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Using Online Databasing to Unlock the Full Value of Environmental Impact Assessments

By Jessica Wentz

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EXECUTIVE SUMMARY

Government agencies are often required to conduct some form of environmental impact assessment (EIA) before approving a major project or proposal. The documents generated during these assessments contain a wealth of information about baseline environmental conditions, impact assessment methodologies, predicted impacts, and mitigation measures, among other things. This information is compiled at great effort and expense and is valuable in many different applications. Unfortunately, the challenge of locating and searching through these documents poses a serious impediment to effectively harnessing the information contained therein.

Granted, public access to EIA documents has improved considerably in the past decade. Environmental Impact Statements (EISs) are now routinely posted online as searchable PDFs, which is a vast improvement over hard copy circulation. The U.S. Environmental Protection Agency (EPA) and several other entities have also created online databases of EISs and other EIA documents, which allow users to search records by title, agency, data, and other parameters. These databases make it easier to find and download specific documents, but they are limited in scope and they lack certain features that would make it much easier to aggregate and synthesize information across multiple documents, such as a full text search feature.

This paper considers how a multi-disciplinary research community can build upon these efforts to further enhance online access to EIA documents and make it easier for the public to use the information contained in those documents. Part I lays the groundwork for this inquiry: it describes the types of information contained in EIA documents and the extent to which existing online databases provide an effective means of locating and searching through these documents. Part II discusses the potential applications of the information contained in these documents, and how this might inform priorities related to online database development. Part III contemplates how we can enhance the accessibility and utility of EIA documents through four complementary measures:

(1) Connect the existing EIA databases, preferably through the creation of a centralized database.

(2) Expand the scope of the documents that are accessible through the centralized database (or existing databases) to include older documents, documents from other jurisdictions, and documents other than EISs.

(3) Add searching, sorting, and filtering features that make it easier for users to find specific documents as well as specific types of data contained in those documents.

(4) Prepare new EIA documents in a manner that will streamline the process of adding these to the database(s) and make it easier for users to find relevant information within the documents.

Appendix A of this paper contains a user guide with detailed instructions on how to use each of the EIA databases. The guide includes hyperlinks to each of the relevant databases, a description of the scope of documents and search features, and screenshots to help people navigate the websites. Appendix B contains a list of the people who attended the workshop and their contact information.

CONTENTS

I.   INTRODUCTION

More than 27,000 federal EISs have been published since the National Environmental Policy Act (NEPA) was enacted in 1970.[1] Thousands of state and local EISs have also been published under NEPA analogs such as the New York State Environmental Quality Review Act (SEQRA), the California Environmental Quality Act (CEQA), the Massachusetts Environmental Policy Act and the Washington State Environmental Policy Act.[2] In addition, tens of thousands of other EIA documents are published each year by federal, state, and local agencies. These include Environmental Assessments (EAs), Findings of No Significant Impact (FONSIs), Records of Decision (RODs), and supplemental studies.[3] The overall universe of these documents is massive: to provide a sense of the scale, in the early 1990s, the U.S. Council on Environmental Quality (CEQ) estimated that approximately 50,000 federal EAs were being prepared annually.[4]

To date, neither federal nor state regulators have created a permanent and secure archive for storing all of the EIA documents they generate. Some government agencies and academic institutions have developed archives and online databases that cover a subset of these documents, but as discussed below, there are considerable gaps in the coverage of existing archives and databases.

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[1] This figure does not include draft EISs (DEISs). *See Environmental Impact Statements Filed Through 2012*, NEPA.GOV, https://ceq.doe.gov/nepa/EISs_by_Year_1970_to_2012.pdf (16,441 EISs were filed between 1970 and 1978; 10,666 FEISs were filed between 1979 and 2012); *Environmental Impact Statement (EIS) Database*, EPA.GOV, https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search (649 final documents, including FEISs, supplemental FEISs, and revised FEISs, were published from Jan. 1, 2013 through July 1, 2016).

[2] For example, at least 3,823 California Environmental Impact Reports (EIRs) have been published since 1980, and 2,706 New York State FEISs were published from 1984 through 2001 (the New York State Department of Environmental Conservation stopped keeping records in 2002). *Query the CEQAnet Database*, CEQANET, http://www.ceqanet.ca.gov/QueryForm.asp; MICHAEL GERRARD ET AL., ENVIRONMENTAL IMPACT REVIEW IN NEW YORK, RELEASE NO. 25 (2015) § 1.03[1].

[3] These are the terms used to describe the EIA documents prepared by federal agencies. Some jurisdictions use different terms to refer to the same or similar types of documents – e.g., in California, an EIS is called an "Environmental Impact Report" (EIR). Although the terminology and specific requirements differ by jurisdiction, the overall approach and resulting documentation closely mirror the federal scheme.

[4] CEQ, THE NATIONAL ENVIRONMENTAL POLICY ACT: A STUDY ON ITS EFFECTIVENESS AFTER TWENTY-FIVE YEARS, 19 (1997), *available at* http://www.blm.gov/or/regulations/files/nepa25fn.pdf.

A. Content of EIA Documents

The content of EIA documents varies depending on the type of document. The most comprehensive of these documents, EISs, include a wealth of information, including:

- Information about the proposed action and reasonable alternatives;

- Data on baseline environmental conditions;

- Predictions about future environmental impacts from the proposed action and alternatives, including the cumulative impacts of the actions under review and other reasonably foreseeable activities in the project area;

- Assessment methodologies and models that underpin these predictions;

- Descriptions of mitigation measures that will or may be implemented to alleviate adverse environmental impacts; and

- Summaries of public comments which can provide insight on how the public views a particular project as well as additional information about environmental conditions and potential impacts.

EAs contain the same types of information, but with considerably less detail (and they may not contain a summary of comments). Other EIA documents provide useful context for EISs and EAs: RODs specify which of the alternatives will ultimately be implemented, FONSIs state the agency's conclusion that the action will not have significant impacts, and supplemental studies provide additional analysis of an issue raised in an EIS or EA.

The primary purpose of the information gathered through the EIA process is to apprise the agency and the public about the potential environmental impacts of the proposal under review before the agency makes a final decision about whether and how to proceed with the proposal. As a result, EIA documents are generally treated as purely prospective documents: there is very little follow-up in terms of the accuracy of environmental predictions or the implementation of mitigation measures (unless those measures are required for a FONSI). This is unfortunate because these documents are expensive to produce and their utility is not limited to informing decisions about a single project – there are many other applications, discussed in Section II.

The treatment of EIA documents as purely prospective documents also influences the manner in which these documents are drafted. Specifically, the documents are <u>not</u> drafted in a manner that facilitates comparisons and synthesis of information across multiple projects (e.g., different documents use different metrics and timeframes to convey information about baseline conditions and predicted impacts). Karkkainen (2002) has explained how such drafting decisions can diminish the utility of EIA documents for applications beyond the assessment of a single project:

> [B]ecause EISs are produced on a sporadic, ad hoc, and largely project-specific basis, each document is a unique and self-contained universe of information. Without standards to govern the nature of the information to be produced or the form in which it is presented, EISs vary widely even within a single agency, and even more so across agencies. Rarely is it possible to make meaningful comparisons, or to aggregate or synthesize information across multiple EISs, over time, or among agencies with disparate NEPA practices. Because such idiosyncratic documents cannot be used to generate comparative benchmarks, cumulative assessments, or longitudinal analyses of environmental performance trends, EISs create no broader context for evaluating the particular projects they accompany. Nor do they provide the basis for assessments of government's environmental performance in the aggregate and over time.[5]

In contrast, Karkkainen has noted that the Toxic Release Inventory (TRI) has been particularly effective at improving environmental performance because the TRI requires the use of standardized reporting metrics that allow for comparison, ranking, and tracking of performance across multiple projects.[6] The aggregated data from TRI reporting thus provides "a richer 'big picture' context in which to interpret each required TRI report."[7]

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[5] Bradley C. Karkkainen, *Towards a Smarter NEPA: Monitoring and Managing Government's Environmental Performance,* 102(4) COLUMBIA L. REV. 903, 923 (2002).

[6] Bradley C. Karkkainen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257, 260-262 (2001); Karkkainen (2002) at 956-58.

[7] Karkkainen (2002) at 957. Importantly, Karkkainen does not suggest that TRI is superior to NEPA in all respects – he recognizes that TRI has its own limitations, namely, "its information base is one dimensional, and consequently provides a single, limited, and potentially misleading metric of environmental performance." Thus, the challenge "is to develop out of agency practice a rich yet crisply defined set of core metrics that combine TRI's continuous and comparable data generation capabilities with NEPA-like multi-dimensionality, while still affording flexibility to adjust monitoring requirements in light of context-specific factors that may fall outside the core metrics." *Id.* at 958.

As discussed in Section III, standards could also be introduced for the content and formatting of EIA documents which would streamline the integration of these documents into an online database and also facilitate comparative benchmarking between documents, aggregation of data across multiple documents, and performance tracking on a much larger scale.

B. Digitization and Online Access

Through the early 2000s, the vast majority of environmental review documents were only available as hard copy books or binders. This significantly impeded access to EISs, in particular, because EISs often span hundreds or thousands of pages across multiple volumes. As explained by Gerrard and Herz (2004), hard copy EISs are not portable,[8] they are expensive and time-consuming to reproduce,[9] and a person must physically visit a library to review the EIS or pay a hefty fee to have the EIS copied and/or shipped to them.[10] It is also difficult to find information contained in hard copy EISs due to their length, the density of the information contained therein, and the fact they rarely include an index.[11] A final problem with hard copy EISs is that, after these documents are completed they are often lost due to the lack of any sort of systemic cataloging system or destroyed due to their size.[12] This is a problem not just for EISs but for all EIA documents: because there is no permanent or secure archive for storing these documents, they are often lost or destroyed over the course of time.

Gerrard and Herz rightly concluded that there was no reason for this situation to persist: EISs are prepared via word processing software and can easily be uploaded to the internet for public access and long-term storage. The authors also concluded that federal

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[8] Michael B. Gerrard & Michael Herz, *Harnessing Information Technology to Improve the Environmental Impact Review Process*, 12 N.Y.U. Envtl. L.J. 18, 25-26 (2004).

[9] *Id.* at 26.

[10] *Id.* at 22.

[11] *Id.* at 25.

[12] *Id.* at 23-24.

law can be interpreted as requiring federal agencies to post EISs online.[13] Some state and local requirements can also be interpreted as requiring the online dissemination of EIA documents,[14] and at least one state (New York) has amended its regulations to expressly require that all EISs be posted online.[15] Farber and Miller made a similar argument, asserting that the online publication of federal EISs and EAs in a searchable format is necessary in order to satisfy the core requirements of NEPA (public notice, assessment, input, and a record of decision).[16]

Fortunately, the situation has changed since 2004. EISs are now routinely published online as digital PDFs that can be easily circulated via email or online posting, and many agencies are following suit with other types of EIA documents, such as EAs. That said, online posting does not always mean that the documents can be easily found. This is because many agencies do not maintain a single database or portal of EIA documents – rather, these documents are posted on a variety of different online locations, which vary depending on the agency. The easiest way to find the documents is to use an external search engine such as Google, but this only works if the person conducting the search is looking for a particular document and knows the name of the document or the project. It

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[13] The authors reached this conclusion based on the text of NEPA and its implementing regulations and a variety of other sources, including: Exec. Order No. 11,514, §2(b), 3 C.F.R. 531, 532 (1971) (requiring agencies to "[d]evelop procedures to ensure the *fullest practicable provision* of timely public information and understanding of Federal plans and programs with environmental impact"); Paperwork Reduction Act of 1995, 44 U.S.C. § 3506(d)(1) (requiring agencies to "ensure that the public has timely and equitable access to the agency's public information"); E-Government Act of 2002, 44 U.S.C. § 3501 (requiring agencies to "ensure that a publically accessible Federal Government web site includes all information about that agency required to be published in the Federal Register…"). For a complete discussion of why federal law requires the online posting of EISs, see *id.* at 34-48.

[14] *See, e.g.,* Cal. Pub. Res. Code § 21168.6.6(f)(2) (requiring lead agency to make DEIS and accompanying documents available to public "in a readily accessible electronic format"); Cal. Code Regs. § 15201 (stating that an agency's procedures for public participation in EIA "should include, wherever possible, making environmental information available in electronic format on the Internet, on a website maintained or utilized by the public agency").

[15] *See, e.g.,* N.Y. Envtl. Conserv. Law § 8-0109 (requiring every state EIS – both draft and final – to be posted on a publicly accessible internet website, but only requiring the FEIS to remain posted for 1 year after all final proposals have been issued for the project).

[16] Dan Farber & Marc Miller, *A Simple But Fundamental Step: Put All EISs & EIAs on the Web,* Arizona Legal Studies Discussion Paper No. 10-41 (2010).

would not work for a person who wants to find multiple documents that cover a particular subject or issue (e.g., recent EISs that involve coal mining).[17] Many agencies also remove these documents from their servers after a short period of time, sometimes as little as a year after posting.

Several online databases have recently been created to archive and provide public access to EISs and, in some cases, other types of EIA documents. These databases have made it significantly easier to find and download certain documents. But only a small subset of the total universe of EIA documents can be obtained through these databases – they do not provide access to federal EAs, RODs, FONSIs or supplemental studies, nor do they provide access to most state and local EIA documents. Some older EISs are also excluded from these databases. Notably, it is still very difficult, and in some cases impossible, for interested parties to locate EAs and accompanying FONSIs (at the federal and state level), because these documents are not systematically cataloged or archived in any centralized database. Interested parties may not even know that these documents exist, let alone be able to obtain copies for review.[18] Given that the vast majority of environmental reviews result in an EA rather than an EIS, the lack of access to these documents is highly problematic.

The search and sorting features of the existing databases are also limited. Some do not include certain basic search features, such as the ability to search by date. Perhaps the most significant limitation is that all but one of the databases lack a full-text search feature (and the one database that includes this feature does not contain recent EISs). There are

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[17] Moreover, even when the user knows the name of the project or document, online searches tend to produce a lot of false positives (e.g., a notice of availability that does not include a link to the actual document) and incomplete results (e.g., a single volume of a multi-volume document). Trying to find EIA documents in this fashion can be extremely time-consuming and, in some cases, fruitless.

[18] The federal scheme provides a good example of why EAs and FONSIs are difficult to find. For EISs, the lead agency must publish a "notice of availability" in the federal register, making it easier to track their availability, and the agency must also submit a copy of the document to EPA for review, which means that a single federal agency has records of all EISs that are published. In contrast, there are no Federal Register notice requirements for EAs and FONSIs, nor are agencies required to submit them to EPA, CEQ, or any other central compiler.

also some databases that only contain records of EIA documents and no downloadable PDFs.

These online databases are summarized below.[19] A more detailed description of how to use them is provided in the Appendix.

TABLE: OVERVIEW OF FEDERAL AND STATE EIA DOCUMENT DATABASES

Database	Coverage	Search features	Missing Elements
EPA Database	Federal EISs, 2012-present	Title, lead agency, date, location	Full text search; federal EISs before 2012; other EIA documents
Northwestern University Libraries (EIS Discovery Tool)	Federal EISs, 1970 – present	Title, author, date	Full text search; other EIA documents
Northwestern University Libraries (Collections hosted on HathiTrust and Google Books)	Federal EISs, 1970-2012	Full text, title, author, date	Federal EISs published since 2012; some older federal EISs; other EIA documents
NYC City Environmental Quality Act (CEQA) Database	NYC EIRs, EAs, 2005 - present	Title, lead agency, location	Full text search; some NYC EIRs and EAs.
Minnesota Pollution Control Agency (MPCA) Archive	MPCA EISs and EAWs (all)	N/A	Search features; state EIA documents from other agencies
California Environmental Quality Act (CEQA) Database	Records of CEQA documents	Title, agency, date	PDFs of documents
Massachusetts EPA (MEPA) Database	Records of MEPA documents	Title, agency, date	PDFs of documents

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[19] There are a variety of foreign jurisdictions that have also developed databases to track EIA document records and, in some instances, to archive EIA documents. *See, e.g., Canada Environmental Assessment Registry,* CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY, http://www.ceaa.gc.ca/050/index-eng.cfm (database of projects currently under review, with links to completed assessments and studies); *Canada Environmental Assessment Archive,* CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY, http://www.ceaa.gc.ca/052/index-eng.cfm (database of completed reviews, with links to assessments and studies for some projects).

1. EPA Database

EPA maintains an online database that contains records of all federal EISs received by EPA since 1987 and PDFs of federal EISs received by EPA since October 2012.[20] This should represent all of the federal EISs published during that period, since agencies are legally required to submit EISs to EPA for review. As of June 27, 2016, the database contained a total of 14,468 records of draft, final, and final supplemental EISs, and approximately 1,400 PDFs of draft and final EISs.[21] Users can search the database by the title, lead agency, date, and state or region where the project is located, but they cannot search for terms or phrases within the full text of EISs, nor can they search for documents that involve specific types of actions (e.g., a Resource Management Plan) or activities that are covered by those actions (e.g., timbering or coal mining).

2. Northwestern University Libraries Database

The Northwestern University Transportation Library has compiled one of the world's largest collections of EISs. This collection includes nearly all of the federal EISs published since 1970, usually in draft as well as final form. It also contains some other environmental review documents, such as EAs, FONSIs, and RODs, and a small number of EISs from other jurisdictions. The head librarian estimates that they have as many as 50,000 volumes in their print collection, covering as many as 21,000 EISs in total.

Recently, Northwestern partnered with Google to digitize and provide online access to some of the EISs in their collection. More than 33,000 of the volumes from the Northwestern print collection have been digitized by Google and are now available in full text through Google Books and the HathiTrust digital library.[22] The most notable aspect of the Google Books and HathiTrust databases is that they allows users to search the full text of the EISs when trying to locate a document – meaning that they can search for terms or

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[20] *Environmental Impact Statement (EIS) Database*, EPA.GOV, https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search.

[21] This estimate is based on the fact that 1,416 records were added between October 1, 2012 and June 27, 2016.

[22] HATHITRUST DIGITAL LIBRARY, https://www.hathitrust.org/.

phrases (e.g., "climate change") within the text of multiple documents. It is the only EIS database that contains this feature. Unfortunately, because the database only consists of items from the Northwestern University Libraries print collection, it does not include more recent EISs that are posted online as PDFs. There were also some items in the print collection that Google did not digitize, including EISs that were published in 3-ring binders / loose-leaf format, fold-outs and oversized pages from EISs, and EISs stored in CDs and microfiche. Users can use the Northwestern Transportation Library "EIS Discovery Tool" to find records of the older EISs that were not digitized by Google, as well as PDFs of the EISs that were digitized by Google or published by EPA in digital format, but the search features are effectively the same as the EPA database.[23]

3. New York City CEQA Database

The New York City Mayor's Office of Sustainability has recently created an online portal where the public can obtain PDF copies of EISs prepared under the New York City Environmental Quality Review Act (CEQR) called "CEQR Access."[24] The online portal contains records of CEQR projects filed with the office from January 1, 2005 to the present (and some older records). Each record contains basic information about the project, and in some cases, links to PDF documents. According to representatives from the office, the database currently contains pdf downloads for approximately 180 CEQR EISs and 6,100 CEQR EAs.[25] Users can search for records by keyword (this searches all other fields, but not the full text of the documents), CEQR number, project name, community district, borough/block/lot, and lead agency.

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[23] *Environmental Impact Statement Search*, NORTHWESTERN TRANSPORTATION LIBRARY, http://nwu-almaprimo.hosted.exlibrisgroup.com/primo_library/libweb/action/search.do?mode=Basic&vid=NULTRANV&tab=eis&.

[24] *CEQR Search*, CEQR ACCESS, https://a002-ceqraccess.nyc.gov/ceqr.

[25] The office is still in the process of digitizing and uploading documents to the database (there are still some entries that do not include downloadable copies of the corresponding EISs and EAs). There are approximately 20 hardcopy EISs that still need to be scanned and uploaded to the database.

4. MPCA Environmental Review Archive

The Minnesota Pollution Control Agency (MPCA) maintains an online archive of all environmental review documents submitted to the agency.[26] These documents include downloadable copies of EISs and Environmental Assessment Worksheets (EAWs). The archive does not include any search features, but it is possible to view the most recent documents and to filter the documents by project type. The archive is not a comprehensive collection of all state EISs and EAWs because it does not include any EISs or EAWs that were prepared by other agencies, such as the Minnesota Department of Natural Resources (MDNR).

5. CEQAnet Database

CEQA declares that it is a policy of California that "Information developed in individual environmental impact reports be incorporated into a database which can be used to reduce delay and duplication in preparation of subsequent environmental impact reports."[27] This policy appears to be the impetus behind the creation of the CEQAnet database, which contains summaries and other information about CEQA projects. [28] However, the CEQAnet database does not include links to the environmental review documents, nor does it summarize or synthesize the data contained in those documents. That said, the record information can be used to more easily find these documents on other websites (since most CEQA documents are posted on the website of the lead agency.

6. MEPA Project Tracking Database

The Massachusetts Environmental Protection Agency (MEPA) maintains a MEPA Project Tracking System database that includes records of environmental documents

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[26] *Archived   Environmental   Reviews,*   MINNESOTA   POLLUTION   CONTROL   AGENCY, https://www.pca.state.mn.us/quick-links/archived-environmental-reviews.

[27] Cal. Pub. Res. Code s 21003(d). *See also id.* s 21003€ (stating policy that "[i]nformation developed in environmental impact reports and negative declarations be incorporated into a data base which may be used to make subsequ3ent or supplemental environmental determinations").

[28] CEQANET DATABASE, http://www.ceqanet.ca.gov.

submitted for MEPA review.[29] Like the CEQAnet database, it does not contain links to PDFs of any documents. The utility of this tracking database is also limited by the fact that many Massachusetts EISs are not available online.

II. APPLICATIONS OF THE INFORMATION IN EIA DOCUMENTS

Before diving into the question of how to further enhance the accessibility and utility of EIA documents, it is important to ask: Why does this matter? How might the information in EIA documents be used in various applications? And how would these potential uses inform priorities and goals for enhancing access?

During the June 16 workshop, a variety of stakeholders discussed how they currently use EIA documents when conducting research, advising clients, and doing advocacy-related work. These stakeholders included representatives from government agencies, private law firms, environmental consulting groups, environmental advocacy organizations, and academic research institutions.[30] They identified many potential uses for the information stored in EIA documents, in addition to informing decision-makers about the effects of a project. The stakeholders also discussed their preferences and priorities for improving the accessibility and searchability of EIA documents, and in particular, what sorts of features they would like to see included in a centralized online database (assuming such a project could be implemented). Their feedback is incorporated below.

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[29] *MEPA Online*, MASS.GOV, http://www.mass.gov/eea/agencies/mepa/mepa-online-generic.html.

[30] As one participant pointed out, all of these stakeholders are relatively "sophisticated" or "professional" users of EIA documents. There was one important user group that was not represented at the workshop: concerned citizens who do not routinely review EIA documents but who are affected by a particular action undergoing environmental review and may therefore want to learn about and perhaps comment on the action. We have attempted to account for their perspective in Subsection A, which discusses how online databases help users learn about and comment on specific projects.

A. Learning About and Commenting on a Specific Action

The creation of an online EIA database would make it easier for government agencies, EIA document preparers, and the public to learn about and develop recommendations with respect to specific proposals. There are two ways in which an online database would enhance learning and public participation in this context:

First, if the database included scoping and draft documents, then it could serve as a portal for finding actions that affect the user's interests and downloading the EIA documents associated with those actions. For example, a person could use the database to search for projects that are located in a particular area and that may affect a local resource that the person uses and enjoys, such as a river or a park. This person would benefit from being able to view actions on a map or filter them by location on a relatively precise scale (e.g., by city or zip code, rather than state or territory). A full-text search could also be used to find documents that contain the name of a particular place or resource. Alternatively, a person might want to find actions that involve an activity or resource that is of special concern to the person, regardless of where the action is located. This person could find relevant documents by conducting a full-text search (e.g., "polar bears" or "coal mining"). But full text searches can produce false positives, and so it would be helpful to be able to search for documents based on the sector or types of activities involved in the proposed action. This could be accomplished by assigning multiple metadata tags to each document and then allowing users to search for and filter results based on those tags.[31]

Second, government agencies, EIA document preparers, and people who want to comment on a particular project could use the database to find examples of past EIA documents for other similarly situated projects, and to use these examples as a basis for, e.g., determining the scope of the review or making recommendations about how environmental impacts should be analyzed. For example, if a person is asserting that an

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[31] See Section III(C) for a more detailed discussion of how metadata tags can be assigned to documents.

agency should evaluate downstream emissions from coal combustion in the EIS for a coal mining lease approval, they could strengthen their argument by directing the agency to past EISs that involve fossil fuel development and that include this type of analysis. Such EISs could also be found through a full-text search (e.g., for "coal mining" or "oil and gas extraction") or by filtering EISs based on the sector or type of activities involved in the action.

For all parties, it would also be helpful to have public comments in the database, since these provide additional perspective on the scope of issues that should be reviewed for a particular type of action, the accuracy of predictions, and the alternatives and mitigation measures.

Priorities for an Online Database:

- Full-text search
- Ability to search for and filter documents by: (i) location (preferably on a local scale), (ii) type of activity, and (3) document status (draft or final)
- Geospatial interface where projects can be identified on a map
- Inclusion of state and local documents
- Inclusion of draft documents
- Inclusion of comments

B. Challenging or Defending Environmental Review Documents in Court

EISs and other EIA documents are often the subject of litigation. Both the plaintiffs and defendants in these cases may refer to other EIA documents for similar actions to support their interpretation of whether the analysis in the litigated document is legally sufficient or insufficient. Much like a person commenting on an EIS, the plaintiff can refer to the information from other EIA documents to establish that a certain type of

environmental analysis is feasible and warranted for the action under review. [32] The defendant could also refer to past EAs and FONSIs to support its determination that a particular type of action would not have significant impacts and thus to defend its decision not to prepare a full EIS.

The same search features as those noted above would be helpful for litigation purposes. One of the workshop participants also noted that it would be helpful to have a database that links each EIA document to any relevant judicial decisions, either by providing records of those decisions or downloadable PDFs.[33]

Priorities for an Online Database:

- Full-text search

- Ability to search for and filter documents by: (i) location, (ii) type of activity, (iii) document type, and (iv) lead agency

- Inclusion of EAs and FONSIs

- Inclusion of state and local documents

- Records or downloadable copies of relevant judicial decisions

C. Expediting and Reducing Costs of Environmental Review and Permitting

A government agency can reduce delay and duplication in the preparation of an EIA document by referring to information and analytical approaches from past EIA documents for similar actions. This saves both time and money in the environmental review process. To illustrate this point: a drafter could refer to a past review to help inform

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[32] *See, e.g.,* Proof Opening Brief of Petitioner Sierra Club at 54, Sierra Club v. Department of Energy, No. 15-1489 (D.C. Cir. March 21, 2016) (arguing that the Department of Energy's assertion that assessing the impacts of natural gas exports on gas production and coal consumption was unreasonably burdensome was belied by the fact that the U.S. Energy Information Administration had already performed such an assessment).

[33] The California Association of Environmental Professionals recently launched a CEQA Case Law Database which allows users to search for CEQA cases by topic, keywords, court, and date. *Case Law Database*, CEQA PORTAL, https://ceqaportal.org/ceqa.cfm.

the scope of issues to be examined for a similarly situated proposal. A drafter could also refer to the cumulative impact analysis that was conducted for recent proposals in the project area to get a sense of what activities and impacts should be included in the cumulative impact analysis for the current proposal. This is not to say that the agency or drafter can simply copy and paste content from a previous document: any data or analysis would of course need to be reviewed to determine whether updating is needed reflect new information and the unique context of the proposal that is currently under review.

The information contained in EIA documents can also be used to expedite other aspects of project review and development. These documents contain valuable information about the regulatory landscape (e.g., what permits are required for a particular type of project), the design and implementation of proposals (e.g., what mitigation measures can be used to reduce impacts), experts who can speak to a particular issue (this would most likely be found in information about the authors of the report), and the stakeholder groups that should be consulted about the project (this information would likely be found in the comment and response section of an EIS).

For these purposes, it would be helpful for preparers to have as many searching and sorting features at their disposal as possible. Options to filter documents by type of activity, agency and location would help these users find similar projects. A full-text search feature would also be very useful, since it would allow preparers to find more specific types of analysis and information across multiple documents.

Priorities for an Online Database:

- Full-text search
- Ability to filter documents by: (i) location, (ii) type of activity, and (iii) agency
- Geospatial interface where projects can be identified on a map
- Inclusion of EAs and FONSIs
- Inclusion of state and local documents
- Inclusion of comments

D. Verifying Environmental Predictions and Mitigation Measures

Environmental review documents are largely prospective—they contain predictions about future environmental impacts, and in some cases, commitments to implement environmental mitigation measures. For most actions, there is little or no monitoring to verify the accuracy of these predictions or whether mitigation measures were actually implemented and resulted in the desired effects.[34] This means that agencies and the public never learn about the actual environmental consequences of any given project. It also has implications that reach beyond the specific action under review: if an agency never revisits its predictions, then it cannot learn from mistakes and improve predictions in future reviews.

There are circumstances in which an agency may conduct a single ex post assessment or even long-term monitoring – perhaps because the agency committed to a monitoring program in the original document, or because it is initiating review of a similar action and would like to verify previous predictions. There are also non-governmental entities that are willing to help fill the monitoring void, either to improve our knowledge about the environmental review process[35] or about a particular issue that is discussed in EIA documents.[36] But both agency and third-party monitoring efforts may be stymied by

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[34] Monitoring has become more routine in some contexts. For example, federal agencies are now beginning to conduct more systematic monitoring of mitigation commitments that are used to justify a FONSI, pursuant to CEQ guidance. *See* Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, 76 Fed. Reg. 3843 (Jan. 21, 2011).

[35] *See, e.g.*, PAUL J. CULHANE ET AL., FORECASTS AND ENVIRONMENTAL DECISIONMAKING: THE CONTENT AND PREDICTIVE ACCURACY OF ENVIRONMENTAL IMPACT STATEMENTS (1987) (finding that relatively few forecasts were inaccurate, but this was due to the vagueness of the forecasts and lack of data on impacts).

[36] *See, e.g.*, JAMES R. KUIPERS ET AL., COMPARISON OF PREDICTED AND ACTUAL WATER QUALITY AT HARDROCK MINES: THE RELIABILITY OF PREDICTIONS IN ENVIRONMENTAL IMPACT STATEMENTS (2006), *available at* https://www.earthworksaction.org/files/publications/ComparisonsReportFinal.pdf (finding that agencies systematically underestimate the water quality impacts of hard rock mines). To provide another example: researchers at the University of Arizona are using the information from EISs to evaluate whether adaptive management practices are effective in the context of livestock grazing plans.

insufficient access to EIA documents and a lack of tools to efficiently search for information within these documents.[37]

Having access to the relevant documents is, of course, a necessary first step to monitoring any predictions or commitments contained in those documents. And the ability to simply retrieve and download individual documents may be enough for a party who is seeking to monitor the implementation of a single project or even a small group of projects. But a party seeking to monitor the implementation of many projects will likely need additional tools to search for and gather information across a large number of documents in an efficient manner.[38] Specifically, large-scale monitoring efforts would benefit from a database that allows them to filter results (e.g., by activity type and/or location) and conduct full-text searches. These tools could be used to: (i) identify actions, predictions, and commitments that affect the same area or resource and should therefore be monitored together; and (ii) compare predictions from an earlier project with the environmental baseline analysis for a subsequent project in the same area (this may help with verification of the older predictions).

Priorities for an Online Database:

- Full-text search

- Ability to filter documents by: (i) location, (ii) type of activity, and (iii) agency

- Geospatial interface where projects can be identified on a map

- Inclusion of state and local documents

- Inclusion of EAs and FONSIs (particularly mitigated FONSIs)

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[37] As noted by the authors of one monitoring project: "The effort required to obtain the [NEPA] documents and information, although initially expected to be onerous, was more arduous and protracted than we imagined. We were surprised to find that no single repository exists for NEPA documents, although the Environmental Protection Agency does have most EISs on microfiche. Technical reports associated with EISs were extremely difficult to obtain." KUIPERS ET AL. (2006), *supra* note 35, at i.

[38] Of course, even a comprehensive database with a full array of searching and sorting features would not totally resolve the monitoring problem. We would still lack data about the implementation and actual effects of many projects. But having accessible and easily searchable EIA documents would certainly make it more feasible to conduct monitoring.

E. Improving the Accuracy of Environmental Predictions

As noted above, if agencies do not monitor and verify their predictions then they will have no occasion to learn from mistakes and generally improve its predictive capacity. Karkkainen (2002) explains that this not only affects the quality of future environmental reviews, it also impedes the agency's ability to improve its environmental performance over time, because without monitoring, an agency has "little capacity to develop useful performance benchmarks against which to measure present and proposed activities—for example, by comparing actual results against baseline conditions, performance targets (including those predicted in the EIS), or other projects."[39]

Gerrard and Herz (2004) note that the environmental review process itself provides an occasion for monitoring the accuracy of past predictions: the idea being that the reviewer should examine previous EIA documents for proposals that affect the same area and determine whether the predictions in those documents have proven accurate.[40] Depending on the context, it may also make sense to evaluate the accuracy of predictions for similar types of proposals even if they are located in a different area. This analysis will help drafters determine whether it makes sense to employ the same methodologies and assumptions that were used in previous reviews.

An online database with a full array of searching and filtering features, including a full text search feature, would make it much easier to identify relevant EIA documents and the predictions contained therein for the purposes of conducting this type of analysis. It would also make it easier to aggregate data over time and across geographic regions, thus further improving the accuracy of future predictions. The database could also potentially

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[39] Karkkainen (2002), *supra* note 5, at 931 (citing CEQ, THE NATIONAL ENVIRONMENTAL POLICY ACT: A STUDY OF ITS EFFECTIVENESS AFTER TWENTY-FIVE YEARS, 27-28, 32 (1997). *See also* RICHARD K. MORGAN, ENVIRONMENTAL IMPACT ASSESSMENT: A METHODOLOGICAL APPROACH, 190 (1998) (asserting that, without monitoring to reveal predictive errors, inaccurate information and predictions may be recycled in subsequent EISs).

[40] Gerrard and Herz (2004), *supra* note 8, at 29.

be designed to allow for the use of natural language processing to extract and aggregate specific types of data.[41]

Making environmental review documents more easily accessible and searchable by a broader audience may also encourage agencies to make more realistic predictions about environmental impacts (since there is a greater chance that these predictions will be scrutinized by other agencies or the public).

Priorities for an Online Database:

- Full-text search

- Ability to filter documents by: (i) location, (ii) type of activity, and (iii) agency

- Geospatial interface where projects can be identified on a map

- Compatible with natural language processing

- Inclusion of state and local documents

- Inclusion of EAs and FONSIs (particularly mitigated FONSIs)

F. Public Oversight of Government Decision-Making

The public also has a broader interest in ensuring that government decision-makers are using a consistent and rational approach when reviewing the environmental impacts of proposals and acting on this information. To this end, non-governmental organizations (NGOs), academics, and oversight agencies will conduct studies evaluating the content and quality of environmental reviews, often accompanied by recommendations for improvement. [42]   When these studies reveal that there are systematic problems or

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[41] For example, natural language processing could be used to extract all quantitative estimates of conventional air pollutants from a particular type of source, the goal being to compare how these estimates compare with one another and with results from ex post monitoring. See Section III for a more in depth discussion of the role of natural language processing in the development of an online database and in the extraction of information from that database.

[42] *See, e.g.*, JESSICA WENTZ, GRANT GLOVIN, & ADRIAN ANG, SURVEY OF CLIMATE CHANGE CONSIDERATIONS IN FEDERAL ENVIRONMENTAL IMPACT STATEMENTS, 2012-2014 (Sabin Center for Climate Change Law, 2016); Richard K. Morgan, *Environmental Impact Assessment: The State of the Art*, 30(1) IMPACT ASSESSMENT AND PROJECT APPRAISAL 5 (2012); NATIONAL RESOURCE COUNCIL COMMITTEE ON HEALTH IMPACT ASSESSMENT,

inconsistencies in the analytical approaches employed by different decision-makers, this may prompt the government to adopt new guidance or regulations aimed at improving the environmental review process.

An online database with a complete array of searching and filtering features would facilitate the identification of trends, discrepancies, and best practices in EIA documents, thus contributing to the public's ability to generate studies and recommendations on how to make systematic improvements to the environmental review process. A full text search would be particularly helpful for these purposes.

It would also be helpful for the database to contain a feature which links a programmatic EIS (PEIS) with any tiered EISs that are prepared in accordance with the PEIS.[43] This would enable users to monitor and evaluate the consistency and completeness of the analysis in these documents. In addition, one participant suggested that the database should include Categorical Exclusions (CEs) and their application to particular projects as this would make it easier for the public to monitor how agencies are using CEs.

Finally, some participants noted that the inclusion of public comments in the database would be helpful for the purposes of evaluating how agencies and project proponents respond to public opinion when conducting these reviews, and whether there are actually opportunities for "meaningful participation" in the review process. In some cases, the comments are already included within the text of EISs (typically as an appendix) – when this is the case, it would be unnecessary to upload or link to comments separately in the database.[44]

IMPROVING HEALTH IN THE UNITED STATES: THE ROLE OF HEALTH IMPACT ASSESSMENT (National Academies Press 2011).

[43] The websites where PEISs are posted online often include links to any EISs within the ambit of the PEIS. When this is the case, it should be relatively easy to retrieve and link all of the connected documents.

[44] For example, both the federal government and New York State requires EISs to include copies or a summary of comments received by the agency and the agency's response to the comments. 40 C.F.R. § 1503.4; N.Y. Envtl. Conserv. Law § 8-0109(2)(j).

Priorities for an Online Database:

- Full-text search

- Natural language processing

- Ability to filter documents by: (i) location, (ii) project type, (iii) agency, (iv) date

- Geospatial interface where projects can be identified on a map

- Link PEIS to tiered EISs

- Inclusion of public comments

- Inclusion of CEs

III. ENHANCING ONLINE ACCESS TO EIA DOCUMENTS

There are four complementary measures that could be implemented to enhance access to EIA documents and facilitate the utilization of information contained therein. The first measure would be to connect the existing EIA databases, preferably through the creation of a centralized database. The second measure would be to increase the number and type of EIA documents that are available through the centralized database (or the existing network of databases). The third measure would be to improve the searching, sorting, and filtering features of the database(s) so that it is easier for users to find a particular document and also to search for information within multiple documents. The fourth measure would be to design future EIA documents in a manner that will streamline their integration into the database(s) and allow for more efficient retrieval of information from these documents.

A. Developing a Centralized EIA Database

One of the key findings from the June 16 workshop was that many participants did not know about the existence of the databases described in Section I. Given that the participants primarily consisted of experienced professionals who frequently use EIA documents in their work and leaders in the field of environmental review, we can infer that the overall awareness and uptake of these databases is generally low. For this reason,

we created the attached user guide to help interested parties find and navigate these databases.[45] But even with this guide, navigating the databases can be a cumbersome process, since each database covers a different subset of documents and includes a different assortment of searching, sorting, and filtering features.[46]

The creation of a centralized EIA database would be useful in several respects. It would be easier to build public awareness about the resource: government agencies and other entities can post links on relevant websites referring people to the database, and users would be able to remember where to find it and how to use it. It would also resolve the question of which database should be used to find a particular document, and would allow users to conduct a single search across all the documents contained therein. Finally, it would be easier to improve the searching, sorting, and filtering features in a single database, as compared with multiple databases.

Ideally, a system would be designed to automatically transfer EIA documents from existing databases into a centralized database (including both existing and newly uploaded documents). This process could also involve the transfer of any relevant metadata accompanying the documents (e.g., title, publication date, and lead agency), and advanced processing techniques, described below, could be used to fill the gaps in the metadata. However, whether the centralized database can be populated automatically would depend on whether the existing databases are designed or modified to allow for the collection of information in this fashion.

The alternative would be to manually populate the database with the documents that are currently contained in other databases, and then to develop a more streamlined system uploading of new documents to the database. Preferably, the new documents

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[45] *See* Appendix.

[46] This may not pose a problem for someone who only needs to find a specific document on one of the databases, but it would make the search process much more cumbersome for someone searching for information across multiple documents and databases.

would be added to the system directly by the preparing agency to expedite the process and also ensure that all documents are covered.

B. Expanding the Scope of EIA Documents That Are Available Through a Database

As discussed in Section I, the existing online databases contain only a subset of the EIA documents that have been published in the U.S. since 1970. The EPA database contains PDFs of federal EISs published since October 2012, and the Northwestern University / HathiTrust database contains PDFs of many of the federal EISs that were published before EPA started hosting them online. But most EAs, FONSIs, and state and local EISs are not archived or even recorded in a centralized database. As a result, it can be difficult to determine that these documents exist, let alone retrieve and review them.

The best way to improve access to EIA documents is to make sure that a larger percentage of these documents are available through an online database. This would involve the following tasks:

- Determining the scope and number of documents that are not already available in digital format and through existing online databases.
- Digitizing and uploading older documents that are only available in hardcopy.
- Ensuring that new documents are posted online and added to the database

It is not necessary to proceed with these tasks in this exact order. To illustrate this point: finding and digitizing older EIA documents that are only available in hardcopy format will involve a good deal of time and effort, and would probably be less helpful to the public than ensuring that more recent documents, particularly EAs and FONSIs, are posted online and included in some sort of online database (which should be a less cumbersome task, since these documents are prepared in digital format already).

When scanning old documents and converting these to PDF format, it will be important to use optical character recognition (OCR) to produce searchable PDFs of those documents. This will enable users to search for specific terms within the documents. It

may also allow for the use of advanced processing techniques, described below, to extract metadata from the documents.

In terms of adding more recent (i.e., already digitized) documents to the database: it may be possible to automatically "scrape" some of the documents that are posted on agency websites.[47] Of course, scraping will only work for documents posted online. It would be necessary to retrieve any physical documents manually.

Crowdsourcing could also be used to populate the database with documents. The idea is simple: users would be able to upload documents and provide information about those documents. This could lead to some duplication and erroneous entries, but these risks are minor and outweighed by the advantages of having a more complete universe of documents in the database.

C. Improving Searching, Sorting, and Filtering Features

Given the great number of EIA documents and the large amount of information stored in these documents, it is important for a database to have advanced searching, sorting, and filtering features to help users find documents and information in an efficient manner. These features include: metadata that can be used to filter and sort documents, a full-text search feature that can be used to find terms within multiple documents, and a geospatial search feature that allows users to view documents on a map.

1. Using Metadata to Filter and Sort Documents

"Metadata" refers to data that describes other data – in this context, it would be any data describing the EIA documents and the information contained therein. This could include:

- Title

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[47] For example, EAs prepared by the Department of Energy could easily be scraped from the DOE website because they have been compiled in a single location. *See Environmental Assessments*, ENERGY.GOV, http://energy.gov/nepa/nepa-documents/environmental-assessments-ea. However, it would be more difficult to scrape documents when they are scattered across many websites and their precise location is unknown.

- Lead agency

- Cooperating agencies

- Location

- Date of publication

- Type of document

- Abstract

- Type of action (e.g., resource management plan, coal lease approval)

- Activities covered by the action (e.g., grazing, coal mining)[48]

- Keywords (e.g., cattle, coal)

- Temporal information (e.g., the anticipated duration of the action)

- Spatial information (coordinates) for georeferencing the statements

- Related documents (e.g., tiered EISs, litigation document, supplemental studies)

Each piece of metadata can serve as a parameter for filtering and sorting search results. Thus, having more metadata allows for a more finely tuned search.

This metadata can be generated manually but this would be a time-consuming process. An alternative would be to use advanced techniques such as Natural Language Processing (NLP) and Machine Learning Algorithms (MLA) to automatically parse and extract useful metadata from the EIA documents. The quality of the metadata generated by these techniques will depend on the type of information that is being extracted – they can accurately retrieve discrete pieces of information that are commonly found in the same location or format across multiple documents (e.g., title, publication date, lead agency) but they are less effective at retrieving more complex information that appears in different locations and formats (e.g., a list of activities covered by the action).

Crowdsourcing could also be advantageous in this context. If users are allowed to edit the information about each document, then they could help correct errors and fill gaps

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[48] Note that multiple metadata tags for "covered activities" could be assigned to any given document. So, for example, a Resource Management Plan (RMP) could be tagged for silviculture, ecosystem restoration, coal mining, oil and gas drilling, grazing, etc.

in the metadata. Of course, this could also lead to new errors in the data. One follow-up research question would be whether and in what circumstances NLP and MLA produce more accurate results than human entry.

Turning to what types of metadata are most valuable: certainly, basic information such as the title, date of publication, and location should be included for each record. And as discussed in Section II, information about the type of document (e.g., whether it is draft or final, and whether it is an EIS or EA) is also helpful in many contexts. These types of metadata would also be relatively easy to retrieve through automated techniques.

It would also be very useful to be able to filter documents based on the type of action or the type of activities that are covered by the action. Take, for example, a user who wants to find all proposals that involve oil and gas drilling. One option would be to perform a full-text search for terms such as "oil" and "gas" and "drilling"– and this might work, but it also might generate many results that are not relevant (e.g., those terms could come up in the cumulative impact analysis, even if the action does not involve any potential drilling). It would be more efficient to filter results based on covered activities. Some of this data could be retrieved through automated techniques, and as noted above, crowdsourcing could be used to fill any data gaps.

2. Providing a Full Text Search Feature

In a "full text search," a user can search the entire text of all documents in the database (or the documents that fall within the search parameters) for specific terms or phrases. This gives the user the flexibility to go beyond the metadata fields and conduct a more targeted search of the information contained within the documents.

A full text search is an incredibly valuable feature for a user that wants to find a particular type of information or analysis across many documents. Take, for example, someone who wants to find all EISs that discuss impacts on a particular species, such as the American Pika. Using the metadata search parameters described above would not be very helpful in this context, since the question of whether a project affects a particular

species would probably not be reflected in the document name, location, project category, or other search parameters. The user could narrow the search results by location (limiting the results to states/territories where the Pika is located), but this search would still produce many extraneous results, and the user would need to download and search through each individual PDF to determine which ones contain information about the Pika. But with a full text search, the user can simply search for all documents that contain the word "Pika" and receive a list with all of the relevant results.[49]

The search results page could include not only the name and other basic metadata about the document – it can also list the number of times a term appears in the document (and this information could be used to sort documents by relevance) and include an excerpt of the text that includes the term. In this way, the database would function like many other search engines, such as Google and Westlaw.

3. Adding a Geospatial Component to the Database

Several of the workshop participants said it would be helpful to have a database with a geospatial component, which would allow users to find and filter EIA documents by using place names, spatial coordinate, or even location criteria (e.g., distance from a coast or protected area), typically through a map interface.[50] This would provide an alternate platform for searching the database. There are two ways this could be accomplished.

The first approach – arguably the easier of the two choices – would be to identify appropriate coordinates for each document and use these to pinpoint the document on a map. This would not inform users about the actual boundaries of the project and its environmental impacts, but it would give them a general sense of where projects are located.

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[49] Ideally, advanced functions would also be supported such as filtering of results, support for complex queries, and links to external dictionaries of terms, e.g., for species names.
[50] The Federal Geographic Data Committee (FGDC) could potentially provide technical support for this endeavor.

The other approach would be to specify the geographic boundaries of the action and/or its environmental impacts and use this to populate the geospatial database. This would be significantly more complicated than simply identifying a pinpoint location, in part because such boundaries are not always well defined in the documents. Granted, it would be easier to retrieve information about the geographic boundaries of the actions themselves – for example, the boundaries of a park subject to a proposed management plan, or the boundaries of a proposed building project. But defining the boundaries of environmental impacts is far more challenging. It also raises the question of whether impacts should be disaggregated for this purpose, since different types of impacts have different boundaries (e.g., the effect of a project's greenhouse gas emissions would be global whereas the effects of conventional air pollutants would be regional or local).

The Environmental Law Institute (ELI) recently launched a pilot project to map the environmental footprint of NEPA projects, one key goal being to better inform the cumulative impact analysis in future environmental reviews.[51] As of July 2016, the pilot geospatial NEPA database shows the footprint of approximately 30 EISs and EAs, and includes basic information about these documents, such as title, document type, year of publication, preparer, affiliated wildlife, and, in some instances, a link to the actual document. The database does not differentiate between types of impacts in establishing boundaries: there is a single footprint for each document.

It is worth noting that the use of geospatial databases is already a routine aspect of many environmental site assessments performed for EIA and other forms of environmental due diligence.[52] Database developers could refer to these existing geospatial databases to help inform certain aspects of the design of a geospatial EIA database.

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[51] *Geospatial NEPA*, ELI OCEAN PROGRAM, http://eli-ocean.org/planning/geospatial-nepa/. *See also* Kathryn Mengerink, *Geospatial NEPA: An Idea Whose Time Has Come*, 29(6) Environmental Forum 55 (2012), *available at* https://www.eli.org/sites/default/files/docs/mengerink-geospatialnepa.pdf; Kathryn Mengerink, *Geospatial NEPA for Ocean and Coastal Environments: Approaches, Policies, and Possibilities* (ELI, 2015), *available at* http://eli-ocean.org/wp-content/blogs.dir/7/files/Geospatial-NEPA-ELI-2015.pdf.

[52] *See, e.g.*, EDR, *EDR Radius Map Report*, http://edrnet.com/prods/edr-radius-map-report-geocheck/.

D. Streamlining the Addition of New Documents into the Database

Once a database has been created, it would be ideal for agencies to directly add any new EIA documents to the database. This could be accomplished through an online portal where agencies can upload documents and provide the metadata to populate the search parameters.

Agencies could also make changes in how they prepare and format documents for online distribution and public use. For example, recognizing that many users will be viewing these documents on their computers, agencies could add hyperlinks to bibliographic references and any other resources that are cited in the document and available online. Agencies could also aim to develop and use standardized metrics in EIA documents to facilitate comparison, aggregation and synthesis of information across multiple documents. For example, when predicting greenhouse gas emissions from proposals, all agencies could agree to convert the emissions into CO_2e and to use the same global warming potentials in this conversion.

New regulations or guidance would likely be needed to prompt such action from agencies. At the federal level, this could occur through CEQ regulations clarifying how agencies should make EISs available to the public. States and localities have similar entities that are responsible for coordinating environmental reviews that could also issue regulations or guidance to this effect.

IV. CONCLUSION

EIA documents contain a wealth of information that is valuable in applications beyond the review of a single project. But to make effective use of this information, the public needs to be able to access these documents and search through them in an efficient manner. Several online databases have been created to provide access and enhanced search features for a subset of EIA documents, but they are limited in terms of both scope and functionality.

A centralized online database with the searching, sorting, and filtering features described in Section III would go a long way in terms of promoting access to and use of EIA documents.   The initial development of this database would require a considerable commitment of time and resources, since documents must be located, in some cases digitized, and added to the database, and the relevant metadata (e.g., title and publication data) must be retrieved from those documents. But once the database is created, maintenance could be streamlined by having agencies submit EIA documents and accompanying metadata directly to the database. The public could also have a role in the creation and maintenance of the database: users could upload new documents and correct errors in the records. In this way, the maintenance of the database would become a collaborative effort between the database manager(s), government agencies, and the public at large.

Many questions remain, such as who should take the lead in the creation of such a database[53] and where to obtain funding for this project.[54] One feasible pathway would be to develop a pilot database as a proof-of-concept and then to expand it into a more comprehensive database with buy-in from federal, state and local agencies.[55] Anyone who would like to provide input or otherwise collaborate in this endeavor is welcome to contact the author.[56]

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[53] It would make sense for this project to be a collaboration between the federal government (perhaps acting through CEQ), state governments, and a consortium of NGOs and academic institutions.

[54] Some possible funding sources discussed at the workshop included the Institute for Museum and Library Services (IMLS), the National Archives and Records Administration, and the National Science Foundation (NSF).

[55] The pilot database could cover a subset of EIA documents that are not currently available through other existing databases, such as federal EAs

[56] The author, Jessica Wentz, can be reached at: Jessica.wentz@law.columbia.edu.

APPENDIX A: EIA DATABASE USER GUIDE

A. EPA Database

EPA maintains an online database with records of all federal EISs received by EPA since 1987, PDFs of EPA comment letters published since 2001, and PDFs of federal EISs received by EPA since October 2012.[57] As of June 27, 2016, the database contained a total of 14,468 records of draft, final, and supplemental EISs, and approximately 1,400 PDFs of EISs. The database allows users to search for and filter results by title, federal register publication date, EPA comment letter date, agency, state or territory, and EISs that include EPA comment letters. There are no other search or sorting features.

Federal EIS Database Search Page

<div style="text-align:center">

Search the EIS database by:

Title
EIS titles containing the following words or phrases. Including and/or creates a multiple word search. Example: Mountain *and* Roadway.

Federal Register Publication Date (mm/dd/yyyy)
From   To

EPA Comment Letter Date (mm/dd/yyyy)
From   To

Agency
Select options

State or Territory
Select options

Only EISs with Comment Letters?
Check the box to search for EISs with EPA comment letters.

*If all search criteria are left empty, all EIS records will be returned.

Reset   Search

</div>

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[57] *Environmental Impact Statement (EIS) Database*, EPA.GOV, https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search.

Once the user has generated a list of EIS records, it can then sort those records by title, document type (final, draft or supplemental EIS), EPA comment letter date, federal register date, agency, and state or territory. The user can also download PDFs of EISs and EPA comment letters, where these are available. The documents are downloaded as Zip files, and there may be multiple files for different volumes or sections of the EISs.

Example of Search Results (searched term "oil" in title, no other filters)

Exporter : CSV| Excel| XML| HTML
389 items found, displaying 1 to 20.[First/Prev] 1, 2, 3, 4, 5, 6, 7, 8 [Next/Last]

Title	Document	EPA Comment Letter Date	Federal Register Date	Agency	State	Download Documents
Monument Butte Area Oil and Gas Development Project, Duchesne and Uintah County, UtahImpact Statement for Newfield Exploration Corporation Monument Butte Oil and Gas Development Project in Uintah and Duchesne Counties	Final		06/24/2016	Bureau of Land Management	UT	Download EIS
Gulf of Mexico OCS Oil and Gas Lease Sales: 2017-2022 Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261	Draft		04/22/2016	Bureau of Ocean Energy Management	Multi	Download EIS
Oil and Gas Leasing in Portions of the Wyoming Range in the Bridger-Teton National Forest	Second Draft Supplemental		04/08/2016	Forest Service	WY	Download EIS Download Comment Letters
Programmatic - Outer Continental Shelf Oil and Gas Leasing Program: 2017-2022	Draft	05/01/2016	03/18/2016	Bureau of Ocean Energy Management	Multi	Download EIS Download Comment Letters
Gulf of Mexico OCS Oil and Gas Lease Sale: 2017 Central Planning Area Lease Sale 247	Draft Supplement	04/11/2016	02/26/2016	Bureau of Ocean Energy Management	Multi	Download EIS Download Comment Letters

The EPA EIS database is an extremely useful resource for locating and downloading copies of federal EISs published since October 2012. It is ideal for users who know the title of the EIS they want to locate. But there are some limitations to the database, most notably:

Scope of Environmental Review Documents: The EPA Database does not include PDFs of EISs published before 2012, nor does it include PDFs of other types of environmental review documents, such as EAs and FONSIs.

Limited search features: The database does not allow users conduct a full text search for terms or phrases within the EISs. In addition, the database does not allow users to search and filter EISs by the type of action that is being proposed, or the activities covered by that action. To generate a list of all EISs for a particular action type, a user could use the title and agency search features – e.g., for proposals to construct a natural gas pipeline, the user could search "pipeline" and limit the results to EISs prepared by the Federal Energy Regulatory Commission (FERC). But in many cases, such a search would produce an incomplete and/or superfluous list of results.[58]

B. Northwestern University Libraries EIS Databases

The Northwestern University Transportation Library has compiled an impressive collection of EIA documents. This collection includes hardcopies of nearly all of the federal EISs published from 1970 through October 2012, usually in draft as well as final form, and digital versions of the EISs that EPA has uploaded to its online database since 2012. [59] It also contains some other environmental review documents, such as EAs, FONSIs, and RODs, and a small number of EISs from other jurisdictions. The head librarian estimates that they have as many as 50,000 volumes in their print collection, covering as many as 21,000 EISs in total.

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[58] Take, for example, a user who wants to find all proposals that involve oil and gas drilling approvals. There are multiple agencies that issue such approvals—most notably, the Bureau of Land Management (BLM), the United States Forest Service (USFS), and the Bureau of Ocean Energy Management (BOEM)—and these agencies also authorize many other types of activities, so a search-by-agency would yield many erroneous results. On the other hand, a title search (for terms such as "oil" "gas" and "drilling") would produce an incomplete list of results, because oil and gas drilling often takes place in the context of broader land and resource management proposals and thus the title of the relevant EIS may not contain any of those terms.
[59] Northwestern uploads the digital EISs to its own services due to concerns about online retention on the EPA website.

1. <u>Northwestern Collection Hosted on HathiTrust and Google Books</u>

Over 33,000 of the volumes from the Northwestern University Libraries print collection have been digitized by Google and are now available in full text through Google Books and the HathiTrust digital library.[60] Only the EISs that were stored in book format were digitized and transferred to Google Books and HathiTrust. This means the following items are <u>not</u> included in the collection (unless they have been uploaded by other entities):

- EISs published since October 2012 (because these were already in digital format)

- EISs that were published in 3-ring binders / loose-leaf format

- Fold-outs and oversized pages from EISs

- EISs stored in CDs and microfiche

a. *Using the HathiTrust system*

To use the HathiTrust system, a person must login through a qualifying "partner institution" or create a free user account.[61] There is one major drawback for users who are not affiliated with one of the partner institutions: they cannot download full PDFs of the Google-digitized materials on HathiTrust (this includes all of the EISs from the Northwestern collection). Once you are logged in, you can do a basic search in the search bar (this will apply to all search fields), or an "advanced full text-search" (see below).

HathiTrust Home Page / Basic Search Function

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[60] HATHITRUST DIGITAL LIBRARY, https://www.hathitrust.org/ (last visited July 7, 2016).
[61] HathiTrust's "partner institutions" include over 100 universities. The complete list is available here: https://www.hathitrust.org/community.
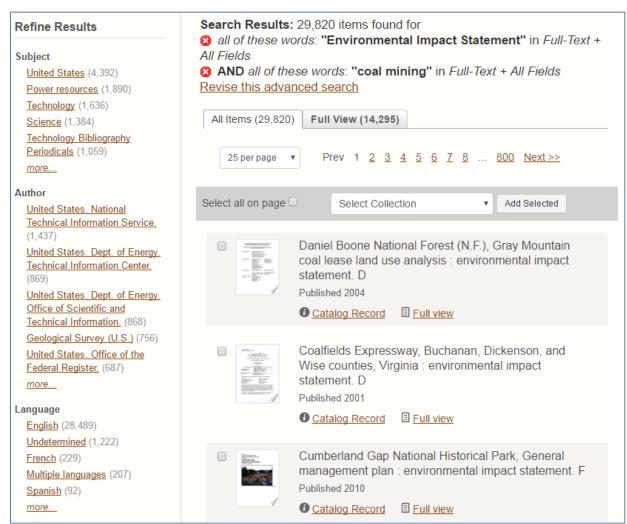
HathiTrust Advanced Search Function

Both the basic and advanced search functions allow users to search for terms within the full text and title of the EIS. Because the HathiTrust collection contains many types of documents, the user will need to specify what type of document they want to obtain in the search field (e.g., "Environmental Impact Statement" or "Record of Decision").

The advanced search function also allows users to search for EISs within a particular date range, and filter results to include only those for which a "full view" of the document is available. There are other search fields, such as author, subject, publisher and series title. This may produce the intended results, but be warned: the relevant data for these fields is not included for many of the EIS records (e.g., the lead agency is frequently

not listed as the author or publisher). Users can work around this with a full text search – e.g., by searching for the name of the lead agency.

The search results page contains links to the catalog information and a PDF of each document. As noted above, only those users who are affiliated with a partner institution can actually download the full document to their computer (others must view the document in the browser).
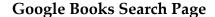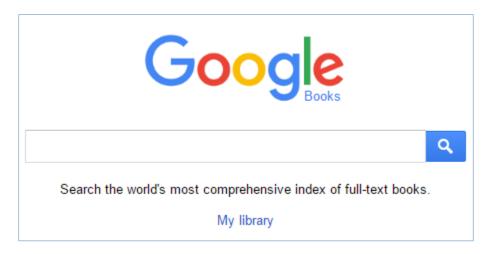
Example of HathiTrust Search Results

b. *Using the Google Books System*

The same collection of documents can also be retrieved through the Google Books platform. That platform provides a single search bar where users can input keywords from

the title, lead agency, publication info, or any text within the book (see next page). As with the HathiTrust database, users will need to include the term "Environmental Impact Statement" in order to filter out other types of documents.

Google Books Search Page

The only advantage of the Google Books database as compared with the HathiTrust database is that users do not need to log in in order to use it. But there are two important disadvantages: (1) it is not currently possible to download the EISs as PDFs from the Google Books website, and (2) the Google Books database contains an even larger collection than HathiTrust, and therefore may produce more false hits.

2. <u>Northwestern Transportation Library Collection</u>

As noted above, some of the EIS materials in the Northwestern Transportation Library collection are not available on HathiTrust or Google Books. These include: (1) EISs published in any format other than a bound book, (2) foldouts and oversized pages from EISs, and (3) the EISs that EPA has already published in a digital format. The Northwestern Transportation Library has created an EIS Discovery Portal which contains records of all of the EISs in its collection, including the items that were not digitized by Google, as well as PDFs of the EISs that were digitized by Google and the EISs that have

been published in digital format by EPA since 2012.[62] Hard copies of these items are also available at the library and through the interlibrary loan system.

Users can search for EISs in the Northwestern University Libraries collection by title and date. Users can also search by "subject" and "author" (lead agency), but like HathiTrust, the relevant information for these fields is not included for all EISs in the database. So using those fields to narrow the search results may result in the exclusion of relevant entries.

Northwestern Transportation Library EIS Search Page

Note that the option to search "anywhere" refers to any of the fields listed in the drop-down box and does not encompass the full text of the document. So, for example, searching for "climate change" from "anywhere" will yield zero results, since this is not included in the title of publication information of any EISs.

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[62] *Environmental Impact Statement Search*, NORTHWESTERN TRANSPORTATION LIBRARY, http://nwu-almaprimo.hosted.exlibrisgroup.com/primo_library/libweb/action/search.do?mode=Basic&vid=NULTRANV&tab=eis&.

C. New York City CEQR Access

The New York City Mayor's Office of Sustainability has recently created an online portal where the public can obtain PDF copies of EISs prepared under the New York City Environmental Quality Review Act (CEQR) called "CEQR Access."[63] Prior to the creation of this database, a person would need to submit a request to the office to view a CEQR document, and then the office would send an electronic copy (if available), pull the hardcopy for in-person viewing, or mail the hardcopy at the requestors' expense. The new online portal makes it much easier and faster for the public to obtain copies of CEQR EISs and other environmental review and permitting documents for CEQR projects.

The online portal contains records of CEQR projects filed with the office from January 1, 2005 to the present. Some older records are also available through the database, but others must be requested from the agency that was responsible for preparing the EIS. Each record contains basic information about the project, and in some cases, links to PDF documents. According to representatives from the office, the database currently contains PDF downloads for approximately 180 CEQR EISs and 6,100 CEQR EAs.[64] Users can search for records by keyword (this searches all other fields, but not the full text of the documents), CEQR number, project name, community district, borough/block/lot, and lead agency. (See image, next page.)
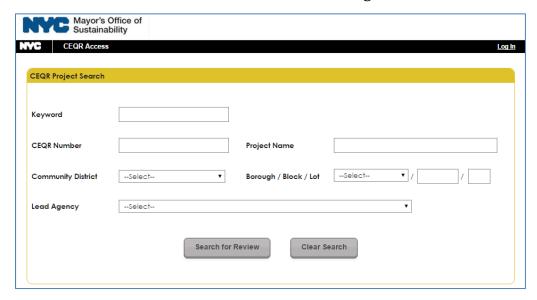
The search will produce a list of one or more relevant records. Each record includes the project name, project description, lead agency, geographical information, and any final documents that are available for download. (See image, next page.)

The online portal also includes a "back end" that contractors and project proponents can use to upload documents to the system for agency review, thus expediting the CEQR review process.
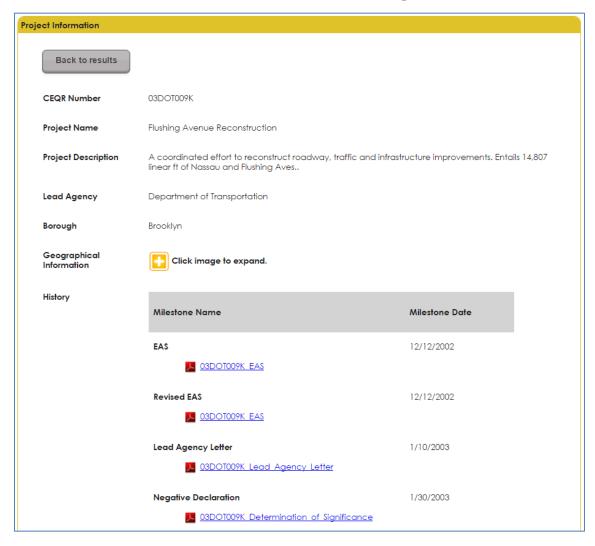
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[63] *CEQR Search*, CEQR ACCESS, https://a002-ceqraccess.nyc.gov/ceqr.

[64] The office is still in the process of digitizing and uploading documents to the database (there are still some entries that do not include downloadable copies of the corresponding EISs and EAs). There are approximately 20 hardcopy EISs that still need to be scanned and uploaded to the database.

CEQR Access EIS Search Page

CEQR Access EIS Record Example

D. MPCA Environmental Review Archive

The Minnesota Pollution Control Agency (MPCA) maintains an online archive of all environmental review documents submitted to the agency.[65] These documents include downloadable copies of EISs and Environmental Assessment Worksheets (EAWs). The archive does not include any search features, but it is possible to view the most recent documents and to filter the documents by project type. The archive is not a comprehensive collection of all state EISs and EAWs because it does not include any EISs or EAWs that were prepared by other agencies, such as the Minnesota Department of Natural Resources (MNDNR). The MNDNR does maintain a list of current and past projects undergoing environmental review with links to project-specific pages and downloadable documents, but these records only date back to 2007.[66]

MPCA Environmental Review Archive

Archived Environmental Reviews

Archived environmental reviews by facility type. Environmental reviews include both Environmental Assessment Worksheets (EAW) and Environmental Impact Statements (EIS). Please note that these reviews are no longer open for public comment. Projects that complete environmental review are not always implemented.

Index by facility type	Recently archived

Air pollution

Electric generating facilities

Fuel conversion

Feedlots

Hazardous waste disposal, processing, or disposal facilities

Mining

Pulp/paper mills

Petroleum refineries

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[65] *Archived Environmental Reviews*, MINNESOTA POLLUTION CONTROL AGENCY, https://www.pca.state.mn.us/quick-links/archived-environmental-reviews.
[66] *Environmental Review – Projects*, MNDNR, http://www.dnr.state.mn.us/eco/ereview/active_rgu.html.

E. CEQAnet Database

The CEQAnet database contains records for all of the CEQA and NEPA documents submitted to the State Clearinghouse for state review since 1990. [67] It is not a comprehensive database of all CEQA and NEPA documents, because not all of these documents are submitted to the Clearinghouse. Users can search by clearinghouse number, date range, project location, keyword with the project title, lead agency, reviewing agency, and document type.

CEQAnet Database Record Search

Notably, the CEQAnet database does <u>not</u> include links to the environmental review documents, nor does it summarize or synthesize the data contained in those documents.

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[67] CEQANET DATABASE, http://www.ceqanet.ca.gov.

The advantage of the database is that it provides a relatively sophisticated system for locating records of most CEQA projects (which then makes it easier for people to find the full documents on other websites).

The CEQAnet records include brief summaries of NEPA EISs, CEQA Environmental Impact Reports (EIRs), Negative Declarations, and other types of NEPA and CEQA documents, as well as the project title, project location, lead agency name, contact information, and a project description. On the results list, you can click on the "project title" to view summaries of all CEQAnet documents associated with the project, or the "document type" to view a more detailed summary for the particular document (these more detailed summaries are also linked to from the project summary page).

CEQAnet Results Page

Click Project Title link to display all related documents. Document Type link will display full document description.					
Records Found: 54					
[First] [Next] [Previous] [Last]					
Page: 1 2					
Query Parameters: Los Angeles, City of None All		Date Range: 2016-04-01 to 2016-06-30			
SCH#	**Lead Agency**	**Project Title**	**Description**	**Document Type**	**Date Received**
2014101004	Los Angeles, City of	El Sereno Park Improvement Project	The proposed project involves the demolition of the old El Sereno Clubhouse and concession stand and construction and installation of several new recreational facilities, including a basketball half-court within the Clubhouse footprint, a jogging path, fitness equipment, picnic tables, benches, and drinking fountains and ADA improvements.	NOD	6/23/2016
2016061048	Los Angeles, City of	Olympic Tower LA	The proposed project would include the demolition of all existing structures on the site and the construction of a mixed use development containing 374 residential units, 373 hotel rooms, 33,498 sq. ft. of office space, a 10,801 sq. ft. conference center, and 65,074 sq. ft. of commercial uses. The project would include 25 commercial condominium units. The proposed project uses would be contained in a 57-story, 742-foot high tower and would contain a total floor area of approx. 778,173 sq. ft.	NOP	6/23/2016
2013011001	Los Angeles, City of	Restoration of Historic Streetcar Service in Downtown Los Angeles	The City of LA is proposing to construct and operate electrically powered streetcar service via one of four alignment alternatives that are analyzed in the Draft EIR. Boarding platforms would be provided on most blocks along the alignment, with final platform locations to be determined in final design. Streetcar service would operate seven days a week; round trip running times would be approximately 35-40 minutes. Power to the streetcars would be provided by a series of traction power substations located along the alignment and delivered by means of overhead catenary wires supported on trolley poles located in the sidewalks along the alignment. A maintenance and storage facility would also be constructed to service streetcar vehicles.	EIR	6/23/2016
2016051028	Los Angeles Unified School District	Los Angeles Academy Middle School Feasibility Study and Remedial Action Plan	The Project involves the preparation and implementation of a Remedial Action Plan (RAP) at the Los Angeles Academy Middle School (LAAMS). The objective of the RAP for an area defined as Operable Unit 3 located within LAAMS is to remediate site-wide groundwater to minimize the potential migration of contaminants to the drinking water wells. There is no immediate health risk because the public is not exposed to the groundwater and the shallow groundwater present at the Project site is not a source of drinking water.	NOD	6/23/2016

F. MEPA Project Tracking System Database

The Massachusetts Environmental Protection Agency (MEPA) maintains a MEPA Project Tracking System database that includes records of Environmental Notification Forms, Environmental Impact Reports, and Notices of Project Change submitted for MEPA review (but does not include downloadable links to each of these documents).[68] There are records available for all projects reviewed by MEPA from 1972 to present, but projects reviewed before the database was created in 1991 may contain less information. In 1998, new search fields for thresholds, watershed, and geographical information were added to improve users' ability to filter results.

MEPA Database Search Page

Search

Back

% = wildcard. For example a% will find all values begining with "a". Searches are case insensitive.

EEA No.:

Municipality:

Project Name:

Proponent Name:

Watershed:

Archive Status:

Monitor Month:

Monitor Year:

Analyst:

Project Type:

Scope Type:

Submission Type:

Action Type:

Threshold:

Search Reset

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[68] *MEPA Online*, MASS.GOV, http://www.mass.gov/eea/agencies/mepa/mepa-online-generic.html.

Each record contains some basic information about the project, and directs readers to "view the project documents" for additional details. But there is no link to those project documents. The MEPA page for reviewing MEPA files directs people to visit a physical location where these files are stored, and notes that the bound documents can be borrowed for up to 4 hours for photocopying (at 10 cents a page).

G. Sabin Center Databases of Climate Change in Federal EISs

The Sabin Center has compiled two excel databases containing information about how certain topics related to climate change are considered in federal EISs.[69] One database covers EISs published from January 2009 through July 2012, the other covers EISs published from August 2012 through December 2014. Each of the databases contains a list of the EISs covered, accompanied by a hyperlink to an online copy of the EIS, as well as references to climate change-related content. The databases can be organized by project type, agency, state, and date. Users can also search for terms within the titles using the "ctrl-f" function.

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[69] *Surveys of Climate Change Considerations in EISs*, SABIN CENTER FOR CLIMATE CHANGE LAW, http://wordpress.ei.columbia.edu/climate-change-law/program-areas/environmental-assessment/eis-surveys/.

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