCKTIMESTAMP	STATUSTIMESTAMP
STOCKTIMESTAMP	STOCKTIMESTAMP
STOCKDATE	STOCKDATE
RELCAPACITORUNITCOMPANYNUMBER	COMPANYNUMBER
RELSTORERROOMNUMBER	STORERROOMNUMBER

*CircuitSource*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CircuitSource	CADOPS
CircuitSource	CIRCUITSOURCE
CircuitSource	FEEDERALL
CircuitSource	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
NOMINALVOLTAGE	CADOPS
NOMINALVOLTAGE	FEEDERALL
CIRCUITSOURCEID	FEEDERALL
CIRCUITSOURCEID	FEEDERID
CIRCUITSOURCEID	CADOPS
CIRCUITSOURCENAME	FEEDERALL
CIRCUITSOURCENAME	FEEDERNAME
CIRCUITSOURCENAME	CADOPS
SUBSTATIONID	CADOPS
SUBSTATIONID	FEEDERALL
SUBSTATIONID	SUBSTATIONID
EMERGENCYCAPACITYKW	CADOPS
EMERGENCYCAPACITYKW	FEEDERALL
MAXKVAR	CADOPS
MAXKVAR	FEEDERALL
MINKVAR	CADOPS
MINKVAR	FEEDERALL
MAXPOSITIVESEQUENCEREACTANCE	CADOPS
MAXPOSITIVESEQUENCEREACTANCE	FEEDERALL
MAXPOSITIVESEQUENCERESISTANCE	CADOPS
MAXPOSITIVESEQUENCERESISTANCE	FEEDERALL
MAXZEROSEQUENCEIMPEDANCE	CADOPS

MAXZEROSEQUENCEIMPEDANCE	FEEDERALL
MAXZEROSEQUENCERESISTANCE	CADOPS
MAXZEROSEQUENCERESISTANCE	FEEDERALL
NEGATIVESEQUENCEREACTANCE	CADOPS
NEGATIVESEQUENCEREACTANCE	FEEDERALL
VOLTAGEANGLE	CADOPS
VOLTAGEANGLE	FEEDERALL
FEEDERSOURCEINFO	FEEDERSOURCEINFO

*CompanyStreetlight*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CompanyStreetlight	COMPANYSTREETLIGHT
CompanyStreetlight	EDFS RETIREMENT INFO
CompanyStreetlight	EDFS STRUCTURE PREVENT DELETION
CompanyStreetlight	EDFS WORKORDER 2

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	SUBTYPECD
DISTRIBREFNUMBER	DISTRIBREFNUMBER
ASSEMBLYID	ASSEMBLYID
ASSEMBLYIDCOUNT	ASSEMBLYCOUNT
ASSEMBLYIDCOUNT	ASSEMBLYIDCOUNT
RELSUPPORTSTRUCTUREOBJECTID	RELSUPPORTSTRUCTUREOBJECTID

*ConductorDefinition*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
ConductorDefinition	CONDUCTORDEFINITION

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CATEGORYCD	CATEGORYCD
LOCATIONCD	LOCATIONCD
WIRETYPECD	WIRETYPECD
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	WIREMATERIALCD

*CustomerGenerator*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CustomerGenerator	CADOPS
CustomerGenerator	FEEDERALL

CustomerGenerator	LOCATABLEOBJECT
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*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL
NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
GRIDCD	CADOPS
GRIDCD	FEEDERALL
SYMBOLCONFIGURATIONCD	SYMBOLOLOGYCONFIGURATIONCD
CUSTOMERNAME	CADOPS
CUSTOMERNAME	FEEDERALL
NOMINALVOLTAGE	CADOPS
NOMINALVOLTAGE	FEEDERALL
CUSTOMERSUBSTATIONID	CADOPS
CUSTOMERSUBSTATIONID	FEEDERALL
MAXPOSITIVESEQUENCERESISTANCE	CADOPS
MAXPOSITIVESEQUENCERESISTANCE	FEEDERALL
MAXPOSITIVESEQUENCEREACTANCE	CADOPS
MAXPOSITIVESEQUENCEREACTANCE	FEEDERALL
NEGATIVESEQUENCEREACTANCE	CADOPS
NEGATIVESEQUENCEREACTANCE	FEEDERALL
MAXZEROSEQUENCERESISTANCE	CADOPS
MAXZEROSEQUENCERESISTANCE	FEEDERALL
MAXZEROSEQUENCEIMPEDANCE	CADOPS
MAXZEROSEQUENCEIMPEDANCE	FEEDERALL
MAXKVAR	CADOPS
MAXKVAR	FEEDERALL
MINKVAR	CADOPS



MINKVAR	FEEDERALL
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[\*CustomerStreetlight\*](#)

*Object Class Model Names*

Object Class	Model Name
CustomerStreetlight	EDFS PADMOUNT PREVENT DELETION
CustomerStreetlight	EDFS STRUCTURE PREVENT DELETION
CustomerStreetlight	LOCATABLEOBJECT

*Field Model Names*

Field	Model Name
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[\*DeadEndElectric\*](#)

*Object Class Model Names*

Object Class	Model Name
DeadEndElectric	DEADENDELECTRIC

*Field Model Names*

Field	Model Name
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[\*ElectricDiscrepancy\*](#)

*Object Class Model Names*

Object Class	Model Name
ElectricDiscrepancy	LOCATABLEOBJECT

*Field Model Names*

Field	Model Name
ERRORDescription	LOCATABLEFIELD

[\*ElectricNetwork\\_Junctions\*](#)

*Object Class Model Names*

Object Class	Model Name
ElectricNetwork_Junctions	CADOPS
ElectricNetwork_Junctions	FEEDERALL

*Field Model Names*

Field	Model Name
ENABLED	CADOPS
ENABLED	FEEDERALL

[\*FeederAllOpenPoint\*](#)

*Object Class Model Names*

Object Class	Model Name
FeederAllOpenPoint	FEEDERALL
FeederAllOpenPoint	FEEDERALLOPENPOINT
FeederAllOpenPoint	LOCATABLEOBJECT

*Field Model Names*

Field	Model Name
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OBJECTID	LOCATABLEFIELD
ENABLED	FEEDERALL

*FuseCutoutBank*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
FuseCutoutBank	CADOPS
FuseCutoutBank	EDFS STRUCTURE PREVENT DELETION
FuseCutoutBank	FDRMGRPROTECTIVE
FuseCutoutBank	FEEDERALL
FuseCutoutBank	FUSE
FuseCutoutBank	FUSECUTOUTBANK
FuseCutoutBank	LOCATABLEOBJECT
FuseCutoutBank	PROTECTIVE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
GRIDCD	CADOPS
GRIDCD	FEEDERALL
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
FUSELINKAMPRATINGVALUE	CADOPS
FUSELINKAMPRATINGVALUE	FEEDERALL
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL
NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C
SYMBOLCONFIGURATIONCD	SYMBOLOLOGYCONFIGURATIONCD

*FuseUnit*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
FuseUnit	CADOPS
FuseUnit	EDFS RETIREMENT INFO
FuseUnit	EDFS WORKORDER 2
FuseUnit	FEEDERALL
FuseUnit	FUSEUNIT
FuseUnit	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
PHASEDESIGNATION	PHASEDESIGNATION
DISTRIBREFNUMBER	DISTRIBREFNUMBER
CIRCUITNUMBER	FEEDERID
SUBTYPECD	SUBTYPECD
CUTOUTAMPERAGEVALUE	CADOPS
CUTOUTAMPERAGEVALUE	FEEDERALL

*GisMappsTransactionQueue*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
GisMappsTransactionQueue	GISMAPPSTRANSACTIONQUEUE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
COMPANYNUMBER	COMPANYNUMBER
TRANSACTIONTYPE	TRANSACTIONTYPE
LOANUMBER	LOANUMBER
STORESITEMNUMBER	STORESITEMNUMBER
TRANSACTIONDATE	TRANSACTIONDATE

*InterfaceCHAssemblyNumber*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
InterfaceCHAssemblyNumber	CHASSEMBLYVIEW

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
AssemblyNumber	ASSEMBLYID

*InterfaceCISLifeSupport*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
InterfaceCISLifeSupport	CISLIFESUPPORT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LoadDistribRefNumber	DISTRIBREFNUMBER
LifeSupportYesNoInd	LIFESUPPORTINDICATOR

*InterfaceGLWorkOrderNumber*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
InterfaceGLWorkOrderNumber	GENERALLEDGERVIEW

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WorkOrderNumber	WORKORDERNUMBER

*JointUseAttachment*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
JointUseAttachment	JOINTUSEATTACHMENT
JointUseAttachment	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
SUBTYPECD	SUBTYPECD
ATTACHMENTCOMPANYNAME	ATTACHMENTCOMPANYNAME

*LegacyOhConductorInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LegacyOhConductorInfo	CONDUCTORINFO
LegacyOhConductorInfo	EDFS CONDUCTORINFO
LegacyOhConductorInfo	EDFS RETIREMENT INFO
LegacyOhConductorInfo	EDFS WORKORDER 2
LegacyOhConductorInfo	LEGACYOHCONDUCTORINFO
LegacyOhConductorInfo	LEGACYPRIMARYCONDUCTORINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	SUBTYPECD
FROMDISTRIBREFNUMBER	FROMDISTRIBREF
TODISTRIBREFNUMBER	TODISTRIBREF
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	WIREMATERIALCD
WIRETYPECD	WIRETYPECD

CIRCUITNUMBER	CIRCUITNUMBER
CONDUCTORSPANCOUNT	SPANCOUNT
SPANLENGTHVALUE	SPANLENGTH

*LegacyUgConductorInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LegacyUgConductorInfo	CONDUCTORINFO
LegacyUgConductorInfo	EDFS CONDUCTORINFO
LegacyUgConductorInfo	EDFS RETIREMENT INFO
LegacyUgConductorInfo	EDFS WORKORDER 2
LegacyUgConductorInfo	LEGACYPRIMARYCONDUCTORINFO
LegacyUgConductorInfo	LEGACYPRIMARYUGCONDUCTORINFO
LegacyUgConductorInfo	LEGACYUGCONDUCTORINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	SUBTYPECD
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	WIREMATERIALCD
WIRETYPECD	WIRETYPECD
INCONDUITCD	INCONDUITCD
CIRCUITNUMBER	CIRCUITNUMBER
FROMDISTRIBREFNUMBER	FROMDISTRIBREF
TOSTRUCTUREID	TODISTRIBREF
CONDUCTORSPANCOUNT	SPANCOUNT
SPANLENGTHVALUE	SPANLENGTH

*Manhole*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Manhole	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
SYMBOLROTATIONVALUE	SYMBOLROTATION

*OhConductor*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
OhConductor	CADOPS
OhConductor	CONDUCTOR

OhConductor	EDFS CONDUCTORINFO
OhConductor	FEEDERALL
OhConductor	LINE
OhConductor	LOCATABLEOBJECT
OhConductor	OHCONDUCTOR
OhConductor	OVERHEADCONDUCTOR
OhConductor	SPLITTARGET

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
GRIDCD	CADOPS
GRIDCD	FEEDERALL
MEASUREDLENGTH	CADOPS
MEASUREDLENGTH	FEEDERALL
MEASUREDLENGTH	MEASUREDLENGTH
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERINFO	FEEDERINFO
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
PRIMARYOPERATINGVOLTAGEVALUE	CADOPS
PRIMARYOPERATINGVOLTAGEVALUE	FEEDERALL
PRIMARYOPERATINGVOLTAGEVALUE	OPERATINGVOLTAGE
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
WIRESIZECD	CADOPS
WIRESIZECD	FEEDERALL
WIREMATERIALCD	CADOPS
WIREMATERIALCD	FEEDERALL

*OhConductorInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
OhConductorInfo	CADOPS
OhConductorInfo	CONDUCTORINFO
OhConductorInfo	EDFS CONDUCTORINFO
OhConductorInfo	EDFS RETIREMENT INFO
OhConductorInfo	EDFS WORKORDER 2
OhConductorInfo	FEEDERALL
OhConductorInfo	LOCATABLEOBJECT

OhConductorInfo	NIPSCOTARGETCLASS
OhConductorInfo	OHCONDUCTORINFO
OhConductorInfo	PRIMARYCONDUCTORINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
SUBTYPECD	SUBTYPECD
FROMDISTRIBREFNUMBER	FROMDISTRIBREF
TODISTRIBREFNUMBER	TODISTRIBREF
WIRESIZECD	CADOPS
WIRESIZECD	FEEDERALL
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	CADOPS
WIREMATERIALCD	FEEDERALL
WIREMATERIALCD	WIREMATERIALCD
WIRETYPECD	WIRETYPECD
WIRETYPECD	CADOPS
WIRETYPECD	FEEDERALL
CIRCUITNUMBER	CIRCUITNUMBER
CIRCUITNUMBER	FEEDERID
MEASUREDLENGTH	MEASUREDLENGTH
MEASUREDLENGTH	SPANLENGTH

*OpenPoint*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
OpenPoint	SWITCH
OpenPoint	CADOPS
OpenPoint	FEEDERALL
OpenPoint	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO

PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL
NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C

*PadMount*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
PadMount	EDFS ASSETSTRUCTURE
PadMount	EDFS RETIREMENT INFO
PadMount	EDFS WORKORDER 2
PadMount	FEEDERALL
PadMount	MMREMOVABLE
PadMount	NABACKWARD
PadMount	PADMOUNT
PadMount	STRUCTURE
PadMount	UNIQUEDISTRIBREFNUMBERCLASS
PadMount	CADOPS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	AT_5
GRIDCD	GRIDCD
INSTALLDATE	AT_6
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12



INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	AT_9
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
TAXUNITCD	AT_4
TAXUNITCD	TAXUNITCD
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
TYPECD	AT_14
OWNERIND	AT_15
OWNERIND	OWNER
LEGACYDISTRIBREFNUMTERMID	AT_17
INSTALLTIMESTAMP	AT_18
INSTALLTIMESTAMP	INSTALLTIMESTAMP
REMOVALTIMESTAMP	AT_19
PRINTID	AT_20
DISTRIBREFNUMBER	AT_21
DISTRIBREFNUMBER	CADOPS
DISTRIBREFNUMBER	DISTRIBREFNUMBER
DISTRIBREFNUMBER	FEDERALL
DISTRIBREFNUMBER	FROMDISTRIBREF
DISTRIBREFNUMBER	LOADDISTRIBREFNUMBER
DISTRIBREFNUMBER	TAKEOFFREFNUMBER
DISTRIBREFNUMBER	TODISTRIBREF
LOCATIONDESCRIPTION	AT_22
SERVICEPOINTTYPECD	AT_23

*Pedestal*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Pedestal	COMPANYSTREETLIGHT
Pedestal	EDFS WORKORDER 2
Pedestal	LOCATABLEOBJECT
Pedestal	PEDESTAL
Pedestal	STRUCTURE
Pedestal	UNIQUEDISTRIBREFNUMBERCLASS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE

RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SYMBOLROTATIONVALUE	SYMBOLROTATION
LONGPEDESTALNUMBER	DISTRIBREFNUMBER
LONGPEDESTALNUMBER	FROMDISTRIBREF
LONGPEDESTALNUMBER	LOADDISTRIBREFNUMBER
LONGPEDESTALNUMBER	TAKEOFFREFNUMBER
LONGPEDESTALNUMBER	TODISTRIBREF

*PowerTransformer*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
PowerTransformer	FEEDERALL
PowerTransformer	NAGETSHAPE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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*PrimaryMeter*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
PrimaryMeter	CADOPS
PrimaryMeter	EDFS WORKORDER
PrimaryMeter	FEEDERALL
PrimaryMeter	LOCATABLEOBJECT
PrimaryMeter	NABACKWARD

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
GRIDCD	CADOPS
GRIDCD	FEEDERALL
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD

INSTALLMISCORDERID	MISCORDERID
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*RecloserBank*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RecloserBank	CADOPS
RecloserBank	DYNAMICPROTECTIVEDEVICE
RecloserBank	EDFS STRUCTURE PREVENT DELETION
RecloserBank	FDRMGRPROTECTIVE
RecloserBank	FEEDERALL
RecloserBank	LOCATABLEOBJECT
RecloserBank	PROTECTIVE
RecloserBank	RECLOSERBANK

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
GRIDCD	FEEDERALL
GRIDCD	CADOPS
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
RECLOSERTYPECD	CADOPS
RECLOSERTYPECD	FEEDERALL
RECLOSERSIZEVALUE	CADOPS
RECLOSERSIZEVALUE	FEEDERALL
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL
NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C

*RecloserUnit*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RecloserUnit	CADOPS
RecloserUnit	EDFS RETIREMENT INFO
RecloserUnit	EDFS WORKORDER 2
RecloserUnit	FEEDERALL
RecloserUnit	LOCATABLEOBJECT
RecloserUnit	RECLOSERUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
PHASEDESIGNATION	PHASEDESIGNATION
DISTRIBREFNUMBER	DISTRIBREFNUMBER
CIRCUITNUMBER	CIRCUITNUMBER
CIRCUITNUMBER	FEEDERID
SUBTYPECD	SUBTYPECD

*RegulatorFunctionTest*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RegulatorFunctionTest	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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*RegulatorUnit*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RegulatorUnit	CADOPS
RegulatorUnit	EDFS ASSETUNIT
RegulatorUnit	FEEDERALL
RegulatorUnit	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
COMPANYNUMBER	COMPANYNUMBER
STATUSTIMESTAMP	STATUSTIMESTAMP
DISPOSITIONCD	DISPOSITIONCD
STATUSCD	STATUSCD
RELSTORESITEMNUMBER	RELSTORESITEMNUMBER

*RegulatorUnitInstall*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RegulatorUnitInstall	CADOPS

RegulatorUnitInstall	EDFS ASSETINSTALL
RegulatorUnitInstall	FEEDERALL
RegulatorUnitInstall	LOCATABLEOBJECT
RegulatorUnitInstall	REGULATORUNITINSTALL

*Field Model Names*

Field	Model Name
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
TAXUNITCD	TAXUNITCD
GRIDCD	GRIDCD
INSTALLTIMESTAMP	INSTALLTIMESTAMP
INSTALLDATE	INSTALLDATE
CIRCUITNUMBER	CIRCUITNUMBER
PHASEDESIGNATION	PHASEDESIGNATION
INSTALLATIONSTATUSCD	INSTALLATIONSTATUSCD
MATERIALTICKETNUMBER	MATERIALTICKETNUMBER
DISTRIBREFNUMBER	DISTRIBREFNUMBER
RELREGULATORUNITCOMPANYNUMBER	COMPANYNUMBER
RELVOLTAGEREGULATOROBJECTID	RELATEDBANKOID

*RegulatorUnitRemove*

*Object Class Model Names*

Object Class	Model Name
RegulatorUnitRemove	EDFS ASSETREMOVE
RegulatorUnitRemove	REGULATORUNITREMOVE

*Field Model Names*

Field	Model Name
REMOVALTIMESTAMP	REMOVALTIMESTAMP
REMOVALDATE	REMOVALDATE
REMOVALCD	REMOVALCD
MATERIALTICKETNUMBER	MATERIALTICKETNUMBER
RELREGULATORUNITCOMPANYNUMBER	COMPANYNUMBER

*RegulatorUnitStock*

*Object Class Model Names*

Object Class	Model Name
RegulatorUnitStock	EDFS ASSETSTOCK

*Field Model Names*

Field	Model Name
STOCKTIMESTAMP	STOCKTIMESTAMP
STOCKTIMESTAMP	STATUSTIMESTAMP
STOCKDATE	STOCKDATE
RELREGULATORUNITCOMPANYNUMBER	COMPANYNUMBER
RELSTOREROOMNUMBER	STOREROOMNUMBER

*RetiredPadMount*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredPadMount	EDFS RETIRED ASSETSTRUCTURE
RetiredPadMount	EDFS WORKORDER 2
RetiredPadMount	MMREMOVED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
TAXUNITCD	AT_4
GRIDCD	AT_5
INSTALLDATE	AT_6
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	AT_9
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SUBTYPECD	AT_SUBTYPECD
TYPECD	AT_14
OWNERIND	AT_15
LEGACYDISTRIBREFNUMTERMID	AT_17
INSTALLTIMESTAMP	AT_18
LEGACYREMOVALTIMESTAMP	AT_19
PRINTID	AT_20
DISTRIBREFNUMBER	AT_21
LOCATIONDESCRIPTION	AT_22
SERVICEPOINTTYPECD	AT_23

*RetiredSupportStructure*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredSupportStructure	EDFS RETIRED ASSETSTRUCTURE
RetiredSupportStructure	EDFS WORKORDER 2
RetiredSupportStructure	LOCATABLEOBJECT
RetiredSupportStructure	MMREMOVED
RetiredSupportStructure	RETIRESUPPORTSTRUCTURE
RetiredSupportStructure	UNIQUEDISTRIBREFNUMBERCLASS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
TAXUNITCD	AT_4
GRIDCD	AT_5
INSTALLDATE	AT_6
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	AT_9
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SUBTYPECD	AT_SUBTYPECD
DISTRIBREFNUMBER	AT_14
DISTRIBREFNUMBER	DISTRIBREFNUMBER
LOCATIONDESCRIPTION	AT_17
POLEHEIGHTVALUE	AT_18
POLEMATERIALCD	AT_19
PRIMARYDISTRIBREFNUMBER	AT_20
SERVICEPOINTTYPECD	AT_28
TRANSMISSIONSTRUCTURENUMBER	AT_29
INSTALLTIMESTAMP	AT_30
REMOVALTIMESTAMP	AT_31
TELEPHONECOMPANYCD	TELEPHONECOMPANYCD
FIRSTCABLECOMPANYCD	FIRSTCABLECOMPANYCD
SECONDCABLECOMPANYCD	SECONDCABLECOMPANYCD
UTILITYCOMPANYCD	UTILITYCOMPANYCD
FIBERCOMPANYCD	FIBERCOMPANYCD
OTHERCOMPANYCD	OTHERCOMPANYCD
FOREIGNOWNERNAME	AT_33

*RetiredSwitchGear*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredSwitchGear	EDFS WORKORDER 2
RetiredSwitchGear	MMREMOVED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONUSER
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
TAXUNITCD	AT_4
GRIDCD	AT_5
INSTALLDATE	AT_6
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREWORKORDERNUMBER	AT_9
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SUBTYPECD	AT_SUBTYPECD
SWITCHGEARKV	AT_14
OPERATIONTYPECD	AT_15
FRONTKINDCD	AT_16
USEDCOMPARTMENTCOUNT	AT_17
DISTRIBREFNUMBER	AT_18
ASSEMBLYNUMBER	AT_19
ASSOCIATIONTIMESTAMP	AT_20

*RetiredWoodPoleEvents*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredWoodPoleEvents	RETIREDWOODPOLEEVENTS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WOODPOLEINSPECTIONYEAR	INSPECTIONYEAR
WOODPOLEINSPECTIONPASSFAILCD	INSPECTIONPASSFAILCD
WOODPOLEREINFORCEDDATE	REINFORCEDDATE
WOODPOLEGNDTREATDATE	GROUNDTREATMENTDATE
RELDISTRIBREFNUMBER	DISTRIBREFNUMBER
EVENTTYPECD	EVENTTYPECD

*RetiredWoodPoleInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredWoodPoleInfo	RETIREDWOODPOLEINFO



*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WOODPOLECLASSCD	CLASSCD
WOODPOLETYPECD	TYPECD
WOODSETTINGCD	SETTINGCD
RELDISTRIBREFNUMBER	DISTRIBREFNUMBER
WOODPOLEORIGINALTREATMNTTYPECD	ORIGINALTREATMENTTYPECD

*Secondary*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Secondary	LINE
Secondary	LOCATABLEOBJECT
Secondary	MMABANDONABLE
Secondary	SECONDARY

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_1
LOANUMBER	LOANAME
GRIDCD	AT_2
SHAPE	AT_SHAPE

**SECONDARYCONDUCTORINFO**

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SECONDARYCONDUCTORINFO	CONDUCTORINFO
SECONDARYCONDUCTORINFO	EDFS CONDUCTORINFO
SECONDARYCONDUCTORINFO	EDFS RETIREMENT INFO
SECONDARYCONDUCTORINFO	EDFS WORKORDER 2
SECONDARYCONDUCTORINFO	LOCATABLEOBJECT
SECONDARYCONDUCTORINFO	SECONDARYCONDUCTORINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIRESWORKORDERNUMBER	RETIRESWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIRESMISCORDERID	RETIRESMISCORDERID
SUBTYPECD	SUBTYPECD
WIRESIZECD	WIRESIZE
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	WIREMATERIALCD

WIRETYPECD	WIRETYPECD
FROMDISTRIBREFNUMBER	FROMDISTRIBREF
TODISTRIBREFNUMBER	TODISTRIBREF

*SectionalizerBank*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SectionalizerBank	CADOPS
SectionalizerBank	EDFS STRUCTURE PREVENT DELETION
SectionalizerBank	FDRMGRPROTECTIVE
SectionalizerBank	FEEDERALL
SectionalizerBank	LOCATABLEOBJECT
SectionalizerBank	PROTECTIVE
SectionalizerBank	SECTIONALIZERBANK

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
GRIDCD	CADOPS
GRIDCD	FEEDERALL
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL
NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C
SECTIONFUSENUMBER	CADOPS
SECTIONFUSENUMBER	FEEDERALL
SYMBOLCONFIGURATIONCD	SYMBOLOLOGYCONFIGURATIONCD
SECTIONALIZERAMPRATING	CADOPS
SECTIONALIZERAMPRATING	FEEDERALL

[SectionalizerUnit](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SectionalizerUnit	CADOPS
SectionalizerUnit	EDFS RETIREMENT INFO
SectionalizerUnit	EDFS WORKORDER 2
SectionalizerUnit	FEEDERALL
SectionalizerUnit	LOCATABLEOBJECT
SectionalizerUnit	SECTIONALIZERUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	CADOPS
OBJECTID	FEEDERALL
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
PHASEDESIGNATION	CADOPS
PHASEDESIGNATION	FEEDERALL
PHASEDESIGNATION	PHASEDESIGNATION
DISTRIBREFNUMBER	DISTRIBREFNUMBER
CIRCUITNUMBER	FEEDERID
SUBTYPECD	SUBTYPECD

[ServiceConductorInfo](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
ServiceConductorInfo	SERVICECONDUCTORINFO
ServiceConductorInfo	CONDUCTORINFO
ServiceConductorInfo	EDFS CONDUCTORINFO
ServiceConductorInfo	EDFS PADMOUNT PREVENT DELETION
ServiceConductorInfo	EDFS PEDESTAL PREVENT DELETION
ServiceConductorInfo	EDFS RETIREMENT INFO
ServiceConductorInfo	EDFS STRUCTURE PREVENT DELETION
ServiceConductorInfo	EDFS WORKORDER 2

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	SUBTYPECD
WIRESIZECD	WIRESIZE
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	WIREMATERIALCD

WIRETYPECD	WIRETYPECD
LOADDISTRIBREFNUMBER	LOADDISTRIBREFNUMBER
TAKEOFFREFNUMBER	TAKEOFFREFNUMBER

*Splice*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Splice	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION

*StreetlightSwitch*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
StreetlightSwitch	EDFS RETIREMENT INFO
StreetlightSwitch	EDFS STRUCTURE PREVENT DELETION
StreetlightSwitch	EDFS WORKORDER 2
StreetlightSwitch	LOCATABLEOBJECT
StreetlightSwitch	STREETLIGHTSWITCH

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	SUBTYPECD
DISTRIBREFNUMBER	DISTRIBREFNUMBER

*Substation*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Substation	CADOPS
Substation	FEEDERALL
Substation	LOCATABLEOBJECT
Substation	NABACKWARD
Substation	STRUCTURE
Substation	SUBSTATION

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
SUBSTATIONNAME	CADOPS
SUBSTATIONNAME	FEEDERALL
SUBSTATIONNAME	LOCATABLEFIELD
SUBSTATIONNUMBER	CADOPS
SUBSTATIONNUMBER	FEEDERALL
SYMBOLROTATIONVALUE	SYMBOLROTATION

*SubstationBreaker*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SubstationBreaker	PROTECTIVE
SubstationBreaker	CADOPS
SubstationBreaker	DYNAMICPROTECTIVEDEVICE
SubstationBreaker	FDRMGRPROTECTIVE
SubstationBreaker	FEEDERALL
SubstationBreaker	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID	LOCATABLEFIELD
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
NORMALPOSITIONABC	CADOPS
NORMALPOSITIONABC	FEEDERALL
NORMALPOSITIONABC	NORMALPOSITION_A
NORMALPOSITIONABC	NORMALPOSITION_B
NORMALPOSITIONABC	NORMALPOSITION_C

*SupportStructure*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SupportStructure	UNIQUEDISTRIBREFNUMBERCLASS
SupportStructure	CADOPS
SupportStructure	EDFS ASSETSTRUCTURE
SupportStructure	EDFS RETIREMENT INFO
SupportStructure	EDFS WORKORDER 2
SupportStructure	FEEDERALL
SupportStructure	LOCATABLEOBJECT
SupportStructure	MMREMOVABLE
SupportStructure	NABACKWARD
SupportStructure	STRUCTURE
SupportStructure	SUPPORTSTRUCTURE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	AT_5
GRIDCD	GRIDCD
INSTALLDATE	AT_6
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	AT_9
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
TAXUNITCD	AT_4
TAXUNITCD	TAXUNITCD
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SYMBOLROTATIONVALUE	SYMBOLROTATION
SUBTYPECD	AT_SUBTYPECD
LOCATIONDESCRIPTION	AT_17
POLEHEIGHTVALUE	AT_18
POLEMATERIALCD	AT_19
PRIMARYDISTRIBREFNUMBER	AT_20
PRIMARYDISTRIBREFNUMBER	CADOPS
PRIMARYDISTRIBREFNUMBER	FEEDERALL

FOREIGNOWNERNAME	AT_33
SERVICEPOINTTYPECD	AT_28
TRANSMISSIONSTRUCTURENUMBER	AT_29
INSTALLTIMESTAMP	AT_30
INSTALLTIMESTAMP	INSTALLTIMESTAMP
REMOVALTIMESTAMP	AT_31
DISTRIBREFNUMBER	AT_14
DISTRIBREFNUMBER	CADOPS
DISTRIBREFNUMBER	DISTRIBREFNUMBER
DISTRIBREFNUMBER	FEEDERALL
DISTRIBREFNUMBER	FROMDISTRIBREF
DISTRIBREFNUMBER	LOADDISTRIBREFNUMBER
DISTRIBREFNUMBER	LOCATABLEFIELD
DISTRIBREFNUMBER	TAKEOFFREFNUMBER
DISTRIBREFNUMBER	TODISTRIBREF

*Switch*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Switch	CADOPS
Switch	EDFS STRUCTURE PREVENT DELETION
Switch	FEEDERALL
Switch	LOCATABLEOBJECT
Switch	SWITCH

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
SUBTYPECD	SWITCHTYPECD
NORMALPOSITIONA	CADOPS
NORMALPOSITIONA	FEEDERALL

NORMALPOSITIONA	NORMALPOSITION_A
NORMALPOSITIONB	CADOPS
NORMALPOSITIONB	FEEDERALL
NORMALPOSITIONB	NORMALPOSITION_B
NORMALPOSITIONC	CADOPS
NORMALPOSITIONC	FEEDERALL
NORMALPOSITIONC	NORMALPOSITION_C
SWITCHIDNUMBER	CADOPS
SWITCHIDNUMBER	FEEDERALL
SWITCHIDNUMBER	LOCATABLEFIELD
SYMBOLCONFIGURATIONCD	SYMBOLOLOGYCONFIGURATIONCD

### SwitchGear

#### Object Class Model Names

Object Class	Model Name
SwitchGear	STRUCTURE
SwitchGear	SWITCHGEAR
SwitchGear	EDFS PADMOUNT PREVENT DELETION
SwitchGear	EDFS RETIREMENT INFO
SwitchGear	EDFS WORKORDER 2
SwitchGear	LOCATABLEOBJECT
SwitchGear	MMREMOVABLE

#### Field Model Names

Field	Model Name
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_1
UPDATEUSERID	AT_2
LOANUMBER	AT_3
LOANUMBER	LOANAME
GRIDCD	AT_5
INSTALLDATE	AT_6
INSTALLWORKORDERNUMBER	AT_7
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	AT_12
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	AT_8
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	AT_9
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIREMISCORDERID	AT_13
RETIREMISCORDERID	RETIREMISCORDERID
TAXUNITCD	AT_4
LEGACYWRINSTALLTIMESTAMP	AT_10
LEGACYWRREMOVALTIMESTAMP	AT_11
SYMBOLROTATIONVALUE	SYMBOLROTATION
SUBTYPECD	AT_SUBTYPECD
SWITCHGEARVOLTAGERATINGVALUE	AT_14



OPERATIONTYPECD	AT_15
FRONTKINDCD	AT_16
USEDCOMPARTMENTCOUNT	AT_17
LEGACYDISTRIBREFNUMBER	DISTRIBREFNUMBER
LEGACYDISTRIBREFNUMBER	AT_18
ASSEMBLYNUMBER	AT_19
ASSOCIATIONTIMESTAMP	AT_20

*SwitchUnit*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
SwitchUnit	CADOPS
SwitchUnit	EDFS RETIREMENT INFO
SwitchUnit	EDFS WORKORDER 2
SwitchUnit	FEEDERALL
SwitchUnit	LOCATABLEOBJECT
SwitchUnit	SWITCHUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
PHASEDESIGNATION	PHASEDESIGNATION
DISTRIBREFNUMBER	DISTRIBREFNUMBER
CIRCUITNUMBER	FEEDERID
SUBTYPECD	SUBTYPECD
SWITCHCHAMPERAGEVALUE	CADOPS
SWITCHCHAMPERAGEVALUE	FEEDERALL
SWITCHTYPECD	SWITCHTYPECD

*Terminator*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Terminator	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION

[TieBus](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TieBus	TRANSFORMERLEAD
TieBus	CADOPS
TieBus	CONDUCTOR
TieBus	FEEDERALL
TieBus	LOCATABLEOBJECT
TieBus	OHCONDUCTOR
TieBus	SPLITTARGET

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
SUBTYPECD	SUBTYPECD
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERINFO	FEEDERINFO
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
PRIMARYOPERATINGVOLTAGEVALUE	CADOPS
PRIMARYOPERATINGVOLTAGEVALUE	FEEDERALL
PRIMARYOPERATINGVOLTAGEVALUE	OPERATINGVOLTAGE
PRIMARYOPERATINGVOLTAGEVALUE	PRIMARYOPERATINGVOLTAGE
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
PHASEDESIGNATIONCD	PHASEDESIGNATIONCD
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME

[TrafficLightDemand](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TrafficLightDemand	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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[TransformerBank](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerBank	CADOPS
TransformerBank	DISTRIBUTIONTRANSFORMER

TransformerBank	EDFS ASSETFEATURE
TransformerBank	EDFS PADMOUNT PREVENT DELETION
TransformerBank	EDFS STRUCTURE PREVENT DELETION
TransformerBank	FEEDERALL
TransformerBank	LOCATABLEOBJECT
TransformerBank	TRANSFORMER
TransformerBank	TRANSFORMERBANK

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
SYMBOLROTATIONVALUE	SYMBOLROTATIONVALUE
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
LEGACYDISTRIBREFNUMBER	DISTRIBREFNUMBER
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
TRANSFORMERBANKKVA	CADOPS
TRANSFORMERBANKKVA	FEEDERALL
TRANSFORMERBANKKVA	RATEDKVA

*TransformerFunctionTest*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerFunctionTest	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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*TransformerOilTest*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerOilTest	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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*TransformerRegulatorStoresItem*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerRegulatorStoresItem	TRANSFORMERREGULATORSTORESITEM

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
KVAVALUE	KVA

*TransformerUnit*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerUnit	CADOPS
TransformerUnit	EDFS ASSETUNIT
TransformerUnit	FEEDERALL
TransformerUnit	LOCATABLEOBJECT
TransformerUnit	TRANSFORMERUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
COMPANYNUMBER	COMPANYNUMBER
COMPANYNUMBER	LOCATABLEFIELD
STATUSTIMESTAMP	STATUSTIMESTAMP
DISPOSITIONCD	DISPOSITIONCD
STATUSCD	STATUSCD
RELSTORESITEMNUMBER	RELSTORESITEMNUMBER

*TransformerUnitInstall*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransformerUnitInstall	CADOPS
TransformerUnitInstall	EDFS ASSETINSTALL
TransformerUnitInstall	FEEDERALL
TransformerUnitInstall	TRANSFORMERUNITINSTALL

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
TAXUNITCD	TAXUNITCD
GRIDCD	GRIDCD
INSTALLTIMESTAMP	INSTALLTIMESTAMP
INSTALLDATE	INSTALLDATE
CIRCUITNUMBER	CIRCUITNUMBER
PHASEDESIGNATION	CADOPS
PHASEDESIGNATION	FEEDERALL

PHASEDESIGNATION	PHASEDESIGNATION
KVAVALUE	CADOPS
KVAVALUE	FEEDERALL
KVAVALUE	KVA
KVAVALUE	RATEDKVA
INSTALLATIONSTATUSCD	INSTALLATIONSTATUSCD
MATERIALTICKETNUMBER	MATERIALTICKETNUMBER
DISTRIBREFNUMBER	DISTRIBREFNUMBER
RELTRANSFORMERBANKOBJECTID	RELATEDBANKOID
RELTRANSFORMERUNITCOMPANYNUMBER	COMPANYNUMBER

*TransformerUnitRemove*

*Object Class Model Names*

Object Class	Model Name
TransformerUnitRemove	EDFS ASSETREMOVE
TransformerUnitRemove	TRANSFORMERUNITREMOVE

*Field Model Names*

Field	Model Name
REMOVALTIMESTAMP	REMOVALTIMESTAMP
REMOVALDATE	REMOVALDATE
REMOVALCD	REMOVALCD
MATERIALTICKETNUMBER	MATERIALTICKETNUMBER
RELTRANSFORMERUNITCOMPANYNUMBER	COMPANYNUMBER

*TransformerUnitStock*

*Object Class Model Names*

Object Class	Model Name
TransformerUnitStock	EDFS ASSETSTOCK

*Field Model Names*

Field	Model Name
STOCKTIMESTAMP	STOCKTIMESTAMP
STOCKDATE	STOCKDATE
RELSTOREROOMNUMBER	STOREROOMNUMBER
RELTRANSFORMERUNITCOMPANYNUMBER	COMPANYNUMBER

*UgConductor*

*Object Class Model Names*

Object Class	Model Name
UgConductor	CADOPS
UgConductor	CONDUCTOR
UgConductor	FEEDERALL
UgConductor	LINE
UgConductor	LOCATABLEOBJECT
UgConductor	MMABANDONABLE
UgConductor	SPLITTARGET
UgConductor	UGCONDUCTOR

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_1
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	AT_2
GRIDCD	CADOPS
GRIDCD	FEEDERALL
MEASUREDLENGTH	CADOPS
MEASUREDLENGTH	FEEDERALL
MEASUREDLENGTH	MEASUREDLENGTH
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERINFO	FEEDERINFO
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
PRIMARYOPERATINGVOLTAGEVALUE	CADOPS
PRIMARYOPERATINGVOLTAGEVALUE	FEEDERALL
PRIMARYOPERATINGVOLTAGEVALUE	OPERATINGVOLTAGE
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	PHASEDESIGNATION
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
INCONDUITIND	AT_3
INCONDUITIND	INCONDUITCD
INCONDUITIND	INCONDUITIND
FEEDERALLPHASE	CADOPS
FEEDERALLPHASE	FEEDERALL
WIRESIZECD	CADOPS
WIRESIZECD	FEEDERALL
WIREMATERIALCD	CADOPS
WIREMATERIALCD	FEEDERALL
SHAPE	AT_SHAPE

*UgConductorInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
UgConductorInfo	CADOPS

UgConductorInfo	CONDUCTORINFO
UgConductorInfo	EDFS CONDUCTORINFO
UgConductorInfo	EDFS RETIREMENT INFO
UgConductorInfo	EDFS WORKORDER 2
UgConductorInfo	FEEDERALL
UgConductorInfo	LOCATABLEOBJECT
UgConductorInfo	PRIMARYCONDUCTORINFO
UgConductorInfo	PRIMARYUGCONDUCTORINFO
UgConductorInfo	UGCONDUCTORINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLDATE	INSTALLDATE
INSTALLWORKORDERNUMBER	INSTALLWORKORDERNUMBER
INSTALLMISCORDERID	INSTALLMISCORDERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIREMISCORDERID	RETIREMISCORDERID
SUBTYPECD	CADOPS
SUBTYPECD	FEEDERALL
SUBTYPECD	SUBTYPECD
WIRESIZECD	CADOPS
WIRESIZECD	FEEDERALL
WIRESIZECD	WIRESIZE
WIRESIZECD	WIRESIZECD
WIREMATERIALCD	CADOPS
WIREMATERIALCD	FEEDERALL
WIREMATERIALCD	WIREMATERIALCD
WIRETYPECD	CADOPS
WIRETYPECD	FEEDERALL
WIRETYPECD	WIRETYPECD
INCONDUITCD	INCONDUITCD
INCONDUITCD	INCONDUITIND
CIRCUITNUMBER	CIRCUITNUMBER
CIRCUITNUMBER	FEEDERID
FROMDISTRIBREFNUMBER	FROMDISTRIBREF
TODISTRIBREFNUMBER	TODISTRIBREF
MEASUREDLENGTH	MEASUREDLENGTH
MEASUREDLENGTH	SPANLENGTH

*UniqueDistribRefNumbersTable*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
UniqueDistribRefNumbersTable	UNIQUEDISTRIBREFNUMBERSTABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
UniqueDistribRefNumber	DISTRIBREFNUMBER

*VoltageRegulator*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
VoltageRegulator	CADOPS
VoltageRegulator	EDFS ASSETFEATURE
VoltageRegulator	EDFS STRUCTURE PREVENT DELETION
VoltageRegulator	FEEDERALL
VoltageRegulator	LOCATABLEOBJECT
VoltageRegulator	VOLTAGEREGULATORUNIT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MMELECTRICTRACEWEIGHT	MMELECTRICTRACEWEIGHT
FDRMGRNONTRACEABLE	FDRMGRNONTRACEABLE
FEEDERID	CADOPS
FEEDERID	FEEDERALL
FEEDERID	FEEDERID
FEEDERID2	FEEDERID2
FEEDERINFO	FEEDERINFO
PHASEDESIGNATIONCD	FEEDERALL
PHASEDESIGNATIONCD	CADOPS
PHASEDESIGNATIONCD	PHASEDESIGNATION
SYMBOLROTATIONVALUE	SYMBOLROTATION
LOANUMBER	CADOPS
LOANUMBER	FEEDERALL
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
GRIDCD	CADOPS
GRIDCD	FEEDERALL
LEGACYDISTRIBREFNUMBER	LOCATABLEFIELD
REGULATORKVA	CADOPS
REGULATORKVA	FEEDERALL
VOLTAGEREGULATORAMPRATING	CADOPS
VOLTAGEREGULATORAMPRATING	FEEDERALL

*VoltageRegulatorBank*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
VoltageRegulatorBank	CADOPS
VoltageRegulatorBank	FEEDERALL
VoltageRegulatorBank	LOCATABLEOBJECT
VoltageRegulatorBank	NABACKWARD
VoltageRegulatorBank	VOLTAGEREGULATOR

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
BANKKVAVALUE	CADOPS
BANKKVAVALUE	FEEDERALL



*WoodPoleEvents*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
WoodPoleEvents	WOODPOLEEVENTS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WOODPOLEINSPECTIONYEAR	INSPECTIONYEAR
WOODPOLEINSPECTIONPASSFAILCD	INSPECTIONPASSFAILCD
WOODPOLEREINFORCEDDATE	REINFORCEDDATE
WOODPOLEGNDTREATDATE	GROUNDTREATMENTDATE
RELDISTRIBREFNUMBER	DISTRIBREFNUMBER
EVENTTYPECD	EVENTTYPECD

*WoodPoleInfo*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
WoodPoleInfo	WOODPOLEINFO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WOODPOLECLASSCD	CLASSCD
WOODPOLETYPECD	TYPECD
WOODPOLEORIGINALTREATMNTTYPECD	ORIGINALTREATMENTTYPECD
WOODSETTINGCD	SETTINGCD
RELDISTRIBREFNUMBER	DISTRIBREFNUMBER

**Table E-4. Gas ArcFM configuration**

[arcfm8.GAS.Casing](#)

ArcFM Display Field:

SUBTYPECD

Create Edit Task:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

[arcfm8.GAS.RetiredCasing](#)

Abandon Subtype:

Remove Feature

Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE		
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Casing Diameter	TRUE	TRUE	FALSE		
Installed Length	TRUE	TRUE	FALSE		
Length Source	TRUE	TRUE	TRUE		
RR Crossing Agreement Number	TRUE	TRUE	TRUE		
Related Main OID	FALSE	FALSE	TRUE	NIPSCO.Casing.RelatedMain OID	NIPSCO.Casing.RelatedMain OID
CP Section OID	FALSE	FALSE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Main Link Value	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcfm8.GAS.CpRectifier](#)

ArcFM Display Field: RECTIFIERNUMBER

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Rectifier Number	TRUE	TRUE	TRUE		
Related CP Section OID	FALSE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	TRUE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Main Link Value	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		

[arcfm8.GAS.CpSection](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event: NIPSCO.CPSection.CorrosionControlNumber

On Update Event: NIPSCO.CPSection.CorrosionControlNumber

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Corrosion Section Number	TRUE	TRUE	FALSE		
Corrosion Control Number	TRUE	FALSE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	TRUE	TRUE		ArcFM Current Date
Updated By	FALSE	TRUE	TRUE		ArcFM User Name
Legacy Main Link Value	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
GLINK	FALSE	TRUE	TRUE		

[arcfm8.GAS.CpTestPoint](#)

ArcFM Display Field:

SUBTYPECD

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Location Description 1	TRUE	TRUE	FALSE		
Location Description 2	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	FALSE		
Related CP Section OID	FALSE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE		

[arcfm8.GAS.DeadEndGas](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class: [arcfm8.GAS.RetiredDeadEndGas](#)

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Field	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Location Description 1	TRUE	TRUE	FALSE		
Location Description 2	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Main Link Value	FALSE	TRUE	TRUE		
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		

[arcfm8.GAS.Drip](#)

ArcFM Display Field:

DRIPPOTTYPE

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

arcfm8.GAS.RetiredDrip

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.Loaname	NIPSCO.Loaname
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Drip Pot Type	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Main Link Value	FALSE	TRUE	TRUE		
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Related Main OID	FALSE	FALSE	TRUE	NIPSCO.RetrieveOIDofClosest GasMain	NIPSCO.RetrieveOIDofClosest GasMain

[arcfm8.GAS.EmergencyValveMarker](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task: ArcFM Manual Angle Setter

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	FALSE		
Related Valve OID	FALSE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
Label Text	FALSE	TRUE	TRUE		

EES	FALSE	TRUE	TRUE		
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[arcfm8.GAS.GasDiscrepancy](#)

ArcFM Display Field: ERRORDescription

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype	TRUE	TRUE	FALSE		
Error Description	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		

[arcfm8.GAS.GasMain](#)

ArcFM Display Field: SUBTYPECD

Create Edit Task:

On Update Event: EDFs Validate Work Order Number 1

On Update Event: ArcFM Check for Pinchable Pipe

On Update Event: NIPSCO.GasMain.PipeChangeAU

On Delete Event:

On Split Event:

On Abandon Event:

Before Split Event: EDFs Turn WOMO Validation Off

Before Split Event: EDFs Keep WOMO Validation Off For Split

After Split Event: EDFs WOMO Validation Split Finished

After Split Event: EDFs Turn WOMO Validation On

On Create Event: EDFs Validate Work Order Number 1

On Create Event: ArcFM Check for Pinchable Pipe

On Create Event: EDFs Turn WOMO Validation Off

On Create Event: NIPSCO.SplitAtTapPoint

On Create Event: EDFs Turn WOMO Validation On

On Create Event: NIPSCO.GasMain.PipeChangeAU

Abandon Feature Class: arcfm8.GAS.RetiredGasMain

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		

Grid Code	TRUE	TRUE	FALSE		
Main Diameter	TRUE	TRUE	FALSE		
Main Material	TRUE	TRUE	FALSE		
ArcFm Main Material	TRUE	TRUE	TRUE		
Measured Length	TRUE	TRUE	FALSE		
Length Source	TRUE	TRUE	FALSE		
Insert Indicator	TRUE	TRUE	FALSE		
Bonded Indicator	TRUE	TRUE	FALSE		
Maintained By	TRUE	TRUE	TRUE		
Calculated Flow	TRUE	TRUE	TRUE		
Upstream Calculated Pressure	TRUE	TRUE	TRUE		
Downstream Calculated Pressure	TRUE	TRUE	TRUE		
System Name	TRUE	TRUE	TRUE		
Line Section Number	TRUE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Distribution Main Trace Weight	ArcFM Gas Distribution Main Trace Weight
CP System OID	FALSE	TRUE	TRUE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
Gas System Status Code	TRUE	TRUE	FALSE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		

[arcfm8.GAS.GasMainLocation](#)

ArcFM Display Field: OBJECTID

Create Edit Task: NIPSCO.Gas.PlaceAndRelateGasMain

On Create Event: NIPSCO.Gas.RelatedPipeObjectID

On Update Event: NIPSCO.Gas.RelatedPipeObjectID

On Delete Event:

On Abandon Event:

Abandon Feature Class: arcfm8.GAS.RetiredGasMainLocation

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
Location Description 1	TRUE	TRUE	FALSE		
Location Description 2	TRUE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Main Link Value	FALSE	TRUE	TRUE		
Related Distribution Main ObjectID	FALSE	FALSE	FALSE	NIPSCO.RetrieveOIDofClosest GasMain	NIPSCO.RetrieveOIDofClosest GasMain
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		

DCSID	FALSE	TRUE	TRUE		
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[arcm8.GAS.GasService](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE		
Created By	FALSE	TRUE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE		
Updated By	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
LOA Name	TRUE	FALSE	TRUE		
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
Main Material	TRUE	TRUE	TRUE		
Main Diameter	TRUE	TRUE	TRUE		
Insert Indicator	TRUE	TRUE	FALSE		
DG Grid	FALSE	TRUE	TRUE		
Maintained By	TRUE	TRUE	TRUE		
Bonded Indicator	TRUE	TRUE	FALSE		
Length Source	TRUE	TRUE	TRUE		
Measured Length	TRUE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcm8.GAS.GasValve](#)

ArcFM Display Field:

VALVENUMBER

Create Edit Task:

On Delete Event:

On Abandon Event:

On Update Event: EDFs Validate Work Order Number 1

On Update Event: NIPSCO.Generic.FieldConcatination

On Update Event:

NIPSCO.CopyValueToRelatedObject

On Create Event: EDFs Validate Work Order Number 1

On Create Event: ArcFM Segment

Split

On Create Event: NIPSCO.Generic.FieldConcatination

On Create Event: NIPSCO.CopyValueToRelatedObject

Abandon Feature Class: arcm8.GAS.RetiredGasValve

Abandon Subtype:

Remove Feature Class:



Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE		
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Valve Size	TRUE	TRUE	FALSE		
Valve Number	TRUE	TRUE	TRUE		
Open/Closed	TRUE	TRUE	FALSE		
Installation Type	TRUE	TRUE	FALSE		
Location Description 1	TRUE	TRUE	FALSE		
Location Description 2	TRUE	TRUE	FALSE		
Emergency Valve	TRUE	TRUE	FALSE	NIPSCO.EmergencyValveInd Field	NIPSCO.EmergencyValveInd Field
Insulated Indicator	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Valve Trace Weight	ArcFM Gas Valve Trace Weight
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Symbol Configuration Code	FALSE	TRUE	TRUE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		
Gas System Status Code	TRUE	TRUE	FALSE		

[arcfm8.GAS.GMMS](#)

ArcFM Display Field: SYSTEMNAME

Create Edit Task: ArcFM Manual Angle Setter

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Line Section Number	TRUE	TRUE	TRUE		
System Name	TRUE	TRUE	TRUE		
HCA Number	TRUE	TRUE	TRUE		
Foreign Key to Gas Main Object Id	TRUE	FALSE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		

CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	TRUE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name

[arcfm8.GAS.InsulatedCoupling](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Delete Event:

On Abandon Event:

On Update Event: EDFs Validate Work Order Number 1

On Create Event: EDFs Validate Work Order Number 1

On Create Event: ArcFM Segment

Split

Abandon Feature Class: arcfm8.GAS.RetiredInsulatedCoupling

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE		
Created By	FALSE	TRUE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE		
Updated By	FALSE	TRUE	TRUE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Non-controllable Fitting Trace Weight	ArcFM Gas Non-controllable Fitting Trace Weight
Symbol Rotation	FALSE	FALSE	FALSE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		
Gas System Status Code	TRUE	TRUE	FALSE		
Graphics Scale Factor	TRUE	TRUE	FALSE		
Insulated Indicator	TRUE	TRUE	FALSE		

[arcfm8.GAS.LeakReport](#)

ArcFM Display Field: LEAKID

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Leak Identification Number	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Related Main OID	FALSE	FALSE	FALSE	NIPSCO.RetrieveOIDofClosest GasMain	NIPSCO.RetrieveOIDofClosest GasMain

[arcfm8.GAS.LeakSurveyArea](#)

ArcFM Display Field: SURVEYAREAID

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
COMMENTS	TRUE	TRUE	TRUE		
SURVEYDUEDATE	TRUE	TRUE	TRUE		
Survey Area ID	TRUE	TRUE	TRUE		
Survey Frequency	TRUE	TRUE	TRUE		
Area Type	TRUE	TRUE	TRUE		
TARGETDATE	TRUE	TRUE	TRUE		
DATECOMPLETED1	TRUE	TRUE	TRUE		
DATECOMPLETED2	TRUE	TRUE	TRUE		
Completed By	TRUE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy Ees Number	FALSE	TRUE	TRUE		
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.GAS.Meter](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Delete Event:  
 On Abandon Event:  
 On Create Event: EDFs Validate Work Order Number 1  
 On Update Event: EDFs Validate Work Order Number 1  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Regulator Station OID	FALSE	TRUE	TRUE		
Regulator Station OID	FALSE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	FALSE		ArcFM User Name

[arcfm8.GAS.PipeChange](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Delete Event:  
 On Abandon Event:  
 On Create Event: NIPSCO.PipeChange.RotateRelate  
 On Update Event: NIPSCO.PipeChange.RotateRelate  
 Abandon Feature Class: arcfm8.GAS.RetiredPipeChange  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
Symbol Rotation	FALSE	TRUE	FALSE		
Related Main OID	FALSE	TRUE	FALSE		
Legacy Main Vertex Value	FALSE	TRUE	TRUE		
EES	FALSE	TRUE	TRUE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		

[arcfm8.GAS.PipeExposure](#)

ArcFM Display Field: LOCATIONDESCRIPTION

Create Edit Task:  
 On Delete Event:  
 On Abandon Event:  
 On Create Event: EDFs Validate Work Order Number 1  
 On Update Event: EDFs Validate Work Order Number 1  
 Abandon Feature Class:  
 Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Location Description	TRUE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	FALSE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Related Main OID	FALSE	FALSE	FALSE	NIPSCO.RetrieveOIDofClosest GasMain	NIPSCO.RetrieveOIDofClosest GasMain

[arcfm8.GAS.PipelineMarker](#)

ArcFM Display Field: MARKERTYPECD

Create Edit Task: NIPSCO.Gas.PlaceAndRelateGasMain

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Create Event: NIPSCO.Gas.RelatedPipeObjectld

On Update Event: EDFs Validate Work Order Number 1

On Update Event: NIPSCO.Gas.RelatedPipeObjectld

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	FALSE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Marker Type	TRUE	TRUE	FALSE		
Marker Number	TRUE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	TRUE		
Legacy Main Link Value	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Related Gas Main OID	FALSE	FALSE	FALSE	NIPSCO.RetrieveOIDofClosest GasMain	NIPSCO.RetrieveOIDofClosest GasMain

[arcfm8.GAS.PressureControlFitting](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Delete Event:  
 On Abandon Event:  
 On Update Event: EDFs Validate Work Order Number 1  
 On Create Event: EDFs Validate Work Order Number 1  
 On Create Event: ArcFM Segment Split  
 Abandon Feature Class: arcfm8.GAS.RetiredPressureControlFitting  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE		
Created By	FALSE	TRUE	FALSE		
UPDATEDATE	FALSE	TRUE	TRUE		
Updated By	FALSE	TRUE	TRUE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Non-controllable Fitting Trace Weight	ArcFM Gas Non-controllable Fitting Trace Weight
Symbol Rotation	FALSE	FALSE	FALSE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		
Gas System Status Code	TRUE	TRUE	FALSE		
Graphics Scale Factor	TRUE	TRUE	FALSE		
Location Description 1	TRUE	TRUE	TRUE		
Location Description 2	TRUE	TRUE	TRUE		

[arcfm8.GAS.Regulator](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Delete Event:  
 On Abandon Event:  
 On Create Event: EDFs Validate Work Order Number 1  
 On Update Event: EDFs Validate Work Order Number 1  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	TRUE	TRUE	FALSE		
Tax Unit	TRUE	TRUE	FALSE		

Grid Code	TRUE	TRUE	FALSE		
Regulator Station OID	FALSE	TRUE	TRUE		
Take Station OID	FALSE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	FALSE		ArcFM User Name

[arcfm8.GAS.RegulatorStation](#)

ArcFM Display Field: REGULATORSTATIONNUMBER

Create Edit Task: NIPSCO.Gas.PlaceAndRelateGasMain

On Create Event: EDFs Validate Work Order Number 1

On Create Event: ArcFM Segment

Split

On Create Event: NIPSCO.Gas.RelatedPipeObjectId

On Update Event: EDFs Validate Work Order Number 1

On Update Event: ArcFM Segment

Split

On Update Event: NIPSCO.Gas.RelatedPipeObjectId

On Delete Event:

On Abandon Event:

Abandon Feature Class: arcfm8.GAS.RetiredRegulatorStation

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	FALSE		
LOA Name	FALSE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Regulator Station Number	TRUE	TRUE	FALSE		
Seq Num	TRUE	TRUE	FALSE		
Installation Type	TRUE	TRUE	TRUE		
Graphics Scale Factor	FALSE	TRUE	TRUE		
Inlet Pressure	FALSE	TRUE	TRUE		
Outlet Pressure	FALSE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	FALSE		ArcFM User Name
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Regulator Trace Weight	ArcFM Gas Regulator Trace Weight
Symbol Rotation	FALSE	FALSE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Related Upstream Gas Main OID	FALSE	TRUE	TRUE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		

Gas System Status Code	TRUE	TRUE	FALSE		
Insulated Indicator	TRUE	TRUE	FALSE		
Customer Name	TRUE	TRUE	TRUE		

[arcm8.GAS.RetiredCasing](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Main Link Value	TRUE	TRUE	TRUE		
Casing Diameter	TRUE	TRUE	TRUE		
Installed Length	TRUE	TRUE	TRUE		
Length Source	TRUE	TRUE	TRUE		
RR Crossing Agreement Number	TRUE	TRUE	TRUE		
Related Main OID	TRUE	TRUE	TRUE		
CP Section OID	TRUE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcm8.GAS.RetiredDeadEndGas](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:



Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Field	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Main Link Value	TRUE	TRUE	TRUE		
Location Description 1	TRUE	TRUE	TRUE		
Location Description 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredDrip](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Main Link Value	TRUE	TRUE	TRUE		
Drip Pot Type	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Related Main OID	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredGasMain](#)

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 Before Split Event:  
 On Split Event:  
 After Split Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	FALSE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	FALSE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Upstream Calculated Pressure	TRUE	TRUE	TRUE		
CP System OID	TRUE	TRUE	TRUE		
Measured Length	TRUE	TRUE	TRUE		
Maintained By	TRUE	TRUE	TRUE		
Main Material	TRUE	TRUE	FALSE		
Main Diameter	TRUE	TRUE	TRUE		
Length Source	TRUE	TRUE	TRUE		
Insert Indicator	TRUE	TRUE	FALSE		
Downstream Calculated Pressure	TRUE	TRUE	TRUE		
Calculated Flow	TRUE	TRUE	TRUE		
Bonded Indicator	TRUE	TRUE	FALSE		
SHAPE.len	FALSE				

[arcfm8.GAS.RetiredGasMainLocation](#)

ArcFM Display Field: OBJECTID

[arcfm8.GAS.RetiredGasValve](#)

ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:

Remove Feature Class:  
Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Graphics Scale Factor	TRUE	TRUE	TRUE		
Valve Number	TRUE	TRUE	TRUE		
Valve Size	TRUE	TRUE	TRUE		
Location Description 1	TRUE	TRUE	TRUE		
Location Description 2	TRUE	TRUE	TRUE		
Insulated Indicator	TRUE	TRUE	TRUE		
Open/Closed	TRUE	TRUE	TRUE		
Emergency Valve	TRUE	TRUE	TRUE		
Symbol Configuration Code	TRUE	TRUE	TRUE		
Installation Type	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredInsulatedCoupling](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		

Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Graphics Scale Factor	TRUE	TRUE	TRUE		
Insulated Indicator	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredPipeChange](#)

ArcFM Display Field: OBJECTID

[arcfm8.GAS.RetiredPressureControlFitting](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Graphics Scale Factor	TRUE	TRUE	TRUE		
Location Description 1	TRUE	TRUE	TRUE		
Location Description 2	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredRegulatorStation](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		
RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Graphics Scale Factor	TRUE	TRUE	TRUE		
Reg Sta Num	TRUE	TRUE	TRUE		
Seq Num	TRUE	TRUE	TRUE		
Inlet Pressure	TRUE	TRUE	TRUE		
Outlet Pressure	TRUE	TRUE	TRUE		
Installation Type	TRUE	TRUE	TRUE		
Insulated Indicator	TRUE	TRUE	TRUE		
Related Upstream Gas Main OID	TRUE	TRUE	TRUE		
Customer Name	TRUE	TRUE	TRUE		

[arcfm8.GAS.RetiredTakeStation](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	TRUE		
Shape	TRUE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE		
Created By	TRUE	TRUE	TRUE		
UPDATEDATE	TRUE	TRUE	TRUE		
Updated By	TRUE	TRUE	TRUE		
Legacy Ees Number	TRUE	TRUE	TRUE		
LOA Name	TRUE	TRUE	TRUE		
Tax Unit	TRUE	TRUE	TRUE		
Grid Code	TRUE	TRUE	TRUE		
INSTALLDATE	TRUE	TRUE	TRUE		
Install Work Order	TRUE	TRUE	TRUE		
Install Misc Order Id	TRUE	TRUE	TRUE		

RETIREDATE	TRUE	TRUE	TRUE		
Retire Work Order	TRUE	TRUE	TRUE		
Retire Misc Order Id	TRUE	TRUE	TRUE		
RetireType	TRUE	TRUE	TRUE		
Legacy Node 1	TRUE	TRUE	TRUE		
Legacy Node 2	TRUE	TRUE	TRUE		
Symbol Rotation	TRUE	TRUE	TRUE		
Graphics Scale Factor	TRUE	TRUE	TRUE		
Reg Sta Num	TRUE	TRUE	TRUE		
Seq Num	TRUE	TRUE	TRUE		
Inlet Pressure	TRUE	TRUE	TRUE		
Outlet Pressure	TRUE	TRUE	TRUE		
Installation Type	TRUE	TRUE	TRUE		
Insulated Indicator	TRUE	TRUE	TRUE		
Pipeline Operator Number	TRUE	TRUE	TRUE		
Supplier Name	TRUE	TRUE	TRUE		

[arcm8.GAS.RetiredWorkOrderLeaderLine](#)

ArcFM Display Field: OBJECTID

[arcm8.GAS.SqueezeOff](#)

ArcFM Display Field: SubtypeCd

Create Edit Task:

On Create Event: ArcFM Create Squeeze Off

On Update Event:

On Delete Event:

Metadata Editor:

Custom Configuration

Editor:

Extended Data Definition Table:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas Squeeze Off Trace Weight	ArcFM Gas Squeeze Off Trace Weight
Open/Closed	TRUE	TRUE	FALSE		
Symbol Rotation	FALSE	FALSE	FALSE	ArcFM Auto Angle Setter	ArcFM Auto Angle Setter
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UpdateDate	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	FALSE		ArcFM User Name
Graphics Scale Factor	FALSE	TRUE	TRUE		

[arcm8.GAS.TakeStation](#)

ArcFM Display Field: REGULATORSTATIONNUMBER

Create Edit Task:

On Delete Event:

On Abandon Event:

On Create Event: EDFs Validate Work Order Number 1

On Create Event: ArcFM Segment

Split

On Update Event: EDFs Validate Work Order Number 1

Abandon Feature Class: arcm8.GAS.RetiredTakeStation

Abandon Subtype:  
 Remove Feature  
 Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Subtype Code	TRUE	TRUE	FALSE		
INSTALLDATE	TRUE	TRUE	FALSE		
Install Work Order	TRUE	TRUE	FALSE		
InstallMiscOrderId	TRUE	TRUE	FALSE		
LOA Name	TRUE	FALSE	TRUE	NIPSCO.LoaName	NIPSCO.LoaName
Tax Unit	TRUE	TRUE	FALSE		
Grid Code	TRUE	TRUE	FALSE		
Reg Sta Num	TRUE	TRUE	FALSE		
Seq Num	TRUE	TRUE	FALSE		
Installation Type	TRUE	TRUE	TRUE		
Graphics Scale Factor	FALSE	TRUE	TRUE		
Inlet Pressure	FALSE	TRUE	TRUE		
Outlet Pressure	FALSE	TRUE	TRUE		
Pipeline Operator Number	TRUE	TRUE	TRUE		
Supplier Name	TRUE	TRUE	TRUE		
Shape	FALSE	TRUE	TRUE		
AncillaryRole	FALSE	TRUE	TRUE		
Enabled	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Gas Trace Weight	FALSE	FALSE	TRUE	ArcFM Gas TBS Trace Weight	ArcFM Gas TBS Trace Weight
Symbol Rotation	FALSE	FALSE	FALSE		
Legacy Node 1	FALSE	TRUE	TRUE		
Legacy Node 2	FALSE	TRUE	TRUE		
Legacy Ees Number	FALSE	TRUE	TRUE		
Pressure System Status Code	TRUE	TRUE	FALSE		
Emergency Isolation System Status Code	TRUE	TRUE	FALSE		
Gas System Status Code	TRUE	TRUE	FALSE		
Insulated Indicator	TRUE	TRUE	FALSE		

**Table E-5. Contains all gas ArcFM model name assignments for both the base and custom configuration**

*Casing*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Casing	CASING
Casing	EDFS WORKORDER
Casing	LOCATABLEOBJECT
Casing	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
CASINGDIAMETERVALUE	AT_1
INSTALLEDLENGTHVALUE	AT_2
LENGTHSOURCECD	AT_3
RRCROSSINGAGREEMENTNUMBER	AT_4
RRCROSSINGAGREEMENTNUMBER	LOCATABLEFIELD
RELMAINOBJECTID	RELMAINOBJECTID
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

*Casing\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Casing_Anno	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*CpRectifier*



*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CpRectifier	EDFS WORKORDER
CpRectifier	LOCATABLEOBJECT
CpRectifier	RECTIFIER

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
LOANUMBER	LOANAME
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	SUBTYPECD
INSTALLMISCORDERID	MISCORDERID

*CpSection*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CpSection	CPSECTION
CpSection	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
GRIDCD	DGGRIDCD
SUBTYPECD	SUBTYPECD
CORROSIONSECTIONNUMBER	CORROSIONSECTIONNUMBER
CORROSIONCONTROLNUMBER	CORROSIONCONTROLNUMBER

*CpTestPoint*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
CpTestPoint	EDFS WORKORDER
CpTestPoint	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
LOANUMBER	LOANAME
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	SUBTYPECD
INSTALLMISCORDERID	MISCORDERID

*DeadEnd\_Location\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
DeadEnd_Location_Anno	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*DeadEndGas*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
DeadEndGas	DEADEND
DeadEndGas	EDFS WORKORDER
DeadEndGas	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	AT_SUBTYPECD
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

*DistributionMain\_Size\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
DistributionMain_Size_Anno	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*Drip*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Drip	DRIP
Drip	EDFS WORKORDER
Drip	LOCATABLEOBJECT
Drip	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
DRIPPOTTYPE	AT_1
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

*EmergencyValveMarker*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
EmergencyValveMarker	EMERGENCYVALVEMARKER
EmergencyValveMarker	NIPSCOTARGETCLASS

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
SUBTYPECD	SUBTYPECD
SYMBOLROTATIONVALUE	SYMBOLROTATIONVALUE
GRAPHICSSCALEFACTORVALUE	GRAPHICSSCALEFACTOR
LABELTEXT	NIPSCOTARGETFIELD
LABELTEXT	LABELTEXT
SHAPE	SHAPE

*EmergencyValveMarker\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
EmergencyValveMarker_Anno	EMERGENCYVALVEMARKERANNO

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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*GasDiscrepancy*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
GasDiscrepancy	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
SUBTYPECD	SUBTYPECD
ERRORDescription	LOCATABLEFIELD

*GasMain*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
GasMain	DISTRIBUTIONMAIN
GasMain	EDFS WORKORDER
GasMain	GASMAIN
GasMain	LINE
GasMain	LOCATABLEOBJECT
GasMain	MMABANDONABLE
GasMain	PIPE
GasMain	SERVICE
GasMain	SPLITTARGET

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
SUBTYPECD	SUBTYPECD
SUBTYPECD	AT_SUBTYPECD
UPSTREAMCALCPRESSUREVALUE	AT_1
RELCPSECTIONOBJECTID	RELCPSECTIONOBJECTID
MEASUREDLENGTHVALUE	AT_2
MAINTAINEDBYNAME	AT_MAINTAINEDBYNAME
MAINMATERIALCD	AT_MAINMATERIALCD
MAINMATERIALCD	PIPECHANGEMATERIAL
MAINDIAMETERVALUE	AT_MAINDIAMETERVALUE

MAINDIAMETERVALUE	PIPEDIAMETER
MAINDIAMETERVALUE	SIZE
LENGTHSOURCECD	AT_3
INSERTIND	AT_INSERTIND
GASTRACEWEIGHT	GASTRACEWEIGHT
DOWNSTREAMCALCPRESSUREVALUE	AT_4
CALCULATEDFLOWVALUE	AT_5
BONDEDIND	AT_6
BONDEDIND	BONDEDINDICATOR
SHAPE	AT_SHAPE
ARCFMMAINMATERIALTYPE	MATERIAL
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

[GasMainLocation](#)

*Object Class Model Names*

Object Class	Model Name
GasMainLocation	GASMAINLOCATION
GasMainLocation	MMABANDONABLE

*Field Model Names*

Field	Model Name
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
RELGASMAINOID	RELATEDGASMAINOID
SHAPE	AT_SHAPE

[GasMainLocation\\_Anno](#)

*Object Class Model Names*

Object Class	Model Name
GasMainLocation_Anno	MMABANDONABLE

*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

[GasService](#)

*Object Class Model Names*

Object Class	Model Name
GasService	EDFS WORKORDER

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
INSTALLMISCORDERID	MISCORDERID

*GasValve*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
GasValve	EDFS WORKORDER
GasValve	GASVALVE
GasValve	LOCATABLEOBJECT
GasValve	MMABANDONABLE
GasValve	VALVE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
GASTRACEWEIGHT	GASTRACEWEIGHT
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SYMBOLROTATIONVALUE	SYMBOLROTATION
SYMBOLROTATIONVALUE	SYMBOLROTATIONVALUE
GASPRESSURESYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
EMERISOLATIONSYSTEMSTATUSCD	EMERISOLATIONSYSSTATUS
GASSYSTEMSTATUSCD	GASSYSTEMSTATUS
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
GRAPHICSSCALEFACTORVALUE	GRAPHICSSCALEFACTOR
SUBTYPECD	SUBTYPECD
SUBTYPECD	AT_SUBTYPECD
VALVENUMBER	AT_1
VALVENUMBER	LOCATABLEFIELD
VALVENUMBER	NIPSCOSOURCEFIELD
VALVENUMBER	VALVENUMBER
VALVESIZEVALUE	AT_2
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
INSULATEDIND	AT_3
INSULATEDIND	CPSYSTEMSTATUS
INSULATEDIND	INPUTFIELD4
INSULATEDIND	INSULATEDIND
OPENCLOSEDSTATUSCD	AT_4

OPENCLOSEDSTATUSCD	INPUTFIELD1
OPENCLOSEDSTATUSCD	NORMALPOSITION
OPENCLOSEDSTATUSCD	OPENCLOSEDSTATUSCD
EMERGENCYVALVEIND	AT_5
EMERGENCYVALVEIND	EMERGENCYVALVEIND
EMERGENCYVALVEIND	INPUTFIELD3
SYMBOLCONFIGURATIONCD	AT_6
SYMBOLCONFIGURATIONCD	OUTPUTFIELD
SYMBOLCONFIGURATIONCD	SYMBOLOLOGYCONFIGURATIONCD
INSTALLATIONTYPECD	AT_7
INSTALLATIONTYPECD	INPUTFIELD2
INSTALLATIONTYPECD	INSTALLATIONTYPECD
SHAPE	AT_SHAPE
SHAPE	SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

[GasValve\\_Location\\_Anno](#)

*Object Class Model Names*

Object Class	Model Name
GasValve_Location_Anno	MMABANDONABLE

*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

[GasValve\\_Size\\_Anno](#)

*Object Class Model Names*

Object Class	Model Name
GasValve_Size_Anno	MMABANDONABLE

*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

[InsulatedCoupling](#)

*Object Class Model Names*

Object Class	Model Name
InsulatedCoupling	EDFS WORKORDER
InsulatedCoupling	FITTING
InsulatedCoupling	LOCATABLEOBJECT

InsulatedCoupling	MMABANDONABLE
InsulatedCoupling	NONCONTROLFITTING

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONDATE	DATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
GASTRACEWEIGHT	GASTRACEWEIGHT
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SYMBOLROTATIONVALUE	SYMBOLROTATION
GASPRESSURESYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
EMERISOLATIONSYSSTATUSCD	EMERISOLATIONSYSSTATUS
GASSYSTEMSTATUSCD	GASSYSTEMSTATUS
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
INSULATEDIND	AT_1
INSULATEDIND	CPSYSTEMSTATUS
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

*LeakReport*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LeakReport	EDFS WORKORDER
LeakReport	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD
LOANUMBER	LOANAME
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	SUBTYPECD
INSTALLMISCORDERID	MISCORDERID

*LeakSurveyArea*

*Object Class Model Names*



Object Class	Model Name
LeakSurveyArea	EDFS WORKORDER
LeakSurveyArea	LEAKSURVEYAREA

*Field Model Names*

Field	Model Name
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
COMMENTS	COMMENTS
INSTALLMISCORDERID	MISCORDERID

*Meter*

*Object Class Model Names*

Object Class	Model Name
Meter	EDFS WORKORDER

*Field Model Names*

Field	Model Name
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
INSTALLMISCORDERID	MISCORDERID

*PCF\_Location\_Anno*

*Object Class Model Names*

Object Class	Model Name
PCF_Location_Anno	MMABANDONABLE

*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*PipeChange*

*Object Class Model Names*

Object Class	Model Name
PipeChange	LOCATABLEOBJECT
PipeChange	MMABANDONABLE
PipeChange	PIPECHANGE

*Field Model Names*

Field	Model Name
OBJECTID	LOCATABLEFIELD
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SYMBOLROTATIONVALUE	SYMBOLROTATION
RELGASMAINOBJECTID	RELGASMAINOBJECTID
SHAPE	AT_SHAPE

### PipeExposure

#### Object Class Model Names

Object Class	Model Name
PipeExposure	EDFS WORKORDER
PipeExposure	LOCATABLEOBJECT

#### Field Model Names

Field	Model Name
OBJECTID	LOCATABLEFIELD
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	SUBTYPECD
INSTALLMISCORDERID	MISCORDERID

### PipelineMarker

#### Object Class Model Names

Object Class	Model Name
PipelineMarker	EDFS WORKORDER
PipelineMarker	LOCATABLEOBJECT

#### Field Model Names

Field	Model Name
OBJECTID	LOCATABLEFIELD
LOANUMBER	LOANAME
INSTALLDATE	DATE
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
SUBTYPECD	SUBTYPECD
SYMBOLROTATIONVALUE	SYMBOLROTATION
RELGASMAINOBJECTID	RELATEDGASMAINOID
INSTALLMISCORDERID	MISCORDERID

### PressureControlFitting

#### Object Class Model Names

Object Class	Model Name
PressureControlFitting	EDFS WORKORDER
PressureControlFitting	FITTING
PressureControlFitting	LOCATABLEOBJECT
PressureControlFitting	MMABANDONABLE
PressureControlFitting	NONCONTROLFITTING

#### Field Model Names

Field	Model Name
OBJECTID	LOCATABLEFIELD
CREATIONDATE	AT_CREATIONDATE
CREATIONDATE	DATE
CREATIONUSERID	AT_CREATIONUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER

LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
GASTRACEWEIGHT	GASTRACEWEIGHT
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SYMBOLROTATIONVALUE	SYMBOLROTATION
GASPRESSURESYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
EMERISOLATIONSYSTEMSTATUSCD	EMERISOLATIONSYSSTATUS
GASSYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
SUBTYPECD	SUBTYPECD
SUBTYPECD	AT_SUBTYPECD
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
SHAPE	AT_SHAPE
INSTALLMISCORDERID	MISCORDERID
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*Regulator*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Regulator	EDFS WORKORDER
Regulator	REGULATOR

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
INSTALLMISCORDERID	MISCORDERID

*RegulatorStation*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RegulatorStation	EDFS WORKORDER
RegulatorStation	LOCATABLEOBJECT
RegulatorStation	MMABANDONABLE
RegulatorStation	REGSTN
RegulatorStation	REGULATOR

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
LOANUMBER	AT_LOANUMBER

TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
GASTRACEWEIGHT	GASTRACEWEIGHT
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GASPRESSURESYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
EMERISOLATIONSYSTEMSTATUSCD	EMERISOLATIONSYSSTATUS
GASSYSTEMSTATUSCD	GASSYSTEMSTATUS
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSCALEFACTORVALUE
REGULATORSTATIONNUMBER	AT_1
REGULATORSTATIONNUMBER	LOCATABLEFIELD
REGULATORSTATIONSEQUENCECD	AT_2
INLETPRESSUREVALUE	AT_3
INLETPRESSUREVALUE	SOPIN
OUTLETPRESSUREVALUE	AT_4
OUTLETPRESSUREVALUE	SOPOUT
INSTALLATIONTYPECD	AT_5
INSULATEDIND	AT_6
INSULATEDIND	CPSYSTEMSTATUS
SUBTYPECD	AT_SUBTYPECD
SUBTYPECD	SUBTYPECD
RELUPSTREAMGASMAINOID	RELATEDGASMAINOID
CUSTOMERNAME	AT_7
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID
INSTALLMISCORDERID	MISCORDERID

*RegulatorStation\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RegulatorStation_Anno	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredCasing*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredCasing	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE

UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIRESWORKORDERNUMBER	RETIRESWORKORDERNUMBER
RETIRESYTYPE	RETIRESYTYPE
SUBTYPECD	AT_SUBTYPECD
CASINGDIAMETERVALUE	AT_1
INSTALLEDLENGTHVALUE	AT_2
LENGTHSOURCECD	AT_3
RRCROSSINGAGREEMENTNUMBER	AT_4
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredCasing\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredCasing_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredDeadEnd\_Location\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredDeadEnd_Location_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredDeadEndGas*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredDeadEndGas	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIREWOKORDERNUMBER	RETIREWOKORDERNUMBER
RETIRETYPE	RETIRETYPE
SUBTYPECD	AT_SUBTYPECD
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredDistribMain\_Size\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredDistribMain_Size_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredDrip*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredDrip	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER

RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SUBTYPECD	AT_SUBTYPECD
DRIPPOTTYPE	AT_1
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredGasMain*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasMain	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SUBTYPECD	AT_SUBTYPECD
UPSTREAMCALCPRESSUREVALUE	AT_1
MEASUREDLENGTHVALUE	AT_2
MAINTAINEDBYNAME	AT_MAINTAINEDBYNAME
MAINMATERIALCD	AT_MAINMATERIALCD
MAINDIAMETERVALUE	AT_MAINDIAMETERVALUE
LENGTHSOURCECD	AT_3
INSERTIND	AT_INSERTIND
DOWNSTREAMCALCPRESSUREVALUE	AT_4
CALCULATEDFLOWVALUE	AT_5
BONDEDIND	AT_6
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredGasMainLocation*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasMainLocation	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
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CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSERID
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
RETIRETYPE	RETIRETYPE
SHAPE	AT_SHAPE

*RetiredGasMainLocation\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasMainLocation_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredGasValve*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasValve	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
SUBTYPECD	AT_SUBTYPECD
VALVENUMBER	AT_1
VALVESIZEVALUE	AT_2
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
INSULATEDIND	AT_3



OPENCLOSEDSTATUSCD	AT_4
EMERGENCYVALVEIND	AT_5
SYMBOLCONFIGURATIONCD	AT_6
INSTALLATIONTYPECD	AT_7
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredGasValve\_Location\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasValve_Location_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredGasValve\_Size\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredGasValve_Size_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredInsulatedCoupling*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredInsulatedCoupling	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER

RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
SUBTYPECD	AT_SUBTYPECD
INSULATEDIND	AT_1
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredPCF\_Location\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredPCF_Location_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredPipeChange*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredPipeChange	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
SUBTYPECD	AT_SUBTYPECD
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SHAPE	AT_SHAPE

*RetiredPressureControlFitting*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredPressureControlFitting	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER

TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
SUBTYPECD	AT_SUBTYPECD
LOCATIONDESC1	AT_LOCATIONDESC1
LOCATIONDESC2	AT_LOCATIONDESC2
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredRegulatorStation*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredRegulatorStation	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
LOANUMBER	AT_LOANUMBER
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
REGULATORSTATIONNUMBER	AT_1
REGULATORSTATIONSEQUENCECD	AT_2
INLETPRESSUREVALUE	AT_3
OUTLETPRESSUREVALUE	AT_4
INSTALLATIONTYPECD	AT_5
INSULATEDIND	AT_6
SUBTYPECD	AT_SUBTYPECD
CUSTOMERNAME	AT_7
SHAPE	AT_SHAPE
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredRegulatorStation\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredRegulatorStation_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredTakeStation*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredTakeStation	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
RETIREDATE	RETIREDATE
RETIREWORKORDERNUMBER	RETIREWORKORDERNUMBER
RETIRETYPE	RETIRETYPE
REGULATORSTATIONNUMBER	AT_1
REGULATORSTATIONSEQUENCECD	AT_2
INLETPRESSUREVALUE	AT_3
OUTLETPRESSUREVALUE	AT_4
INSTALLATIONTYPECD	AT_5
INSULATEDIND	AT_6
SUBTYPECD	AT_SUBTYPECD
PIPELINEOPERATORNUMBER	AT_7
SUPPLIERNAME	AT_8
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

*RetiredTransMain\_Name\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
RetiredTransMain_Name_Anno	MMABANDONED

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredTransMain\_SizeMat\_Anno*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
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RetiredTransMain_SizeMat_Anno	MMABANDONED
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*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

*RetiredWorkOrder\_Anno*

*Object Class Model Names*

Object Class	Model Name
RetiredWorkOrder_Anno	MMABANDONED

*Field Model Names*

Field	Model Name
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*RetiredWorkOrderLeaderLine*

*Object Class Model Names*

Object Class	Model Name
RetiredWorkOrderLeaderLine	MMABANDONED

*Field Model Names*

Field	Model Name
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*SqueezeOff*

*Object Class Model Names*

Object Class	Model Name
SqueezeOff	LOCATABLEOBJECT
SqueezeOff	SQUEEZEOFF

*Field Model Names*

Field	Model Name
OBJECTID	LOCATABLEFIELD
SUBTYPECD	SUBTYPECD
GASTRACEWEIGHT	GASTRACEWEIGHT
OPENCLOSEDSTATUSCD	NORMALPOSITION

*TakeStation*

*Object Class Model Names*

Object Class	Model Name
TakeStation	EDFS WORKORDER
TakeStation	LOCATABLEOBJECT
TakeStation	MMABANDONABLE
TakeStation	TBS

*Field Model Names*

Field	Model Name
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CREATIONDATE	AT_CREATIONDATE
CREATIONUSERID	AT_CREATIONUSER
UPDATEDATE	AT_UPDATEDATE
UPDATEUSERID	AT_UPDATEUSERID
INSTALLDATE	AT_INSTALLDATE
INSTALLWORKORDERNUMBER	AT_INSTALLWORKORDERNUMBER
INSTALLWORKORDERNUMBER	WORKORDERNUMBER
LOANUMBER	AT_LOANUMBER
LOANUMBER	LOANAME
TAXUNITCD	AT_TAXUNITCD
GRIDCD	AT_GRIDCD
GASTRACEWEIGHT	GASTRACEWEIGHT
SYMBOLROTATIONVALUE	AT_SYMBOLROTATIONVALUE
GASPRESSURESYSTEMSTATUSCD	GASPRESSURESYSTEMSTATUS
EMERISOLATIONSYSTEMSTATUSCD	EMERISOLATIONSYSSTATUS
GASSYSTEMSTATUSCD	GASSYSTEMSTATUS
GRAPHICSSCALEFACTORVALUE	AT_GRAPHICSSCALEFACTORVALUE
REGULATORSTATIONNUMBER	AT_1
REGULATORSTATIONNUMBER	LOCATABLEFIELD
REGULATORSTATIONSEQUENCECD	AT_2
INLETPRESSUREVALUE	AT_3
INLETPRESSUREVALUE	SOPIN
OUTLETPRESSUREVALUE	AT_4
OUTLETPRESSUREVALUE	SOPOUT
INSTALLATIONTYPECD	AT_5
INSULATEDIND	AT_6
INSULATEDIND	CPSYSTEMSTATUS
SUBTYPECD	SUBTYPECD
SUBTYPECD	AT_SUBTYPECD
PIPELINEOPERATORNUMBER	AT_7
SUPPLIERNAME	AT_8
SHAPE	AT_SHAPE
INSTALLMISCORDERID	MISCORDERID
INSTALLMISCORDERID	AT_INSTALLMISCORDERID

[TransmissionMain\\_Name\\_Anno](#)

*Object Class Model Names*

Object Class	Model Name
TransmissionMain_Name_Anno	MMABANDONABLE

*Field Model Names*

Field	Model Name
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

[TransmissionMain\\_SizeMat\\_Anno](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TransmissionMain_SizeMat_Anno	MMABANDONABLE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	AT_1
ZORDER	AT_2
ANNOTATIONCLASSID	AT_3
ELEMENT	AT_4
SHAPE	AT_SHAPE

**Table E-6. Land ArcFM configuration**

[arcfm8.LANDBASE.Bridge](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name

[arcfm8.LANDBASE.County](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
State Name	TRUE	TRUE	FALSE		
County Name	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name



SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.DgGrid](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
DG Grid Number	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				
DCSID	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.Easement](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Recorded Plat ?	TRUE	TRUE	FALSE		
Easement Number	TRUE	TRUE	TRUE		
Easement Width	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name

HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
AVLINK	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.FranchiseBoundary](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
UtilityName	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.LandDiscrepancy](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Error Description	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.LegacyStreetCenterLine](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Metadata Editor:

Custom Configuration Editor:

Extended Data Definition Table:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
NM1	TRUE	TRUE	TRUE		
NM2	TRUE	TRUE	TRUE		
PRE	TRUE	TRUE	TRUE		
TYP	TRUE	TRUE	TRUE		
AD1	TRUE	TRUE	TRUE		
AD2	TRUE	TRUE	TRUE		
AD3	TRUE	TRUE	TRUE		
AD4	TRUE	TRUE	TRUE		
ZIP1	TRUE	TRUE	TRUE		
ZIP2	TRUE	TRUE	TRUE		
CDE	TRUE	TRUE	TRUE		
SUF	TRUE	TRUE	TRUE		
AD5	TRUE	TRUE	TRUE		
AD6	TRUE	TRUE	TRUE		
AD7	TRUE	TRUE	TRUE		
AD8	TRUE	TRUE	TRUE		
ZIP3	TRUE	TRUE	TRUE		
ZIP4	TRUE	TRUE	TRUE		
Related Street C/L Object ID	TRUE	TRUE	TRUE		
Legacy EES Number	FALSE	TRUE	TRUE		
CreationDate	TRUE	TRUE	TRUE	ArcFM Current Date	
Created By	TRUE	TRUE	FALSE	ArcFM User Name	
UpdateDate	TRUE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	FALSE		ArcFM User Name

[arcfm8.LANDBASE.LinearWater](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Name	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
AVLINK	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.Loa](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
LOA Number	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.LotLine](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
AVLINK	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.LotNumber](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Lot Number	FALSE	TRUE	TRUE		
Lot Description	TRUE	TRUE	FALSE		
ADDRESS	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	FALSE		
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
AVLINK	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.MinorGrid](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Township	TRUE	TRUE	FALSE		
Range	TRUE	TRUE	FALSE		
Major Grid	TRUE	TRUE	FALSE		
Section/Intermediate Grid	TRUE	TRUE	FALSE		
Minor Grid	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
DCSID	FALSE	TRUE	TRUE		
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.MiscellaneousLinearLandFeature](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Identifier	TRUE	TRUE	TRUE		
Classification	TRUE	TRUE	TRUE		
Label Text	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	FALSE		
CreationDate	FALSE	TRUE	TRUE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcfm8.LANDBASE.MiscellaneousPointLandFeature](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Identifier	TRUE	TRUE	TRUE		
Classification	TRUE	TRUE	TRUE		
Label Text	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Symbol Rotation	FALSE	TRUE	FALSE		
Graphics Scale Factor	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.Municipality](#)  
 ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
State Name	TRUE	TRUE	FALSE		
Municipality Name	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.PlssSection](#)  
 ArcFM Display Field: OBJECTID

Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Township	TRUE	TRUE	FALSE		
Range	TRUE	TRUE	FALSE		
Major Grid	TRUE	TRUE	FALSE		
Section/Intermediate Grid	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
DCSID	FALSE	TRUE	TRUE		
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.PoliticalTownship](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
State Name	TRUE	TRUE	FALSE		
County Name	TRUE	TRUE	FALSE		
Township Name	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.QuarterTownshipGrid](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:



Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Township	TRUE	TRUE	FALSE		
Major Grid	TRUE	TRUE	FALSE		
Quarter Township Grid Number	TRUE	TRUE	FALSE		
Range	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
DCSID	FALSE	TRUE	TRUE		
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.Railroad](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Name	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
DCSID	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				
AVLINK	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.ReferenceLine](#)

ArcFM Display Field: OBJECTID

[arcfm8.LANDBASE.ReferencePoint](#)

ArcFM Display Field: OBJECTID

Create Edit Task: ArcFM Linear Point

On Create Event:

On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
OBJECTID	TRUE	FALSE	FALSE		
Shape	TRUE	TRUE	TRUE		

[arcfm8.LANDBASE.States](#)

ArcFM Display Field: OBJECTID  
 Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
State Name	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
SHAPE.area	FALSE				
SHAPE.len	FALSE				

[arcfm8.LANDBASE.StreetCenterLine](#)

ArcFM Display Field: OBJECTID  
 Create Edit Task:  
 On Create Event:  
 On Update Event:  
 On Delete Event:  
 Before Split Event:  
 On Split Event:  
 After Split Event:  
 On Abandon Event:  
 Abandon Feature Class:  
 Abandon Subtype:  
 Remove Feature Class:  
 Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Road Name	TRUE	TRUE	FALSE		
Road Type Suffix	TRUE	TRUE	FALSE		
Road Direction Prefix	TRUE	TRUE	TRUE		

Road Direction Suffix	TRUE	TRUE	TRUE		
Left Low Address Range	TRUE	TRUE	TRUE		
Left High Address Range	TRUE	TRUE	TRUE		
Right Low Address Range	TRUE	TRUE	TRUE		
Right High Address Range	TRUE	TRUE	TRUE		
Left Zip Code	TRUE	TRUE	TRUE		
Right Zip Code	TRUE	TRUE	TRUE		
Alternate Name 1	TRUE	TRUE	TRUE		
Alternate Name 2	TRUE	TRUE	TRUE		
Alternate Name 3	TRUE	TRUE	TRUE		
Alternate Name 4	TRUE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
Legacy EES Number	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcfm8.LANDBASE.StreetCenterlineIntersections](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
NAME1	TRUE	TRUE	TRUE		
NAME2	TRUE	TRUE	TRUE		
ZIPCODES	FALSE	TRUE	TRUE		
XCOORD	FALSE	TRUE	TRUE		
YCOORD	FALSE	TRUE	TRUE		
OBJECTID	TRUE	FALSE	FALSE		
SHAPE	FALSE	TRUE	TRUE		
ROADNAME	FALSE	TRUE	TRUE		

[arcfm8.LANDBASE.StreetRow](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

Before Split Event:

On Split Event:

After Split Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
HANDLE	FALSE	TRUE	TRUE		
TILENAME	FALSE	TRUE	TRUE		
SHAPE.len	FALSE				

[arcfm8.LANDBASE.TownshipRange](#)

ArcFM Display Field: OBJECTID

Create Edit Task:

On Create Event:

On Update Event:

On Delete Event:

On Abandon Event:

Abandon Feature Class:

Abandon Subtype:

Remove Feature Class:

Remove Subtype:

Field Alias	Visible	Editable	Allow Null Values	On Feature Create	On Feature Update
Subtype	TRUE	TRUE	FALSE		
Township	TRUE	TRUE	FALSE		
Range	TRUE	TRUE	FALSE		
Major Grid	TRUE	TRUE	FALSE		
OBJECTID	TRUE	FALSE	FALSE		
Shape	FALSE	TRUE	TRUE		
CreationDate	FALSE	TRUE	FALSE	ArcFM Current Date	
Created By	FALSE	TRUE	FALSE	ArcFM User Name	
UPDATEDATE	FALSE	FALSE	TRUE		ArcFM Current Date
Updated By	FALSE	FALSE	TRUE		ArcFM User Name
DCSID	FALSE	TRUE	TRUE		
SHAPE.area	FALSE				
SHAPE.len	FALSE				

**Table E-7. Contains all land ArcFM model name assignments for both the base and custom configuration**

*Bridge*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Bridge	BRIDGE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
--------------	-------------------

*County*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
County	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
COUNTYNAME	LOCATABLEFIELD

*DgGrid*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
DgGrid	DGGRID
DgGrid	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
DGGRIDNUMBER	DGGRIDNUMBER
DGGRIDNUMBER	LOCATABLEFIELD

*Easement*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Easement	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
EASEMENTNUMBER	LOCATABLEFIELD

*FranchiseBoundary*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
FranchiseBoundary	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
UTILITYNAME	LOCATABLEFIELD

[LandDiscrepancy](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LandDiscrepancy	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
ERRORDescription	LOCATABLEFIELD

[LegacyStreetCenterLine](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LegacyStreetCenterLine	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LEGACYEESNUMBER	LOCATABLEFIELD

[LinearWater](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LinearWater	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
WATERFEATURENAME	LOCATABLEFIELD

[Loa](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Loa	LOA
Loa	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOANUMBER	LOANAME
LOANUMBER	LOANUMBER
LOANUMBER	LOCATABLEFIELD

[LotLine](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LotLine	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD

[LotNumber](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
LotNumber	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
LOTNUMBER	LOCATABLEFIELD

*MinorGrid*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
MinorGrid	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MINORGRIDNUMBER	LOCATABLEFIELD

*MiscellaneousLinearLandFeature*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
MiscellaneousLinearLandFeature	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	LOCATABLEFIELD

*MiscellaneousPointLandFeature*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
MiscellaneousPointLandFeature	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
FEATUREID	LOCATABLEFIELD

*Municipality*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Municipality	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MUNICIPALITYNAME	LOCATABLEFIELD

*PlssSection*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
PlssSection	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
PLSSECTIONNUMBER	LOCATABLEFIELD

*PoliticalTownship*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
PoliticalTownship	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
TOWNSHIPNAME	LOCATABLEFIELD

*QuarterTownshipGrid*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
QuarterTownshipGrid	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
QUARTERTOWNSHIPGRIDNUMBER	LOCATABLEFIELD

*Railroad*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
Railroad	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
RAILROADNAME	LOCATABLEFIELD

*ReferenceLine*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
ReferenceLine	REFERENCEFEATURE
ReferenceLine	DONOTPOST

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
--------------	-------------------

*ReferencePoint*

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
ReferencePoint	DONOTPOST
ReferencePoint	REFERENCEFEATURE

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
--------------	-------------------



[States](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
States	LOCATABLEOBJECT
States	GDBEXTRACTION

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
STATENAME	GDBEXTRACTION
STATENAME	LOCATABLEFIELD

[StreetCenterLine](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
StreetCenterLine	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
ROADNAME	LOCATABLEFIELD

[StreetRow](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
StreetRow	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
OBJECTID	LOCATABLEFIELD

[TownshipRange](#)

*Object Class Model Names*

<b>Object Class</b>	<b>Model Name</b>
TownshipRange	LOCATABLEOBJECT

*Field Model Names*

<b>Field</b>	<b>Model Name</b>
MAJORGRIDNUMBER	LOCATABLEFIELD

**Table E-8. Electric snapping configuration**

CapacitorBank

Subtype	Snap To Feature	Hit Type	Tolerance
SinglePhaseCapacitor	OhConductor	Vertex, Edge, End	10
ThreePhaseCapacitor	OhConductor	Vertex, Edge, End	10

CustomerGenerator

Subtype	Snap To Feature	Hit Type	Tolerance
Generator	OhConductor	Vertex, Edge, End	10
Generator	UgConductor	Vertex, Edge, End	10
Generator	Secondary	Vertex, Edge, End	10

DeadEndElectric

Subtype	Snap To Feature	Hit Type	Tolerance
DeadEnd	OhConductor	End	10
DeadEnd	UgConductor	End	10

FeederAllOpenPoint

Subtype	Snap To Feature	Hit Type	Tolerance
FeederAllOpenPoint	UgConductor	Vertex, Edge, End	10

FuseCutoutBank

Subtype	Snap To Feature	Hit Type	Tolerance
SinglePhaseUgFuse	UgConductor	Vertex, Edge, End	10
TwoPhaseUgFuse	TieBus	Vertex, Edge, End	10
TwoPhaseUgFuse	UgConductor	Vertex, Edge, End	10
ThreePhaseUgFuse	TieBus	Vertex, Edge, End	10
ThreePhaseUgFuse	UgConductor	Vertex, Edge, End	10
ThreePhaseOhFuse	OhConductor	Vertex, Edge, End	10
ThreePhaseOhFuse	TieBus	Vertex, Edge, End	10
TwoPhaseTripleShot	OhConductor	Vertex, Edge, End	10
TwoPhaseTripleShot	TieBus	Vertex, Edge, End	10
TwoPhaseOhFuse	OhConductor	Vertex, Edge, End	10
TwoPhaseOhFuse	TieBus	Vertex, Edge, End	10
SinglePhaseTripleShot	OhConductor	Vertex, Edge, End	10
SinglePhaseTripleShot	TieBus	Vertex, Edge, End	10
ThreePhaseTripleShot	OhConductor	Vertex, Edge, End	10
ThreePhaseTripleShot	TieBus	Vertex, Edge, End	10
SinglePhaseOhFuse	OhConductor	Vertex, Edge, End	10
SinglePhaseOhFuse	TieBus	Vertex, Edge, End	10
SinglePhaseUgFuse	TieBus	Vertex, Edge, End	10

Manhole

Subtype	Snap To Feature	Hit Type	Tolerance
Manhole	UgConductor	Vertex, Edge, End	10

OhConductor

Subtype	Snap To Feature	Hit Type	Tolerance
OhTransmission	OhConductor	Vertex, Edge, End	10
OhTransmission	SubstationBreaker	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	FuseCutoutBank	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	OhConductor	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	PrimaryMeter	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	RecloserBank	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	SectionalizerBank	Vertex, Edge, End	10

ThreePhaseOverheadPrimary	Switch	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	TransformerBank	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	SubstationBreaker	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	TieBus	Vertex, Edge, End	10
ThreePhaseOverheadPrimary	CustomerGenerator	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	FuseCutoutBank	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	TransformerBank	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	CapacitorBank	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	CustomerGenerator	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	OhConductor	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	RecloserBank	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	SectionalizerBank	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	Switch	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	TieBus	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	VoltageRegulator	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	PrimaryMeter	Vertex, Edge, End	10
SinglePhaseOverheadPrimary	SubstationBreaker	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	CapacitorBank	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	CustomerGenerator	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	FuseCutoutBank	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	OhConductor	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	PrimaryMeter	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	RecloserBank	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	SectionalizerBank	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	SubstationBreaker	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	Switch	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	TieBus	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	TransformerBank	Vertex, Edge, End	10
TwoPhaseOverheadPrimary	VoltageRegulator	Vertex, Edge, End	10

OpenPoint

Subtype	Snap To Feature	Hit Type	Tolerance
OpenPoint	UgConductor	Vertex, Edge, End	10
OpenPoint	OhConductor	Vertex, Edge, End	10
OpenPoint	Secondary	Vertex, Edge, End	10

PadMount

Subtype	Snap To Feature	Hit Type	Tolerance
Pad	UgConductor	Vertex, Edge, End	10
Vault	UgConductor	Vertex, Edge, End	10

Pedestal

Subtype	Snap To Feature	Hit Type	Tolerance
FusePedestal	UgConductor	Vertex, Edge, End	10
PrimaryPedestal	UgConductor	Vertex, Edge, End	10
SwitchPedestal	UgConductor	Vertex, Edge, End	10
SecondaryPedestal	UgConductor	Vertex, Edge, End	10
SecondaryPedestal	Secondary	Vertex, Edge, End	10

PrimaryMeter

Subtype	Snap To Feature	Hit Type	Tolerance
Overhead	OhConductor	Vertex, Edge, End	10

Underground	UgConductor	Vertex, Edge, End	10
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#### RecloserBank

Subtype	Snap To Feature	Hit Type	Tolerance
HybridRecloser	OhConductor	Vertex, Edge, End	10
ThreePhaseRecloser	OhConductor	Vertex, Edge, End	10
SinglePhaseRecloser	OhConductor	Vertex, Edge, End	10

#### Secondary

Subtype	Snap To Feature	Hit Type	Tolerance
OhSecondary	Secondary	Vertex, Edge, End	10
OhSecondary	SupportStructure	Vertex, Edge, End	10
UgSecondary	Secondary	Vertex, Edge, End	10
UgSecondary	SupportStructure	Vertex, Edge, End	10
UgSecondary	PadMount	Vertex, Edge, End	10
UgSecondary	Pedestal	Vertex, Edge, End	10

#### SectionalizerBank

Subtype	Snap To Feature	Hit Type	Tolerance
Sectionalizer	OhConductor	Vertex, Edge, End	10
Sectionalizer	TieBus	Vertex, Edge, End	10

#### Splice

Subtype	Snap To Feature	Hit Type	Tolerance
UgSplice	UgConductor	Vertex, Edge, End	10

#### SupportStructure

Subtype	Snap To Feature	Hit Type	Tolerance
Tower	SupportStructure	Vertex, Edge, End	10

#### Switch

Subtype	Snap To Feature	Hit Type	Tolerance
GoabSwitch	OhConductor	Vertex, Edge, End	10
HookSwitchUnderhung	OhConductor	Vertex, Edge, End	10
DistributionAutomationSwitch	OhConductor	Vertex, Edge, End	10
HookSwitchInLine	OhConductor	Vertex, Edge, End	10
UgSwitch	TieBus	Vertex, Edge, End	10
UgSwitch	UgConductor	Vertex, Edge, End	10
UgDistributionAutomationSwitch	UgConductor	Vertex, Edge, End	10
UgDistributionAutomationSwitch	TieBus	Vertex, Edge, End	10
OhDistributionAutomationSwitch	OhConductor	Vertex, Edge, End	10
OhDistributionAutomationSwitch	TieBus	Vertex, Edge, End	10

#### SwitchGear

Subtype	Snap To Feature	Hit Type	Tolerance
SwitchGear	UgConductor	Vertex, Edge, End	10

#### Terminator

Subtype	Snap To Feature	Hit Type	Tolerance
PoleTerminator	TieBus	End	10
PoleTerminator	UgConductor	Vertex, Edge, End	10

#### TieBus

Subtype	Snap To Feature	Hit Type	Tolerance
DistributionTieWire	OhConductor	Vertex, Edge, End	10
DistributionTieWire	UgConductor	Vertex, Edge, End	10
TransmissionTieWire	OhConductor	Vertex, Edge, End	10

TransmissionTieWire	UgConductor	Vertex, Edge, End	10
SwitchGearBusBar	Switch	Vertex, Edge, End	10
SwitchGearBusBar	FuseCutoutBank	Vertex, Edge, End	10
SubstationBusBar	PowerTransformer	Vertex, Edge, End	10
SubstationBusBar	SubstationBreaker	Vertex, Edge, End	10
TransformerLead	OhConductor	Vertex, Edge, End	10
TransformerLead	TransformerBank	Vertex, Edge, End	10

#### TransformerBank

Subtype	Snap To Feature	Hit Type	Tolerance
TwoPhaseOverhead	SupportStructure	Vertex, Edge, End	10
TwoPhaseOverhead	OhConductor	Vertex, Edge, End	10
SinglePhaseStep	SupportStructure	Vertex, Edge, End	10
SinglePhaseStep	OhConductor	Vertex, Edge, End	10
ThreePhaseOverhead	SupportStructure	Vertex, Edge, End	10
ThreePhaseOverhead	OhConductor	Vertex, Edge, End	10
ThreePhaseStep	SupportStructure	Vertex, Edge, End	10
ThreePhaseStep	OhConductor	Vertex, Edge, End	10
SinglePhaseOverhead	SupportStructure	Vertex, Edge, End	10
SinglePhaseOverhead	OhConductor	Vertex, Edge, End	10
ThreePhaseUnderground	UgConductor	Vertex, Edge, End	10
SinglePhaseUnderground	UgConductor	Vertex, Edge, End	10
ThreePhaseOverheadInVault	PadMount	Vertex, Edge, End	10
ThreePhaseOverheadInVault	SupportStructure	Vertex, Edge, End	10
ThreePhaseOverheadInVault	OhConductor	Vertex, Edge, End	10
TwoPhaseOverheadInVault	PadMount	Vertex, Edge, End	10
TwoPhaseOverheadInVault	SupportStructure	Vertex, Edge, End	10
TwoPhaseOverheadInVault	OhConductor	Vertex, Edge, End	10
SinglePhaseOverheadInVault	PadMount	Vertex, Edge, End	10
SinglePhaseOverheadInVault	SupportStructure	Vertex, Edge, End	10
SinglePhaseOverheadInVault	OhConductor	Vertex, Edge, End	10

#### UgConductor

Subtype	Snap To Feature	Hit Type	Tolerance
ThreePhasePrimaryUnderground	VoltageRegulator	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	CapacitorBank	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	CustomerGenerator	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	FuseCutoutBank	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	OhConductor	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	PrimaryMeter	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	RecloserBank	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	SectionalizerBank	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	Splice	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	SubstationBreaker	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	Switch	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	Terminator	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	TieBus	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	TransformerBank	Vertex, Edge, End	10
ThreePhasePrimaryUnderground	UgConductor	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	VoltageRegulator	Vertex, Edge, End	10

TwoPhasePrimaryUnderground	CapacitorBank	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	CustomerGenerator	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	FuseCutoutBank	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	OhConductor	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	PrimaryMeter	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	RecloserBank	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	SectionalizerBank	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	Splice	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	SubstationBreaker	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	Switch	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	Terminator	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	TieBus	Vertex, Edge, End	10
TwoPhasePrimaryUnderground	UgConductor	Vertex, Edge, End	10
UgTransmission	UgConductor	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	VoltageRegulator	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	CapacitorBank	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	CustomerGenerator	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	FuseCutoutBank	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	OhConductor	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	PrimaryMeter	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	RecloserBank	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	Switch	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	TieBus	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	TransformerBank	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	UgConductor	Vertex, Edge, End	10
SinglePhasePrimaryUnderground	SubstationBreaker	Vertex, Edge, End	10

[VoltageRegulator](#)

<b>Subtype</b>	<b>Snap To Feature</b>	<b>Hit Type</b>	<b>Tolerance</b>
ThreePhase	OhConductor	Vertex, Edge, End	10
SinglePhase	OhConductor	Vertex, Edge, End	10

**Table E-9. Gas snapping configurations**

**Casing**

Subtype	Snap To Feature	Hit Type	Tolerance
TransCasing	GasMain	Vertex, Edge, End	10
DistCasing	GasMain	Vertex, Edge, End	10

**CpRectifier**

Subtype	Snap To Feature	Hit Type	Tolerance
Rectifier	GasMain	Vertex, Edge, End	10

**DeadEndGas**

Subtype	Snap To Feature	Hit Type	Tolerance
DeadEnd	GasMain	Vertex, Edge, End	10

**Drip**

Subtype	Snap To Feature	Hit Type	Tolerance
Drip	GasMain	Vertex, Edge, End	10

**GasMain**

Subtype	Snap To Feature	Hit Type	Tolerance
DistributionHighPressure	GasMain	Vertex, Edge, End	10
DistributionLowPressure	GasMain	Vertex, Edge, End	10
TransmissionDOT	GasMain	Vertex, Edge, End	10
TransmissionNIPSCO	GasMain	Vertex, Edge, End	10
DistributionMediumPressure	GasMain	Vertex, Edge, End	10

**GasMainLocation**

Subtype	Snap To Feature	Hit Type	Tolerance
GasMainLocation	GasMain	Vertex, Edge, End	10

**GasService**

Subtype	Snap To Feature	Hit Type	Tolerance
Service	GasMain	Vertex, Edge, End	10
Service	GasService	Vertex, Edge, End	10
ServiceStub	GasMain	Vertex, Edge, End	10
ServiceStub	GasService	Vertex, Edge, End	10

**GasValve**

Subtype	Snap To Feature	Hit Type	Tolerance
DistributionValve	GasMain	Vertex, Edge, End	10
TransmissionValve	GasMain	Vertex, Edge, End	10

**InsulatedCoupling**

Subtype	Snap To Feature	Hit Type	Tolerance
InsulatedCoupling	GasMain	Vertex, Edge, End	10

**PipeExposure**

Subtype	Snap To Feature	Hit Type	Tolerance
PipeExposure	GasMain	Vertex, Edge, End	10

**PressureControlFitting**

Subtype	Snap To Feature	Hit Type	Tolerance
PressureControlFitting	GasMain	Vertex, Edge, End	10

**RegulatorStation**

Subtype	Snap To Feature	Hit Type	Tolerance
MeterStation	GasMain	Vertex, Edge, End	10
SingleCustomer		Vertex, Edge, End	10
RegulatorStation	GasMain	Vertex, Edge, End	10

**TakeStation**

<b>Subtype</b>	<b>Snap To Feature</b>	<b>Hit Type</b>	<b>Tolerance</b>
TakeStation	GasMain	Vertex, Edge, End	10



**Table E-10. Land snapping configuration**

**Bridge**

Subtype	Snap To Feature	Hit Type	Tolerance
Bridge	StreetRow	Vertex, Edge, End	10

**Easement**

Subtype	Snap To Feature	Hit Type	Tolerance
Easement	StreetRow	Vertex, Edge, End	10
Easement	LotLine	Vertex, Edge, End	10
Easement	Easement	Vertex, Edge, End	10

**LinearWater**

Subtype	Snap To Feature	Hit Type	Tolerance
MinorWater	LinearWater	Vertex, Edge, End	10
MajorWater	LinearWater	Vertex, Edge, End	10

**Loa**

Subtype	Snap To Feature	Hit Type	Tolerance
Loa	Loa	Vertex, Edge, End	10

**LotLine**

Subtype	Snap To Feature	Hit Type	Tolerance
LotLine	StreetRow	Vertex, Edge, End	10
LotLine	LotLine	Vertex, Edge, End	10
LotLine	Easement	Vertex, Edge, End	10

**MiscellaneousLinearLand Feature**

Subtype	Snap To Feature	Hit Type	Tolerance
LinearLandFeature	MiscellaneousLinearLand Feature	Vertex, Edge, End	10

**Railroad**

Subtype	Snap To Feature	Hit Type	Tolerance
RailroadRow	Railroad	Vertex, Edge, End	10
RailroadCenterline	Railroad	Vertex, Edge, End	10

**StreetCenterLine**

Subtype	Snap To Feature	Hit Type	Tolerance
MajorRoad	StreetCenterLine	Vertex, Edge, End	10
Interstate	StreetCenterLine	Vertex, Edge, End	10
Highway	StreetCenterLine	Vertex, Edge, End	10
Alley	StreetCenterLine	Vertex, Edge, End	10
MinorRoad	StreetCenterLine	Vertex, Edge, End	10

**StreetRow**

Subtype	Snap To Feature	Hit Type	Tolerance
Recorded	StreetRow	Vertex, Edge, End	10
Unrecorded	StreetRow	Vertex, Edge, End	10

Table E-11. Electric relationship rules

### CapacitorBank\_CapacitorUnitInstall

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>			<b>Destination</b>
<b>ObjectClass</b>	CapacitorBank			CapacitorUnitInstall
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )			RelCapacitorBankObjectID ( <i>Origin Foreign Key</i> )
<b>Labels</b>	CapacitorUnitInstall			CapacitorBank
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	SinglePhaseCapacitor	0..1	CapacitorUnitInstall	1..1
	ThreePhaseCapacitor	0..1	CapacitorUnitInstall	3..12

### FuseCutoutBank\_FuseUnit

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>			<b>Destination</b>
<b>ObjectClass</b>	FuseCutoutBank			FuseUnit
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )			RelFuseCutoutBankObjectID ( <i>Origin Foreign Key</i> )
<b>Labels</b>	FuseUnit			FuseCutoutBank
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	SinglePhaseUgFuse	0..1	Fuse	1..1
	TwoPhaseOhFuse	0..1	Fuse	2..2
	SinglePhaseOhFuse	0..1	Fuse	1..1
	ThreePhaseOhFuse	0..1	Fuse	3..3
	SinglePhaseTripleShot	0..1	Fuse	1..1
	ThreePhaseUgFuse	0..1	Fuse	3..3
	ThreePhaseTripleShot	0..1	Fuse	3..3
	TwoPhaseUgFuse	0..1	Fuse	2..2
	TwoPhaseTripleShot	0..1	Fuse	2..2

### OhConductor\_OhConductorInfo

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>			<b>Destination</b>
<b>ObjectClass</b>	OhConductor			OhConductorInfo
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )			RelOhConductorObjectID ( <i>Origin Foreign Key</i> )
<b>Labels</b>	OhConductorInfo			OhConductor
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	SinglePhaseOverhead Primary	0..1	OhConductor	1..2
	TwoPhaseOverhead Primary	0..1	OhConductor	2..3
	ThreePhaseOverhead Primary	0..1	OhConductor	3..4
	OhTransmission	0..1	OhConductor	3..4

### PadMount\_TransformerBank

<b>Composite</b>	No			
<b>Cardinality</b>	One To One			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	PadMount		TransformerBank	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelPadMountObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	TransformerBank		PadMount	
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	Vault	1..1	SinglePhase OverheadInVault	0..1
	Pad	1..1	ThreePhase Underground	0..1
	Pad	1..1	SinglePhase Underground	0..1
<b>Rules</b>	Vault	1..1	TwoPhase OverheadInVault	0..1
	Vault	1..1	SinglePhase UndergroundIn Vault	0..1
	Vault	1..1	ThreePhase OverheadInVault	0..1
	Vault	1..1	ThreePhase UndergroundIn Vault	0..1

### RecloserBank\_RecloserUnit

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	RecloserBank		RecloserUnit	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelRecloserBankObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	RecloserUnit		RecloserBank	
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	SinglePhaseRecloser	0..1	Recloser	1..1
	ThreePhaseRecloser	0..1	Recloser	3..3
	HybridRecloser	0..1	Recloser	1..1
	TwoPhaseRecloser	0..1	Recloser	2..2

### Secondary\_ConductorInfo

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	Secondary		SECONDARYCONDUCTOR INFO	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelSecondaryObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	CONDUCTORINFO		Secondary	
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination</b>

	OhSecondary	0..1	OhSecondary	<b>Cardinality</b> 1..3
	UgSecondary	0..1	UgSecondary	1..1

### SectionalizerBank\_SectUnit

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	SectionalizerBank		SectionalizerUnit	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelSectionalizerBankObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	SectionalizerUnit		SectionalizerBank	
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	Sectionalizer	0..1	Sectionalizer	1..3

### SubBreaker\_CircuitSource

<b>Composite</b>	No			
<b>Cardinality</b>	One To One			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	SubstationBreaker		CircuitSource	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelSubstationBreakerObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	CircuitSource		SubstationBreaker	
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	DistributionBreaker	0..1	CircuitSource	1..1
	TransmissionBreaker	0..1	CircuitSource	1..1

### SupportStruct\_FuseCutoutBank

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>		<b>Destination</b>	
<b>ObjectClass</b>	SupportStructure		FuseCutoutBank	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		RelSupportStructureObjectld ( <i>Origin Foreign Key</i> )	
<b>Labels</b>	Fuse Cutout Bank		SupportStructure	
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	Pole	1..1	SinglePhaseOh Fuse	0..3
	Pole	1..1	TwoPhaseTriple Shot	0..3
	Pole	1..1	ThreePhaseOh Fuse	0..3
	Pole	1..1	ThreePhaseTriple Shot	0..3
	Pole	1..1	TwoPhaseOhFuse	0..3
	Pole	1..1	SinglePhaseTriple Shot	0..3

### SupportStruct\_SectBank

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>	<b>Destination</b>		
<b>ObjectClass</b>	SupportStructure	SectionalizerBank		
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )	RelSupportStructureObjectld ( <i>Origin Foreign Key</i> )		
<b>Labels</b>	SectionalizerBank	SupportStructure		
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	Pole	1..1	Sectionalizer	0..3

### SupportStruct\_Switch

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>	<b>Destination</b>		
<b>ObjectClass</b>	SupportStructure	Switch		
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )	RelSupportStructureObjectld ( <i>Origin Foreign Key</i> )		
<b>Labels</b>	Switch	SupportStructure		
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	Pole	0..1	HookSwitchUnderhung	0..2
	Pole	0..1	GoabSwitch	0..2
	Pole	0..1	HookSwitchInLine	0..2
	Pole	0..1	OhDistributionAutomationSwitch	0..2

### SupportStruct\_TransformerBank

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>	<b>Destination</b>		
<b>ObjectClass</b>	SupportStructure	TransformerBank		
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )	RelSupportStructureObjectld ( <i>Origin Foreign Key</i> )		
<b>Labels</b>	Transformer Bank	SupportStructure		
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	Pole	1..1	TwoPhaseOverhead	0..2
	Pole	1..1	SinglePhaseOverhead	0..2
	Pole	1..1	ThreePhaseOverhead	0..2

### SupportStructure\_WoodPoleInfo

<b>Composite</b>	No		
<b>Cardinality</b>	One To Many		
	<b>Origin</b>	<b>Destination</b>	
<b>ObjectClass</b>	SupportStructure	WoodPoleInfo	
<b>Key</b>	DistribRefNumber ( <i>Origin Primary Key</i> )	RelDistribRefNumber ( <i>Origin Foreign Key</i> )	

<b>Labels</b>	WoodPoleInfo	SupportStructure		
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	Pole	0..1	WoodPoleInfo	0..1
	HFrame	0..1	WoodPoleInfo	0..1

### Switch\_SwitchUnit

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
<b>ObjectClass</b>	Switch	<b>Origin</b>	<b>Destination</b>	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		SwitchUnit	
<b>Labels</b>	SwitchUnit		RelSwitchObjectld ( <i>Origin Foreign Key</i> )	
			Switch	
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	HookSwitchUnderhung	0..1	Switch	1..3
	HookSwitchInLine	0..1	Switch	1..3
	GoabSwitch	0..1	Switch	1..3
	OhDistributionAutomationSwitch	0..1	Switch	1..3
	UgSwitch	0..1	Switch	1..1
	UgDistributionAutomationSwitch	0..1	Switch	1..1

### SwitchGear\_FuseCutoutBank

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
<b>ObjectClass</b>	SwitchGear	<b>Origin</b>	<b>Destination</b>	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		FuseCutoutBank	
<b>Labels</b>	Fuse Cutout Bank		RelSwitchGearObjectld ( <i>Origin Foreign Key</i> )	
			SwitchGear	
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	4 Compartment SwitchGear	1..1	SinglePhaseUgFuse	0..1
	4 Compartment SwitchGear	1..1	ThreePhaseUgFuse	0..1
	4 Compartment SwitchGear	1..1	TwoPhaseUgFuse	0..1

### SwitchGear\_Switch

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
<b>ObjectClass</b>	SwitchGear	<b>Origin</b>	<b>Destination</b>	
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )		Switch	
<b>Labels</b>	Switch		RelSwitchGearObjectld ( <i>Origin Foreign Key</i> )	
			SwitchGear	
<b>Rules</b>	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>

4 Compartment SwitchGear	1..1	UgDistributionAutomationSwitch	0..4
4 Compartment SwitchGear	1..1	UgSwitch	0..4

### TransfBank\_TransfUnitInstall

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
<b>ObjectClass</b>	<b>Origin</b>			<b>Destination</b>
<b>Key</b>	TransformerBank OBJECTID ( <i>Origin Primary Key</i> )			TransformerUnitInstall RelTransformerBankObject Id ( <i>Origin Foreign Key</i> )
<b>Labels</b>	TransformerUnitInstall			TransformerBank
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	SinglePhaseOverhead	0..1	TransformerUnit Install	1..1
	ThreePhaseOverheadIn Vault	0..1	TransformerUnit Install	3..3
	SinglePhaseUnderground	0..1	TransformerUnit Install	1..1
	TwoPhaseOverhead	0..1	TransformerUnit Install	2..2
<b>Rules</b>	ThreePhaseOverhead	0..1	TransformerUnit Install	3..3
	ThreePhaseUnderground	0..1	TransformerUnit Install	1..1
	SinglePhaseUnderground InVault	0..1	TransformerUnit Install	1..1
	ThreePhaseUnderground InVault	0..1	TransformerUnit Install	1..1
	SinglePhaseOverheadIn Vault	0..1	TransformerUnit Install	1..1
	TwoPhaseOverheadIn Vault	0..1	TransformerUnit Install	2..2

### UgConductor\_UgConductorInfo

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
<b>ObjectClass</b>	<b>Origin</b>			<b>Destination</b>
<b>Key</b>	UgConductor OBJECTID ( <i>Origin Primary Key</i> )			UgConductorInfo RelUgConductorObjectId ( <i>Origin Foreign Key</i> )
<b>Labels</b>	ConductorInfo			UgPrimary
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
	SinglePhasePrimaryUnd erground	0..1	UgConductor	1..1
<b>Rules</b>	TwoPhasePrimary Underground	0..1	UgConductor	1..2
	ThreePhasePrimary Underground	0..1	UgConductor	1..3
	UgTransmission	0..1	UgConductor	1..3

### VoltageReg\_RegulatorUnitInstall

<b>Composite</b>	No			
<b>Cardinality</b>	One To One			
	<b>Origin</b>	<b>Destination</b>		
<b>ObjectClass</b>	VoltageRegulator	RegulatorUnitInstall		
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )	RelVoltageRegulatorObject Id ( <i>Origin Foreign Key</i> )		
<b>Labels</b>	RegulatorUnitInstall	VoltageRegulator		
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	SinglePhase	0..1	RegulatorUnitInstall	1..1
	ThreePhase	0..1	RegulatorUnitInstall	1..1

### VoltRegBank\_VoltRegulator

<b>Composite</b>	No			
<b>Cardinality</b>	One To Many			
	<b>Origin</b>	<b>Destination</b>		
<b>ObjectClass</b>	VoltageRegulatorBank	VoltageRegulator		
<b>Key</b>	OBJECTID ( <i>Origin Primary Key</i> )	RelVoltRegBankObjectId ( <i>Origin Foreign Key</i> )		
<b>Labels</b>	VoltageRegulator	VoltageRegulatorBank		
	<b>Subtype</b>	<b>Origin Cardinality</b>	<b>Subtype</b>	<b>Destination Cardinality</b>
<b>Rules</b>	VoltageRegulatorBank	1..1	SinglePhase	1..3
	VoltageRegulatorBank	1..1	ThreePhase	1..1



**Table E-13. Electric connectivity Edge – Edge rules**

From Edge	From Edge Subtype	To Edge	To Edge Subtype	Via Junction::Subtype (Default)
OhConductor	SinglePhaseOverheadPrimary	TieBus	DistributionTieWire	ElectricNetwork_Junctions
OhConductor	TwoPhaseOverheadPrimary	TieBus	TransformerLead	ElectricNetwork_Junctions
OhConductor	ThreePhaseOverheadPrimary	TieBus	TransformerLead	ElectricNetwork_Junctions
OhConductor	SinglePhaseOverheadPrimary	TieBus	TransformerLead	ElectricNetwork_Junctions
OhConductor	TwoPhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	ThreePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	OhTransmission	TieBus	TransmissionTieWire	ElectricNetwork_Junctions
OhConductor	ThreePhaseOverheadPrimary	TieBus	DistributionTieWire	ElectricNetwork_Junctions
OhConductor	TwoPhaseOverheadPrimary	TieBus	DistributionTieWire	ElectricNetwork_Junctions
OhConductor	OhTransmission	OhConductor	OhTransmission	ElectricNetwork_Junctions
OhConductor	OhTransmission	OhConductor	OhTransmission	PrimaryMeter::Overhead
OhConductor	OhTransmission	OhConductor	OhTransmission	Switch::GoabSwitch
OhConductor	OhTransmission	OhConductor	OhTransmission	Switch::OhDistributionAutomationSwitch
OhConductor	ThreePhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	CapacitorBank::SinglePhaseCapacitor
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	CapacitorBank::ThreePhaseCapacitor
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank::SinglePhaseOhFuse
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank::SinglePhaseTripleShot
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank::ThreePhaseOhFuse
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank::ThreePhaseTripleShot
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	OpenPoint::OpenPoint
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	PrimaryMeter::Overhead
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	RecloserBank::HybridRecloser
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	RecloserBank::ThreePhaseRecloser
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	SectionalizerBank::Sectionalizer
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	Switch::GoabSwitch
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	Switch::HookSwitchInLine
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	Switch::HookSwitchUnderhung
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	Switch::OhDistributionAutomationSwitch
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	VoltageRegulator::SinglePhase
OhConductor	ThreePhaseOverheadPrimary	OhConductor	ThreePhaseOverheadPrimary	VoltageRegulator::ThreePhase
OhConductor	ThreePhaseOverheadPrimary	TieBus	SubstationBusBar	SubstationBreaker::DistributionBreaker
OhConductor	OhTransmission	TieBus	SubstationBusBar	SubstationBreaker::TransmissionBreaker
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	CapacitorBank::SinglePhaseCapacitor
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	FuseCutoutBank::SinglePhaseOhFuse
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	FuseCutoutBank::SinglePhaseTripleShot
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	OpenPoint::OpenPoint
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	PrimaryMeter::Overhead
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	RecloserBank::SinglePhaseRecloser
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	SectionalizerBank::Sectionalizer
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	Switch::HookSwitchInLine
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	Switch::HookSwitchUnderhung
OhConductor	SinglePhaseOverheadPrimary	OhConductor	SinglePhaseOverheadPrimary	VoltageRegulator::SinglePhase
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	CapacitorBank::SinglePhaseCapacitor
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	ElectricNetwork_Junctions
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank::TwoPhaseOhFuse
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank::TwoPhaseTripleShot
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank::SinglePhaseOhFuse
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank::SinglePhaseTripleShot
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	OpenPoint::OpenPoint
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	PrimaryMeter::Overhead
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	RecloserBank::TwoPhaseRecloser
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	RecloserBank::SinglePhaseRecloser
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	SectionalizerBank::Sectionalizer
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	Switch::HookSwitchInLine
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	Switch::HookSwitchUnderhung
OhConductor	TwoPhaseOverheadPrimary	OhConductor	TwoPhaseOverheadPrimary	VoltageRegulator::SinglePhase
TieBus	DistributionTieWire	TieBus	DistributionTieWire	FuseCutoutBank::SinglePhaseOhFuse
TieBus	DistributionTieWire	TieBus	DistributionTieWire	FuseCutoutBank::ThreePhaseOhFuse
TieBus	DistributionTieWire	TieBus	DistributionTieWire	FuseCutoutBank::TwoPhaseOhFuse
TieBus	DistributionTieWire	TieBus	DistributionTieWire	SectionalizerBank::Sectionalizer
TieBus	DistributionTieWire	TieBus	DistributionTieWire	Switch::HookSwitchInLine

TieBus	DistributionTieWire	TieBus	DistributionTieWire	Switch::HookSwitchUnderhung
TieBus	SubstationBusBar	TieBus	SubstationBusBar	ElectricNetwork_Junctions
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	ElectricNetwork_Junctions
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	FuseCutoutBank::ThreePhaseUgFuse
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	FuseCutoutBank::SinglePhaseUgFuse
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	FuseCutoutBank::TwoPhaseUgFuse
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	Switch::UgSwitch
TieBus	SwitchGearBusBar	TieBus	SwitchGearBusBar	Switch::UgDistributionAutomationSwitch
UgConductor	TwoPhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	SinglePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	TwoPhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	SinglePhasePrimaryUnderground	TieBus	DistributionTieWire	Terminator::PoleTerminator
UgConductor	SinglePhasePrimaryUnderground	TieBus	SwitchGearBusBar	ElectricNetwork_Junctions
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	CustomerGenerator::Generator
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	FeederAllOpenPoint::FeederAllOpenPoint
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	FuseCutoutBank::ThreePhaseUgFuse
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	OpenPoint::OpenPoint
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	PrimaryMeter::Underground
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	Splice::UgSplice
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	TransformerBank::SinglePhaseUnderground
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	TransformerBank::ThreePhaseUnderground
UgConductor	ThreePhasePrimaryUnderground	UgConductor	ThreePhasePrimaryUnderground	TransformerBank::ThreePhaseUndergroundInVault
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	CustomerGenerator::Generator
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	FeederAllOpenPoint::FeederAllOpenPoint
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	FuseCutoutBank::SinglePhaseUgFuse
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	OpenPoint::OpenPoint
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	PrimaryMeter::Underground
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	Splice::UgSplice
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	TransformerBank::SinglePhaseUnderground
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	TransformerBank::SinglePhaseUndergroundInVault
UgConductor	SinglePhasePrimaryUnderground	UgConductor	SinglePhasePrimaryUnderground	TransformerBank::SinglePhaseOverheadInVault
UgConductor	ThreePhasePrimaryUnderground	TieBus	DistributionTieWire	Terminator::PoleTerminator
UgConductor	ThreePhasePrimaryUnderground	TieBus	SubstationBusBar	SubstationBreaker::DistributionBreaker
UgConductor	ThreePhasePrimaryUnderground	TieBus	SwitchGearBusBar	ElectricNetwork_Junctions
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	CustomerGenerator::Generator
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	ElectricNetwork_Junctions
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	FeederAllOpenPoint::FeederAllOpenPoint
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	FuseCutoutBank::TwoPhaseUgFuse
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	OpenPoint::OpenPoint
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	PrimaryMeter::Underground
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	Splice::UgSplice
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	TransformerBank::SinglePhaseUnderground
UgConductor	TwoPhasePrimaryUnderground	UgConductor	TwoPhasePrimaryUnderground	TransformerBank::TwoPhaseOverheadInVault
UgConductor	TwoPhasePrimaryUnderground	TieBus	DistributionTieWire	Terminator::PoleTerminator
UgConductor	TwoPhasePrimaryUnderground	TieBus	SwitchGearBusBar	ElectricNetwork_Junctions
UgConductor	UgTransmission	TieBus	TransmissionTieWire	Terminator::PoleTerminator
UgConductor	UgTransmission	TieBus	SubstationBusBar	SubstationBreaker::TransmissionBreaker

**Table E-14. Edge – Electric connectivity junction rules**

From Edge	From Edge Subtype	To Junction	To Junction Subtype (default)	Min E	Max E	Min J	Max J
OhConductor	OhTransmission	CustomerGenerator	Generator	-	-	-	-
OhConductor	OhTransmission	ElectricNetwork_Junctions	-	-	-	-	-
OhConductor	OhTransmission	PrimaryMeter	Overhead	0	2	0	2
OhConductor	OhTransmission	SubstationBreaker	TransmissionBreaker	0	1	0	1
OhConductor	OhTransmission	Switch	GoabSwitch	0	2	0	2
OhConductor	OhTransmission	Switch	HookSwitchInLine	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	CapacitorBank	SinglePhaseCapacitor	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	CustomerGenerator	Generator	-	-	-	-
OhConductor	SinglePhaseOverheadPrimary	ElectricNetwork_Junctions	-	-	-	-	-
OhConductor	SinglePhaseOverheadPrimary	FuseCutoutBank	SinglePhaseOhFuse	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	FuseCutoutBank	SinglePhaseTripleShot	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	OpenPoint	OpenPoint	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	PrimaryMeter	Overhead	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	RecloserBank	SinglePhaseRecloser	2	2	0	2
OhConductor	SinglePhaseOverheadPrimary	SectionalizerBank	Sectionalizer	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	Switch	HookSwitchInLine	0	2	0	2
OhConductor	SinglePhaseOverheadPrimary	Switch	HookSwitchUnderhung	-	-	-	-
OhConductor	SinglePhaseOverheadPrimary	VoltageRegulator	SinglePhase	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	CapacitorBank	ThreePhaseCapacitor	2	2	0	2
OhConductor	ThreePhaseOverheadPrimary	CapacitorBank	SinglePhaseCapacitor	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	CustomerGenerator	Generator	-	-	-	-
OhConductor	ThreePhaseOverheadPrimary	ElectricNetwork_Junctions	-	-	-	-	-
OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank	ThreePhaseOhFuse	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank	ThreePhaseTripleShot	2	2	0	2
OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank	SinglePhaseOhFuse	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	FuseCutoutBank	SinglePhaseTripleShot	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	OpenPoint	OpenPoint	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	PrimaryMeter	Overhead	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	RecloserBank	ThreePhaseRecloser	2	2	0	2
OhConductor	ThreePhaseOverheadPrimary	RecloserBank	HybridRecloser	2	2	0	2
OhConductor	ThreePhaseOverheadPrimary	SectionalizerBank	Sectionalizer	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	SubstationBreaker	DistributionBreaker	0	1	0	1
OhConductor	ThreePhaseOverheadPrimary	Switch	GoabSwitch	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	Switch	HookSwitchInLine	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	Switch	OhDistributionAutomationSwitch	2	2	0	2
OhConductor	ThreePhaseOverheadPrimary	Switch	HookSwitchUnderhung	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	VoltageRegulator	SinglePhase	0	2	0	2
OhConductor	ThreePhaseOverheadPrimary	VoltageRegulator	ThreePhase	2	2	0	2
OhConductor	TwoPhaseOverheadPrimary	CapacitorBank	SinglePhaseCapacitor	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	CustomerGenerator	Generator	-	-	-	-
OhConductor	TwoPhaseOverheadPrimary	ElectricNetwork_Junctions	-	-	-	-	-
OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank	SinglePhaseOhFuse	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank	SinglePhaseTripleShot	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank	TwoPhaseOhFuse	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	FuseCutoutBank	TwoPhaseTripleShot	2	2	0	2
OhConductor	TwoPhaseOverheadPrimary	OpenPoint	OpenPoint	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	PrimaryMeter	Overhead	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	RecloserBank	TwoPhaseRecloser	2	2	0	2
OhConductor	TwoPhaseOverheadPrimary	RecloserBank	SinglePhaseRecloser	-	-	-	-
OhConductor	TwoPhaseOverheadPrimary	SectionalizerBank	Sectionalizer	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	Switch	HookSwitchInLine	0	2	0	2
OhConductor	TwoPhaseOverheadPrimary	Switch	HookSwitchUnderhung	-	-	-	-
OhConductor	TwoPhaseOverheadPrimary	VoltageRegulator	SinglePhase	0	2	0	2
TieBus	DistributionTieWire	ElectricNetwork_Junctions	-	-	-	-	-
TieBus	DistributionTieWire	FuseCutoutBank	ThreePhaseOhFuse	0	2	0	1
TieBus	DistributionTieWire	FuseCutoutBank	TwoPhaseOhFuse	0	2	0	2
TieBus	DistributionTieWire	FuseCutoutBank	SinglePhaseOhFuse	0	2	0	2
TieBus	DistributionTieWire	SectionalizerBank	Sectionalizer	-	-	-	-
TieBus	DistributionTieWire	Switch	HookSwitchInLine	0	2	0	2
TieBus	DistributionTieWire	Switch	HookSwitchUnderhung	0	2	0	2
TieBus	DistributionTieWire	Terminator	PoleTerminator	0	1	0	1
TieBus	SubstationBusBar	ElectricNetwork_Junctions	-	-	-	-	-
TieBus	SubstationBusBar	SubstationBreaker	TransmissionBreaker	0	1	0	1

TieBus	SubstationBusBar	SubstationBreaker	DistributionBreaker	0	1	0	1
TieBus	SwitchGearBusBar	ElectricNetwork_Junctions	-	-	-	-	-
TieBus	SwitchGearBusBar	FuseCutoutBank	ThreePhaseUgFuse	0	2	0	2
TieBus	SwitchGearBusBar	FuseCutoutBank	SinglePhaseUgFuse	0	2	-	-
TieBus	SwitchGearBusBar	FuseCutoutBank	TwoPhaseUgFuse	0	2	0	2
TieBus	SwitchGearBusBar	Switch	UgSwitch	2	2	0	2
TieBus	SwitchGearBusBar	Switch	UgDistributionAutomationSwitch	2	2	0	2
TieBus	TransformerLead	ElectricNetwork_Junctions	-	-	-	-	-
TieBus	TransformerLead	TransformerBank	TwoPhaseOverhead	1	1	0	1
TieBus	TransformerLead	TransformerBank	ThreePhaseOverhead	1	1	0	1
TieBus	TransformerLead	TransformerBank	SinglePhaseOverhead	1	1	0	1
TieBus	TransmissionTieWire	ElectricNetwork_Junctions	-	-	-	-	-
TieBus	TransmissionTieWire	FuseCutoutBank	ThreePhaseOhFuse	0	2	-	-
TieBus	TransmissionTieWire	Terminator	PoleTerminator	0	1	0	1
UgConductor	SinglePhasePrimaryUnderground	CustomerGenerator	Generator	-	-	-	-
UgConductor	SinglePhasePrimaryUnderground	ElectricNetwork_Junctions	-	-	-	-	-
UgConductor	SinglePhasePrimaryUnderground	FeederAllOpenPoint	-	-	-	-	-
UgConductor	SinglePhasePrimaryUnderground	FuseCutoutBank	SinglePhaseUgFuse	0	2	-	-
UgConductor	SinglePhasePrimaryUnderground	OpenPoint	OpenPoint	0	2	0	2
UgConductor	SinglePhasePrimaryUnderground	PrimaryMeter	Underground	0	2	0	2
UgConductor	SinglePhasePrimaryUnderground	Splice	UgSplice	0	2	0	2
UgConductor	SinglePhasePrimaryUnderground	Terminator	PoleTerminator	0	1	0	1
UgConductor	SinglePhasePrimaryUnderground	TransformerBank	SinglePhaseUnderground	0	4	0	2
UgConductor	SinglePhasePrimaryUnderground	TransformerBank	SinglePhaseOverheadInVault	1	4	0	2
UgConductor	SinglePhasePrimaryUnderground	TransformerBank	SinglePhaseUndergroundInVault	1	2	0	2
UgConductor	ThreePhasePrimaryUnderground	CustomerGenerator	Generator	-	-	-	-
UgConductor	ThreePhasePrimaryUnderground	ElectricNetwork_Junctions	-	-	-	-	-
UgConductor	ThreePhasePrimaryUnderground	FeederAllOpenPoint	-	-	-	-	-
UgConductor	ThreePhasePrimaryUnderground	FuseCutoutBank	ThreePhaseUgFuse	0	2	0	2
UgConductor	ThreePhasePrimaryUnderground	OpenPoint	OpenPoint	0	2	0	2
UgConductor	ThreePhasePrimaryUnderground	PrimaryMeter	Underground	0	2	0	2
UgConductor	ThreePhasePrimaryUnderground	Splice	UgSplice	0	2	0	2
UgConductor	ThreePhasePrimaryUnderground	SubstationBreaker	DistributionBreaker	0	1	0	1
UgConductor	ThreePhasePrimaryUnderground	Terminator	PoleTerminator	0	1	0	1
UgConductor	ThreePhasePrimaryUnderground	TransformerBank	ThreePhaseUnderground	1	4	0	2
UgConductor	ThreePhasePrimaryUnderground	TransformerBank	SinglePhaseUnderground	0	4	0	2
UgConductor	ThreePhasePrimaryUnderground	TransformerBank	ThreePhaseOverheadInVault	1	4	0	2
UgConductor	ThreePhasePrimaryUnderground	TransformerBank	ThreePhaseUndergroundInVault	1	4	0	2
UgConductor	TwoPhasePrimaryUnderground	CustomerGenerator	Generator	-	-	-	-
UgConductor	TwoPhasePrimaryUnderground	ElectricNetwork_Junctions	-	-	-	-	-
UgConductor	TwoPhasePrimaryUnderground	FeederAllOpenPoint	-	-	-	-	-
UgConductor	TwoPhasePrimaryUnderground	FuseCutoutBank	TwoPhaseUgFuse	0	2	0	2
UgConductor	TwoPhasePrimaryUnderground	OpenPoint	OpenPoint	0	2	0	2
UgConductor	TwoPhasePrimaryUnderground	PrimaryMeter	Underground	0	2	0	2
UgConductor	TwoPhasePrimaryUnderground	Splice	UgSplice	0	2	0	2
UgConductor	TwoPhasePrimaryUnderground	Terminator	PoleTerminator	0	1	0	1
UgConductor	TwoPhasePrimaryUnderground	TransformerBank	SinglePhaseUnderground	0	4	0	2
UgConductor	TwoPhasePrimaryUnderground	TransformerBank	TwoPhaseOverheadInVault	1	4	0	2
UgConductor	UgTransmission	CustomerGenerator	Generator	-	-	-	-
UgConductor	UgTransmission	ElectricNetwork_Junctions	-	-	-	-	-
UgConductor	UgTransmission	FeederAllOpenPoint	-	-	-	-	-
UgConductor	UgTransmission	PrimaryMeter	Underground	0	2	0	2
UgConductor	UgTransmission	SubstationBreaker	TransmissionBreaker	0	1	0	1
UgConductor	UgTransmission	Terminator	PoleTerminator	0	1	0	1

**Table E-15. Gas connectivity Edge – Edge rules**

From Edge	From Edge Subtype	To Edge	To Edge Subtype	Via Junction::Subtype (Default)
GasMain	DistributionLowPressure	GasMain	DistributionLowPressure	<i>GasNetwork_Junctions</i>
GasMain	DistributionLowPressure	GasMain	DistributionLowPressure	GasValve::DistributionValve
GasMain	DistributionLowPressure	GasMain	DistributionLowPressure	InsulatedCoupling::InsulatedCoupling
GasMain	DistributionLowPressure	GasMain	DistributionLowPressure	PressureControlFitting::PressureControlFitting
GasMain	DistributionMediumPressure	GasMain	DistributionMediumPressure	<i>GasNetwork_Junctions</i>
GasMain	DistributionMediumPressure	GasMain	DistributionMediumPressure	GasValve::DistributionValve
GasMain	DistributionMediumPressure	GasMain	DistributionMediumPressure	InsulatedCoupling::InsulatedCoupling
GasMain	DistributionMediumPressure	GasMain	DistributionMediumPressure	PressureControlFitting::PressureControlFitting
GasMain	DistributionMediumPressure	GasMain	DistributionMediumPressure	RegulatorStation::RegulatorStation
GasMain	DistributionHighPressure	GasMain	DistributionHighPressure	<i>GasNetwork_Junctions</i>
GasMain	DistributionHighPressure	GasMain	DistributionHighPressure	GasValve::DistributionValve
GasMain	DistributionHighPressure	GasMain	DistributionHighPressure	InsulatedCoupling::InsulatedCoupling
GasMain	DistributionHighPressure	GasMain	DistributionHighPressure	PressureControlFitting::PressureControlFitting
GasMain	TransmissionNIPSCO	GasMain	TransmissionNIPSCO	<i>GasNetwork_Junctions</i>
GasMain	TransmissionNIPSCO	GasMain	TransmissionNIPSCO	GasValve::TransmissionValve
GasMain	TransmissionNIPSCO	GasMain	TransmissionNIPSCO	PressureControlFitting::PressureControlFitting
GasMain	TransmissionNIPSCO	GasMain	TransmissionNIPSCO	RegulatorStation::RegulatorStation
GasMain	TransmissionDOT	GasMain	TransmissionDOT	<i>GasNetwork_Junctions</i>
GasMain	TransmissionDOT	GasMain	TransmissionDOT	GasValve::TransmissionValve
GasMain	TransmissionDOT	GasMain	TransmissionDOT	PressureControlFitting::PressureControlFitting
GasMain	TransmissionDOT	GasMain	TransmissionDOT	RegulatorStation::RegulatorStation
GasMain	TransmissionDOT	GasMain	TransmissionNIPSCO	<i>GasNetwork_Junctions</i>
GasMain	TransmissionDOT	GasMain	TransmissionNIPSCO	GasValve::TransmissionValve
GasMain	TransmissionDOT	GasMain	TransmissionNIPSCO	PressureControlFitting::PressureControlFitting
GasMain	TransmissionDOT	GasMain	TransmissionNIPSCO	RegulatorStation::RegulatorStation
GasMain	DistributionHighPressure	GasMain	DistributionMediumPressure	<i>GasNetwork_Junctions</i>
GasMain	DistributionHighPressure	GasMain	DistributionMediumPressure	RegulatorStation::RegulatorStation
GasMain	DistributionHighPressure	GasMain	TransmissionDOT	<i>GasNetwork_Junctions</i>
GasMain	DistributionHighPressure	GasMain	TransmissionDOT	RegulatorStation::RegulatorStation
GasMain	DistributionHighPressure	GasMain	TransmissionNIPSCO	<i>GasNetwork_Junctions</i>
GasMain	DistributionHighPressure	GasMain	TransmissionNIPSCO	RegulatorStation::RegulatorStation
GasMain	DistributionLowPressure	GasMain	DistributionMediumPressure	<i>GasNetwork_Junctions</i>
GasMain	DistributionLowPressure	GasMain	DistributionMediumPressure	RegulatorStation::RegulatorStation
GasMain	DistributionMediumPressure	GasMain	TransmissionDOT	<i>GasNetwork_Junctions</i>
GasMain	DistributionMediumPressure	GasMain	TransmissionDOT	RegulatorStation::RegulatorStation
GasMain	TransmissionNIPSCO	GasMain	DistributionMediumPressure	<i>GasNetwork_Junctions</i>
GasMain	TransmissionNIPSCO	GasMain	DistributionMediumPressure	RegulatorStation::RegulatorStation

**Table E-16. Edge – Edge gas junction rules**

From Edge	From Edge Subtype	To Junction	To Junction Subtype (default)	Min E	Max E	Min J	Max J
GasMain	DistributionHighPressure	GasNetwork_Junctions	-	-	-	-	-
GasMain	DistributionHighPressure	GasValve	DistributionValve	0	2	0	2
GasMain	DistributionHighPressure	InsulatedCoupling	InsulatedCoupling	0	2	0	2
GasMain	DistributionHighPressure	PressureControlFitting	PressureControlFitting	0	3	0	2
GasMain	DistributionHighPressure	RegulatorStation	MeterStation	0	2	0	2
GasMain	DistributionHighPressure	RegulatorStation	RegulatorStation	0	2	0	2
GasMain	DistributionHighPressure	RegulatorStation	SingleCustomer	0	2	0	2
GasMain	DistributionHighPressure	SqueezeOff	SqueezeOff	0	2	0	2
GasMain	DistributionHighPressure	TakeStation	TakeStation	0	1	0	1
GasMain	DistributionLowPressure	GasNetwork_Junctions	-	-	-	-	-
GasMain	DistributionLowPressure	GasValve	DistributionValve	0	2	0	2
GasMain	DistributionLowPressure	InsulatedCoupling	InsulatedCoupling	0	2	0	2
GasMain	DistributionLowPressure	PressureControlFitting	PressureControlFitting	0	3	0	2
GasMain	DistributionLowPressure	RegulatorStation	MeterStation	0	2	0	2
GasMain	DistributionLowPressure	RegulatorStation	RegulatorStation	0	2	0	2
GasMain	DistributionLowPressure	SqueezeOff	SqueezeOff	0	2	0	2
GasMain	DistributionMediumPressure	GasNetwork_Junctions	-	-	-	-	-
GasMain	DistributionMediumPressure	GasValve	DistributionValve	0	2	0	2
GasMain	DistributionMediumPressure	InsulatedCoupling	InsulatedCoupling	0	2	0	2
GasMain	DistributionMediumPressure	PressureControlFitting	PressureControlFitting	0	3	0	2
GasMain	DistributionMediumPressure	RegulatorStation	MeterStation	0	2	0	2
GasMain	DistributionMediumPressure	RegulatorStation	RegulatorStation	0	2	0	2
GasMain	DistributionMediumPressure	RegulatorStation	SingleCustomer	0	2	0	2
GasMain	DistributionMediumPressure	SqueezeOff	SqueezeOff	0	2	0	2
GasMain	DistributionMediumPressure	TakeStation	TakeStation	0	1	0	1
GasMain	TransmissionDOT	GasNetwork_Junctions	-	-	-	-	-
GasMain	TransmissionDOT	GasValve	TransmissionValve	0	2	0	2
GasMain	TransmissionDOT	PressureControlFitting	PressureControlFitting	0	3	0	2
GasMain	TransmissionDOT	RegulatorStation	RegulatorStation	0	2	0	2
GasMain	TransmissionDOT	RegulatorStation	SingleCustomer	0	1	0	1
GasMain	TransmissionDOT	TakeStation	TakeStation	0	1	0	1
GasMain	TransmissionNIPSCO	GasNetwork_Junctions	-	-	-	-	-
GasMain	TransmissionNIPSCO	GasValve	TransmissionValve	0	2	0	2
GasMain	TransmissionNIPSCO	PressureControlFitting	PressureControlFitting	0	3	0	2
GasMain	TransmissionNIPSCO	RegulatorStation	RegulatorStation	0	2	0	2
GasMain	TransmissionNIPSCO	RegulatorStation	SingleCustomer	0	1	0	1
GasMain	TransmissionNIPSCO	TakeStation	TakeStation	0	1	0	1

# Appendix F

Table F-1. Abstract class data model changes

Table	Action	Details of Data Model Requested Change
ObjectLocationCommonData	<i>Create Abstract Class</i>	Copy ObjectCommonData
	<i>Inheritance</i>	Inherit from UnitLocationCodes
	<i>New Columns</i>	LegacyWRInstallTimestamp - date LegacyWRRemovalTimestamp - date InstallMiscOrderId - string(15) RetireMiscOrderId - string(15)
	<i>Update Columns</i>	Update InstallWorkOrderNumber to length of 15 Update RetireWorkOrderNumber to length of 15
	<i>Add Subclasses</i>	Move RetiredSupportStructure subclass from ObjectCommonData to ObjectLocationCommonData
ObjectCommonData	<i>Change Inheritance</i>	Change Inheritance from UnitLocationCodes to ObjectMetadata - All EDFS objects except RetiredSupportStructure underneath this abstract class do not need to capture LoaNumber, TaxUnitCd, or GridCd because these values can be found by tracing to the related structure.
	<i>Update Columns</i>	Update InstallWorkOrderNumber to length of 15 Update RetireWorkOrderNumber to length of 15
	<i>New Columns</i>	InstallMiscOrderId - string(15) RetireMiscOrderId - string(15)
EDFSTimeStamps	<i>Create Abstract Class</i>	Create New Abstract Class under the objects diagram
	<i>Inheritance</i>	Inherit from ObjectCommonData
	<i>New Columns</i>	LegacyWRInstallTimestamp - date LegacyWRRemovalTimestamp - date AssociationTimestamp - date
UnitObject	<i>New Columns</i>	CircuitNumber (must be carried on retired units AU captures on retirement) - string(7) SubtypeCd - integer

	<i>Remove Column</i>	ActiveRetireStatusCd (this is managed via the subtypes)
	<i>Rename Column</i>	LegacyDistribRefNumber --> DistribRefNumber (must be carried on retired units, AU captures on retirement)
	<i>Change Inheritance</i>	Change inheritance from ObjectCommonData to EDFSTimeStamps
PointFeatureCommonData	<i>New Columns</i>	LegacyWRInstallTimestamp - date LegacyWRRemovalTimestamp - date
FeatureCommonData	<i>Update Columns</i>	Update InstallWorkOrderNumber to length of 15 Update RetireWorkOrderNumber to length of 15
	<i>New Columns</i>	InstallMiscOrderId - string(15) RetireMiscOrderId - string(15)



Table F-2. Transformer and regulator data model changes

Table	Action	Details of Data Model Requested Change
TransformerUnit	<i>New Column / New Domain</i>	Add new column StatusCd with a domain: S, I, C : In Stock, Installed, Comdemned
	<i>New Domain</i>	Create Domain for DispositionCd: C, L, S, R : Condemned, Leased, Sold, Reverse-Condmdned
	<i>New Domain</i>	Create Domain for ManufacturerName: A.B. Chance Allis Chalmers Central Maloney Dowzer Electric Ferranti-Packar General Electric Howard Industries Kentucky Rural Kuhlman Electric Line Material McGraw Edison Pauwells Chance RTE Corporation Siemens-Allis Aolo Basis Square D Company Standard Vantran Electric Wagner electric Westinghouse Electric Other  Verify this with a query against the EDFS data: select distinct TRSFMR_MFR_NM from dbo.ED_TRSFMR a, dbo.ED_TRSFMR_STR_ITM b where a.STR_ITM_NUM=b.STR_ITM_NUM and b.TRSFMR_TYP_CD='T' order by TRSFMR_MFR_NM
	<i>Rename Column</i>	StoresItemNumber --> RelStoresItemNumber

	<i>Remove Column</i>	CondemnDate RetireDate InstallDate LegacyDistribRefNumber ActiveRetireStatusCd PhaseDesignation PrimaryOperatingVoltage SecondaryOperatingVoltage RelCompanyNumberObjectId TransformerKvaVallue TemporaryInstallInd TransformerRemovalCd RemovalMaterialTicketNumber RelTransformerBankObjectId TransformerCondmenationCd CondemnationTicketNumber InstallMaterialTicketNumber
	<i>Remove Relationship</i>	Delete the relationship between the Unit table and the Bank table. The unit table simply captures the asset information and has nothing to do with the actual installation of the unit.
	<i>Change Inheritance</i>	No longer inherit from abstract class UnitLocationCodes. Instead inherit from ObjectMetadata
EdfsTransformerInstall	<i>Rename Table</i>	Rename Table to TransformerUnitInstall
TransformerUnitInstall	<i>Rename Column</i>	InstallTimestamp InstallDate InstallationStatusCd RelCompanyUseLocationId TransformerInstallationPhaseCd --> PhaseDesignation TransformerNumber --> RelTransformerUnitCompanyNumber
	<i>Assign Domain</i>	Assign Phase Designation Domain to PhaseDesignation Column
	<i>Change Inheritance</i>	Change to Inherit from Abstract Class UnitLocationCodes to include LoaNumber, TaxUnitCd, and GridCd
	<i>New Column / New Domain</i>	Add new column InstallationTypeCd with new domain: M - Pad Installation V - Vault Installation P - Pole Installation

<i>New Domain</i>	New Domain for InstallStatusCd: A - Active and Permanent B - Active and Temporary C - Inactive and Permanent D - Inactive and Temporary
<i>New Domain</i>	Create New Domain for TaxUnitCd and assign it to the abstract class UnitLocationCodes: use this query for the values: select distinct TX_UT_CD from dbo.ED_TRSFMR order by TX_UT_CD
<i>Update Column</i>	Update MaterialTicketNumber length to 14
<i>Update Column</i>	Update CompanyNumber length to 7
<i>Update Column</i>	Update TicketCircuitNumber length to 10
<i>Remove Column</i>	PoleNumber MountingNumber NIPSCOMajorMapCd MinorMapCd IntermediateMapCd DepartmentCd TaxUnitCd CapacitorStgNum RelTransformerUnitObjectld
<i>New Column</i>	DistribRefNumber string(8) (this must be maintained on the install record at time of removal- AU) RelTransformerBankObjectID - LongInt
<i>New Column</i>	KvaValue, Assign domain dmTransformerKva
<i>New Relationship</i>	A new relationship should be created between the TransformerBank and the TransformerUnitInstall table. This more accurately models the real world work flow as well as assists in the data integrity of the installation process.
<i>Update Relationship</i>	Update the relationship between the TransformerUnit and the TransformerUnitInstall tables. No longer use the Objectld of the Unit table as the PK. Instead use the CompanyNumber as the PK on the Unit table and as the FK on the Install table. This allows the clerks to easily

		locate the transformer records upon installation.
TransformerFunctionTest	<i>Rename Column</i>	CompanyNumber --> RelTransformerUnitCompanyNumber
	<i>Remove Column</i>	RelTransformerUnitObjectId
	<i>Update Relationship</i>	Update the relationship between the Test Record and the TransformerUnit to use the RelTransformerUnitCompanyNumber field
TransformerOilTest	<i>Rename Column</i>	CompanyNumber --> RelTransformerUnitCompanyNumber
	<i>Remove Column</i>	RelTransformerUnitObjectId
	<i>Update Relationship</i>	Update the relationship between the Test Record and the TransformerUnit to use the RelTransformerUnitCompanyNumber field
	<i>New Domain</i>	Create Domain for OilTestType: S - Screen Test L - Lab Test R - Retrofill
EdfsTransformerRemove	<i>Rename Table</i>	Rename Table to TransformerUnitRemove
TransformerUnitRemove	<i>Rename Column</i>	TransformerNumber --> RelTransformerUnitCompanyNumber RemovalTimestamp RemovalDate RemovalCd LegacyInstallTimestamp

	<i>New Domain</i>	RemovalCd: A - Inactive B - Sold/Exchanged C - Pole/Mounting Replaced or Removed D - Voltage Conversion E - Change in Capacity F - Cracked Busshing G - Oil Leak H - Accident/Vandalism I - Animals J - Storm K - Lightning L - Overloaded M - Secondary Short N - Unknown
	<i>Remove Column</i>	RelTransformerUnitObjectId
	<i>Update Relationship</i>	Update the relationship between the Remove Record and the TransformerUnit to use the RelTransformerUnitCompanyNumber field
	<i>Update Column</i>	Update: MaterialTicketNumber length to 14 CompanyNumber to 7
EdfsTransformerStock	<i>Rename Table</i>	Rename Table to TransformerUnitStock
TransformerUnitStock	<i>Rename Column</i>	TransformerNumber --> RelTransformerUnitCompanyNumber StockTimestamp StockDate TransferNumber
	<i>Remove Column</i>	RelTransformerUnitObjectId DepartmentCd NipscoMajorMapCd IntermediateMapCd MinorMapCd TaxUnitCd
	<i>New Column</i>	RelStoreRoomNumber String(3) (This is a lookup against the StoreRoom Table)
	<i>Update Relationship</i>	Update the relationship between the Stock Record and the TransformerUnit to use the RelTransformerUnitCompanyNumber field
	<i>Update Column</i>	Update TransferNumber length to 7

EdfsTransformerCondemn	<i>Rename Table</i>	Rename Table to TransformerUnitCondemn
TransformerUnitCondemn	<i>Rename Column</i>	TransformerInstallNumber --> RelTransformerUnitCompanyNumber CondemnNumber CondemnTimestamp CondemnTypeCd CondemnDate CondemnCd CondemnNumber CondemnApproveCd
	<i>New Domain</i>	CondemnTypeCd: C - Condemned R - Reverse-Condemned
	<i>New Domain</i>	CondemnApproveCd: Y - Approved N - Not Approved P - Printed for Approval
	<i>New Domain</i>	CondemnCd: A - Per Company Standard E21-698T B - PCB Contaminated C - To be Sold D - Lost or Stolen E - Destroyed F - Conveyed to REMC G - Returned to REMC J - Non-repairable/Sealed 1 - Returned from REMC 2 - Previously Lost or Stolen 3 - Condemnation Cancelled
	<i>Remove Column</i>	RelTransformerUnitObjectId
	<i>Update Relationship</i>	Update the relationship between the Condemn Record and the TransformerUnit to use the RelTransformerUnitCompanyNumber field
	<i>Update Column</i>	Update: CondemnNumber length to 3
	TransformerUnitSold OrLeased	<i>Create Table</i>
<i>Inheritance</i>		Inherit from ObjectMetaData

	<i>New Columns</i>	RelTransformerUnitCompanyNumber - string (7) SoldLeasedTimestamp - date SoldLeasedDate - date SoldLeasedCd - domain... MaterialTicketNumber - string (14) ReceiverName - string (25) LeaseTerminatedInd - DmYesNoInd LeaseTerminatedDate - date
	<i>New Domain</i>	SoldLeasedCd: L - Leased S - Sold
	<i>New Relationship</i>	Create relationship between the Sold/Leased Record and the TransformerUnit using the RelTransformerUnitCompanyNumber field

Table F-3. Capacitor data model changes

Table	Action	Details of Data Model Requested Change
CapacitorUnit	<i>Rename Column</i>	CapacitorFluidTypeCode --> FluidTypeCd StatusCd RelStoresItemNumber
	<i>New Domain</i>	FluidTypeCd: C - Compound L - Liquid
	<i>New Domain</i>	StatusCd: S - In Stock I - Installed C - Out of Service
	<i>New Domain</i>	ManufacturerName: Federal Pacific Electric General Electric McGraw Edison Sangamo Electric Westinghouse ABB Cooper Powerhouse Systems Other
	<i>New Column</i>	StatusTimeStamp - date
	<i>New Column / New Domain</i>	DispositionCd: N - N/A L - Lost or Stolen C - Conveyed to REMC
	<i>Remove Column</i>	KVARValue InstallMaterialTicketNumber CapacitorDirectionCd CapacitorVoltageValue CapacitorStageNumber CapacitorInstallationCd OilSwitchIndicator RelCapacitorBankObjectld PhaseDesignation LegacyDistribRefNumber ActiveRetireStatusCd RemoveMaterialTicketNumber InstallDate RetireDate
	<i>Remove Relationship</i>	Delete the relationship between the Unit table and the Bank table. The unit table simply captures the asset information and



		has nothing to do with the actual installation of the unit.
	<i>New Relationship</i>	A new relationship should be created between the CapacitorBank and the CapacitorUnitInstall
	<i>New Relationship</i>	New Relationship between CapacitorUnit and CapacitorStoresItem based on RelStoresItemNumber
	<i>Change Inheritance</i>	No longer inherit from abstract class UnitLocationCodes. Instead inherit from ObjectMetadata. This excludes the LoaNumber, TaxUnitCd, and GridCd
EdfsCapacitorInstall	<i>Rename Table</i>	Rename Table to CapacitorUnitInstall
CapacitorUnitInstall	<i>Rename Column</i>	CapacitorNumber --> RelCapacitorUnitCompanyNumber InstallTimestamp InstallDate CircuitNumber --> TicketCircuitNumber CapacitorInstallPhaseCd --> PhaseDesignation PoleNumber --> DistributionReferenceCd CoLocationId --> RelCompanyUseLocationId VoltageValue InstallationStatusCd OilSwitchYesNoInd CapacitorDRTNCd --> DirectionCd CapacitorStgNum --> StageNumber LedgerAccountId --> WorkOrderNumber
	<i>Assign Domain</i>	Assign existing domain DmYesNoInd to OilSwitchYesNoInd
	<i>Change Inheritance</i>	Change to Inherit from Abstract Class UnitLocationCodes to include LoaNumber, TaxUnitCd, and GridCd

	<i>New Domain</i>	CapacitorVoltageValue: .2 v .3 v .4 v .5 v 2 v 4 v 6 v 11 v 12 v 14 v 17 v 20 v 23 v 34 v 69 v 138 v 345 v
	<i>New Domain</i>	DirectionCd N - North S - South W - West E - East
	<i>New Domain</i>	InstallationStatusCd: C - inactive and permanent A - active and permanent
	<i>New Domain</i>	New Range domain for StageNumber 1-9
	<i>Update Column</i>	RelCapacitorUnitCompanyNumber length to 5 TicketCircuitNumber length to 10 WorkOrderNumber length to 15 MiscOrderId length to 15
	<i>Remove Column</i>	RelCapacitorUnitObjectId DepartmentCd TaxUnitcd NipscoMajorMapCd MinorMapCd IntermediateMapCd SubNumber DistributionReferenceld JobRequestDate

	<i>New Column</i>	DistribRefNum string(8) (this must be maintained on the install record at time of removal- AU) CircuitNumber string(7) (this must be maintained on the install record at time of removal- AU) RelCapacitorBankObjectId Integer
	<i>New Relationship</i>	New Relationship between CapacitorUnitInstall and the CapacitorBank based on RelCapacitorBankObjectId
	<i>Update Relationship</i>	Update the relationship between the CapacitorUnit and the CapacitorUnitInstall tables. No longer use the ObjectId of the Unit table as the PK. Instead use the CompanyNumber as the PK on the Unit table and as the FK on the Install table. This allows the clerks to easily locate the transformer records upon installation.
EdfsCapacitorRemove	<i>Rename Table</i>	Rename Table to CapacitorUnitRemove
CapacitorUnitRemove	<i>Rename Column</i>	CapacitorNumber --> RelCapacitorUnitCompanyNumber RemovalTimestamp RemovalDate RemovalCd LegacyInstallTimestamp
	<i>New Domain</i>	RemovalCd: A - Inactive B - Sold/Echanged REMC C - Pole Replace/Removed D - Scheduled E - Lost/Stolen F - Cracked Bushing G - Oil Leak H - Accident/Vandalism I - Animals J - Storm K - Lightning L Unknown
	<i>New Column</i>	WorkOrderNumber String(15)
	<i>Update Column</i>	MiscOrderId length to 15

	<i>Remove Column</i>	CapacitorInstallDate RelCapacitorUnitObjectId CapacitorInstallDate CapacitorJobRequestTimestamp
	<i>Update Relationship</i>	Update the relationship between the Remove Record and the CapacitorUnit to use the RelCapacitorUnitCompanyNumber field
EdfsCapacitorStock	<i>Rename Table</i>	Rename Table to CapacitorUnitStock
CapacitorUnitStock	<i>Rename Column</i>	CapacitorNumber --> RelCapacitorUnitCompanyNumber StockTimestamp StockDate TransferNumber
	<i>Remove Column</i>	NipscoMajorMapCd IntermediateMapCd MinorMapCd TaxUnitCd RelCapacitorUnitObjectId DepartmentCd
	<i>New Column</i>	RelStoreRoomNumber String(3) (This is a lookup against the StoreRoom Table)
	<i>Update Relationship</i>	Update the relationship between the Stock Record and the CapacitorUnit to use the RelCapacitorUnitCompanyNumber field
	<i>Update Column</i>	Update TransferNumber length to 7
EdfsCapacitorStoreItem	<i>Rename Table</i>	Rename Table to CapacitorStoresItem
CapacitorStoresItem		
	<i>Rename Column</i>	StoresItemNumber BushingNumber KvarValue KvValue
	<i>Update Column</i>	update KvValue tagged items with Precision=4 and Scale=2
	<i>Assign Domain</i>	KvarValue: use existing DmCapacitorUnitKvar

Table F-4. EDFS shared tables data model changes

Table	Action	Details of Data Model Requested Change
EdfsCompanyNumber	<i>Rename Table</i>	Rename Table to CompanyUseLocation
CompanyUseLocation	<i>Remove Column</i>	NIPSCOMajorMapCd MinorMapCd IntermediateMapCd RelTransformerUnitObjectld RelCapacitorUnitObjectld
	<i>New Column</i>	GridCd String(5)
	<i>Update Column</i>	Update CompanyLocationld lentgh to 4
	<i>New Domain</i>	New domain for CompanyLocationTypeCd: G - Generating Station S - Substation T - Training Center
	<i>Assign Domain</i>	Assign domain to TaxUnit which was created via the TransformerUnitInstall data model changes
	<i>Remove Relationship</i>	Delete the relationship between this class and the TransformerUnit
	<i>Remove Relationship</i>	Delete the relationship between this class and the CapacitorUnit
	<i>New Relationship</i>	Create new relationship between this class and the TransformerUnitInstall based on CompanyLocationld
	<i>New Relationship</i>	Create new relationship between this class and the CapacitorUnitInstall based on CompanyLocationld
EdfsTransformerStoreItem	<i>Rename Table</i>	Rename Table to TransformerRegulatorStoresItem
TransformerRegulatorStoresItem	<i>New Relationship</i>	Create new relationship between this table and TransformerUnit based on StoresItemNumber.

	<i>Rename Column</i>	StoreItemNumber --> StoresItemNumber TypeCd LocationCd PhaseTypeCd KvaValue AmpValue PrimaryVoltageValue SecondaryVoltageValue PropertyRecordsInstallAmount PropertyRecordsEffectiveDate
	<i>Update Column</i>	Update StoresItemNumber length to 7
	<i>New Domain</i>	TypeCd: R - Regulator T - Transformer
	<i>New Domain</i>	LocationCd: O - Overhead U - Underground
	<i>New Domain</i>	PhaseTypeCd: 1 - SinglePhase 3 - ThreePhase
	<i>Update Domain</i>	DmVoltageRegulatorAmpRating: Remove UNK and add: 50, 75, 100, 150, 219, 438, 548, 668
	<i>New Domain</i>	PrimaryVoltageValue: select distinct TRSFMR_PRIM_VT_VAL from ED_TRSFMR_STR_ITM
	<i>New Domain</i>	SecondaryVoltageValue: select distinct TRSFMR_SECD_VT_VAL from ED_TRSFMR_STR_ITM
	<i>Assign Domain</i>	Assign DmVoltageRegulatorAmpRating to AmpValue
	<i>Update Domain</i>	DmTransformerKva (should be assigned to KvaValue): Remove UNK
	<i>Update Column</i>	Update PropertyRecordsInstallAmount to be type double with precision of 6 and a scale of 0.
EdfsStoreroom	<i>Rename Table</i>	Rename Table to StoreRoom

StoreRoom	<i>Remove Column</i>	NIPSCOMajorMapCd MinorMapCd IntermediateMapCd TaxUnitCd
	<i>Rename Column</i>	StoreRoomNumber
	<i>New Relationship</i>	Create a new relationship between StoreRoom (PK - StoreRoomNumber) to TransformerUnitStock (FK - RelStoreRoomNumber)
	<i>New Relationship</i>	Create a new relationship between StoreRoom (PK - StoreRoomNumber) to CapacitorUnitStock (FK - RelStoreRoomNumber)
	<i>Update Inheritance</i>	Change to Inherit from Abstract Class UnitLocationCodes to include LoaNumber, TaxUnitCd, and GridCd
	<i>Update Column</i>	StoreRoomNumber length to 3
GisMappsTransactionQueue	<i>Create Table</i>	Inherit from Object
	<i>New Column</i>	CompanyNumber string(7) TransactionType string(3) LoaNumber string(3) StoresItemNumber string(7) TransactionDate date CondemnationNumber varchar(3)
	<i>New Domain</i>	TransactionType: INS - T&R Install RMV - T&R Removal CI - Capacitor Install CND - T&R Condemnation
	<i>Assign Domain</i>	Department: DmLoa

**Table F-5. Poles, attachments and assemblies data model changes**

<b>Table</b>	<b>Action</b>	<b>Details of Data Model Requested Change</b>
SupportStructure	<i>New Column</i>	InstallTimestamp RemovalTimestamp WoodSettingCd
	<i>Rename Column</i>	PrimaryReferenceNumber --> PrimaryDistribRefNumber
	<i>New Domain</i>	NonMeteredServicePointTypeCd: C - Cable D - Dusk/Dawn M - Multiple O - Other S - Streetlights T - Traffic Lights N - None
	<i>Update Domain</i>	DmStructureOwner: Make sure all owners from EDFs are included in list. Use query as follows: "select distinct PL_OWN_NM from ED_POLE_NUM" And then weed out all the bad values...
	<i>New Domain</i>	WoodPoleTypeCd: WF - Western Fir NP - Northern Pine EC - Northern White/Eastern Cedar WP - Western Pine DF - Douglas Fir SP - Southern Pine LP - Lodge Pole Pine CH - Chestnut YC - Alaskan Yellow Cedar WL - Western Larch WC - Western Cedar WH - Western Hemlock H1 - The material has to equal W, Pole Size has to equal 40
	<i>New Domain</i>	WoodPoleClassCd: 1,2,3,4,5,6,7,8,9,10



	<i>New Domain</i>	WoodPoleOriginalTreatmentTypeCd: ACZA - Ammoniacal Copper Zinc Arsenate C - Creosote O - Other P - Pentachlorophenol CN - Copper Napthenate CCA - Chromated Copper Arsenate
	<i>New Domain</i>	WoodSettingCd: ASPH - Asphalt WET - Wet DRY - Dry CONC - Concrete
	<i>New Domain</i>	WoodPoleInspectionPassFailCd: N - No Y - Yes P - Pass
JointUseAttachment	<i>New Column</i>	SubtypeCd
	<i>New Subtypes</i>	Telephone (subtypecd=1) Cable (subtypecd=2) Utility (subtypecd=3) Fiber (subtypecd=4) Other (subtypecd=5)
	<i>Verify Domains</i>	Verify DmPhoneCompanyCd against table ED_TLPHON Verify DmCableCompanyCd against table ED_CABLE Verify DmUtilityCompanyCd against table ED_UTLTY
	<i>Assign Domains</i>	Assign Telephone, Cable, and Utility domains to the appropriate subtypes for the ComanyName Field
	<i>Remove Column</i>	AttachmentTypeCd
	<i>Change Inheritance</i>	Change to inherit from ObjectMetadata instead of ObjectCommonData to exclude the install and retirement information
Assembly	<i>Remove Subtype</i>	PadAssembly
	<i>New Subtype</i>	RetiredPoleAssembly (subtypecd=2)
	<i>Remove Relationship</i>	Remove Relationship to a PadMount

	<i>Remove Column</i>	RelPadObjectId RelUgTransformerObjectId RelSwitchGearObjectId RelPedestalObjectId RelManholeObjectId AssemblyStatus
	<i>New Column</i>	AssociationTimestamp - date InstallMiscOrderId - String(15) RetireMiscOrderId - String(15) RetireWorkOrderNumber - String(15) LegacyWRInstallTimestamp - date LegacyWRRemovalTimestamp -date
	<i>Rename Column</i>	WorkOrderNumber --> InstallWorkOrderNumber LegacyDistribRefNumber --> DistribRefNumber This field was first used for Migration purposes. Going forward it will not be populated on Active assemblies. However, upon retirement, when the subtype is updated to 'RetiredPoleAssembly', code will grab the distribrefnumber of the related pole and populate it on the record.
	<i>Update Column</i>	InstallWorkOrderNumber length to 15
RetiredSupportStructure	<i>New Column</i>	InstallTimestamp RemovalTimestamp WoodSettingCd TelephoneCompanyCd FirstCableCompanyCd SecondCableCompanyCd UtilityCompanyCd FiberCompanyCd OtherCompanyCd TransformerCompanyNumber1 TransformerCompanyNumber2 TransformerCompanyNumber3 TransformerCompanyNumber4
	<i>Remove Column</i>	PoleExtensionSizeValue PoleExtensionTypeCd
	<i>Rename Column</i>	PrimaryReferenceNumber --> PrimaryDistribRefNumber
	<i>Update Column</i>	Update RetireWorkOrderNumber length to 15

**Table F-6. Pad mounts (pad / vaults) data model changes**

<b>Table</b>	<b>Action</b>	<b>Details of Data Model Requested Change</b>
PadMount	<i>New Column</i>	InstallTimestamp - date RemovalTimestamp - date PrintId - string(6) LegacyDistribRefTerminationId - string(8) DistribRefNumber - String(8) LocationDescription - String(100)
	<i>Rename Column</i>	MountingTypeCd --> TypeCd MountingOwnerCd --> OwnerInd
	<i>Remove Column</i>	MountingStatusCd
	<i>New Column / New Domain</i>	NonMeteredServicePointTypeCd: C - Cable D - Dusk/Dawn M - Multiple O - Other S - Streetlights T - Traffic Lights N - None
	<i>New Domain</i>	TypeCd: F - Fiberglass C - Concrete
	<i>Assign Domain</i>	OwnerInd: DmYesNoInd
	<i>New Subtype</i>	Vault (subtypeCd=2)
RetiredPadMount	<i>Create Table</i>	Copy PadMount, move to objects diagram
	<i>Inheritance</i>	Inherit from ObjectLocationCommonData
	<i>New Subtypes</i>	RetiredPad (subtypecd=1) RetiredVault (subtypecd=2)

**Table F-7. Protective devices data model changes**

<b>Table</b>	<b>Action</b>	<b>Details of Data Model Requested Change</b>
SwitchUnit	<i>New Subtypes</i>	Switch (subtypecd=1) RetiredSwitch (subtypecd=2)
	<i>Update Domain</i>	DmSwitchTypeCd Add: DA - Distribution Automation Switch This domain should be synced with the available subtypes for Switch (Bank)
	<i>New Domain</i>	SwitchAmperageValue: 400 600
FuseUnit	<i>New Subtypes</i>	Fuse (subtypecd=1) RetiredFuse (subtypecd=2)
	<i>New Column</i>	SectionalizerFuseNumber - Integer
	<i>New Domain</i>	CutoutAmperageValue: 0, 2, 5, 9, 10, 15, 20, 25, 30, 40, 50, 65, 75, 80, 100, 110, 125, 150, 199, 200, 240, 300, 499, 600, 700, 800, 900
	<i>Verify Domain</i>	Verify DmFuseLinkAmerage has following values: 0, 1, 2, 3, 5, 7, 10, 12, 13, 14, 15, 16, 18, 20, 24, 25, 27, 30, 35, 36, 40, 45, 50, 52, 55, 58, 60, 65, 66, 70, 75, 80, 85, 90, 100, 125, 140, 150, 155, 156, 165, 175, 198, 200
RecloserUnit	<i>New Subtypes</i>	Recloser (subtypecd=1) RetiredRecloser (subtypecd=2)
	<i>New Column</i>	SectionalizerFuseNumber - Integer
	<i>Rename Column</i>	RecloserAmpereValule --> RecloserAmperageValue
	<i>Verify Domain</i>	Verify DmRecloserSize has following values: 50, 65, 70, 75, 100, 140, 150, 200, 219, 300, 328, 400, 438, 560, 600, 800
SectionalizerUnit	<i>New Subtypes</i>	Sectionalizer (subtypecd=1) RetiredSectionalizer (subtypecd=2)
SwitchGear	<i>Remove Column</i>	PrimaryOperatingVoltage
	<i>New Column</i>	SwitchGearKv - domain AssociationTimestamp - date RelPadMountObjectId - integer AssemblyNumber String(9) (This was not migrated but is used going forward)

	<i>Rename Column</i>	DistribRefNumber --> LegacyDistribRefNumber (The DistribRefNumber is able to be determined by traversing the relationship to the PadMount based on ObjectId for Active SwitchGears)
	<i>New Domain</i>	SwitchGearKv: 12.0 14.4
	<i>New Relationship</i>	Create a relationship to PadMount based on RelPadMountObjectId. 1 PadMount can have 0 or 1 SwitchGear
	<i>Update Default</i>	Column - FrontKindCd: Update default from D to L
RetiredSwitchGear	<i>Create Table</i>	Create new object class RetiredSwitchGear
	<i>Inheritance</i>	Inherit from ObjectLocationCommonData
	<i>New Columns</i>	SubtypeCd - integer DistribRefNumber - string(8) SwitchGearKv - domain (see SwitchGear) OperationTypeCd - domain (see SwitchGear) FrondKindCd - domain (see SwitchGear) UsedCompartmentCount - domain (see SwitchGear) AssociationTimestamp - date AssemblyNumber - string(9)
	<i>New Subtype</i>	RetiredSwitchGear (subtypecd=1)

**Table F-8. Lighting data model changes**

<b>Table</b>	<b>Action</b>	<b>Details of Data Model Requested Change</b>
EdfsCompanyStreetlight	<i>Rename Table</i>	Rename table to CompanyStreetlight
CompanyStreetlight	<i>New Column</i>	SubtypeCd - integer NearestAddress - string 20 StreetName - string - 30 RateSchedule - double 5,2 CISAccountNumber - integer LegacyCustXrefCustAcctRefNumber - integer
	<i>Remove Column</i>	RelUgTransformerObjectId RelPedestalObjectId RelFieldInvLightObjectId CustomerAcctReferenceNumber
	<i>New Subtypes</i>	CompanyStreetlight (subtypecd=1) RetiredCompanyStreetlight (subtypecd=2)
	<i>Change Inheritance</i>	Change to inherit from LegacyWorkOrderTimestamps
	<i>Remove Relationships</i>	to FieldInventoryLight to Pedestal to TransformerBank
	<i>New Relationship</i>	Create a relationship to SupportStructure based on RelSupportStructureObjectId. 1 SupportStructure can have 0 or many CompanyStreetlights
EdfsCustomerStreetlight	<i>Rename Table</i>	Rename table to CustomerStreetlight
CustomerStreetlight	<i>New Column</i>	RelPadMountObjectId - integer AssociationTimestamp - date CISAccountNumber - integer LegacyCustXrefCustAcctRefNumber - integer
	<i>Rename Column</i>	PoleTypeCd LuminaireTypeCd LuminaireCount WattageValue InventoryDate
	<i>Remove Column</i>	RelUgTransformerObjectId RelPedestalObjectId RelFieldInvLightObjectId CustAccountReferenceNumber

	<i>Remove Relationships</i>	to FieldInventoryLight to Pedestal to TransformerBank
	<i>Change Inheritance</i>	Change to inherit from ObjectMetaData instead of ObjectCommonData to exclude install and retire data
	<i>New Relationship</i>	Create a relationship to PadMount based on RelPadMountObjectId. 1 PadMount can have 0 or many CompanyStreetlights
	<i>New Relationship</i>	Create a relationship to SupportStructure based on RelSupportStructureObjectId. 1 SupportStructure can have 0 or many CustomerStreetlights
FieldInventoryLight	<i>Delete Table</i>	No longer needed because its data has been merged into the CompanyStreetLight object class and the support structure feature class.
StreetlightSwitch	<i>New Column</i>	SubtypeCd - integer
	<i>Rename Column</i>	LegacyDistribRefNumber --> DistribRefNumber
	<i>Remove Column</i>	StreetlightSwitchStatusCd
	<i>New Subtypes</i>	StreetlightSwitch (subtypecd=1) RetiredStreetlightSwitch (subtypecd=2)
	<i>Rename Column</i>	StreetlightSwitchAmpereValue --> AmperageValue StreetlightSwitchVoltageValue --> VoltageValue
	<i>Change Inheritance</i>	Change to inherit from LegacyWorkOrderTimestamps
	<i>Verify Domain</i>	Verify that DmStreetlightSwAmpereValue includes: 20,30,35,60,75,100
EdfsTrafficLight	<i>Rename Table</i>	Rename table to TrafficLightDemand
TrafficLightDemand	<i>Rename Column</i>	DemandDate DemandWattageValue
	<i>New Column</i>	RelPadMountObjectId - integer CISAccountNumber - integer LegacyCustXrefCustAcctRefNumber - integer

	<i>Remove Column</i>	RelUgTransformerObjectId RelPedestalObjectId TrafficLightInventoryDate TrafficLightTypeCd TrafficLightCount CustomerAcctReferenceNumber
	<i>Change Inheritance</i>	Change to inherit from ObjectMetaData instead of ObjectCommonData to exclude install and retire data
	<i>Remove Relationships</i>	to Pedestal to TransformerBank
	<i>New Relationship</i>	Create a relationship to PadMount based on RelPadMountObjectId. 1 PadMount can have 0 or many TrafficLightDemand records



**Table F-9. Conductor data model changes**

<b>Table</b>	<b>Action</b>	<b>Details of Data Model Requested Change</b>
EdfsConductor	<i>Rename Table</i>	Rename Table to ConductorDefinition
ConductorDefinition	<i>Verify Inheritance</i>	Should inherit from ObjectMetadata
	<i>Rename Column</i>	LegacyConductorNumber CategoryCd - new domain LocationCd - new domain WireTypeCd - new domain WireSizeCd - new domain WireMaterialCd - new domain LegacyCalculationCd
	<i>New Domain</i>	CategoryCd: 1 - Primary 2 - Secondary 3 - Service
	<i>New Domain</i>	LocationCd: O - Overhead U - Underground
	<i>New Domain</i>	WireSizeCd: verify against old data with query: select distinct CNDUCR_SZ_CD from ED_CONDTR

	<i>New Domain</i>	<p>WireTypeCd (may match DmConductorTypeCd - this is the superset of all types from prim, sec, svc, oh, ug, etc):</p> <ul style="list-style-type: none"> <li>W - Solid Wire</li> <li>WS - Stranded Wire</li> <li>WN - Solid Wire as Neutral</li> <li>WSN Stranded Wire as Neutral</li> <li>WSS - Stranded Wire as Static or Sheild</li> <li>WSU - Wire Size Unknown</li> <li>CSU - Cable Size Unknown</li> <li>CO - Customer Owned</li> <li>B - Duplex</li> <li>C - Triplex</li> <li>CCU - Triplex with Copper Neutral</li> <li>D - Quadruplex</li> <li>UAS - Single Cable</li> <li>UCS - Triplex Cable</li> <li>UDS - Quadruplex</li> <li>UA - Single Cable Concentric</li> <li>UAJ - Single Cable Concentric Jacketed</li> <li>UC - Triplex Cable Concentric</li> <li>UCJ - Triplex Cable Concentric Jacketed</li> <li>UP - Single Cable Power</li> <li>UF - Single Cable Power XLP 5Kv</li> </ul> <p>Verify against data with query: select distinct CNDUCR_TYP_CD from ED_CONDTR</p>
	<i>New Domain</i>	<p>WireMaterialCd (may match DmConductorMaterialCd - this is the superset of all types from prim, sec, svc, oh, ug, etc):</p> <ul style="list-style-type: none"> <li>AA - Aluminum Alloy</li> <li>ACSR- Aluminum Coated Steel Reinforced</li> <li>CU - Copper</li> <li>CW - Copper Weld</li> <li>AL - Aluminum</li> <li>WSU - Wire Size Unknown</li> <li>CSU - Cable Size Unknown</li> </ul> <p>Verify against data with query: select distinct CNDUCR_KND_CD from ED_CONDTR</p>
OhConductorInfo	<i>New Column</i>	<p>MeasuredLength - DmMeasuredLengthRange (to be populated</p>

		in retirement) CircuitNumber string(20) (to be populated in retirement)
	<i>Rename Column</i>	ConductorSizeCd --> WireSizeCd ConductorMaterialCd --> WireMaterialCd ConductorTypeCd --> WireTypeCd
	<i>Remove Column</i>	ConductorCalculationTypeCd ConductorsPerPhaseCount PrimaryOperatingVoltageValue RelAbandonedConductorObjectId ConductorSpanCount SpanLengthValue ConductorNumberCd
	<i>New Domain</i>	WireSizeCd: select distinct CNDUCR_SZ_CD from ED_CONDTR where CNDUCR_LOC_CD='O' and CNDUCR_CTGR_TYP_CD = '1'
	<i>New Domain</i>	WireTypeCd (OH ONLY):  W - Solid Wire WS - Stranded Wire WN - Solid Wire as Neutral WSN Stranded Wire as Neutral WSS - Stranded Wire as Static or Sheild WSU - Wire Size Unknown CSU - Cable Size Unknown CO - Customer Owned
	<i>New Domain</i>	WireMaterialCd (OH ONLY):  AA - Aluminum Alloy ACSR- Aluminum Coated Steel Reinforced CU - Copper CW - Copper Weld WSU - Wire Size Unknown CSU - Cable Size Unknown
	<i>New Subtype</i>	RetiredOhConductor (subtypecd=2)
	<i>Remove Relationship</i>	to AbandonedConductor
LegacyOhConductorInfo	<i>Create Table</i>	Copy OhConductorInfo

	<i>New Column</i>	ConductorSpanCount - integer SpanLengthValue - integer LegacyConductorNumber - integer
	<i>Remove Column</i>	MeasuredLength RelOhConductorObjectId
	<i>Inheritance</i>	Inherit from EDFSTimeStamps
	<i>New Subtypes</i>	OhConductor (subtypecd=1) RetiredOhConductor (subtypecd=2)
UgConductorInfo	<i>New Column</i>	MeasuredLength - DmMeasuredLengthRange (to be populated in retirement) CircuitNumber string(20) (to be populated in retirement) FromDistribRefNumber string(8) ToDistribRefNumber string(8)
	<i>Rename Column</i>	ConductorSizeCd --> WireSizeCd ConductorMaterialCd --> WireMaterialCd ConductorTypeCd --> WireTypeCd InConduitInd --> InConduitCd
	<i>Remove Column</i>	ConductorCalculationTypeCd ConductorsPerPhaseCount PrimaryOperatingVoltageValue RelAbandonedConductorObjectId ConductorSpanCount SpanLengthValue ConductorNumberCd
	<i>New Domain</i>	WireSizeCd: select distinct CNDUCR_SZ_CD from ED_CONDTR where CNDUCR_LOC_CD='U' and CNDUCR_CTGR_TYP_CD = '1'
	<i>New Domain</i>	WireTypeCd (UG ONLY):  UA - Single Cable Concentric UAJ - Single Cable Concentric Jacketed UC - Triplex Cable Concentric UCJ - Triplex Cable Concentric Jacketed UP - Single Cable Power UF - Single Cable Power XLP 5Kv WSU - Wire Size Unknown CSU - Cable Size Unknown CO - Customer Owned

	<i>New Domain</i>	WireMaterialCd (UG ONLY): AL - Aluminum AA - Aluminum Alloy CU - Copper WSU - Wire Size Unknown CSU - Cable Size Unknown
	<i>New Domain</i>	InConduitCd: Y - Yes N - No C - Customer
	<i>New Subtype</i>	RetiredUgConductor (subtypecd=2)
	<i>Remove Relationship</i>	to AbandonedConductor
LegacyUgConductorInfo	<i>Create Table</i>	Copy UgConductorInfo
	<i>New Column</i>	ConductorSpanCount - integer SpanLengthValue - integer LegacyConductorNumber - integer
	<i>Remove Column</i>	MeasuredLength RelUgConductorObjectId
	<i>Rename Column</i>	ToDistribRefNumber --> ToStructureId
	<i>Inheritance</i>	Inherit from EDFSTimeStamps
	<i>New Subtypes</i>	UgConductor (subtypecd=1) RetiredUgConductor (subtypecd=2)
SecondaryConductorInfo	<i>New Column</i>	MeasuredLength - DmMeasuredLengthRange (to be populated in retirement) ToAlternateNumber string(8)
	<i>Rename Column</i>	ConductorSizeCd --> WireSizeCd ConductorMaterialCd --> WireMaterialCd ConductorTypeCd --> WireTypeCd InConduitInd --> InConduitCd
	<i>Remove Column</i>	ConductorCateogoryTypeCd ConductorCalculationTypeCd RelAbandonedConductorObjectId ConductorSpanCount SpanLengthValue ConductorNumberCd

<i>New Domain</i>	WireSizeCd: select distinct CNDUCR_SZ_CD from ED_CONDTR where CNDUCR_CTGR_TYP_CD = '2'
<i>New Domain</i>	SecondaryOperatingVoltage: 120/208 120/240 120 MS 230 277/480 240/480 SS 480
<i>New Domain</i>	WireTypeCd (SEC ONLY):  OH - W - Solid Wire WS - Stranded Wire WN - Solid Wire as Neutral WSN Stranded Wire as Neutral WSU - Wire Size Unknown CSU - Cable Size Unknown CO - Customer Owned B - Duplex C - Triplex CCU - Triplex with Copper Neutral D - Quadruplex  UG - UAS - single Cable UCS - Triple Cable UDS - Quadruplex WSU - Wire Size Unknown CSU - Cable Size Unknown CO - Customer Owned
<i>New Domain</i>	WireMaterialCd (SEC ONLY):  AA = Aluminum Alloy ACSR- Aluminum Coated Steel Reinforced CU - Copper CW - Copper Weld AL - Aluminum

	<i>New Domain</i>	InConduitCd: Y - Yes N - No C - Customer
	<i>Rename Subtype</i>	Rename the single existing Subtype to become OhSecondary (subtypecd=1)
	<i>New Subtypes</i>	UgSecondary (subtypecd=2) RetiredOhSecondary (subtypecd=3) RetiredUgSecondary (subtypecd=4)
	<i>Domain via Subtype</i>	Set up the domain for WireTypeCd to be specific to OH/UG subtypes
	<i>Remove Relationship</i>	to AbandonedConductor
LegacySecondary ConductorInfo	<i>Create Table</i>	Copy SecondaryConductorInfo
	<i>New Column</i>	ConductorSpanCount - integer SpanLengthValue - integer LegacyConductorNumber - integer
	<i>Remove Column</i>	MeasuredLength RelSecondaryConductorObjectId
	<i>Inheritance</i>	Inherit from EDFSTimeStamps
	<i>New Subtypes</i>	OhSecondary (subtypecd=1) UgSecondary (subtypecd=2) RetiredOhSecondary (subtypecd=3) RetiredUgSecondary (subtypecd=4)
OhServiceConductor UgServiceConductor	<i>Merge Tables</i>	Merge these two object classes together as follows: 1) Rename OhServiceConductor to ServiceConductorInfo 2) Delete UgServiceConductor & related subtypes & relationships
ServiceConductorInfo	<i>Rename Column</i>	ConductorNumberCd - LegacyConductorNumber ConductorSizeCd - WireSizeCd ConductorMaterialCd - WireMaterialCd ConductorTypeCd - WireTypeCd LoadPoleDistribRefNumber - LoadDistribRefNumber RelSupportStructureObjectId - RelLoadSupportStructureObjectId

<i>Remove Column</i>	RelTransformerBankObjectId FromDistribRefNumber ToDistribRefNumber ConductorCalculationTypeCd ConductorCategoryTypeCd ConductorsPerPhaseCount TransformerSequenceNumber
<i>New Column</i>	TakeOffRefNumber - string(8) InConduitCd - domain RelLoadPadMountObjectId - integer RelTakeOffSupportStructureObjectId - integer RelTakeOffPadMountObjectId - integer RelTakeOffPedestalObjectId - integer
<i>New Domain</i>	WireSizeCd: select distinct CNDUCR_SZ_CD from ED_CONDTR where CNDUCR_CTGR_TYP_CD = 'S'
<i>New Domain</i>	WireTypeCd (SRV ONLY):  OH - W - Solid Wire WS - Stranded Wire WSU - Wire Size Unknown B - Duplex C - Triplex CCU - Triplex with Copper Neutral D - Quadruplex  UG - UAS - single Cable UCS - Triple Cable UDS - Quadruplex CSU - Cable Size Unknown CO - Customer Owned
<i>New Domain</i>	WireMaterialCd (SRV ONLY):  AA - Aluminum Alloy ACSR- Aluminum Coated Steel Reinforced CU - Copper CW - Copper Weld AL - Aluminum CSU - Cable Size Unknown WSU - Wire Size Unknown



	<i>New Domain</i>	InConduitCd: Y - Yes N - No C - Customer
	<i>Change Inheritance</i>	Change to inherit from EDFSTimeStamps
	<i>Update Relationship</i>	Update existing relationship to support structure to be based off of RelLoadSupportStructureObjectId
	<i>New Relationship</i>	Create new relationship to SupportStructure based on RelTakeOffSupportStructureObjectId.
	<i>New Relationship</i>	Create new relationship to PadMount based on RelLoadPadMountObjectId
	<i>New Relationship</i>	Create new relationship to PadMount based on RelTakeOffPadMountObjectId
	<i>New Relationship</i>	Create new relationship to Pedestal based on RelTakeOffPedestalObjectId
	<i>New Subtypes</i>	UgServiceConductor (subtypecd=2) RetiredOhServiceConductor (subtypecd=3) RetiredUgServiceConductor (subtypecd=4)
	<i>Domain via Subtype</i>	Set up the domain for WireTypeCd to be specific to OH/UG subtypes
	<i>Remove Relationship</i>	to TransformerBank
RetiredServiceConductor	<i>Delete Table</i>	No longer needed because the retired service conductor is handled by subtypes

## Appendix G

### Glossary of Terms

Term	Definition
.NET	Microsoft's most recent Application Development Environment for programming custom software.
ADO (ActiveX Directory Object)	Microsoft software which allows programmers to create software which accesses data in a database.
AEDR	Automated Energy Distribution and Reliability system. NIPSCO's Geographic Information System.
Annotation	Text labels displayed on a map whose size, position, color, and other properties are stored as a record in the Geodatabase.
Application Interface	Regarding NIPSCO's GIS, communication of data between the GIS and other applications typically owned and maintained by another NIPSCO department.
ArcCatalog	ESRI software for managing GIS databases. Often referred to as "Windows Explorer for GIS".
ArcFM	Software from Miner & Miner extending ArcGIS's core functionality to support business processes specific to the Utility Industry.
ArcGIS	A family of software from ESRI for building and running GIS databases and applications. The ArcGIS includes ArcMap, ArcCatalog, and ArcSDE.
ArcIMS	ESRI software for building and distributing an Internet Mapping Service, which displays map data in a web browser such as Internet Explorer.
ArcMap	ESRI software for viewing, analyzing, and editing GIS datasets.

ArcMap Publisher Extension	ESRI software for exporting GIS information to a Published Map File which can be viewed using ESRI's free ArcReader application.
ArcObjects	ESRI's framework of programming tools which allows programmers to create software that employs GIS specific functions.
ArcReader	ESRI's free GIS data viewing application.
ArcSDE	ESRI's Spatial Database Engine connecting ArcGIS applications to data stored in a RDBMS such as SQL Server.
ASP .NET	Microsoft application development technology that allows programmers to create interactive web pages, such as a web page that collects user input and posts the input to a database.
Attribute Domain	See <i>Domain</i> .
Attribute Query	A technique for selecting a subset of records in ArcMap by specifying a filter value for a given table column.
Auto Updaters (AU)	Miner & Miner technology that automatically performs a predetermined activity when triggered by a specific event. The event trigger may be the creating, deleting, or updating a record in the database.
AutoCAD	AutoDesk's Computer Aided Drafting software which provides tools for creating any type of drawing.
Batch (process or application)	A group of similar activities automatically executed in sequence. Often batch processes or applications are scheduled to run at repeated intervals, such as nightly or weekly.
Binary Data	Information stored in a manner that only computer software can interpret. In other words, data that is not presented as letters or numbers.
Buffer	An area whose perimeter is a specified map distance from a given geometry. For example, a 10 foot buffer

	around a point on a map is a circle with a radius of 10 feet.
C# .NET	Microsoft's Application Development Environment in which programmers enter instructions for the computer in the C# programming language.
CAD (Computer Aided Drafting)	A type of software that allows the user to create any type of drawing be it a design of automobile part or a street map.
CADOPS	A software tool used to analyze outages in utility network systems.
CICS (Customer Information Control System)	A mainframe application that controls a variety of mainframe computer applications.
CIS (Customer Information System)	A client/mainframe based application that maintains all utility customers billing and account information.
CITRIX	A software application that allows a user to control a remote computer and application using their local computer over a network,
Client-Server Application	A set of applications for which some function execute on the local computer in front of the user, and other functions or data are processed on a remote server. The network provides communication between the two.
Commit	Regarding database edits, the process that saves database edits from the computer's temporary memory to the physical drive space.
Compress	An ArcSDE Geodatabase process which reduces the size of the versioning state tree by deleting all version states that have been completely posted to the default version. See <i>Versioning</i> for more information.
Concatenate	Combine two strings together, for example "hel" + "lo" = "hello"
Conflict	A discrepancy among the data reported when reconciling an ArcSDE version to a parent version.

CPU (Central Processing Unit)	The main logic engine of a computer through which all instructions are read and executed.
Data Migration	A process where data is copied from one data set to another data set. Typically the two datasets are of different types. For example, NIPSCO moved data stored in AutoCad Drawing files into an ArcSDE Geodatabase.
Data Model	An organization of information types into tables, records, relationships, subtypes, domains, etc. Defines the structure of a database.
DataPrep	A conversion tool which exports the Gas Network to a data format compatible with the SynerGEE gas analysis software.
DB2	A Relational Database Management System (RDBMS).
Distribution Reference Number	A NIPSCO specific unique number assigned to all electric poles, transformer pads, and pedestals.
Domain	Regarding database columns, a finite list or range of values that are allowed to be assigned to a given column for any table record.
DOQQ	Digital Orthophoto Quarter Quadrangle; A digital raster image of an aerial photo mapped by the USGS, specifically a “quarter quad”, or the extent of one fourth of a 7.5 –minute quadrangle, often used in GIS applications.
EAIF	Engineering Accounts Information File. A mainframe system that keeps load information on each transformer.
EDFS (Electric Distribution Facility Services)	NIPSCO's legacy electric asset tracking system which was migrated to and replaced by the GIS.
Electric Distribution Planning System (Load Study)	See <i>FeederALL</i> .

Enterprise Application	A system of software, computer resources, and data that is shared among many users.
ESRI (Environmental Systems Research Institute)	A GIS software and services provider which produces the ArcGIS family of software.
Extension to ArcGIS	Software built with ArcObjects that adds functionality to ESRI's ArcGIS.
Fat-Client	The client of a Client-Server Application where the majority of processing is performed on the user's local computer.
Feature	A record in a Geodatabase Feature Class which models the attributes and geometry of a real world object.
Feature Class	A table in the Geodatabase with a defined set of attributes and a geometry type (point, line, polygon, or annotation) that stores a collection of Features.
FeederAll	Package software that uses the computer model of the electric network and actual load readings to determine wire size requirements for the distribution network.
FME (Feature Manipulation Engine)	Software produced by Safe Software that converts many types of GIS file formats.
General Ledger	Computer system that maintains a portion of the financial information for NIPSCO
Geodatabase	An ESRI proprietary data structure for modeling and storing real world map objects in a database such as MS Access or MS SQL Server.
Geometric Network	See <i>Utility Network</i>
Geometry	A line, point, or polygon that represents the trend, location, or shape of a real world map object.
HTML (Hypertext Markup Language)	A collection of tags that allows for the formatting of text and images. Internet Browsers are the most common applications which read HTML formatted documents.

Interface	See <i>Application Interface</i> .
IRTH	A web based mapping application using GIS data to manage facility locate (call before you dig) requests.
JavaScript	A programming scripting language used to add dynamic content to internet pages.
Join	Regarding databases, merges the records of two or more database tables using a column in each table containing common data.
MAPPS (Materials, Purchasing and Accounts Payable)	Mainframe based system that manages the purchase, inventory and payments of various goods and services.
Migration	See <i>Data Migration</i>
Miner & Miner	A GIS software and services provider focusing on the utility industry. Produces ArcFM.
MLOG	Material and labor estimating system for distribution and substation design.
MVV (Multi-Versioned View)	A presentation of versioned ESRI Geodatabase tables for a specific version without the need for any ESRI licensed software.
Network	See <i>Utility Network</i> .
Network Edge	See <i>Utility Network</i> .
Network Junction	See <i>Utility Network</i> .
NIPSCO	Northern Indiana Public Service Company, a NiSource company
NORS (NIPSCO Outage and Restoration System)	Packaged software from ABB that combines the electric network connectivity and customer information to determine the most likely point of failure in the network for storm restoration work.
Oracle	A RDMBS.

Outfield	NIPSCO's legacy automated mapping system which stored all map data and attributes until it was replaced by the GIS.
OOTB (Out-Of-The-Box)	Software functionality that does not require any programming or customization.
Performance	The ability of a computer to perform a task within a duration.
Post	See <i>Versioning</i> .
PLSS	Public Land Survey System
QAQC (Quality Assurance Quality Control)	The process of preventing inconsistent or inaccurate data from entering the system.
RDBMS (Relational Database Management System)	A software for managing large collections of structured data.
Reconcile	See <i>Versioning</i> .
Relationship Classes	A structure of ESRI's Geodatabase which maintains a relationship between records in two tables or feature classes.
ROW	Right of Way
SAGE (Stand Alone Geodatabase Editor)	A tool provided by Miner & Miner which allow for viewing and editing of data stored in a versioned ESRI Geodatabase without the need for an ESRI software license.
SDE	See <i>ArcSDE</i> .
Session	A Miner & Miner invention that presents ESRI versioning management in a user friendly manner.
Spatial Query	A technique for selecting a subset of data within ArcGIS by comparing the geometry of the selection candidate to a filter geometry.
Split	Division of a single linear feature into two shorter linear features.



SQL Query	A database operation, such as Select, Insert, or Delete, which is executed via syntax written in Structure Query Language.
SQL Server	A RDBMS.
Symbology	A definition of size, shape, color, and other parameters used for displaying a feature's geometry on the map.
SynerGEE	A software for analyzing gas utility networks.
Tap	The point at which two network edges intersect.
Thin-Client	The client of a Client-Server Application where the majority of processing is performed on the server computer.
UNC Path (Universal Naming Convention)	Syntax for identifying a file path on a network.
Use Case	A specific business process for which a software component is designed to accomplish.
Utility Network	A collection of features that model a real world gas, electric, or water system. Line features become network edges which transmit the commodity through the system. Point features become junctions which control how the commodity moves through the system.
Versioning	An ESRI invention which allows multiple users to edit a Geodatabase at the same time by assigning a copy of the data to each user. The edits that are made within the copy are posted back to the copy's parent when the editing is complete.
Visio	A software for creating diagrams, such as a visual diagram of a data model.
Walker GL	Computer system that maintains a portion of the financial information for NIPSCO
Web Server	A computer which makes documents and applications available to users via the internet.

XML (Extensible Markup Language)	A system of user defined tags that allows for the formatting of text and images. Internet Browsers are the most common applications which read XML formatted documents.
XSLT (Extensible Stylesheet Language Transformations)	A document that defines how information in an XML document should be converted or displayed in a web browser.

# REPORT DOCUMENTATION PAGE

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<b>13. SUPPLEMENTARY NOTES</b>						
<b>14. ABSTRACT (Maximum 200 Words)</b> This report describes Northern Indiana Public Service Co. project efforts to develop an automated energy distribution and reliability system. The purpose of this project was to implement a database-driven GIS solution that would manage all of the company's gas, electric, and landbase objects.						
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