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COMPILATION OF DIVERSITY FACTORS AND SCHEDULES FOR ENERGY AND COOLING LOAD CALCULATIONS

ASHRAE Research Project 1093-RP

Final Report

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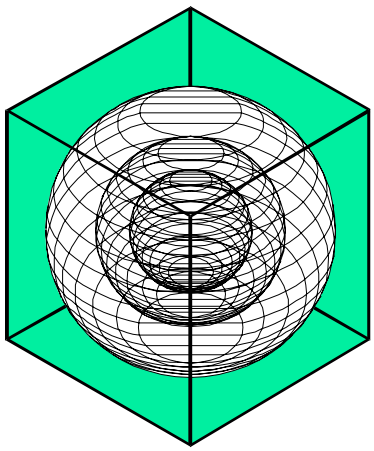

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PREFACE

This is the final report for the ASHRAE 1093-RP project. The project was carried out in three phases, with reports prepared and submitted to the Project Monitoring Subcommittee (PMSC) during the ASHRAE Meetings in Seattle (June 1999), Dallas (January 2000), and Minneapolis (June 2000).

In Phase I a literature review was performed on day-typing analysis and building classification schemes, and an initial search was made of the available databases that could possibly be used by the project. Phase II clarified the available databases, defined the different office categories that would be used, and determined the uncertainty calculations that could be used in the diversity factor calculations. Finally, in Phase III the identified analysis methods were applied to the chosen databases to develop the diversity profiles.

This final report presents the method used to derive the diversity factors and typical hourly load shapes of lighting and receptacle loads in office buildings. In this report the results of the analysis of data collected from databases at the Energy Systems Laboratory (ESL) and the Lawrence Berkeley National Laboratory (LBNL) are reported, and are also provided in electronic format on the accompanying CDROM. This final report was submitted to the PMSC in September 2000, revised and resubmitted in April 2001.

The reader is referred to the previous 1093-RP reports for additional information about the development of this project, including: (1) *Preliminary Report – Literature Review and Database Search*, (2) *Phase II Report – Identified Relevant Data Sets, Methods and Variability Analysis*, and (3) *Phase III Draft Report – Compilation of Diversity Factors and Load Shapes*.

ABSTRACT

This is the final report for the ASHRAE 1093-RP project. This report presents the method used to derive the diversity factors and typical load shapes of lighting and receptacle loads in office buildings. In this report the results of the application of the diversity factor calculations are applied to the data collected for this project. The buildings analyzed for this report consisted of office buildings monitored by the ESL, and office buildings provided by the LBNL.

In this report a day-typing method that uses a percentile analysis is described. In the percentile analysis the 50^{th} percentile was used to calculate the diversity factors and the typical hourly load shapes; other statistics are reported as well, including: the mean, the mean plus or minus one standard deviation, and the 10^{th}, 25^{th}, 75^{th}, and 90^{th} percentiles. This percentile calculation has been codified into a MS Excel spreadsheet that can be used for analyzing up to one year of hourly data in the proper format. A table of comparative EUIs and a summary of the results have also been included to facilitate easier comparison of the profiles.

In general the method divides the year into weekday and weekends; allowing the user to include or remove holidays as needed. The spreadsheet then produces three forms of output; a) tabular output describing the statistics of the diversity profiles that are developed, b) graphical output of the diversity profiles, and c) ready-to-use input files for the DOE-2, BLAST and EnergyPlus simulation programs. Electronic copies of all the diversity factor profiles in this report are provided in the accompanying CDROM as part of the MS Word file.

ACKNOWLEDGEMENTS

This project would not have been possible without the support that was provided by the following persons and/or the agencies or companies for which they work: Ms. Theresa Sifuentes, Mr. Felix Lopez, and Mr. Dub Taylor at the Texas State Energy Conservation Office (SECO) who authorized the use of the LoanSTAR database. Ms. Mary Ann Piette at Lawrence Berkeley National Laboratory (LBNL) who authorized the use of Energy Edge database and Ms. Satkartar Khalsa and Mr. Bruce Nordman (LBNL) who so speedily provided the data. Mr. Todd Taylor, at the Pacific Northwest National Laboratory (PNNL) who provided ELCAP data for the project (not used). Mr. Mike Witte at GARD Analytics who provided the BLAST and EnergyPlus expertise needed to complete the necessary input files.

The authors are also grateful to the ASHRAE Project Monitoring Subcommittee members who have helped to guide the project and have provided useful comments and reviews of the material submitted, including: Prof. Agami Reddy at Drexel University (PMSC Chair), Mr. Joe Huang at LBNL, Prof. Bill Bahnfleth at Penn State University, and Ms. Suzanne Leviseur, Blue Heron Consulting.

Finally, the authors would like to express a word of thanks to the following individuals who helped keep the computers running, the data flowing, and the printers printing at the ESL: Mr. Dan Lockhart, Mr. Jim Sweeney, Mr. John Shoemaker, Mr. Peter Klima, and Mr. Steven O'Neal. Thanks also to Juan Carlos Baltazar-Cervantes who showed us his excellent Excel macros.

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1.0 INTRODUCTION

This is the final report for the ASHRAE 1093-RP project. The project was planned and scheduled over three phases, with reports prepared and submitted to the Project Monitoring SubCommittee (PMSC) during the ASHRAE Meetings in Seattle (June 1999), Dallas (January 2000), and Minneapolis (June 2000). This report presents the method used to derive the diversity factors and typical load shapes of lighting and receptacle loads in office buildings. The results of the application of the analysis to the data collected for this project are reported and are also provided in electronic format on the accompanying CDROM.

1.1 Review of the previous 1093-RP reports.

The previous reports have been submitted to ASHRAE in partial fulfillment of the reporting requirements:

Abushakra, B., Haberl, J., Claridge, D. 1999. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase I Report: Literature Review and Database Search.* Energy Systems Laboratory Report No. ESL-TR-99/05-02, (May).

Abushakra, B., Haberl, J., Claridge, D. 1999. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase II Report: Identified Relevant Datasets, Methods and Variability Analysis.* Energy Systems Laboratory Report No. ESL-TR-99/12-01, (December).

Abushakra, B., Haberl, J., Claridge, D. 2000. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase III Report: Compilation of Diversity Factors and Load Shapes.* Energy Systems Laboratory Report No. ESL-TR-00/06/01, (June)

In the May 1999 Phase I report the following information was presented: (1) an extended literature search of methods used to derive load shapes and diversity factors in the U.S. and Europe, (2) a survey of available databases of monitored commercial end-use electrical data in the U.S. and Europe, and (3) a review of classification schemes of the commercial building stock listed in national standards and codes, and reported by researchers and utility projects. The findings in the preliminary report were used in performing the next steps of the project where the daytyping methods identified were tested on relevant monitored data sets of lighting and equipment to determine the best methods to use.

The literature survey on diversity factors and load shapes covered publications reporting the existence of databases of monitored end-uses in commercial building, methods used in developing the daytypes and load shapes, and what classification schemes were used in the commercial building sector. From the literature on methods used in deriving load shapes of end-uses in the U.S., 12 unique methods were identified that were used when metered end-uses were not available, and/or employed some sophisticated techniques. Besides these methods, some other simpler methods were also reviewed. The simple methods were based on averages and standard deviations of typical daytypes, and usually utilized whenever metered end-uses existed. From the few European papers that were reviewed, only one paper described the methodology of

deriving the load shapes. However, all the European papers are useful in providing a basis for comparison between the energy use in commercial buildings in the U.S. and Europe.

The preliminary report also reviewed previous literature on different classification schemes that were used in various commercial building energy-use daytyping and determination of load shapes projects. This included a review of the various national standards and codes, and major public surveys to identify commercial building classification schemes. As a result of the classification schemes review, the classification followed by the Commercial Buildings Energy Consumption Survey (CBECS) was recommended, which is a national survey of commercial buildings and their energy suppliers that is used to compile the statistics of the commercial building stock in the U.S. The CBECS classification scheme also agrees with that of ASHRAE Standard 90.1.

In the December 1999 Phase II report the sources of the datasets that had been identified in Phase I were contacted and the relevant, available data were collected. The CBECS classification scheme of for office buildings was adopted (i.e., Small: 1,001 - 10,000 ft^2**,** Medium: 10,001 - 100,000 ft^2, and Large: > 100,000 ft^2**).** The analysis methods were reviewed to determine which methods were the most suitable for the diversity factor calculations. Previously published diversity factors were identified, and methods for calculating uncertainty were reviewed. A surrogate variable was also proposed as a substitute for occupancy data since none of the relevant datasets contained accurate, hourly occupancy data.

In the Phase II report it was discovered that most of the methods identified for daytyping and the generation of typical load shapes were primarily developed to disaggregate monitored whole-building electricity consumption data (load research data) into different end-uses to avoid the additional cost of monitoring the end-uses. In these studies that used the disaggregating procedures, after obtaining the reconciled end-uses data, the daytyping procedures were applied to develop typical load shapes. For this project, annual datasets of monitored lighting, equipment, and lighting+equipment loads were identified for office buildings. Thus, there was no need to use the disaggregation methods to disaggregate the whole-building electricity consumption into end-uses.

The June 2000 Phase III report summarized the work completed during the previous phases and reported on the progress toward assembling the diversity factor profiles. During Phase III, the diversity factor profiling method, or daytyping procedure was approved by the PMSC and codified into a MS Excel spreadsheet that ws capable of processing the different data formats from the ESL data and the LBNL data. The daytyping method that was approved was based on a quartile analysis. The 50^{th} percentile was adopted to for the diversity factor, other statistics that proved useful include the mean, mean plus or minus one standard deviation, the 10^{th}, 25^{th}, 75^{th} percentile. The 90^{th} percentile was found to be the most useful for representing the maximum consumption at a given site.

The quartile statistics were found to provide a clear representation of the average load profile and the variation in the derived load shape. Generally one year datasets were used for each site, which were broken into weekends and weekdays sub-groups. Holidays were manually removed from the weekday group from each dataset, and are treated like weekends. This decision to

remove and the treat holidays as weekends was warranted by the way the DOE-2 input file is constructed. EUIs were also calculated using a standard year (i.e., 52 weeks of 5 weekdays and 2 weekends) for each building and reported with building's description. These EUI's are reported along with the channel classification, namely "lighting", "receptacles", or "lighting & receptacles" loads.

The final list of buildings to be analyzed with the diversity factor profiling method included office buildings previously monitored by the ESL, and office buildings from the Energy Edge Buildings, which were monitored by LBNL for a previous project. In the Phase III Report, preliminary profiles were presented for the buildings, along with the corresponding DOE-2 input files.

1.2 Contents of this Final Report

This 1093-RP final report contains a description of the methodology used to calculate the diversity factors, and a library of the 46 derived diversity factors. In Section 2 of this report the diversity factor calculation methodology is presented and includes an overview of the ESL and LBNL datasets, a description of the basic percentile analysis, a discussion of how the analysis is performed on the 1093 diversity factor calculation spreadsheets, and a discussion of the relevant uncertainty calculations that can be applied to the diversity factors.

This is followed by Section 3, which discusses the results of the application of the diversity factor calculations to the ESL and LNBL datasets. In Section 3 a discussion of the calculation procedures within the spreadsheet is presented, which is followed by a discussion of how the user would use a 1093 diversity factor calculation spreadsheet on a new site. This is then followed by a comparative analysis of how well the diversity factor for one of the case study actually represented the data from that site.

In Section 4 the results of the application of the diversity factors to 46 channels that were selected from 32 sites. In this section a graphical summary of diversity factors is presented, followed by the library of diversity factors for 46 channels.

In Section 5 summary diversity profiles are presented in graphical and tabular format that have been derived by averaging the 50^{th} precentile, and 90^{th} percentile plots for each group of sites.

Section 5 is then followed by the library of diversity factor profiles for the 46 sites analyzed.

1.2 **Contents of the CDROM**

Because of its size and complexity, this report is being distributed on CDROM only, and includes the following files:

- Abushakra, B., Haberl, J., Claridge, D. 1999. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Final Report*, Energy Systems Laboratory Report No. ESL-TR-04/99-01 (April).

- Abushakra, B., Haberl, J., Claridge, D. 1999. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase I Report: Literature Review and Database Search.* Energy Systems Laboratory Report No. ESL-TR-99/05-02, (May).

- Abushakra, B., Haberl, J., Claridge, D. 1999. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase II Report: Identified Relevant Datasets, Methods and Variability Analysis.* Energy Systems Laboratory Report No. ESL-TR-99/12-01, (December).

- Abushakra, B., Haberl, J., Claridge, D. 2000. *Compilation of Diversity Factors and Schedules for Energy and Cooling Load Calculations – Phase III Report: Compilation of Diversity Factors and Load Shapes.* Energy Systems Laboratory Report No. ESL-TR-00/06/01, (June).

- A sample spreadsheet DCL001 that contains the data for the U.S.D.O.E. Forrestal Building in Washington, D.C.

2.0 METHODOLOGY

The methodology used to derive the diversity factors and provide the typical load shapes of lighting and receptacle loads for office buildings is based on a analysis that uses percentiles, where the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles are reported for each hour of the day by daytype (i.e., weekday, weekend). The percentile analysis is used instead of the more widely used mean and standard deviation approach, because the lighting and receptacle loads represented by the office buildings studied for this project exhibited Multi-modal Distributions (where the frequency curve exhibits more than two Maxima) rather than a Normal Distribution required by the mean and standard deviation analysis. Furthermore, many of the office buildings had significant outliers that also influence the standard deviation.

A method to account for the uncertainty of using the typical load shapes in energy and cooling load simulation programs has also been developed and is discussed in Section 3.4. In this analysis the uncertainty determines how representative the typical load shapes are of the raw (actual) lighting and receptacles loads in an office building.

2.1 Diversity Factors and Load Shapes

In the 1093-RP Diversity Factor spreadsheet the Mean $\pm$ one Standard Deviation are reported along with the percentile values. The 50^{th} percentile values for each hour of the day are the diversity factors values of the lighting and receptacles loads to be used for the energy calculations of office buildings, whereas the 90^{th} percentile values are the values that are recommended for use for peak cooling load calculations. The 50^{th} percentile is the Median which divides the dataset (for most sites this is one year of hourly data) into two equal parts.

The 90^{th} percentile values are recommended for predicting peak cooling loads from light and receptacle loads. An examination of the datasets revealed that the 90^{th} percentile profile is a more realistic value of a peak profile, since the maximum profile is a profile derived from hourly maximums and rarely represents the events of a single day. In some buildings the maximum profile is almost in agreement with the 90^{th} percentile profile, but in few cases there is a considerable difference between those two profiles.

A comparison of the "*Daily Values*" and the "*Daily Sum from Hourly*" (provided in the tabulated diversity factors in Section 4) illustrates these differences and shows how much the derived hourly diversity factors (and resulting typical load shapes) deviate from a typical day. As can be seen in the tabulated diversity factors and in the "DF & LS" sheets of the MS Excel Workbooks, the "*Daily Values*" and the "*Daily Sum from Hourly*" values differ considerably only for the Mean values, and specially for the Weekends/Holidays daytypes, where more irregular activities can take place in an office building. Thus using the maximum profile as a typical profile for cooling load calculation most often will not represent a real case.

Another important deduction from calculating both the "*Daily Values*" and the "*Daily Sum from Hourly*", is a *reality check* of how representative an aggregated profile (any of the percentiles profile) is of a typical day. The difference between these two values results from "*applying the percentile analysis on the hourly values, then aggregating the results to obtain a typical day*", or,

"*Aggregating the daily values from hourly values, then applying the percentile analysis on the daily values*". If these two daily values match, then the typical load shape (profile) is very representative of an actual energy use on a typical day. Otherwise, it is not. Our results showed a very convincing agreement between these two values (e.g., consult any of the tabulated results in Section 4 below). Therefore, the 46 diversity factors and typical load shapes developed are felt to be representative of a typical internal loads energy use in the surveyed office buildings.

The typical load shapes produced include not only the 50^{th} and the 90^{th} percentiles, but also the 10^{th}, 25^{th}, and the 75^{th} percentiles, to show the whole band that bounds the data, together with the maximum, minimum, mean, for a better illustration of the variation in the data.

2.1.1 Overview of ESL and LBNL data

The data analyzed in this project was provided by the Energy Systems Laboratory (ESL), and Lawrence Berkeley National Laboratory (LBNL). The data consisted of hourly monitored lighting and receptacles loads in various office buildings around the country. LBNL data included the lighting and receptacles loads separately, whereas most of the ESL data consisted of separate channels for Whole-Building Electric (WBE) and Motor Control Center (MCC) loads. The "Lighting and Receptacles" loads - as a sum - were obtained as the difference between the WBE and MCC loads. Cooling loads in these buildings were separately monitored as Btu loads, and therefore were not included in the Whole-Building Electric loads. Table 2.1, below, characterizes the data sets used for this project.

In Column 1 of Table 2.1, the site is categorized according to size (i.e., Small: 1,001 - 10,000 ft^2**,** Medium: 10,001 - 100,000 ft^2, and Large: > 100,000 ft^2**).** In Column 2 the number of the site is listed as it appears in this report. In Column 3 the building ID is listed, which is a value that identifies which logger number used at the ESL. The Column 4 "Site ID" is the label that was assigned to the site for this report and appears on all graphs, tables and figures. Column 5 is the name of the building, and Column 6 is the city and state where the building is located. Column 7 is the area of the building (ft^2**).**

Column 8 is the data type, where: 1) WBE = whole building electricity data, 2) LIGHT = sub-metered lighting data, 3) RECEPT = sub-metered receptacle data, 4) LIGHT+RECEPT = combined, sub-metered lights and receptable data, 5) WBE-MCC = data representative of non-weather dependent loads that are calculated by subtracting motor control center loads from whole-building electricity loads and should not include cooling loads, 6) WBE-MCC-AHU = data representative of non-weather dependent loads that are calculated by subtracting motor control center and air handler loads from whole-building electricity loads and should not include cooling loads, 7) WBE-MCC-Chill = data representative of non-weather dependent loads that are calculated by subtracting motor control center loads plus chiller loads from whole-building electricity loads and should not include cooling loads,

Column 9 is the maximum load (i.e., the actual maximum in the dataset) expressed as a W/ft^2**.** Column 10 is the source of the dataset. Column 11 is the annual EUI (kWh/ ft^2-yr) calculated with 52 weeks of the weekday-weekend median profiles. Columns 12 and 13 are the start and stop dates of the datasets. Column 14 applies to the ESL data and indicates the retrofit data. This

was used as a QC measure to ascertain if the dataset contained data before and after a retrofit. Column 15 contains a qualitative description of the ESL datasets that classifies the data as possible weather-dependent (WD) or non-weather-dependent (NWD). Column 16 identifies the format of the raw data, either 15-minute data or hourly data. Finally, Column 17 indicates whether the ESL data was judged to be good, o.k. or of poor quality, which indicated bad or missing data, and/or problematic data.

The ESL data was obtained from the Informix database and is in columnar, ASCII format with space delimiters, and uses a 0 to 23 hour format where the 0 hour is midnight and the 23 hour is 11:00 p.m. This 0 to 23 data format is created by the Synergistic loggers, which are the predominate loggers used in the Texas LoanSTAR program. Conversely, all the LBNL data except one site (i.e., the Sansome building), is in row format with space-delimiters and uses a 1 to 24 hour format, where hour 24 is midnight. The Sansome building uses the same format as the ESL data.

In this project, the 1 to 24 hour format was chosen for the spreadsheet. Therefore, all 0 to 23 data had to be converted to 1 to 24 hour format prior to processing. One year of hourly data (8,760 values) was typically used for each site to derive the diversity factors. Each dataset was inspected for obvious outliers that needed removing prior to processing. In several of the ESL sites data removals included periods that were exhibiting weather dependency. Holidays that appeared on weekdays were also removed. Several of the LBNL sites also contained synthetic or imputed data that were also removed. In each site all data removals are clearly indicated.

2.1.2 Percentile Analysis

As previously mentioned, a percentile analysis was used to derive the diversity factors for each of the appropriate channels. The data are first sorted in two weekday and weekend daytypes. Then, for both weekdays and weekends, the 10^{th}, 25^{th}, 50^{th}, 75^{th}, 90^{th} percentiles, mean and standard deviation are calculated for each hour for the diversity profile. The median or 50^{th} percentile is used to create the DOE-2, BLAST and EnergyPlus input file. The median was chosen over the mean because it is not effected by outliers. Furthermore, the 10^{th}, 25^{th}, 75^{th}, and 90^{th} percentiles were found to be more robust than the standard deviation when outliers are present in the datatset. Finally, percentile analysis are also more robust with datasets that tend to have a multimodal distribution (where the frequency curve exhibits more than one maxima).

2.1.3 Overview of the 1093-RP Methodology

The 1093-RP diversity factor calculation methodology contained in each of the spreadsheets is illustrated in Figure 2.1. Since the ESL and LBNL formats were very different, this required several preprocessing steps to prepare the data to be input into the same spreadsheet. As mentioned previously, the LBNL data was in 1 to 24 format with one row of data equal to one day's energy use (with the exception of one site that was in 0-23 columnar format). Since this format is exactly what was needed to begin the hourly percentile analysis in the spreadsheet it was read straight into the spreadsheet. A special routine was needed to convert the row-based format into columnar format to facilitate the creation of the time series plot that was displayed for each site. All ESL data required several preprocessing steps. First, all 15-minute data was

converted to hourly data. Then, all hourly data in columnar 0 to 23 data was reformatted into a row format. Finally, the 0 to 23 format was converted into 1 to 24 format.

All ESL and LBNL data were plotted in a time series plot from January through December to allow for a visual inspection for seasonality, and/or weather dependency. This included rearranging several sites that had 12 months of data that did not begin in January. All data that were clearly seasonal, or weather-dependent were rejected and are clearly indicated for each site.

Next, the maximum W/ft^2 value was calculated for each site. This maximum value is used to normalized all the hourly data from each site so that the data can be expressed as a 0 – 1 index that is compatible with the DOE-2, BLAST and EnergyPlus input files. For each of the programs the hourly kW demand from the diversity factors is then calculated by multiplying the 0 - 1 hourly schedule times the maximum kW value. This maximum value is listed in Column 9 of Table 2.1.

The 1 to 24, row-oriented, space-delimited data are then designated with schedule-days values (i.e., 1= Sunday, …7=Saturday), and the data sorted into weekdays and weekends groups from which the percentile values are calculated for the two daytypes.

For each hour (i.e., each hour represents one column within the weekday-weekend daytype groups) the total, mean, mean $\pm$ one standard deviation, maximum, minimum, 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles are calculated and tabulated. All values are then converted to a scale of 0 to 1, by dividing by the absolute maximum value in the dataset to obtain the weekday-weekend diversity factors in tabular and graphical format. A visual inspection of the load shapes was then used to determine if any of the profiles were inconsistent and/or contained data that needed to be eliminated (i.e., known holidays, shutdowns, etc.). For example, a unusually low minimum profile in the weekday group (which looks very much like a weekend profile) usually indicated a Holiday, or a weekday profile in the weekend group usually indicated a special event. In most cases the data associated with these low or high values were removed from the dataset and the

Category	No.	Bldg I.D.	Site ID.	Building	Location	Building Area (sqft)	Data Type	Max Load (W/sqft)	Source	EUI (kWh/sqft.year)	Start Date	End Date	Retrofit Date	WBE	Data Format	Cost	Data Quality
L	1	904	DCL001	USDOE Forrestal Building	Washington D.C	1,200,000	WBE	3.93	ESL	19.99	1/1/94	12/31/94	N/A	NWD			Good
S	2		IDS001a	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT	1.46	LBNL	3.19	1/1/89	12/31/89					
S	3		IDS001b	East Idaho Crd.Union	Idaho Falls, ID	5,300	RECEPT	0.45	LBNL	1.00	1/1/89	12/31/89					
S	4		IDS001c	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT+RECEPT	1.72	LBNL	4.20	1/1/89	12/31/89					
L	5	704	MNL001	State Office Bldg.1	St. Paul, MN	200,829	WBE	3.30	ESL	16.90	1/1/98	12/31/98	7/22/94 - 6/23/95	NWD	15min		Good
L	6	707	MNL002	State Office Bldg.2	St. Paul, MN	281,850	WBE	2.37	ESL	11.45	1/1/98	12/31/98	6/13/94 - 12/28/94	NWD	15min		Good
L	7	710	MNL003	State Office Bldg.3	St. Paul, MN	366,805	WBE	2.31	ESL	11.80	1/1/98	12/31/98	7/1/94 - 12/28/94	NWD	15min		Good
L	8	711	MNL004	State Office Bldg.4	St. Paul, MN	317,286	WBE	4.38	ESL	29.41	1/1/98	12/31/98	5/6/94 - 9/9/94	NWD	15min		Good
M	9	709	MNM002	State Office Bldg.5	St. Paul, MN	87,664	WBE	2.10	ESL	10.88	3/1/96	3/1/97	9/24/94 - 4/5/95	NWD	15min		Good
L	10	963	MTL001	State Office Bldg.8	Butte, MT	100,000	WBE	1.13	ESL	4.19	7/1/98	7/1/99	N/A	NWD			Good
M	11		ORM001a	Director	Portland, OR	79,700	LIGHT	1.15	LBNL	5.58	1/1/91	12/31/91	N/A	NWD			Good
M	12		ORM001b	Director	Portland, OR	79,700	RECEPT	0.60	LBNL	1.79	1/1/91	12/31/91	N/A	NWD			Good
M	13		ORM001c	Director	Portland, OR	79,700	LIGHT+RECEPT	1.69	LBNL	7.36	1/1/91	12/31/91	N/A	NWD			Good
M	14		ORM002a	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT	1.16	LBNL	3.07	1/1/91	12/31/91					
M	15		ORM002b	Emerald PUD, HQ.	Eugene, OR	24,800	RECEPT	0.66	LBNL	2.68	1/1/91	12/31/91					
M	16		ORM002c	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT+RECEPT	1.65	LBNL	5.75	1/1/91	12/31/91					
S	17		ORS001	Dubal Beck	Portland, OR	8,500	LIGHT	1.34	LBNL	4.28	1/1/88	12/31/88					
L	18	146	TXL001	Government Center	Dallas, TX	473,800	WBE-MCC	2.51	ESL	10.61	1/1/95	12/31/95	6/30/92 - N/A	WD			Good
L	19	203	TXL002	John H. Reagan	Austin, TX	169,746	WBE-MCC	4.36	ESL	24.73	1/1/97	12/31/97	4/1/92 - 8/1/92	WD			Good
L	20	206	TXL003	Insurance Building	Austin, TX	102,000	WBE-MCC	3.54	ESL	20.05	1/1/96	12/31/96	4/1/92 - 9/1/92	NWD			Good
L	21	208	TXL004	Archives Building	Austin, TX	120,000	WBE-MCC	1.83	ESL	7.59	1/1/97	12/31/97	4/1/92 - 8/1/92	NWD			Good
L	22	209	TXL005	W.B. Travis	Austin, TX	491,000	WBE-MCC	3.13	ESL	16.46	1/1/97	12/31/97	6/1/92 - 8/1/93	NWD			Good
L	23	210	TXL006	L.B. Johnson	Austin, TX	308,080	WBE-MCC-AHU	5.17	ESL	33.79	1/1/97	12/31/97	1/1/94 - 5/1/94	NWD			Good
L	24	228	TXL007	Price Daniels Building	Austin, TX	151,620	WBE	2.76	ESL	15.95	1/1/98	12/31/98	2/1/94 - N/A	NWD			Good
L	25	229	TXL008	Tom C. Clark Building	Austin, TX	121,654	WBE	1.75	ESL	12.32	1/1/98	12/31/98	2/1/94 - N/A	NWD			Good
L	26	975	TXL010	Brazos County Courthouse	Bryan, TX	100,000	WBE-MCC	3.59	ESL	19.70	7/1/98	7/1/99	N/A	WD			Good
L	27	200	TXL011	Capitol Building	Austin, TX	282,499	WBE	3.39	ESL	21.17	7/1/97	7/1/98	N/A	NWD			OK
L	28	201	TXL012	Sam Houston Building	Austin, TX	182,961	WBE	5.39	ESL	30.18	1/1/93	12/31/93	N/A	NWD			OK
M	29	205	TXM001	James E. Rudder	Austin, TX	80,000	WBE-MCC	5.22	ESL	34.42	1/1/94	12/31/94	4/1/92 - 8/1/92	WD			OK
M	30	207	TXM002	Insurance Annex	Austin, TX	62,000	WBE-MCC-Chill	2.21	ESL	11.63	1/1/93	12/31/93	4/1/94 - N/A	WD			Good
M	31	226	TXM003	Central Services Building	Austin, TX	97,030	WBE - Chill	3.76	ESL	13.49	1/1/96	12/31/96	2/1/94 - N/A	NWD			Good
M	32	227	TXM004	Supreme Court Building	Austin, TX	72,737	WBE	2.22	ESL	11.64	1/1/98	12/31/98	2/1/94 - N/A	NWD			Good
M	33	951	TXM005	Administration Building	Dallas, TX	42,385	WBE	3.5	ESL	14.94	1/1/98	12/31/98	N/A				OK
L	34		WAL001a	Bellevue Place	Bellevue, WA	389,000	LIGHT	1.34	LBNL	6.05	1/1/91	12/31/91					
L	35		WAL001b	Bellevue Place	Bellevue, WA	389,000	RECEPT	0.40	LBNL	2.41	1/1/91	12/31/91					
L	36		WAL001c	Bellevue Place	Bellevue, WA	389,000	LIGHT+RECEPT	1.71	LBNL	8.44	1/1/91	12/31/91					
L	37		WAM001a	Eastgate	Bellevue, WA	25,100	LIGHT	0.77	LBNL	2.58	1/1/91	12/31/91					
L	38		WAM001b	Eastgate	Bellevue, WA	25,100	RECEPT	0.65	LBNL	2.36	1/1/91	12/31/91					
L	39		WAM001c	Eastgate	Bellevue, WA	25,100	LIGHT+RECEPT	1.35	LBNL	4.94	1/1/91	12/31/91					
L	40		WAM002	West Yakima	Yakima, WA	16,200	RECEPT	0.47	LBNL	1.10	1/1/89	12/31/89					
L	41		WAM003a	Evergreen	Tacoma, WA	21,100	LIGHT	2.31	LBNL	12.00	1/1/90	12/31/90					
L	42		WAM003b	Evergreen	Tacoma, WA	21,100	RECEPT	0.18	LBNL	0.72	1/1/90	12/31/90					
L	43		WAM003c	Evergreen	Tacoma, WA	21,100	LIGHT+RECEPT	2.43	LBNL	12.72	1/1/90	12/31/90					
S	44		WAS001a	STS	Ellensburg, WA	4,000	LIGHT	2.45	LBNL	4.77	1/1/90	12/31/90					
S	45		WAS001b	STS	Ellensburg, WA	4,000	RECEPT	0.79	LBNL	0.95	1/1/90	12/31/90					
S	46		WAS001c	STS	Ellensburg, WA	4,000	LIGHT+RECEPT	3.01	LBNL	6.11	1/1/90	12/31/90					

Table 2.1: Complete Summary of the 1093-RP Case Study Buildings.

diversity factors recalculated. The dates of the removed data are indicated for each site.

The EUI (kWh/ft^2 year)for each site is calculated using the daily total for weekdays and weekends using the following formula:

$$EUI = \frac{\left[(WeekdayDailyMeanValue \times 5) + (WeekendDailyMeanValue \times 2)\right] \times 52 \times PeakW / ft^2}{1000} \quad (1)$$

where:

WeekdayDailyMeanValue is a dimensionless value obtained by dividing the weekdays daily mean by the absolute maximum hourly value in the weekdays maximum profile,

WeekendDailyMeanValue is a dimensionless value obtained by dividing the weekends daily mean by the absolute maximum hourly value in the weekdays maximum profile.

These EUI values derived from the diversity factors are then compared with the EUI's calculated directly from the raw data (Total kWh per year divided by the square footage) to assure that the data manipulation during the derivation of the diversity factors is free of calculation errors.

The last step in 1093-RP methodology is the preparation of the ready-to-use DOE-2, BLAST, and EnergyPlus input files that incorporate the diversity factors, and the installed capacity of lighting and receptacles. The diversity factors used in the input files as shown in the report and included in the CDROM are the 50th percentile values for use in energy calculations.

2.2 Uncertainty Calculation

The uncertainty in developing typical load shapes has been categorized in three major groups (Akbari et al. 1989): (1) Uncertainty associated with the input data, for instance, load research data, (2) Uncertainty associated with the estimation method, for instance, aggregation of load research data by building type to obtain average whole-building load shapes, development and use of statistical weighting factors, and regression of weather whole-building load against weather data, and (3) Uncertainty associated with the procedures used to process the typical load shapes. For example, averaging hourly end-use data into load shapes for the daytypes, and estimation of final load shapes.

The *measurement errors* in load research data have three causes (Reddy et al. 1999):
(1) calibration errors, (2) data acquisition errors, and (3) data reduction errors.

Although we used measured data for this project, we did not attempt to calculate the m*easurement errors* that account for the imbedded uncertainty in the raw data sets, and therefore, we assumed that the data sets are *precise.* This is probably a reasonable assumptino since both LBNL and ESL have procedures in place for calibrating all sensors before they are put into the field and employ QC measures for preprocessing their data to check for sensor drift, etc.

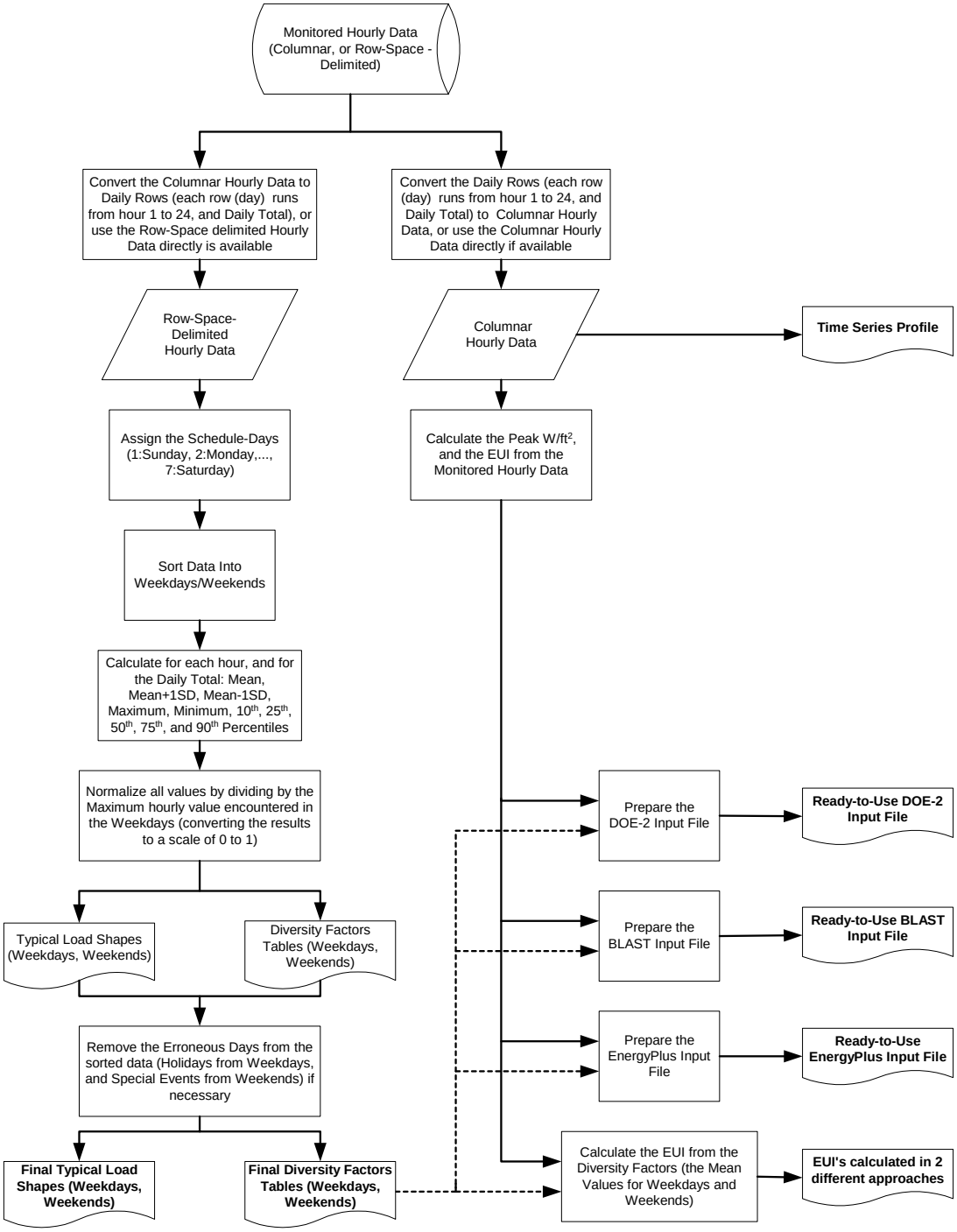


Figure 2.1: Flowchart of the RP-1093 Method

We are accounting for the errors emerging from the modeling (calculations and daytyping techniques) as described below. To account for the variability of the results, Noren and Pyrko (1997, and 1998a and b) showed the final typical load shapes as three curves: (1) Mean, (2) Mean + One Standard Deviation, and (3) Mean - One Standard Deviation.

The band between "*mean + one standard deviation*" and "*mean - one standard deviation*" is equal to a 68.27% Confidence Interval, which provides the range in which the "true value" exists with a defined probability. The confidence limits are calculated for each hour in the typical load shape.

The mean can be defined with any confidence level using the following equation:

$$\overline{X} \pm z_c\left(\frac{\sigma}{\sqrt{N}}\right) \qquad (2)$$

where:

$\overline{X}$ = the mean for each hour (1 to 24)

z_c = the critical value of the confidence level (found tabulated in statistics textbooks)

σ = the standard deviation for each hour (1 to 24)

N = sample size (for each hour, the number of days in each daytype).

Unfortunately, the confidence interval defined in Equation (2) is appropriate when the data shows a *normal distribution*, which is not the case with the lighting and equipment data distributions collected for this research project as illustrated in Figure 2.2.

The lighting and equipment hourly data for the whole year can be binned to show the frequencies and the cumulative percentages of the whole data set (Figure 2.2). The histogram shows clearly that the data do not exhibit *a normal distribution*, rather the data suggest a clear m*ultimodal distribution* (i.e., the data exhibit more than one maxima). Therefore, it is more appropriate to account for the *confidence interval* of the results with a *percentiles measure of central tendency*, instead of the *mean* and the *standard deviation*.

Since the typical load shapes are viewed as median values (i.e., the 50th percentiles), the 25th and the 75th percentiles can be used to establish the central tendency of the data. This interval, or band, covers 50% of the data that are used to define a typical value for each hour. The 25th and the 75th percentiles are calculated for each hour, and the confidence limits is calculated for each hour as follows:

$$\frac{1}{2}\left(P_{25} + P_{75}\right) \pm \frac{1}{2}\left(P_{75} - P_{25}\right) \qquad (3)$$

where:

$(1/2)(P_{25}+P_{75})$ is a measure of central tendency, and

$(1/2)(P_{75}-P_{25})$ is the semi 25-75th percentile range.

On the other hand, to account for the degree to which the typical load shapes represent the actual measured dataset from different buildings categories, i.e., small, medium, and large office buildings, a "typical year" of hourly lighting and equipment load shapes can be developed by multiplying the calculated diversity factors of each daytype by the corresponding intensities and projecting the results over the whole year. The differences between this "typical year" of lighting and equipment loads and a whole year of "actual" data can be accounted for in the following fashion:

- binning the data (for instance, in 10kWh/h bins) and obtaining the frequencies in each bin, and the corresponding cumulative percentages (Figure 2.2, below), and
- calculating the percentiles for the whole set of hourly data.

This procedure will be performed on both, the "typical year" and the "actual year" of hourly lighting and equipment loads, and the variability is accounted for by calculating the Coefficient of Variance of the Root Mean Square Error (CV_{RMSE}%) and the Mean Bias Error (MBE%) of: (1) the frequency of the data, (2) the cumulative percentages, and (3) the percentiles. The results will determine how representative the typical load shapes are of the actual lighting and equipment loads in office building.

Another way of comparing the frequencies in the whole-year of data generated with the typical load shapes, and those associated with a monitored data sate can be performed by comparing the frequencies (shown in Figure 2.2, above) by using the χ^2 statistic as follows:

$$\chi^2 = \sum_{j=1}^{k} \frac{(t_j - a_j)^2}{a_j} \qquad (4)$$

where:

j is the data bin (for instance the 10 kWh/h bin), and k is the total number of bins

t_j is the typical frequency

a_j is the actual frequency

If $\chi^2 = 0$, the typical and actual frequencies agree exactly; while if $\chi^2 > 0$, they do not agree exactly. In practice, χ^2 can be computed and compared with critical values such as $\chi^2_{0.95}$ or $\chi^2_{0.99}$, designating the 0.05 and 0.01 significance levels respectively, which are found tabulated in statistics textbooks. If the results are greater than a certain defined critical value, than one can

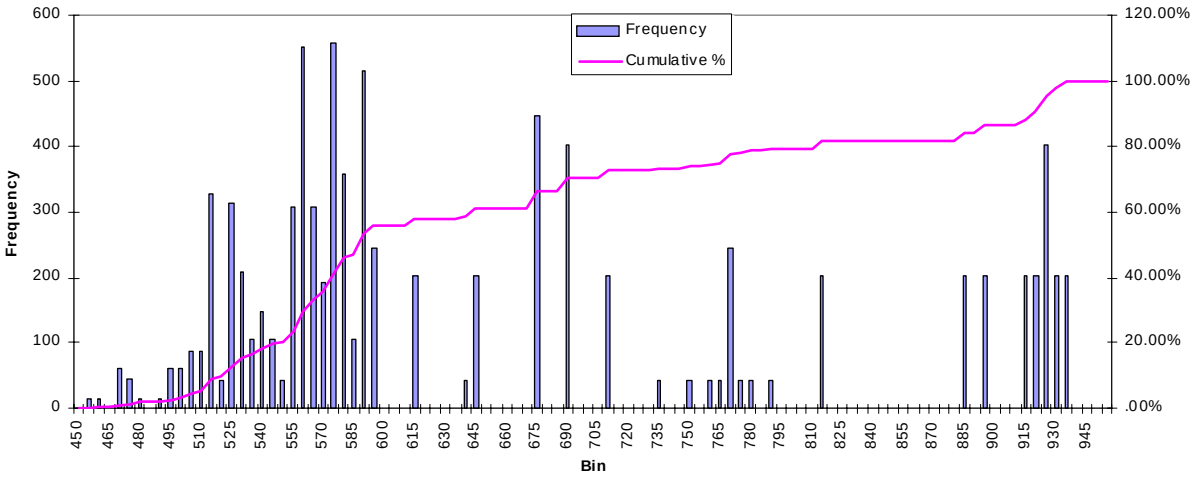


Figure 2.2: Histogram of a Whole-year of Hourly Lighting and Equipment Loads (data generated with a DOE-2 simulation for the Engineering Center).

conclude that the typical frequencies differ significantly from the actual frequencies obtained from a certain monitored data set, and thus the typical load shape is not representative of the "actual" load shape.

It is worth adding that when consulting the tables in a textbook, one should use a *Degree of Freedom*, herein found as:

$$\nu = k - 1 \qquad (5)$$

where;

n is the degree of freedom, and

k is the total number of bins.

3.0 RESULTS: THE 1093-RP DIVERSITY FACTOR CALCULATION SPREADSHEET

The two primary deliverables contained in this final report are: the 1093-RP Diversity Factor Calculation spreadsheet, and the library of 46 diversity factors and typical load shapes of lighting and receptacles loads for energy and cooling loads calculations in office buildings. These diversity factors are tabulated and plotted as typical load shapes, and are also provided as ready-to-use input files for major energy simulation programs namely, DOE-2, BLAST and EnergyPlus. The results are displayed in this report and also provided electronically on the accompanying CDROM.

3.1 Introduction

A search of the available monitored datasets that represented office building lighting and receptacle loads in the U.S. and Europe found the LBNL Energy Edge Buildings datasets and the ESL office building datasets suitable for the case study sites (see Table 2.1 above). Data from the ELCAP project was also received and reviewed, but was not used in the project. Other datasets were identified but various difficulties and restrictions prevented their use in this project, as detailed in the 1093-RP progress reports (Abushakra et al. 1999a, 1999b; and 2000).

In the following section we provide a step-by-step procedure that describes the processing the data in the EXCEL spreadsheets. Additionally, instructions are provided for users on how to use the spreadsheets, followed by an example of the uncertainty calculations.

3.2 Spreadsheet for Diversity Factor Calculation

The EXCEL spreadsheet workbook that incorporates the 1093-RP Diversity Factor calculation is illustrated in Figure 3.1 below. It includes a total of five spreadsheets:

- The "*DF & LS"* spreadsheet is where the basic calculations for deriving the diversity factors are performed, and the typical load shape graphical and tabular profiles produced.

- The "*EUI & Time Series"* spreadsheet is where the EUI's are calculated in two approaches (from the row data and from the diversity factors) and compared as a reality check.

- The *"DOE-2 Input"* spreadsheet is where the ready-to-use DOE-2 input file is prepared including the installed capacity of lighting or receptacles and the weekday and weekend schedules.

- The *"BLAST Input"* spreadsheet is where the ready-to-use DOE-2 input file is prepared including the installed capacity of lighting or receptacles and the weekday and weekend schedules.

- The *"EnergyPlus Input"* spreadsheet is where the ready-to-use DOE-2 input file is prepared including the installed capacity of lighting or receptacles and the weekdays and weekends schedules.

3.2.1 Preprocessing the Raw Data

Since both columnar 1 to 24 format and row 1 to 24 format data are required for this analysis, routines were developed for performing both data format conversions within the

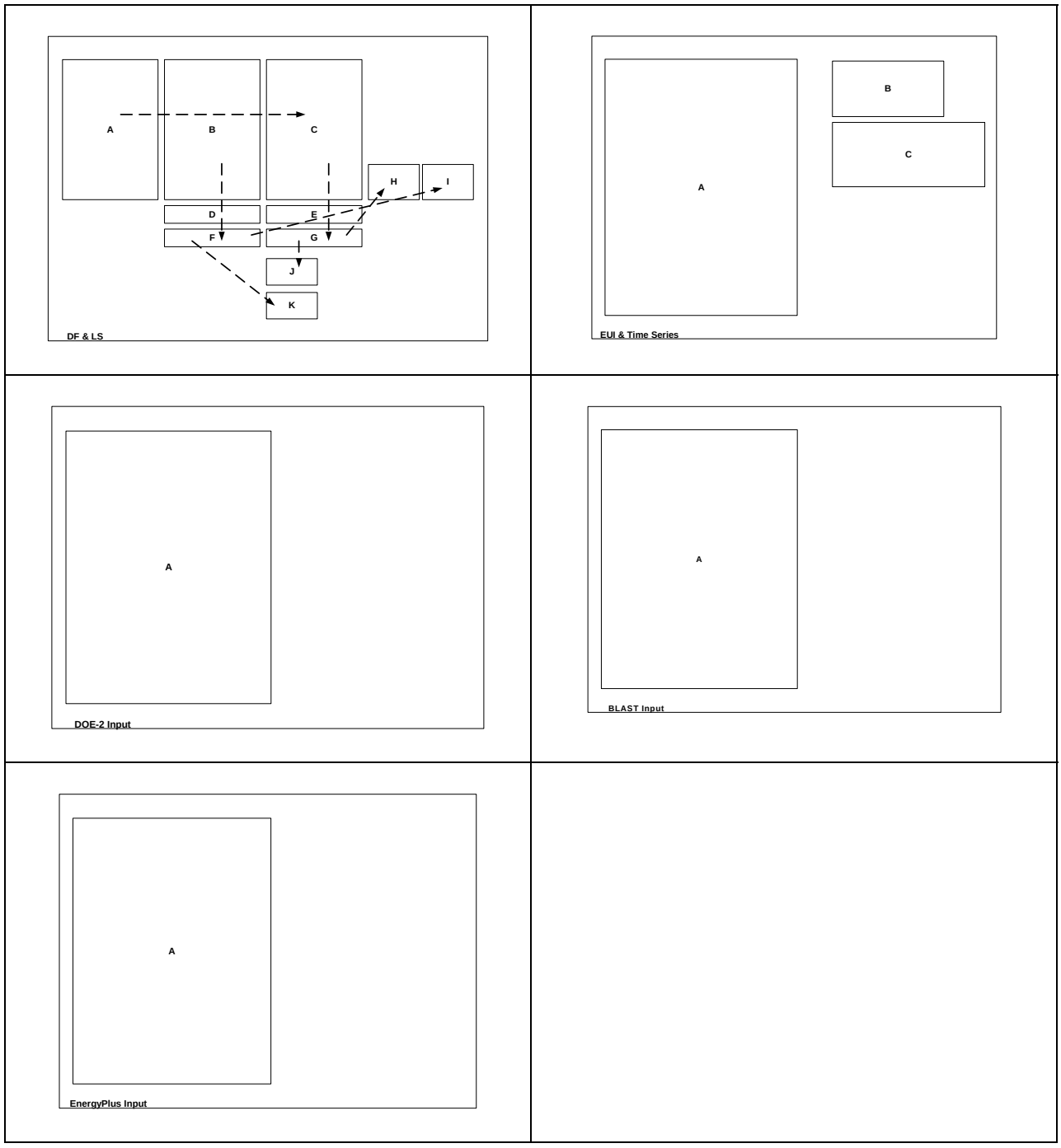


Figure 3.1: The EXCEL spreadsheet implementing the RP-1093 Method and the generation of the DOE-2, BLAST, and EnergyPlus Input Files.

EXCEL spreadsheet. A maximum of one year of hourly data is required in the analysis. If a data set of a length of less than one year is used, blanks are used to fill-in the missing data, as these do not affect the way the diversity factor calculations.

3.2.2 Basic Calculation

The main "sheet" in the EXCEL workbook is the *"DF & LS"* sheet (Figure 3.1). "DF & LS" consists of 11 calculation blocks:

- *Block "A"* is where the row-space-delimited hourly data is displayed. In addition to the hourly values the data set includes the year, month, date, schedule-day, and the total daily values. Two total daily values are displayed that represent the daily total of the raw monitored data and any new total value that can be calculated after the data is processed for filling-in certain gaps of missing values, or removing erroneous values.

- *Block "B"* is where the sorted weekend hourly values are displayed.

- *Block "C"* is where the sorted weekday hourly values are displayed.

- *Block "D"* is where the tabulated, original statistics (mean, mean + 1 standard deviation, mean – 1 standard deviation, maximum, minimum, 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles) of the weekend data are displayed. As the analysis is performed on the hourly values and the total (daily) values, another parameter is included in this table which is the calculated daily values obtained as a summation of the 24 hourly values for each statistic.

- *Block "E"* performs the same analysis as in Block "D", on the weekday data.

- *Block "F"* is where the values calculated in Block "D" are normalized by dividing them by the absolute maximum value of the weekdays maximum profile (from Block "E"). This normalization produces values scaled between 0 and 1, which provides the diversity factors as required in the energy simulation programs (i.e., the hourly schedules). In the simulation programs, these schedules are multiplied by the installed capacity of the corresponding load (lighting or receptacles), to provide the hourly energy use.

- *Block "G"* performs the same analysis as in Block "F", on the weekday data.

- *Block "H"* displays the diversity factors and the accompanying statistics for the weekday diversity factors in a tabulated, columnar format.

- *Block "I"* displays the diversity factors and the accompanying statistics for the Weekend diversity factors in a tabulated, columnar format.

- *Block "J"* displays the typical load shapes for the weekday daytype.

- *Block "K"* displays the typical load shapes for the weekend daytype.

In most cases, an initial processing is performed on a dataset, daytype profiles are inspected and unwanted outliers are removed, then, calculations are repeated until the an appropriate diversity factor is obtained. The inspection of the daytype profiles usually reveals unusually low or high profiles that appear as maximum, minimum, 90^{th}, or 10^{th} percentiles profiles. In most cases these are caused by weekday holidays, or special weekend events when systems were left on. Simply removing that specific day from the data set (in Block "B" or "C") will automatically correct the results throughout the entire EXCEL workbook.

The *"EUI & Time Series"* spreadsheet has three calculation blocks:

- *Block "A"* displays the measured data in a columnar format with a time stamp.

- *Block "B"* includes the maximum kWh/h, total kWh/year, peak W/ft^2, conditioned square footage, and EUI calculated from the measured data as provided before performing the diversity factors derivation, and from the mean profiles after performing the diversity factor derivation. This block served as a reality check for the EUI values.

- *Block "C"* displays the measured hourly data as a year long time series plot. The time series plot helps in figuring any obvious weather-dependency in the data, or any season-dependency (i.e., summer/winter schedules) which can be indicating the shorter daylight hours in winter and or operation/schedule changes for extreme northern locations.

The *"DOE-2 Input", "BLAST", and "EnergyPlus Input"* spreadsheets include the ready-to-use (i.e., cut and paste) files that can be incorporated directly into the input files of these energy simulation programs. These input files indicate the level of the lighting/receptacles loads (W/ft^2) and the hourly schedules, together with an "example" percentage of heat gain dissipated directly to space, lighting type, zone-names, schedule names, specific holiday dates, and radiant fractions of heat gains that can be changed by the user of the simulations.

It is worth mentioning that these schedules in the input files treat holidays as weekends, and thus uses the weekend diversity factor for the holidays as intended in the 1093-RP methodology.

3.2.3 Producing Tables and Graphs

A library of 46 diversity factors has been produced for the 1093-RP final report (i.e., this final report, and the accompanying CDROM). The tabular, graphical and input files are provided for each site in the following section and the complete spreadsheet workbook for each site is provided, as well. Tables and graphs for a given site can be extracted from this final report or from the accompanying spreadsheet workbook.

3.2.4 Producing the DOE-2, BLAST, and EnergyPlus Input Files

The input files for the DOE-2, BLAST, and EnergyPlus programs are produced for each data set analyzed. These input files are ready-to-use as a part of the users' input files for an ideal description of the energy use of lighting and receptacles loads in Office buildings.

3.2.5 Using the Results of the 1093-RP Diversity Factor Calculations Office Building Datasets.

The final deliverable in the 1093-RP project includes a library of 46 diversity factors and load shapes, which is based on a percentile analysis. The 50^{th} percentile was adopted as the diversity factors for energy calculations and the 90^{th} percentile was used for cooling loads calculations. Other statistics were also calculated , such as the mean, mean + 1 standard deviation, mean - 1 standard deviation, 10^{th}, 25^{th}, 75^{th}, 90^{th} percentile, maximum, and minimum. These additional statistics provide a clearer representation of the variation in the derived typical load shape.

The library of 46 diversity factors and load shapes covers the buildings analyzed for this project, and each case is summarized and reported in six pages. The profiles are presented in summary format to allow the user to quickly identify a profile from the library of 46 profiles. Detailed information about each site is then presented in the pages that follow. An electronic copy of the results (i.e., EXCEL workbooks) are provided on the accompanying CDROM.

The six pages that describe the diversity factor profiles for each site consist of the following:

Page 1 - *Building Description*, includes:

- The Site I.D.
- Building Name
- Source of Data
- Building Location
- Building Category
- Square Footage
- Lighting / Receptacles EUI's
- Lighting Type
- Length of the Processed Data Set (Dates)
- Data Type (Lighting, Receptacles, Lighting+Receptacles, etc…)
- Maximum kW
- Time series plot of the dataset

Page 2 - *Typical Load Shapes of the Daytypes*, includes:

- The Typical Load Shapes for the weekday daytype
- The Typical Load Shapes for the weekend daytype
- The days excluded from the weekday daytype for having extreme values usually lying below the 10^{th} or above the 90^{th} percentiles. These days are mostly holidays or special events.

Page 3 - *Diversity Factors and Statistics*, includes:

- For the weekdays daytype, the Diversity Factors of the building being considered. The 50^{th} percentile values are the values to be used for energy calculations by the users, while the 90^{th} percentile can be used for cooling loads calculations. In addition, the rest of the statistics (mean, mean $\pm$ 1 standard deviation, etc..) are useful in shedding more light into the derived diversity factors. Two "Daily" values are also included for each statistic. *Daily Values* is the statistic applied on the daily total values of the monitored data set, while the *Daily Sum from*

Hourly is the daily aggregated value as the statistic is applied on the hourly (hour-of-day) data. A comparison between these two daily values provides an idea of how much the derived typical load shapes (i.e., hourly diversity factors) deviate from a typical day.
- Similar analysis is provided for the weekends daytype.

Page 4 - *DOE-2 Input Sample*, includes:
- A ready-to-use example of the Lighting/Receptacle schedule within the DOE-2 simulation program. The example also includes an example lighting level, heat gain from light to space (equipment to space) and the names (can be changed by the user) of: (1) Building Zone(s) where this schedule is to be applied, (2) Lighting/Receptacle schedule. These commends will be included by the user in the LOADS part of the DOE-2 input file.

Page 5 - *BLAST Input Sample*, inlcudes:
- A ready-to-use example of the Lighting/Receptacle schedule within the BLAST simulation program. The example includes also lighting type, lighting level, the heat gain from light to space (equipment to space), the names (can be changed by the user) of Lighting/Receptacle schedule, percent visible, percent of heat gain dissipated to return air, and percent radiated.

Page 6 – *EnergyPlus Input Sample*, inlcudes:
- A ready-to-use example of the Lighting/Receptacle schedule within the EnergyPlus simulation program. The example includes also lighting type, lighting level, the heat gain from light to space (equipment to space), the names (can be changed by the user) of Lighting/Receptacle schedule, percent visible, percent of heat gain dissipated to return air, and percent radiated.

3.3 Using the 1093-RP Diversity Factor Spreadsheet for Producing New Diversity Factors

To begin with, the user is required to assure that his/her new datasets do not show any seasonality (Summer-Winter operational changes) and/or weather dependency, as this would produce a non-typical diversity factor and load shapes.

To produce new sets of diversity factors whenever the required data (one whole year of hourly data) is available with the user, first the data should be made available in both columnar and row-space-delimited formats.

The new data is then cut and pasted into an existing workbook, and the date (specific calendar year used) checked to ascertain that the correct schedule-days have been calculated (i.e., 1-7). The whole workbook then will be updated automatically as the data will be sorted into weekdays and weekends: new tables of diversity factors and the typical load shapes will be produced, and new DOE-2, BLAST, and EnergyPlus Input Files will be written.

3.4 Comparison of Predicted Daytype Profile vs Actual Data.

In this section the one year of hourly *measured* and *predicted* lighting and receptacles load (kWh/h) for building TXL004 is evaluated. The *predicted* lighting and receptacles load is calculated using the 1093-RP typical load shapes procedure, which is then multiplied by the

installed capacity W/ft^2. The *predicted* year is constructed by creating 52 weeks of 5 weekday load shapes and 2 weekend load shapes, and filling in the known holidays with weekend load shapes.

The total yearly *measured* load is 885,224 kWh, while the Predicted load is 888,739 kWh -- a <1% bias error (0.40%), which says the predicted load accurately represents the measured data.

Figure 3.2 is a scatter plot of the *measured* load vs. the *predicted* load:

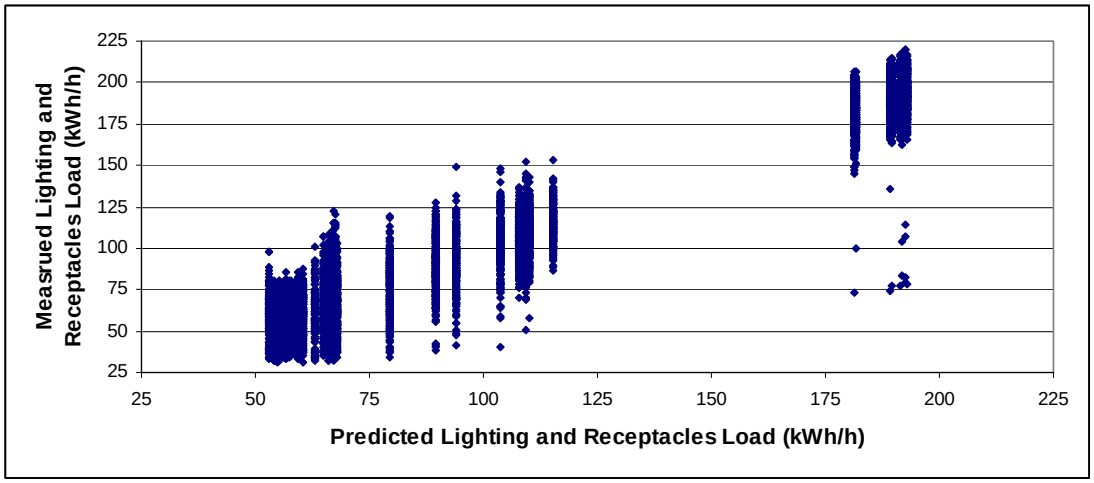


Figure 3.2: Scatter plot of measured load vs predicted load for building TXL004.

4.0 RESULTS: DERIVED DIVERSITY FACTORS

4.1 Derived Diversity Factors

This section of the report contains the individual diversity factors for 46 different channels that utilize data from 32 different buildings (i.e., 23 ESL sites and 9 LBNL sites), as shown in Table 4.1. In the ESL sites weather independent data included: whole-building electricity (WBE) use which contains lights, receptacles and the electricity use of air-handling units, computers, etc.; and a derived light+receptacle channel calculated by subtracting cooling related data from whole-building electricity use (i.e., WBE-MCC, WBE-Chillers, WBE-MCC-AHU, or WBE-MCC-Chillers).

In 7 of the 9 LBNL sites there were sub-metered channels for lights and receptacles, which were used to create (3) diversity factors for lights, receptacles and lights+receptacles. In Figure 4.1 (weekdays) and Figure 4.2 (weekends) which follow, a graphical summary of the diversity factors is presented. Immediately following this section is the presentation of the individual diversity factor calculations for the 46 different channels of data.

Category	No.	Bldg I.D.	Site ID.	Building	Location	Building Area (sqft)	Data Type
L	1	904	DCL001	USDOE Forrestal Building	Washington D.C	1,200,000	WBE
S	2		IDS001a	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT
S	3		IDS001b	East Idaho Crd.Union	Idaho Falls, ID	5,300	RECEPT
S	4		IDS001c	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT+RECEPT
L	5	704	MNL001	State Office Bldg.1	St. Paul, MN	200,829	WBE
L	6	707	MNL002	State Office Bldg.2	St. Paul, MN	281,850	WBE
L	7	710	MNL003	State Office Bldg.3	St. Paul, MN	366,805	WBE
L	8	711	MNL004	State Office Bldg.4	St. Paul, MN	317,286	WBE
M	9	709	MNM002	State Office Bldg.5	St. Paul, MN	87,664	WBE
L	10	963	MTL001	State Office Bldg.8	Butte, MT	100,000	WBE
M	11		ORM001a	Director	Portland, OR	79,700	LIGHT
M	12		ORM001b	Director	Portland, OR	79,700	RECEPT
M	13		ORM001c	Director	Portland, OR	79,700	LIGHT+RECEPT
M	14		ORM002a	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT
M	15		ORM002b	Emerald PUD, HQ.	Eugene, OR	24,800	RECEPT
M	16		ORM002c	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT+RECEPT
S	17		ORS001	Dubal Beck	Portland, OR	8,500	LIGHT
L	18	146	TXL001	Government Center	Dallas, TX	473,800	WBE-MCC
L	19	203	TXL002	John H. Reagan	Austin, TX	169,746	WBE-MCC
L	20	206	TXL003	Insurance Building	Austin, TX	102,000	WBE-MCC
L	21	208	TXL004	Archives Building	Austin, TX	120,000	WBE-MCC
L	22	209	TXL005	W.B. Travis	Austin, TX	491,000	WBE-MCC
L	23	210	TXL006	L.B. Johnson	Austin, TX	308,080	WBE-MCC-AHU
L	24	228	TXL007	Price Daniels Building	Austin, TX	151,620	WBE
L	25	229	TXL008	Tom C. Clark Building	Austin, TX	121,654	WBE
L	26	975	TXL010	Brazos County Courthouse	Bryan, TX	100,000	WBE-MCC
L	27	200	TXL011	Capitol Building	Austin, TX	282,499	WBE
L	28	201	TXL012	Sam Houston Building	Austin, TX	182,961	WBE
M	29	205	TXM001	James E. Rudder	Austin, TX	80,000	WBE-MCC
M	30	207	TXM002	Insurance Annex	Austin, TX	62,000	WBE-MCC-Chill
M	31	226	TXM003	Central Services Building	Austin, TX	97,030	WBE - Chill
M	32	227	TXM004	Supreme Court Building	Austin, TX	72,737	WBE
M	33	951	TXM005	Administration Building	Dallas, TX	42,385	WBE
L	34		WAL001a	Bellevue Place	Bellevue, WA	389,000	LIGHT
L	35		WAL001b	Bellevue Place	Bellevue, WA	389,000	RECEPT
L	36		WAL001c	Bellevue Place	Bellevue, WA	389,000	LIGHT+RECEPT
L	37		WAM001a	Eastgate	Bellevue, WA	25,100	LIGHT
L	38		WAM001b	Eastgate	Bellevue, WA	25,100	RECEPT
L	39		WAM001c	Eastgate	Bellevue, WA	25,100	LIGHT+RECEPT
L	40		WAM002	West Yakima	Yakima, WA	16,200	RECEPT
L	41		WAM003a	Evergreen	Tacoma, WA	21,100	LIGHT
L	42		WAM003b	Evergreen	Tacoma, WA	21,100	RECEPT
L	43		WAM003c	Evergreen	Tacoma, WA	21,100	LIGHT+RECEPT
S	44		WAS001a	STS	Ellensburg, WA	4,000	LIGHT
S	45		WAS001b	STS	Ellensburg, WA	4,000	RECEPT
S	46		WAS001c	STS	Ellensburg, WA	4,000	LIGHT+RECEPT

Table 4.1: List of 1093-RP Case Study Buildings.

Figure 4.1: Calculated Diversity Factors for Weekdays.

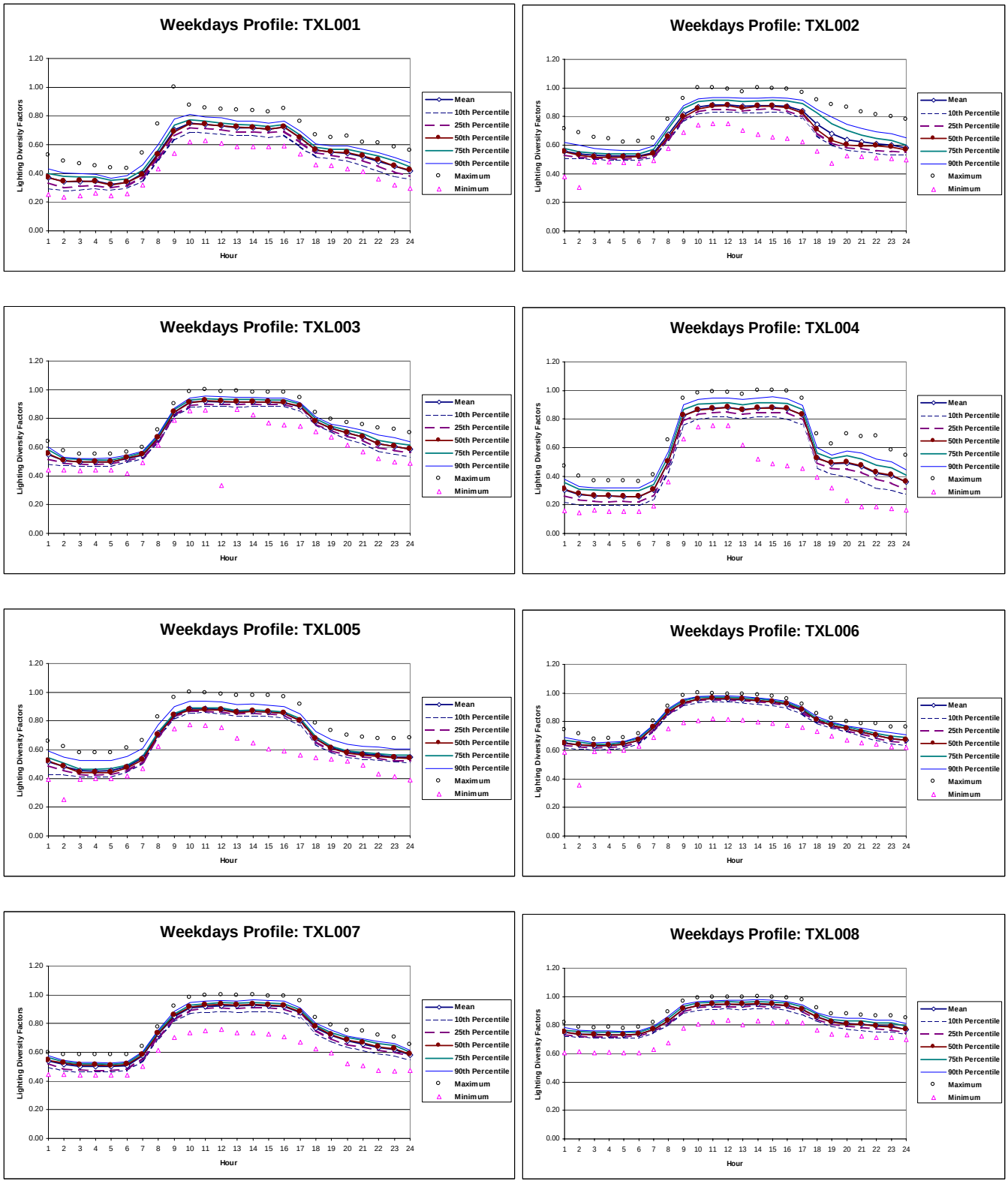
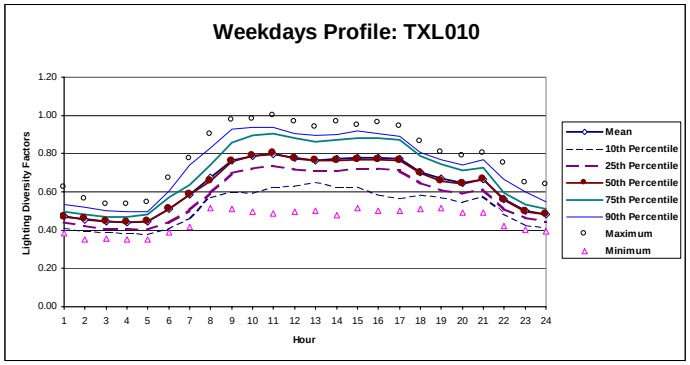
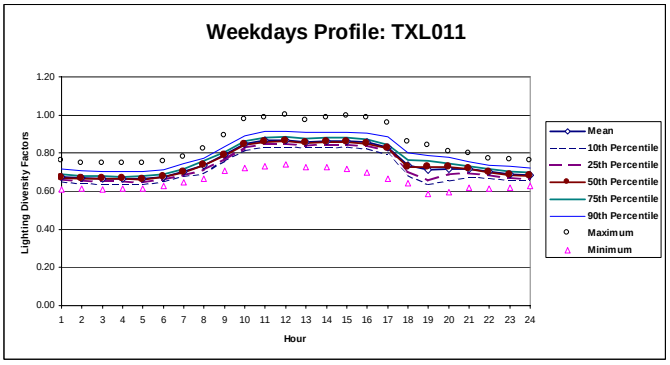
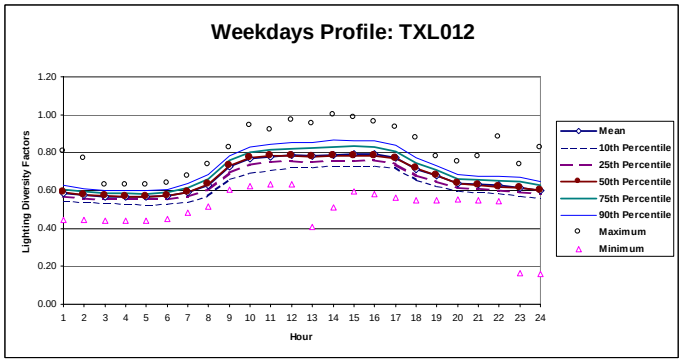
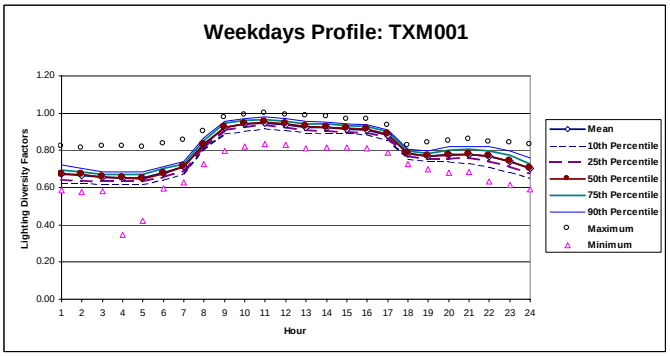


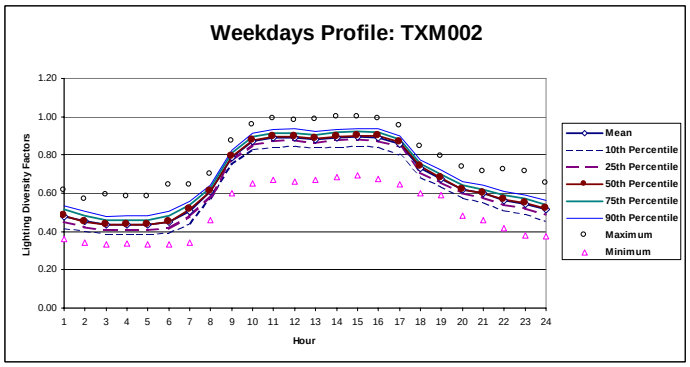
Figure 4.1: Calculated Diversity Factors for Weekdays (cont.)

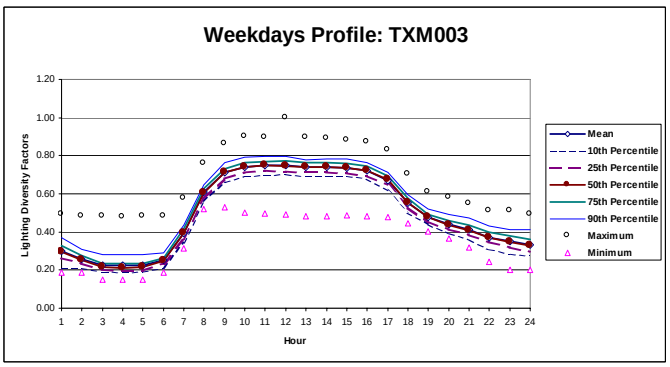


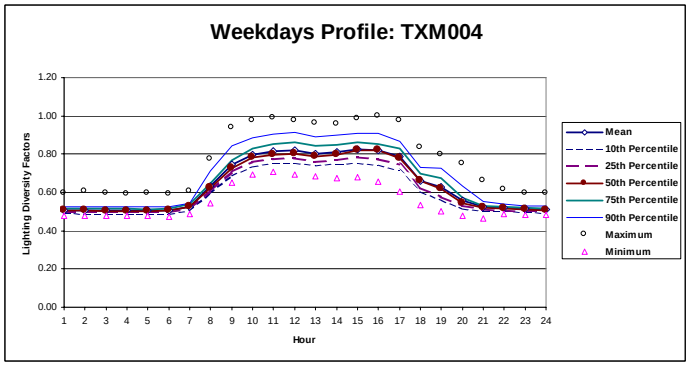












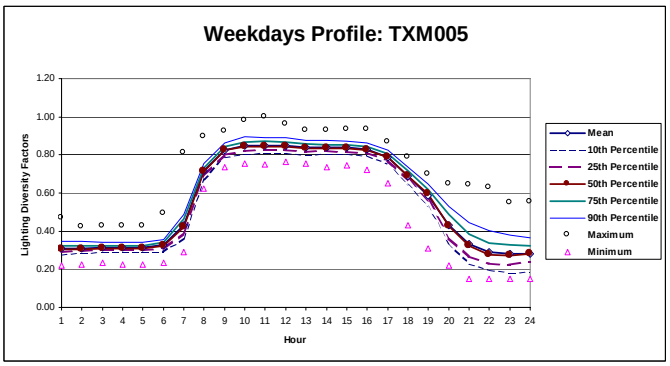


Figure 4.1: Calculated Diversity Factors for Weekdays (cont.)

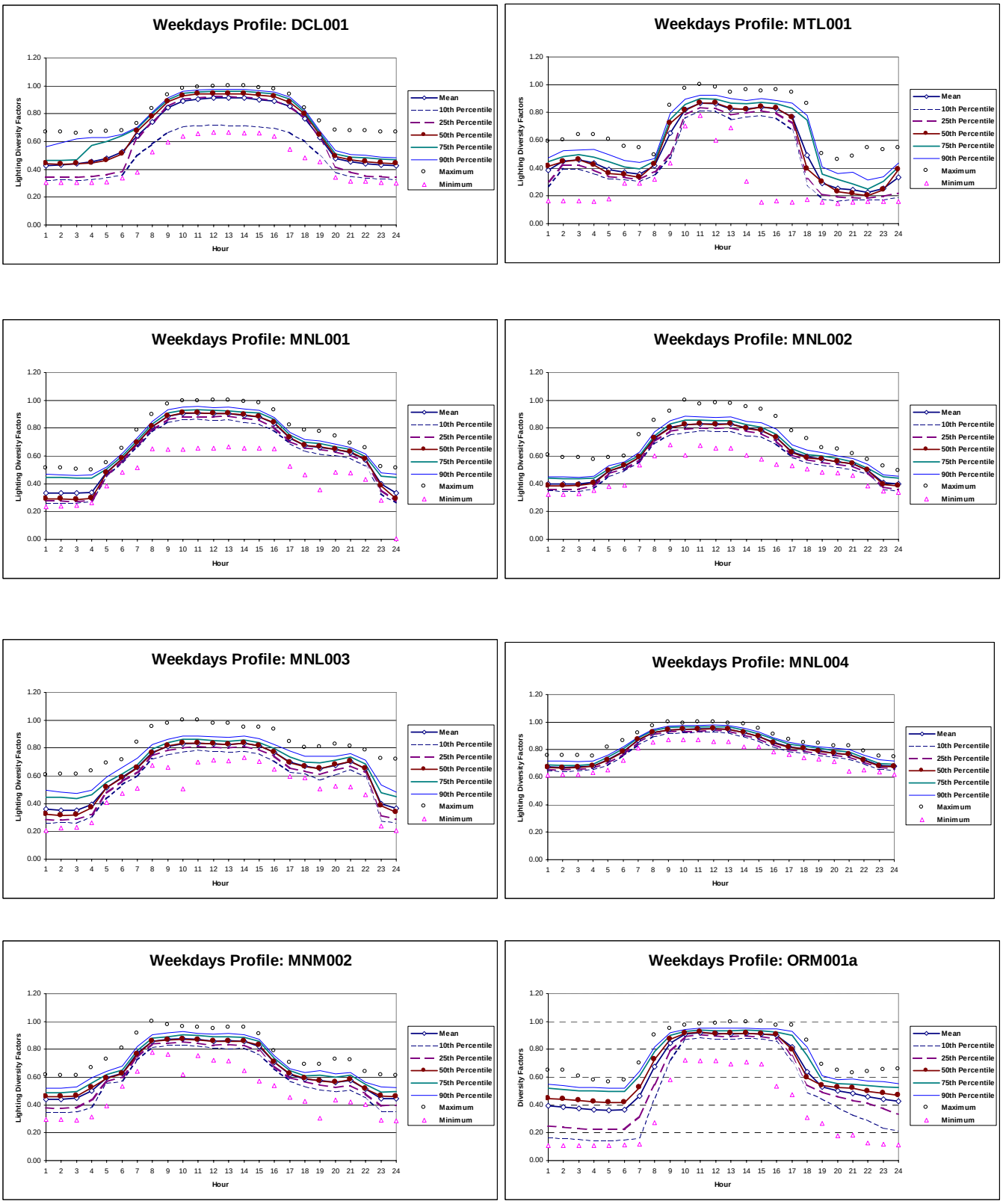
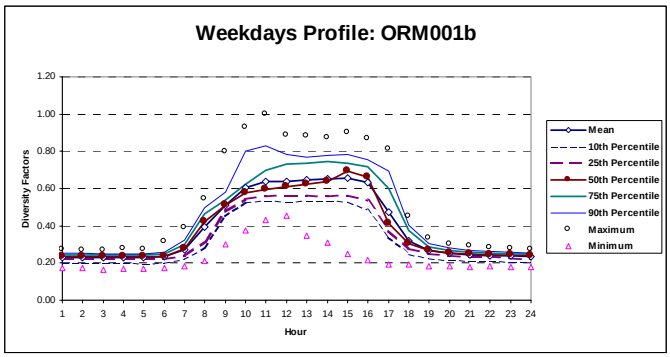
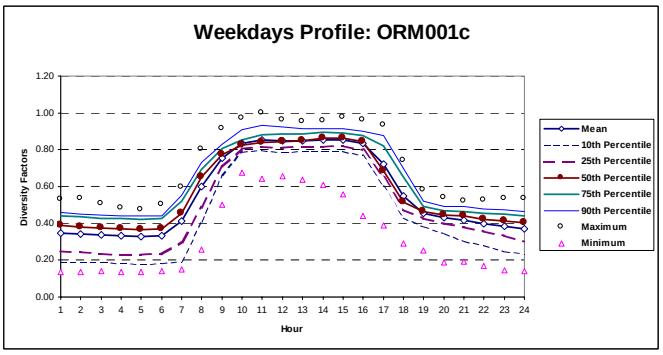
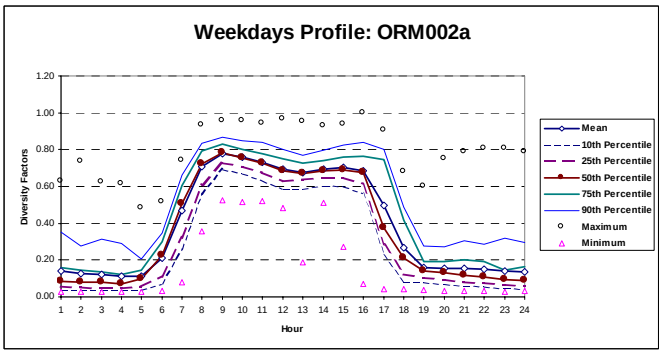
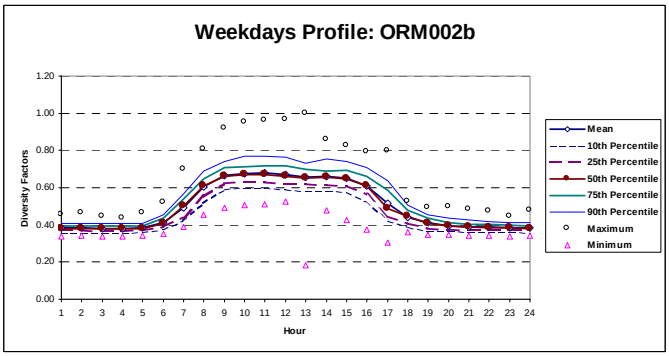


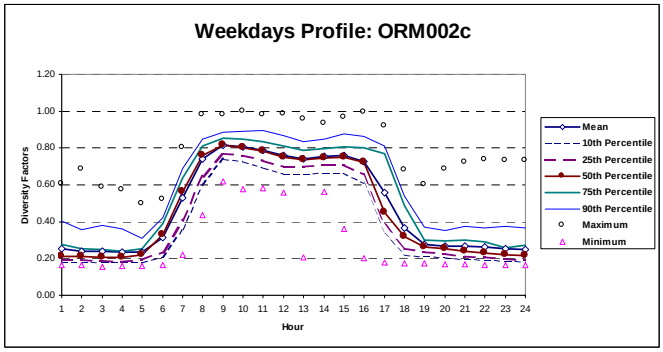
Figure 4.1: Calculated Diversity Factors for Weekdays (cont.)

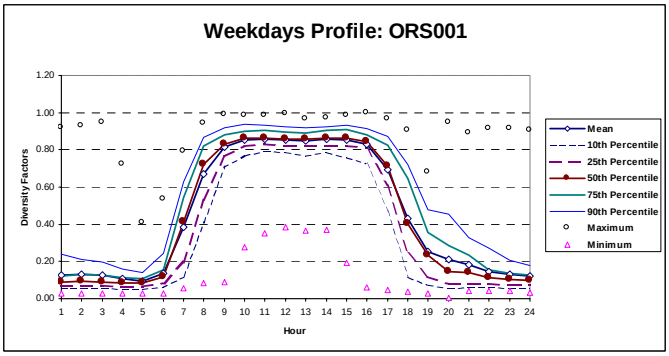


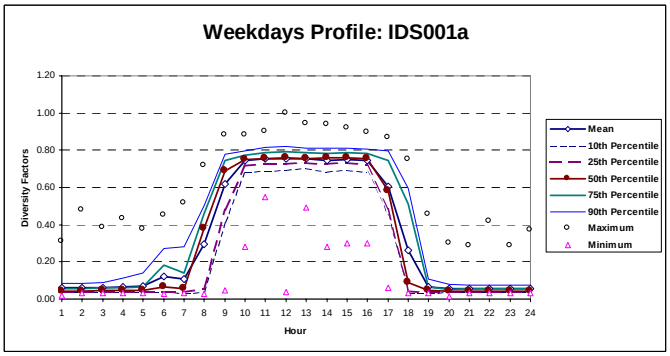












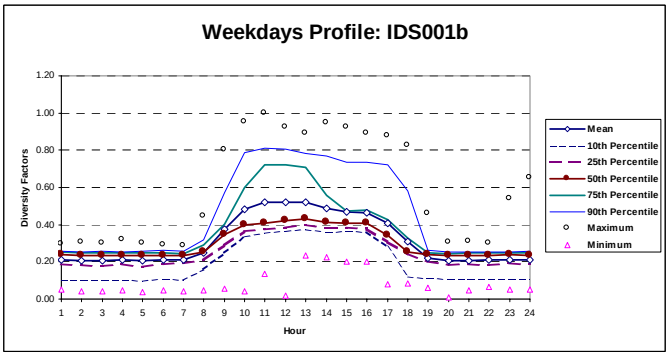
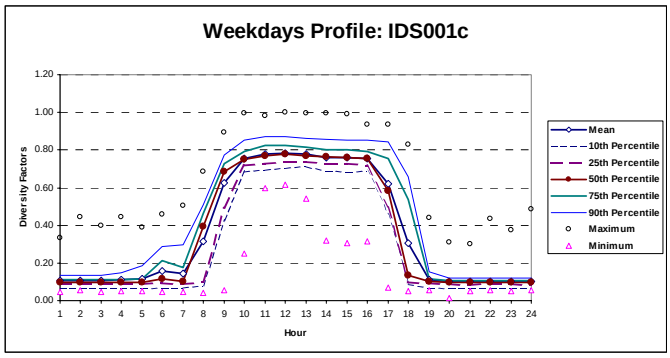
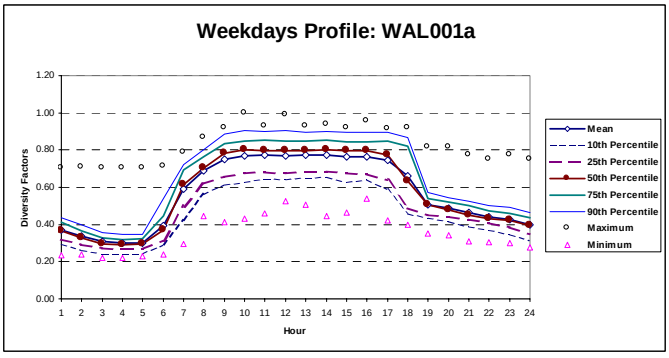
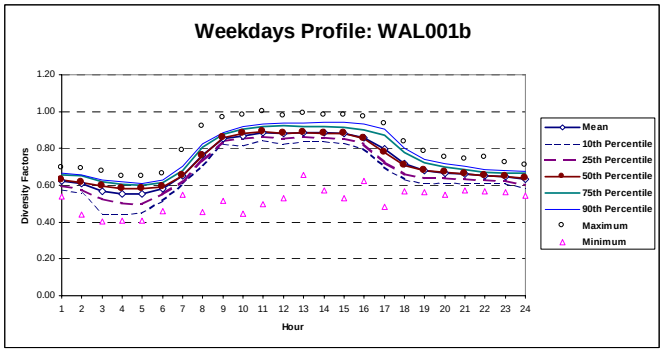
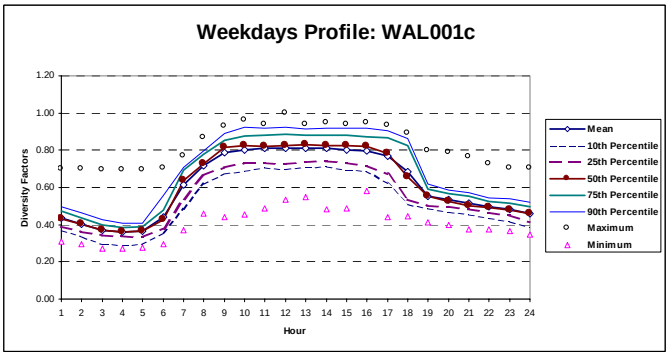


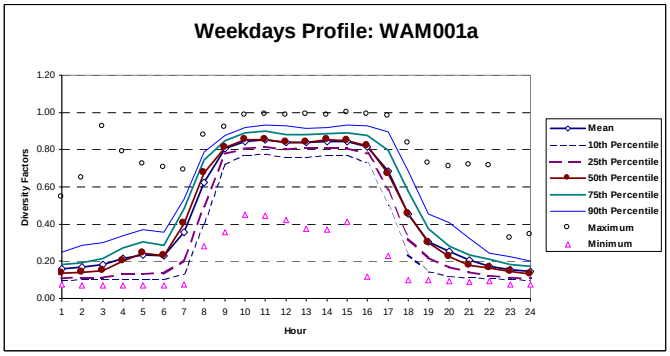
Figure 4.1: Calculated Diversity Factors for Weekdays (cont.)

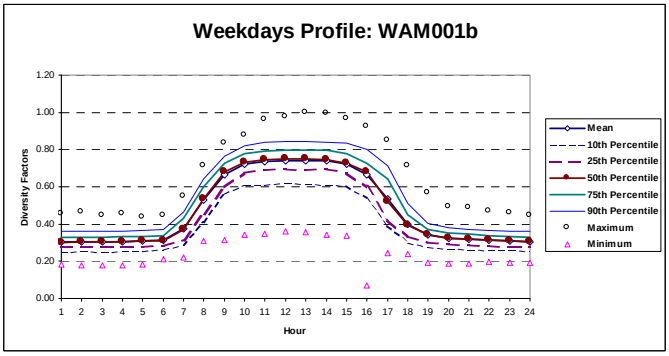


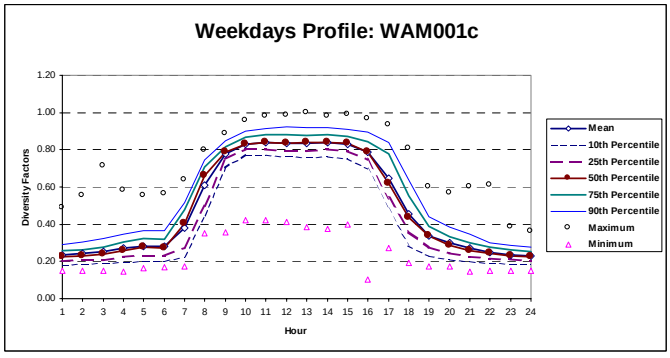












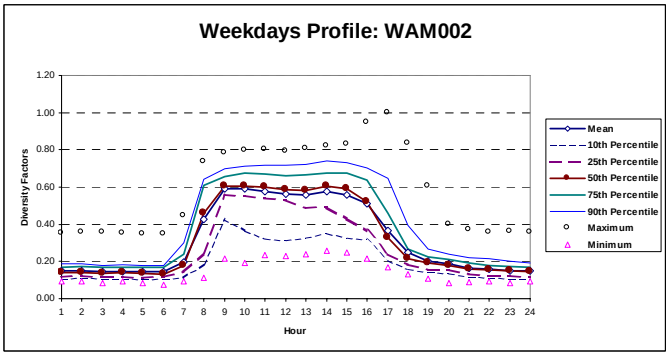
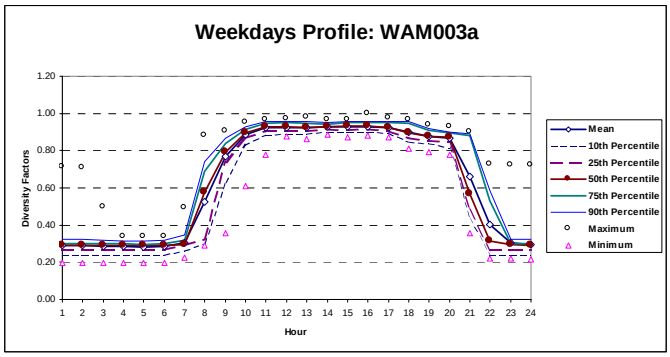
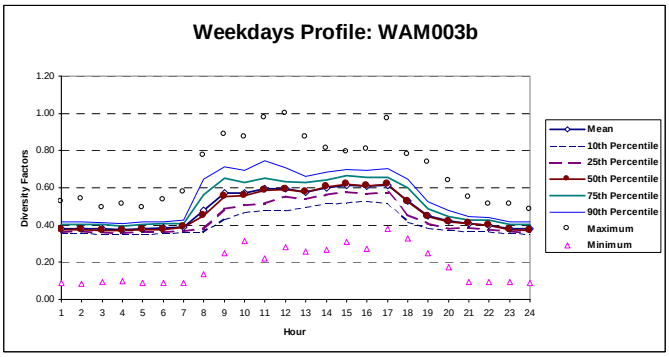
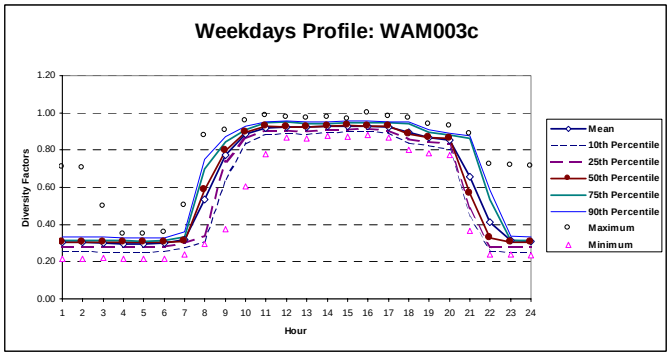
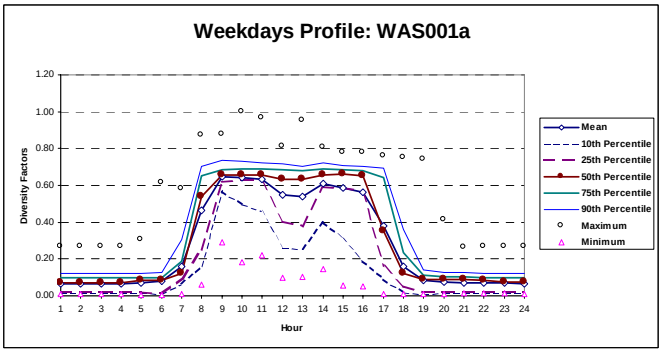


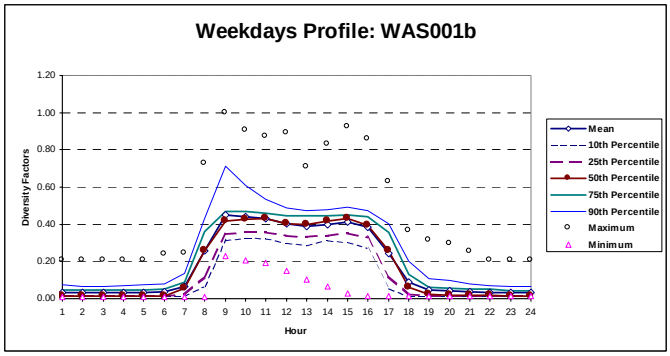
Figure 4.1: Calculated Diversity Factors for Weekdays (cont.)











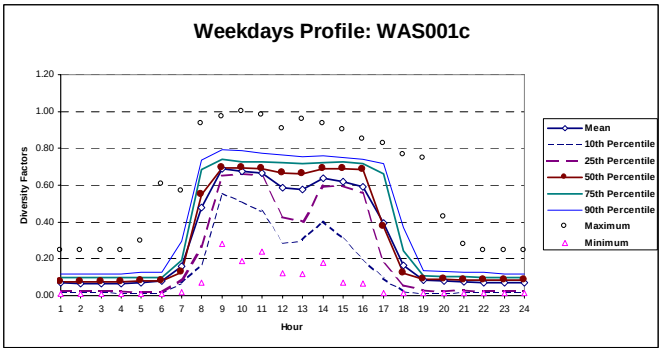
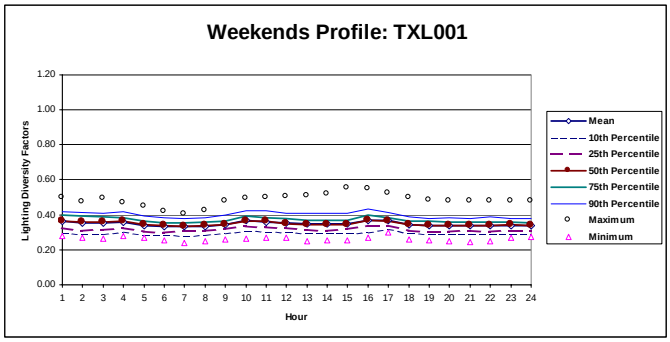
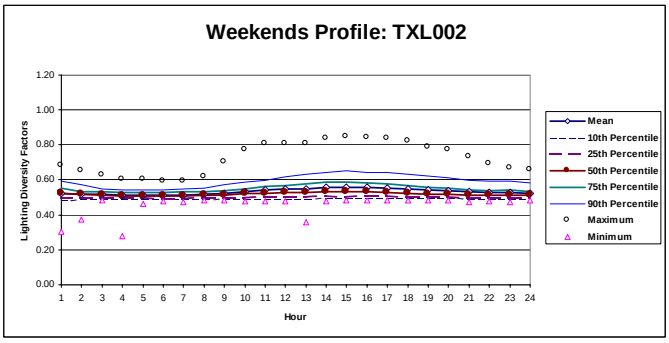
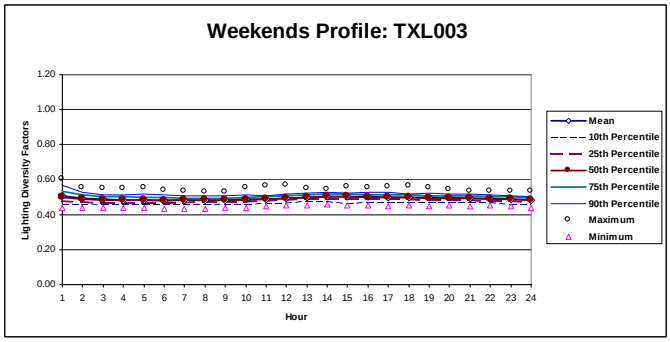
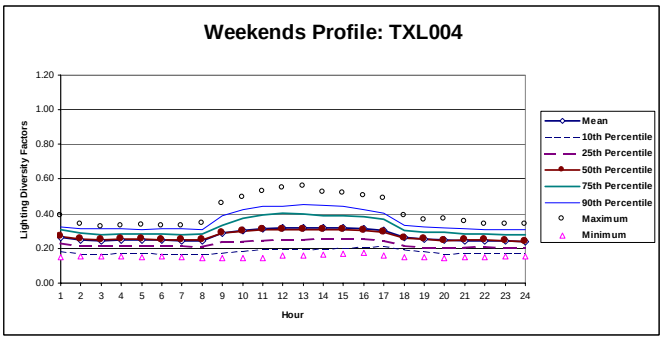


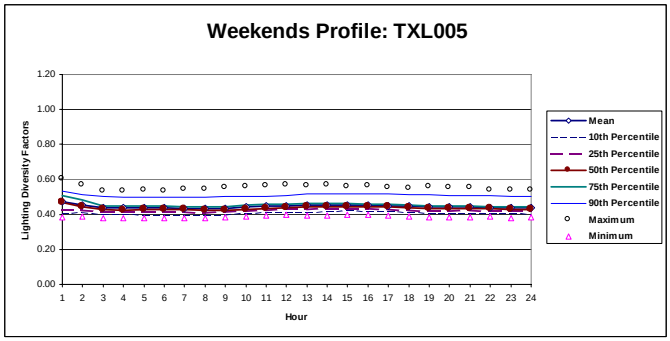
Figure 4.2: Calculated Diversity Factors for Weekends.

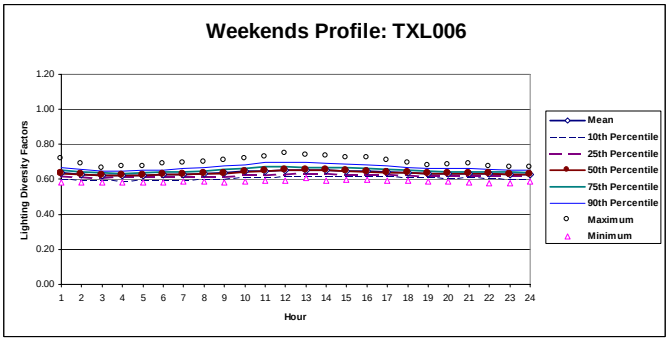


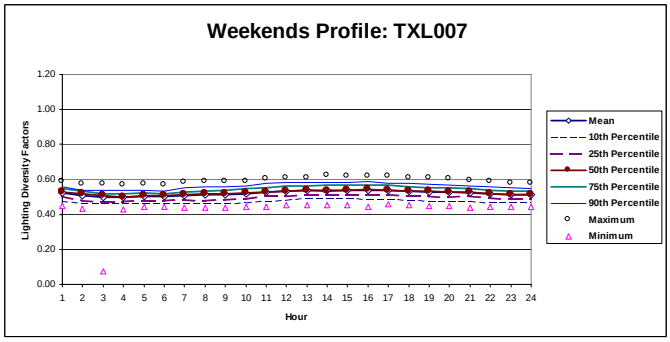












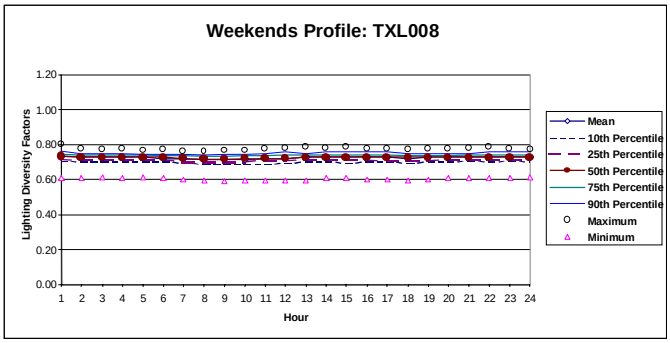
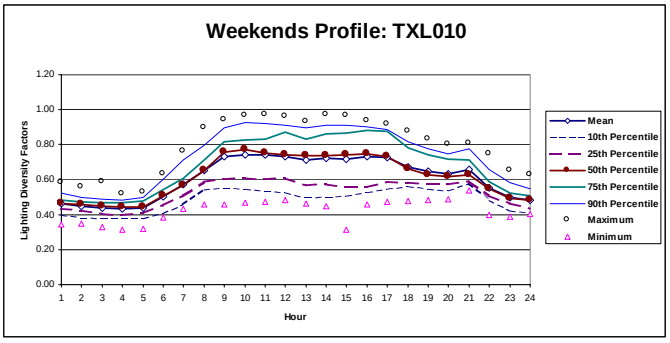
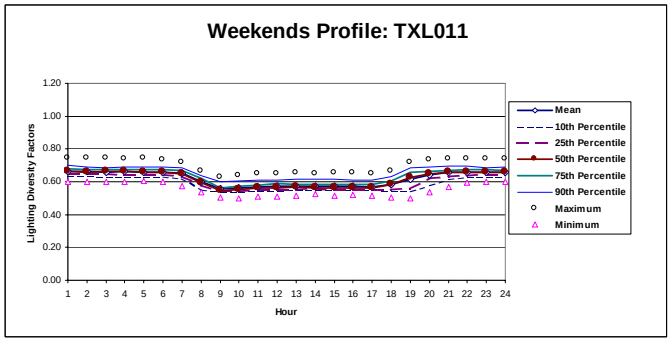
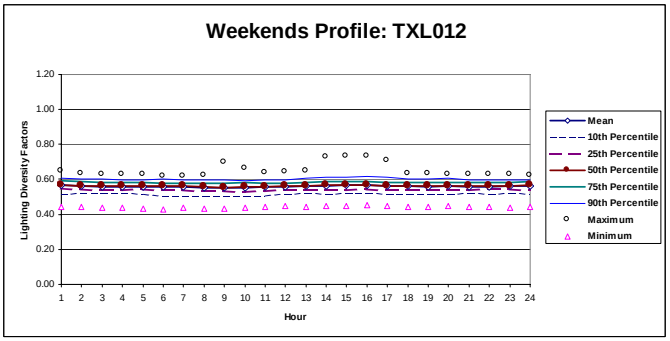
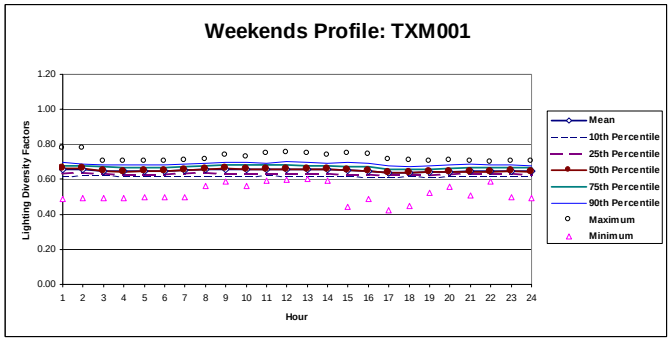


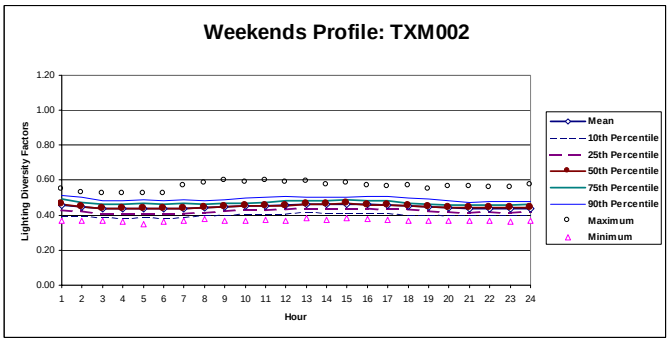
Figure 4.2: Calculated Diversity Factors for Weekends (cont.)

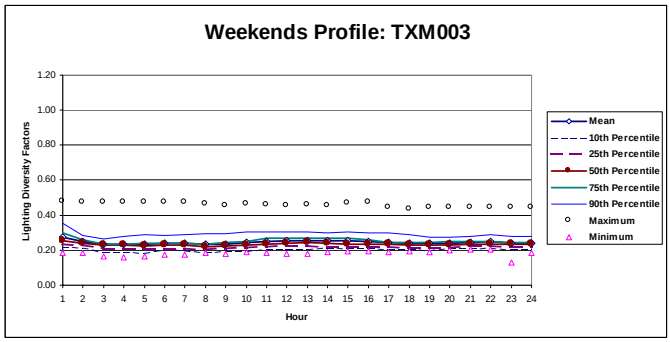


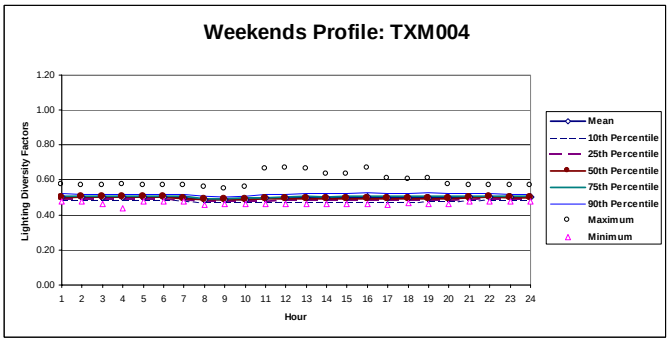












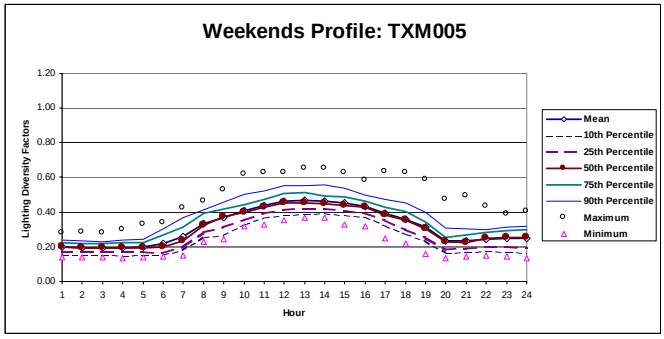
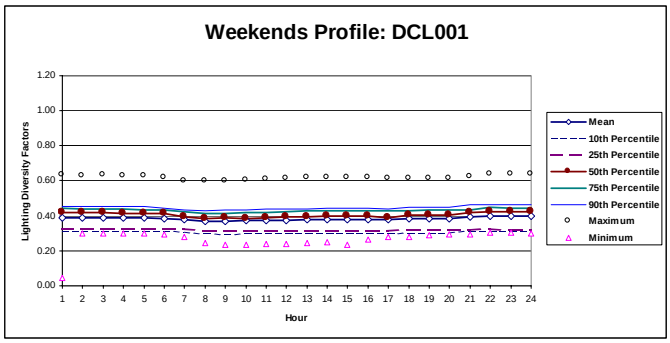
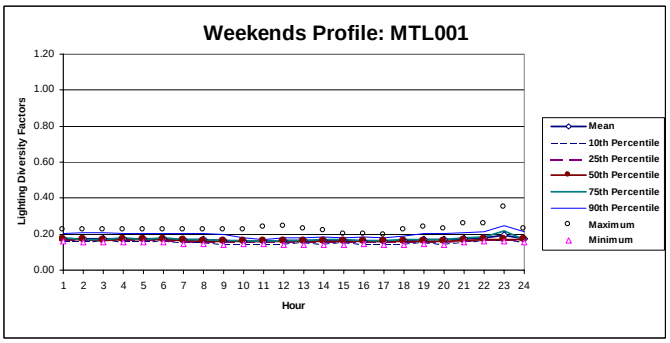
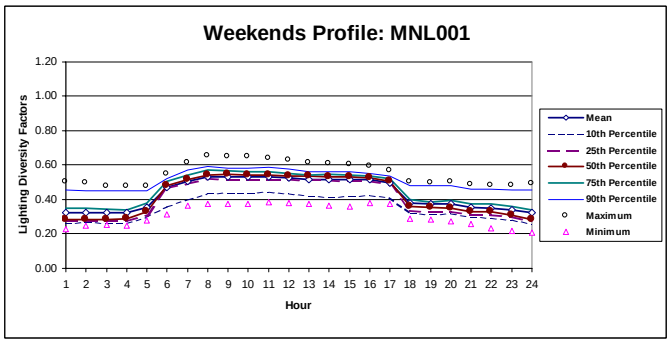
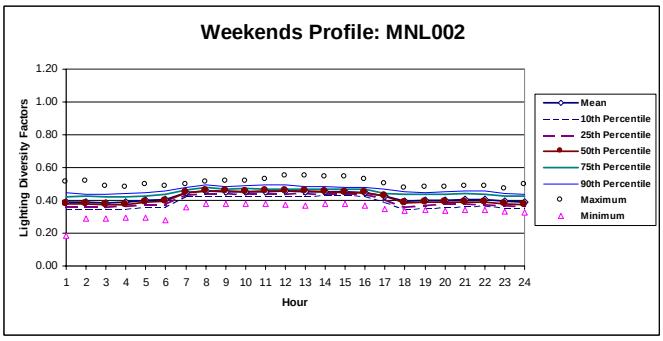


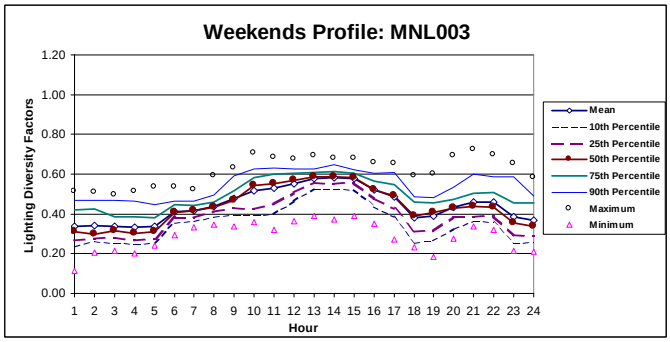
Figure 4.2: Diversity Factor Calculations for Weekends (cont.).

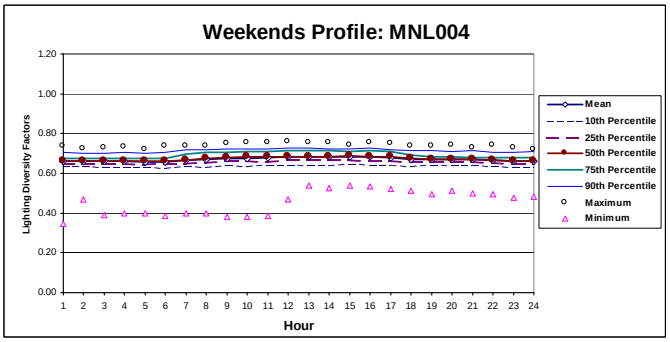


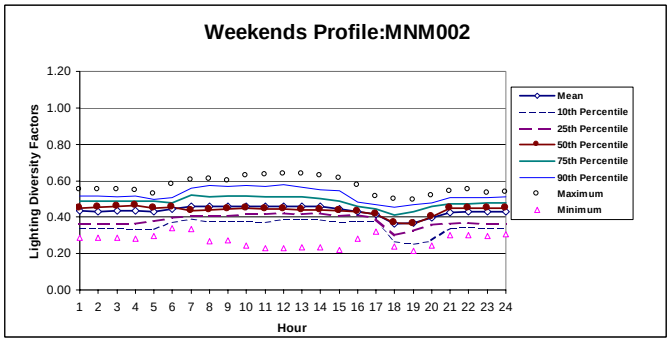












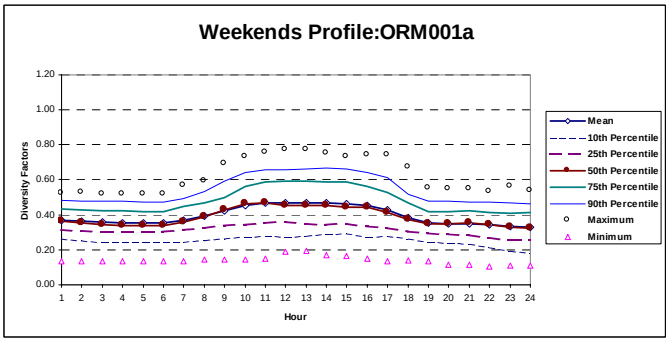
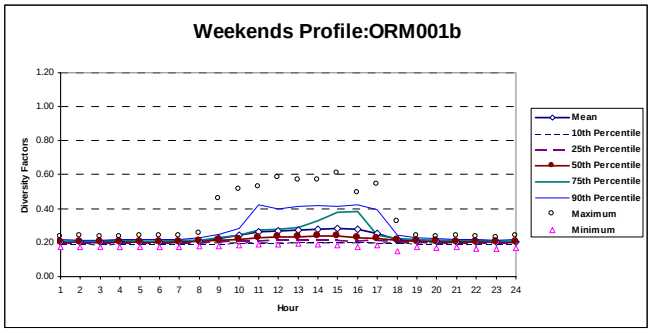
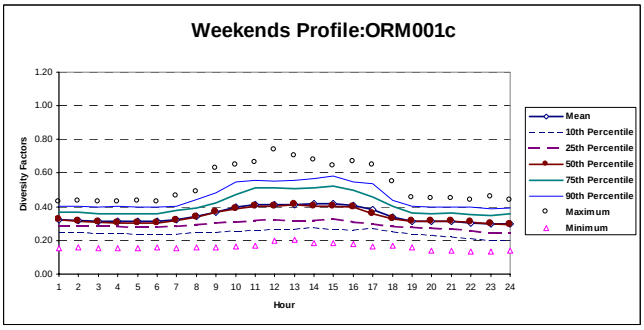
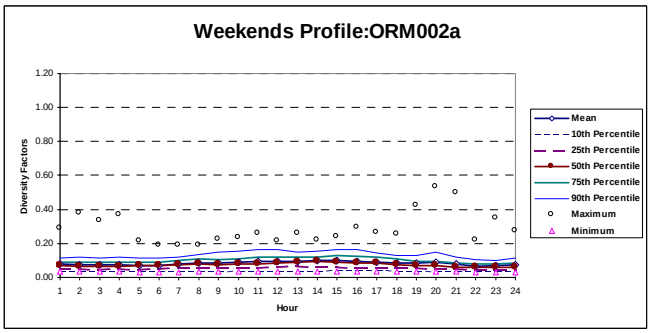
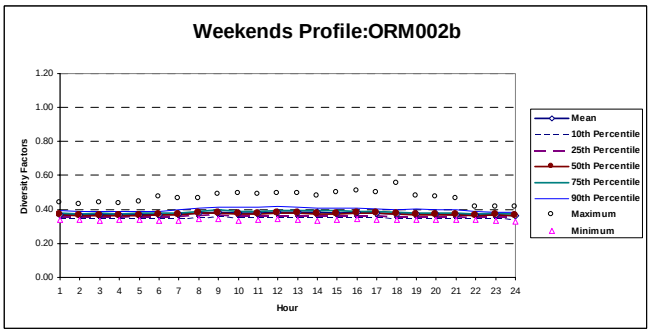


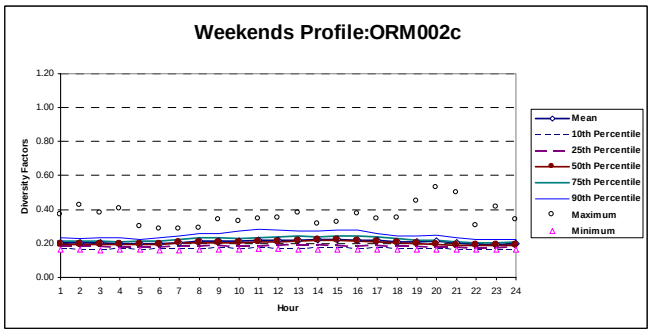
Figure 4.2: Diversity Factor Calculations for Weekends (cont.).

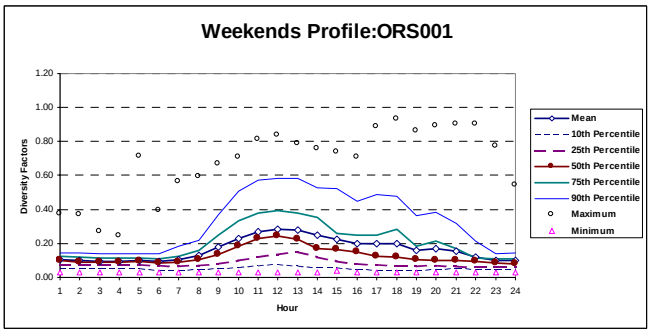


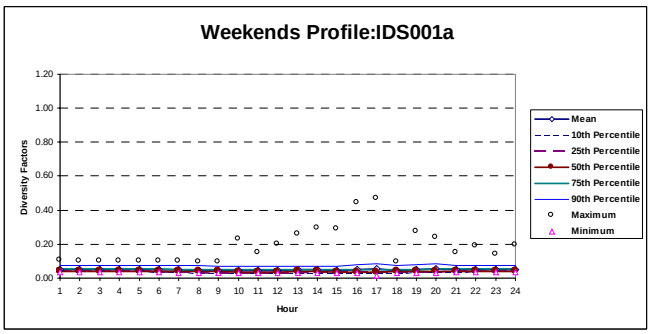












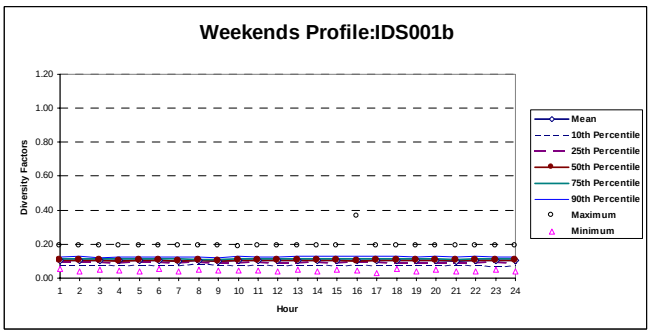
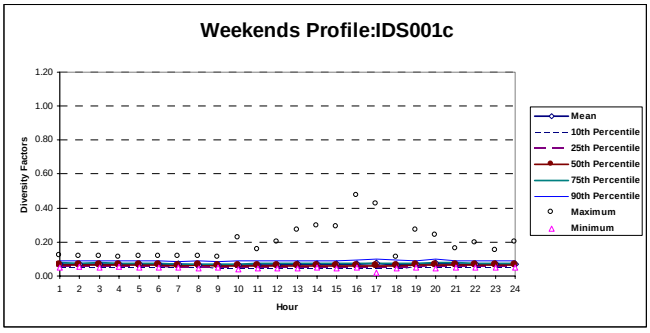
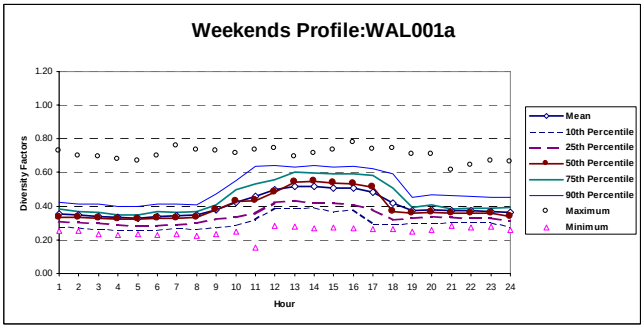
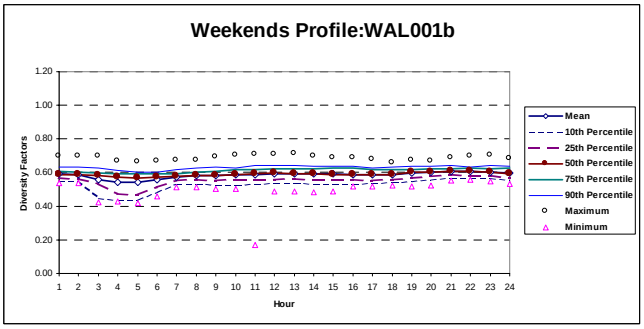
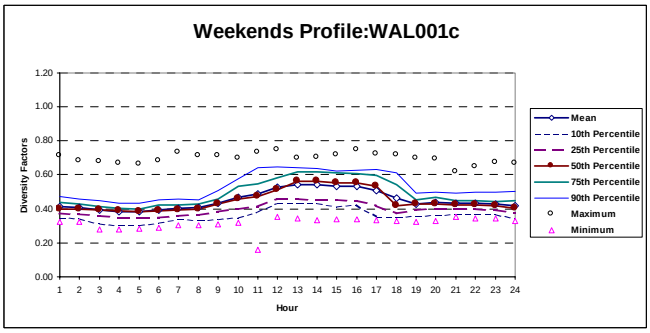


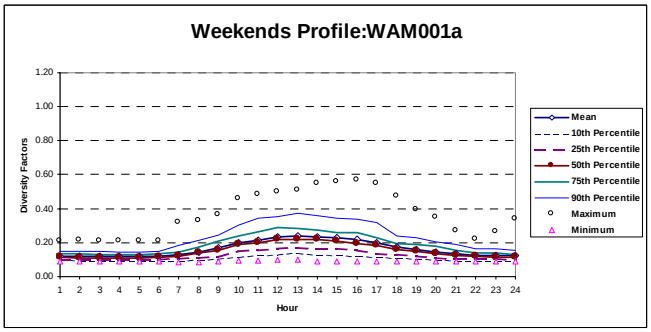
Figure 4.2: Diversity Factor Calculations for Weekends (cont.).

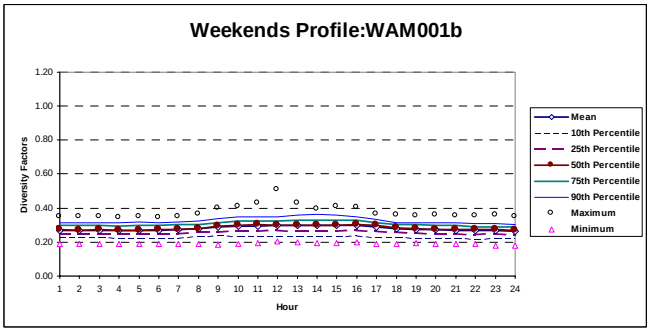


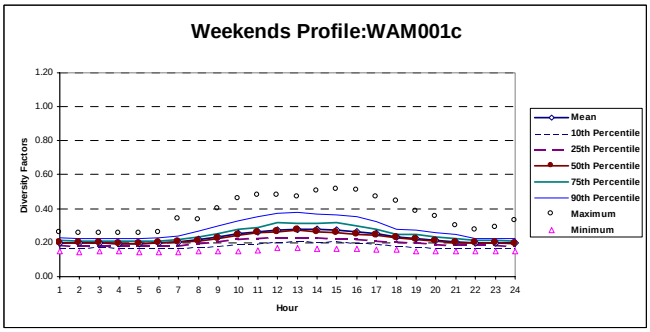












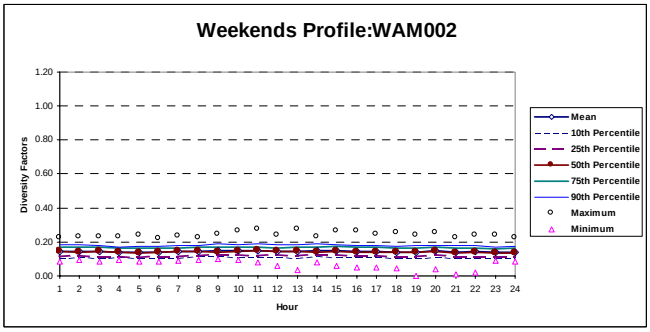
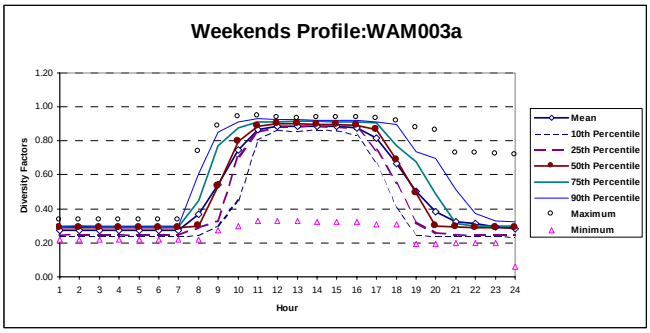
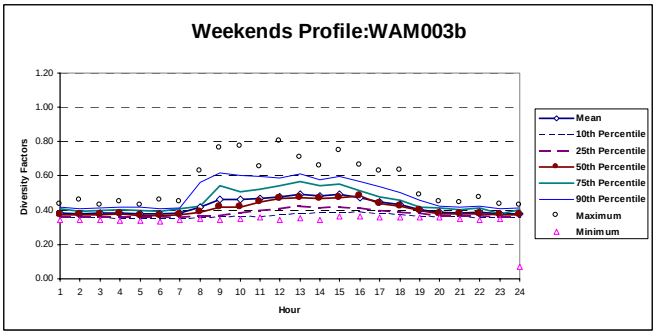
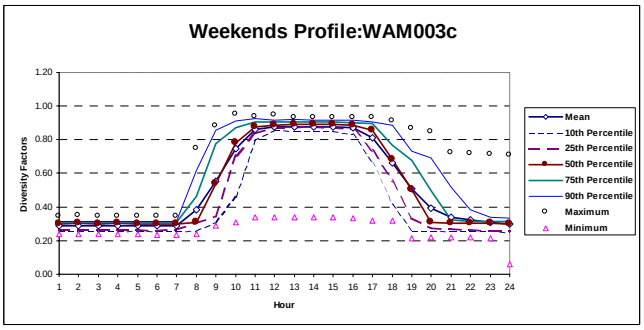
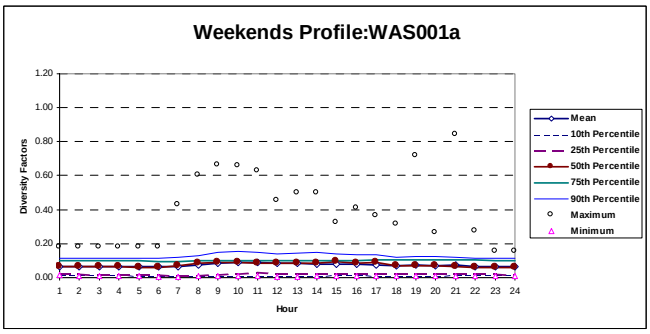


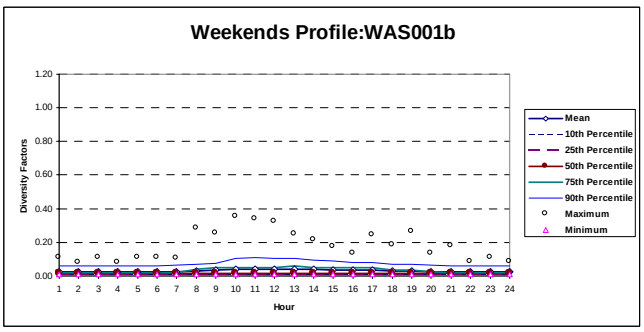
Figure 4.2: Calculated Diversity Factors for Weekends (cont.)

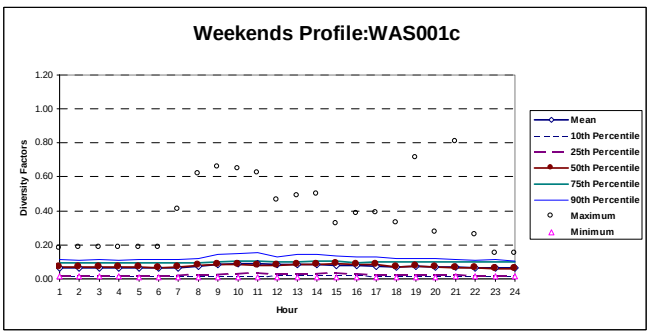












5.0 RESULTS: SUMMARY DIVERSITY FACTORS

5.1 Introduction

In most office buildings, internal heat gains from people, office equipment and lighting dominate the cooling load and the energy calculations. In order to accurately estimate the impact of the internal heat sources on energy and cooling load calculations, a dynamic analysis must be performed with a computer simulation program. The energy use and heat gains from office equipment and lighting deviate from peak operating conditions as people entering and leaving the building switch them on and off. Energy managed devices, also, are often switched to "standby" and "energy savings" modes during the day. Likewise, variable occupancy at the daily and weekly levels causes variable sensible and latent heat gains from people in the cooled space. This variability in the occupancy and operating conditions of office equipment and lighting is accounted for in simulation programs by using diversity factors and hourly schedules.

The goal of ASHRAE 1093-RP was to compile a library of schedules and diversity factors for energy and cooling load calculations in office buildings. Multiple sets of diversity factors have been derived from measured data in 32 office buildings and two sets of factors are presented in this summary for use in energy calculations and cooling load calculations respectively. For cases in which specialized diversity factors may be more suitable, a library of all schedules and diversity factors found for the 32 buildings analyzed in this project are presented in the body of the report, and spreadsheets are included that may be used to derive custom diversity factors from building specific data.

5.2 Literature/Database Review

The initial phase of the project conducted an extensive review of literature and databases of relevance to this effort. The following were included: (1) an extended literature search of methods used to derive load shapes and diversity factors in the U.S. and Europe, (2) a survey of available databases of monitored commercial end-use electrical data in the U.S. and Europe, and (3) a review of classification schemes of the commercial building stock listed in national standards and codes, and reported by researchers and utility projects. The complete report of these searches is included in Phase I progress report. The findings in this phase were used in performing the next steps of the project where the day-typing methods identified were tested on relevant monitored data sets of lighting and equipment to determine the best methods to use.

The literature survey on diversity factors and load shapes covered publications reporting the existence of databases of monitored end-uses in commercial buildings, methods used in developing the day-types and load shapes, and the building classification schemes used in the commercial buildings sector. Twelve unique methods were identified in the literature dealing with *derivation* of end-use load shapes in the U.S. These relatively sophisticated methods were intended for use when there was no metered end-use data. A number of simpler methods, usually utilized when metered end-use data sets were available, were also reviewed. The simple methods were based on averages and standard deviations of typical day-types. From the small number of European papers that were found, only one described a methodology for deriving load

shapes. However, the European papers were useful in providing a basis for comparison between the energy use in commercial buildings in the U.S. and Europe.

This study also reviewed literature on different classification schemes that have been used for determination of load shapes in commercial buildings and for energy-use day-typing. This included a review of the various national standards and codes, and major public surveys to identify commercial building classification schemes. As a result of this review, the classification scheme followed by the Commercial Buildings Energy Consumption Survey (CBECS) was adopted for use in this project. CBECS is a national survey of commercial buildings and their energy suppliers that is used to compile the statistics of the commercial building stock in the U.S. The CBECS classification scheme also agrees with that of ASHRAE Standard 90.1.

Only five papers were found in which the authors reported the existence of databases of monitored commercial building end-uses, from which data was utilized to develop typical load shapes. Following the literature review included in the Phase I Report, an extensive search was conducted in order to locate and identify additional databases of monitored data in the U.S. and Europe. Direct contacts were made with scholars, researchers, and energy consultants, through e-mail, fax, and phone calls. Major sources of data were found through the ASHRAE FIND database, EPRI-CEED, ELCAP, and the Energy Systems Laboratory database that includes data monitored under the LoanSTAR program and other projects.

5.3 Data Analyzed

The measured consumption data from the 32 office buildings selected for analysis in this project was obtained from the Energy Systems Laboratory (ESL), and Lawrence Berkeley National Laboratory (LBNL). The data consisted of hourly monitored lighting, receptacle and other electric consumption in various office buildings around the country. LBNL data included the lighting and receptacles loads separately, whereas most of the ESL data consisted of separate channels for Whole-Building Electric (WBE) and Motor Control Center (MCC) loads. The "Lighting and Receptacles" loads - as a sum - were obtained as the difference between the WBE and MCC/air handler or chiller loads for the buildings where lighting and receptacle loads were not separately measured. In 13 buildings, only a WBE data set was available. In all of these buildings, cooling loads in these buildings were separately monitored as Btu loads, and therefore were not included in the Whole-Building Electric loads. Table 5.0a, below, characterizes the 46 data sets used for this project.

In Column 1 of Table 5.0a, the site is categorized according to size (i.e., Small: 1,001 - 10,000 ft^2**,** Medium: 10,001 - 100,000 ft^2, and Large: > 100,000 ft^2**).** In Column 2 the number of the site is listed as it appears in this report. In Column 3 the building ID is listed, which is a value that identifies which logger number was used for ESL sites. The Column 4 "Site ID" is the label that was assigned to the site for this report and appears on all graphs, tables and figures. Column 5 is the name of the building, and Column 6 is the city and state where the building is located. Column 7 is the area of the building (ft^2**).**

Column 8 is the data type, where: 1) WBE = whole building electricity data, 2) LIGHT = sub-metered lighting data, 3) RECEPT = sub-metered receptacle data, 4) LIGHT+RECEPT =

combined, sub-metered lights and receptacle data, 5) WBE-MCC = data representative of non-weather dependent loads that are obtained by subtracting motor control center loads from whole-building electricity loads and should not include cooling loads, 6) WBE-MCC-AHU = data representative of non-weather dependent loads that are obtained by subtracting motor control center and air handler loads from whole-building electricity loads and should not include cooling loads, 7) WBE-MCC-Chill = data representative of non-weather dependent loads that are obtained by subtracting motor control center loads plus chiller loads from whole-building electricity loads and should not include cooling loads,

Column 9 is the maximum load measured in the building (i.e., the actual maximum value in the dataset) expressed in W/ft^2**.** Column 10 is the source of the dataset. Column 11 is the annual EUI (kWh/ ft^2-yr) calculated as 52 weeks of the weekday-weekend median profiles. Columns 12 and 13 are the start and stop dates of the datasets analyzed in this project. Column 14 applies to the ESL data and indicates the retrofit date for the building. This was used as a quality control measure to ascertain if the dataset contained data before and after a retrofit. Column 15 contains a qualitative description of the ESL datasets that classifies the data as possible weather-dependent (WD) or non-weather-dependent (NWD). Column 16 identifies the format of the raw data, either 15-minute data or hourly data. Finally, Column 17 indicates whether the ESL data was judged to be good, o.k. or of poor quality, which indicated bad or missing data, and/or problematic data.

The 46 data sets summarized in Table 5.0a come from 32 office buildings ranging in size from 4,000 sq.ft. to 1,200,000 sq.ft. Twenty-four of the data sets come from 10 buildings located in Washington, Oregon, Idaho and Montana, while single data sets are from 16 buildings in Texas, five in Minnesota and one in the District of Columbia. Local climates are thought to be relatively unimportant since these datasets represent non-weather dependent consumption. A majority of these office buildings are occupied by state, federal or local government entities.

Three buildings accounting for seven data sets fall in the small category, eight buildings that provided 12 data sets in the medium category and the remaining 21 buildings (27 data sets) in the large category. The different types of consumption data analyzed are summarized in Table 5.0b. The lighting use in the eight buildings analyzed showed one building with peak consumption three times that of another, with the largest EUI more than four times the smallest. Receptacle consumption data was available from eight buildings (seven the same as lighting), with peaks and EUIs about one-fourth the lighting values, but a similar factor of 3-4 from the smallest to the largest. When the buildings with “lights and receptacles” determined as the difference between WBE and MCC consumption or a similar measure are added into the mix to obtain the 17 buildings in this category, the high end of both ranges increase substantially. The peak consumption in these buildings is 5.22 W/sq.ft. while that in those with separately measured lights and receptacles is 3.01 W/sq.ft. The peak EUI in the buildings with lights and receptacles measured separately is 12.72 W/(sq.ft.yr.) while only three of the 10 buildings without separate measurements have values this low. The buildings in which air handlers or motor control centers were not separately monitored were not significantly different from those in which the

Category	No.	Bldg I.D.	Site ID.	Building	Location	Building Area (sqft)	Data Type	Max Load (W/sqft)	Source	EUI (kWh/sqft.year)	Start Date	End Date	Retrofit Date	WBE	Data Format
L	1	904	DCL001	USDOE Forrestal Building	Washington D.C	1,200,000	WBE	3.93	ESL	19.99	1/1/94	12/31/94	N/A	NWD	
S	2		IDS001a	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT	1.46	LBNL	3.19	1/1/89	12/31/89			
S	3		IDS001b	East Idaho Crd.Union	Idaho Falls, ID	5,300	RECEPT	0.45	LBNL	1.00	1/1/89	12/31/89			
S	4		IDS001c	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT+RECEPT	1.72	LBNL	4.20	1/1/89	12/31/89			
L	5	704	MNL001	State Office Bldg.1	St. Paul, MN	200,829	WBE	3.30	ESL	16.90	1/1/98	12/31/98	7/22/94 - 6/23/95	NWD	15min
L	6	707	MNL002	State Office Bldg.2	St. Paul, MN	281,850	WBE	2.37	ESL	11.45	1/1/98	12/31/98	6/13/94 - 12/28/94	NWD	15min
L	7	710	MNL003	State Office Bldg.3	St. Paul, MN	366,805	WBE	2.31	ESL	11.80	1/1/98	12/31/98	7/1/94 - 12/28/94	NWD	15min
L	8	711	MNL004	State Office Bldg.4	St. Paul, MN	317,286	WBE	4.38	ESL	29.41	1/1/98	12/31/98	5/6/94 - 9/9/94	NWD	15min
M	9	709	MNM002	State Office Bldg.5	St. Paul, MN	87,664	WBE	2.10	ESL	10.88	3/1/96	3/1/97	9/24/94 - 4/5/95	NWD	15min
L	10	963	MTL001	State Office Bldg.8	Butte, MT	100,000	WBE	1.13	ESL	4.19	7/1/98	7/1/99	N/A	NWD	
M	11		ORM001a	Director	Portland, OR	79,700	LIGHT	1.15	LBNL	5.58	1/1/91	12/31/91	N/A	NWD	
M	12		ORM001b	Director	Portland, OR	79,700	RECEPT	0.60	LBNL	1.79	1/1/91	12/31/91	N/A	NWD	
M	13		ORM001c	Director	Portland, OR	79,700	LIGHT+RECEPT	1.69	LBNL	7.36	1/1/91	12/31/91	N/A	NWD	
M	14		ORM002a	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT	1.16	LBNL	3.07	1/1/91	12/31/91			
M	15		ORM002b	Emerald PUD, HQ.	Eugene, OR	24,800	RECEPT	0.66	LBNL	2.68	1/1/91	12/31/91			
M	16		ORM002c	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT+RECEPT	1.65	LBNL	5.75	1/1/91	12/31/91			
S	17		ORS001	Dubal Beck	Portland, OR	8,500	LIGHT	1.34	LBNL	4.28	1/1/88	12/31/88			
L	18	146	TXL001	Government Center	Dallas, TX	473,800	WBE-MCC	2.51	ESL	10.61	1/1/95	12/31/95	6/30/92 - N/A	WD	
L	19	203	TXL002	John H. Reagan	Austin, TX	169,746	WBE-MCC	4.36	ESL	24.73	1/1/97	12/31/97	4/1/92 - 8/1/92	WD	
L	20	206	TXL003	Insurance Building	Austin, TX	102,000	WBE-MCC	3.54	ESL	20.05	1/1/96	12/31/96	4/1/92 - 9/1/92	NWD	
L	21	208	TXL004	Archives Building	Austin, TX	120,000	WBE-MCC	1.83	ESL	7.59	1/1/97	12/31/97	4/1/92 - 8/1/92	NWD	
L	22	209	TXL005	W.B. Travis	Austin, TX	491,000	WBE-MCC	3.13	ESL	16.46	1/1/97	12/31/97	6/1/92 - 8/1/93	NWD	
L	23	210	TXL006	L.B. Johnson	Austin, TX	308,080	WBE-MCC-AHU	5.17	ESL	33.79	1/1/97	12/31/97	1/1/94 - 5/1/94	NWD	
L	24	228	TXL007	Price Daniels Building	Austin, TX	151,620	WBE	2.76	ESL	15.95	1/1/98	12/31/98	2/1/94 - N/A	NWD	
L	25	229	TXL008	Tom C. Clark Building	Austin, TX	121,654	WBE	1.75	ESL	12.32	1/1/98	12/31/98	2/1/94 - N/A	NWD	
L	26	975	TXL010	Brazos County Courthouse	Bryan, TX	100,000	WBE-MCC	3.59	ESL	19.70	7/1/98	7/1/99	N/A	WD	
L	27	200	TXL011	Capitol Building	Austin, TX	282,499	WBE	3.39	ESL	21.17	7/1/97	7/1/98	N/A	NWD	
L	28	201	TXL012	Sam Houston Building	Austin, TX	182,961	WBE	5.39	ESL	30.18	1/1/93	12/31/93	N/A	NWD	
M	29	205	TXM001	James E. Rudder	Austin, TX	80,000	WBE-MCC	5.22	ESL	34.42	1/1/94	12/31/94	4/1/92 - 8/1/92	WD	
M	30	207	TXM002	Insurance Annex	Austin, TX	62,000	WBE-MCC-Chill	2.21	ESL	11.63	1/1/93	12/31/93	4/1/94 - N/A	WD	
M	31	226	TXM003	Central Services Building	Austin, TX	97,030	WBE - Chill	3.76	ESL	13.49	1/1/96	12/31/96	2/1/94 - N/A	NWD	
M	32	227	TXM004	Supreme Court Building	Austin, TX	72,737	WBE	2.22	ESL	11.64	1/1/98	12/31/98	2/1/94 - N/A	NWD	
M	33	951	TXM005	Administration Building	Dallas, TX	42,385	WBE	3.5	ESL	14.94	1/1/98	12/31/98	N/A		
L	34		WAL001a	Bellevue Place	Bellevue, WA	389,000	LIGHT	1.34	LBNL	6.05	1/1/91	12/31/91			
L	35		WAL001b	Bellevue Place	Bellevue, WA	389,000	RECEPT	0.40	LBNL	2.41	1/1/91	12/31/91			
L	36		WAL001c	Bellevue Place	Bellevue, WA	389,000	LIGHT+RECEPT	1.71	LBNL	8.44	1/1/91	12/31/91			
L	37		WAM001a	Eastgate	Bellevue, WA	25,100	LIGHT	0.77	LBNL	2.58	1/1/91	12/31/91			
L	38		WAM001b	Eastgate	Bellevue, WA	25,100	RECEPT	0.65	LBNL	2.36	1/1/91	12/31/91			
L	39		WAM001c	Eastgate	Bellevue, WA	25,100	LIGHT+RECEPT	1.35	LBNL	4.94	1/1/91	12/31/91			
L	40		WAM002	West Yakima	Yakima, WA	16,200	RECEPT	0.47	LBNL	1.10	1/1/89	12/31/89			
L	41		WAM003a	Evergreen	Tacoma, WA	21,100	LIGHT	2.31	LBNL	12.00	1/1/90	12/31/90			
L	42		WAM003b	Evergreen	Tacoma, WA	21,100	RECEPT	0.18	LBNL	0.72	1/1/90	12/31/90			
L	43		WAM003c	Evergreen	Tacoma, WA	21,100	LIGHT+RECEPT	2.43	LBNL	12.72	1/1/90	12/31/90			
S	44		WAS001a	STS	Ellensburg, WA	4,000	LIGHT	2.45	LBNL	4.77	1/1/90	12/31/90			
S	45		WAS001b	STS	Ellensburg, WA	4,000	RECEPT	0.79	LBNL	0.95	1/1/90	12/31/90			
S	46		WAS001c	STS	Ellensburg, WA	4,000	LIGHT+RECEPT	3.01	LBNL	6.11	1/1/90	12/31/90			

Table 5.0a: Complete Summary of the 1093-RP Case Study Buildings.

Data Type	# Bldgs.	Peak Consumption (W/sq.ft.)	Energy Use Index (kWh/(sq.ft.yr.))
Lighting	8	0.77 – 2.45	2.58 – 12.00
Receptacles	8	0.18 – 0.66	0.72 – 2.68
Lighting & Receptacles	17	1.35 – 5.22	6.11 - 34.42
Whole Building	13	1.13 – 5.39	4.19 – 30.18

Table 5.0b: Summary of data types analyzed with ranges of peak consumption and energy use index in the sample analyzed.

MCC consumption was subtracted, in terms of either peak consumption or EUI. It is possible that some of the highest values of peak load and EUI for combined lights and receptacles and WBE categories resulted from the inclusion of at least some distributed fans and other equipment that is not on chiller circuits or other central motor control centers.

In this project, one year of hourly data (8,760 values) was typically used for each site to derive the diversity factors. Each dataset was inspected for obvious outliers that needed removing prior to processing. In several of the ESL sites data removals included periods that exhibited weather dependency. Holidays that appeared on weekdays were also removed. Several of the LBNL sites also contained synthetic or imputed data that were also removed. In each site all data removals are clearly indicated in the body of the report that contains site-specific information.

5.4 Diversity Profiles

Diversity profiles for individual building data channels were developed by expressing every consumption value as a ratio of the consumption measured to the peak measured value in the data set. A percentile analysis was used to derive the diversity factors for each of the appropriate channels. The data are first sorted into separate weekday and weekend daytypes. Then, for both weekdays and weekends, the 10^{th}, 25^{th}, 50^{th}, 75^{th}, 90^{th} percentiles, mean and standard deviation are calculated for each hour for the diversity profile. The median or 50^{th} percentile is used to create the DOE-2, BLAST and EnergyPlus input files. The median was chosen over the mean because it is not effected by outliers. Furthermore, the 10^{th}, 25^{th}, 75^{th}, and 90^{th} percentiles were found to be more robust than the standard deviation when outliers are present in the datatset. The choice of percentile analysis was reinforced since it is also more robust with datasets that tend to have a multi-modal distribution (where the frequency curve exhibits more than one maxima).

5.5 Summary Plots and Tables for Energy Profiles

We have summarized the typical weekday and weekend profiles developed for lighting, receptacle, combined lighting and receptacle loads, and for whole building electricity without cooling in the plots shown below. The profiles shown in Figures 5.1 – 5.11 correspond to the 50th percentile of one year of data for each building and are hence recommended as appropriate for use in energy simulations. Tables 5.1 – 5.11 contain the tabulated values found in the figures. The data are separately plotted for small (< 10,000 SF), medium (10,000 - 100,000 SF)

and large (>100,000 SF) office buildings. The line in each figure is the average of the individual profiles plotted as data points. There is insufficient information available to eliminate any data from these averages. If the user has specific knowledge of schedules for the building they wish to simulate that differ from those shown, they should be modified accordingly as described in the body of this report. This would be particularly true for weekend schedules. Some buildings show no weekend use, while others show significant weekend use. The user may prefer to use the schedule for a particular building whose weekend usage is close to that anticipated for the building being simulated.

5.6 Summary Plots and Tables for Design Cooling Profiles

Diversity plots corresponding to the 90th percentiles, which are suitable for design cooling calculations, are given in Figures 5.12 – 5.22. Tables 5.12 – 5.22 contain the tabulated data found in the figures. This set of figures is also grouped to show lighting, receptacle, combined lighting and receptacle loads, and for whole building electricity without cooling. The data are again separately plotted for small (< 10,000 SF), medium (10,000 - 100,000 SF) and large (>100,000 SF) office buildings. The line in each figure is the average of the individual profiles plotted as data points. There is insufficient information available to eliminate any data from these averages. If the user has specific knowledge of schedules for the building they wish to simulate that differ from those shown, they should be modified accordingly as described in the body of this report. The weekend plots are shown for reference only. They would not be appropriate for use in design calculations.

5.7 Input Files and Procedures for Non-Standard Buildings

The remainder of this report contains sample input files for DOE-2, BLAST, and EnergyPlus utilizing the profiles generated for each of the 46 sites processed. It also includes graphical and tabulated libraries of diversity factors that includes detailed profile values for each of the buildings analyzed in this report. An example spreadsheets is included that was used to calculate these profiles to facilitate the generation of custom profiles if the user has a data set from which custom profiles need to be generated.

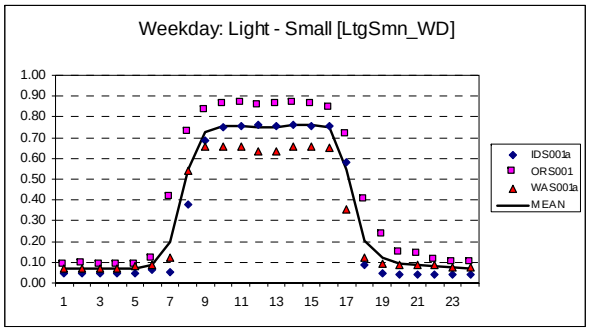


Fig 1a: Lighting-only weekday profile for *small* buildings (50th percentile)

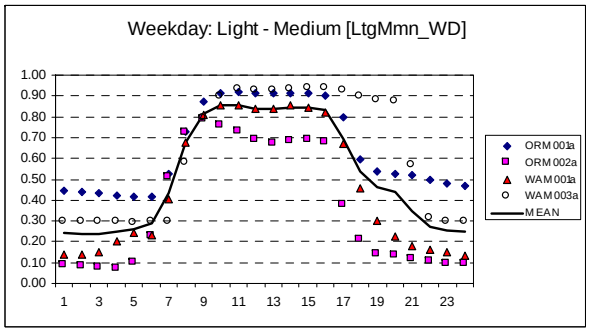


Fig 2a: Lighting-only weekday profile for *medium* buildings (50th percentile)

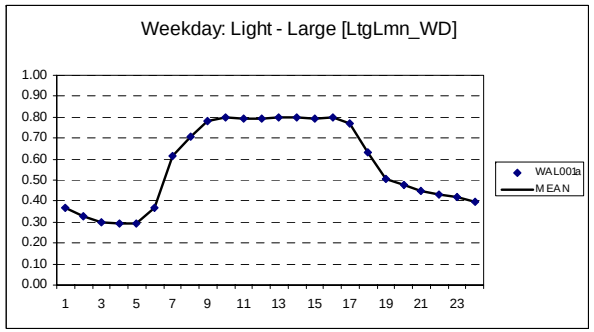


Fig 3a: Lighting-only weekday profile for *large* buildings ((50th percentile).

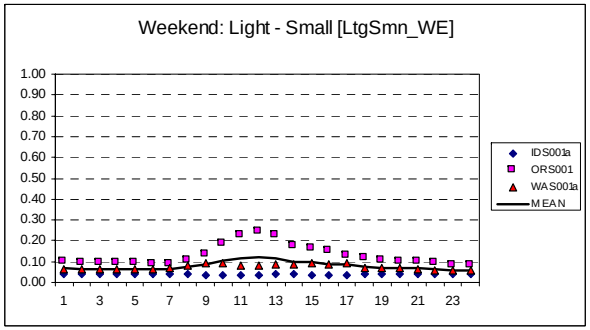


Fig 1b: Lighting-only weekend profile for *small* Buildings (50th percentile).

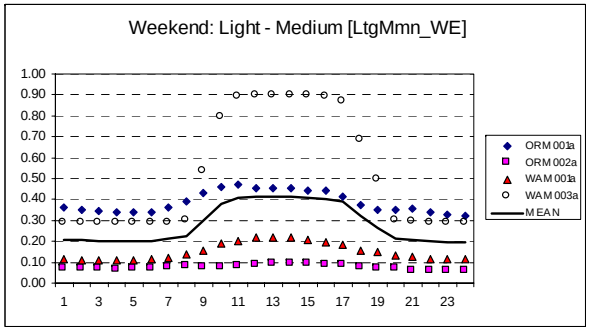


Fig 2b: Lighting-only weekend profile for *medium* Buildings (50th percentile).

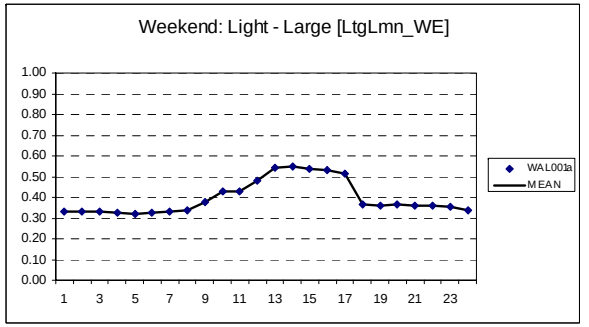


Fig 3b: Lighting-only weekend profile for *large* bldg (50th percentile).

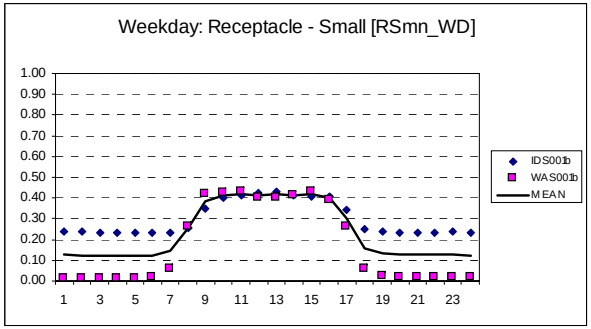


Fig 4a: Receptacles-weekday profile for *small* Buildings (50th percentile).

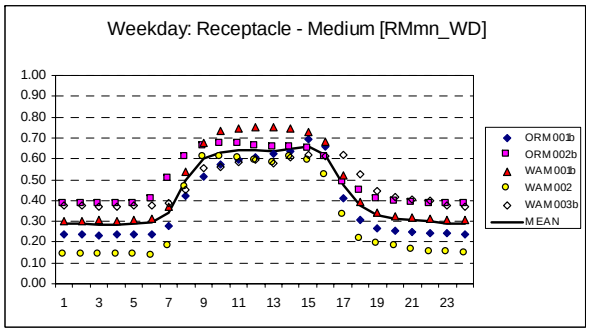


Fig 5a: Receptacles-weekday profile for *medium* Buildings (50th percentile).

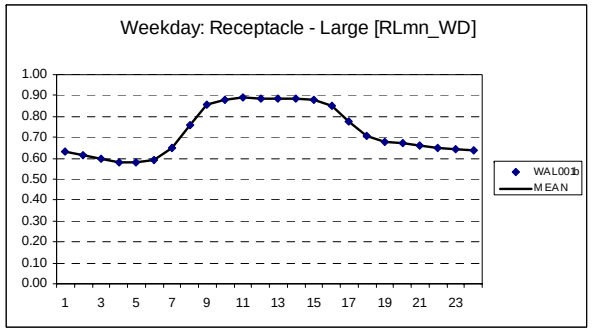


Fig 6a: Receptacles-weekday profile for *large* Building (50th percentile).

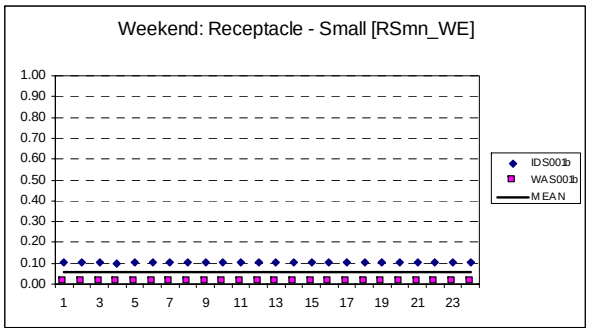


Fig 4b: Receptacles-weekend profile for *small* Buildings (50th percentile).

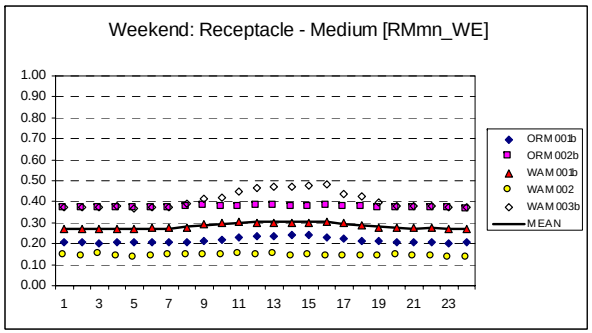


Fig 5b: Receptacles-weekend profile for *medium* Buildings (50th percentile).

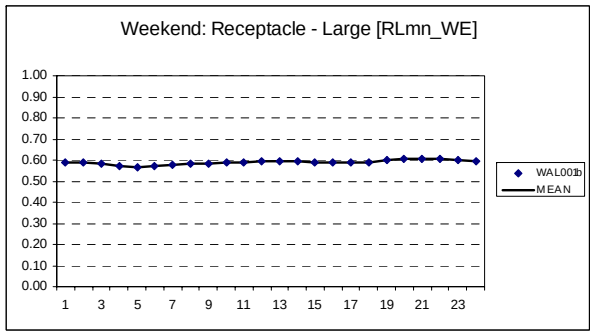


Fig 6b: Receptacles-weekend profile for *large* Building (50th percentile).

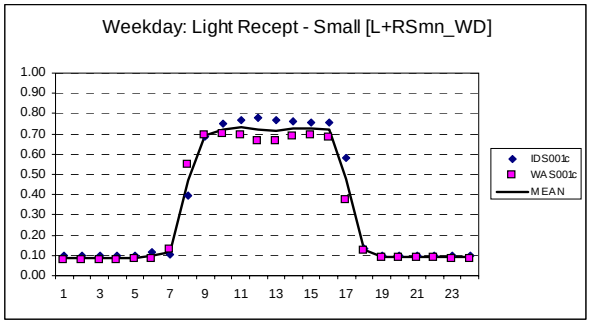


Fig 7a: Combined lights and receptacles weekday profile for *small* buildings (50th percentile).

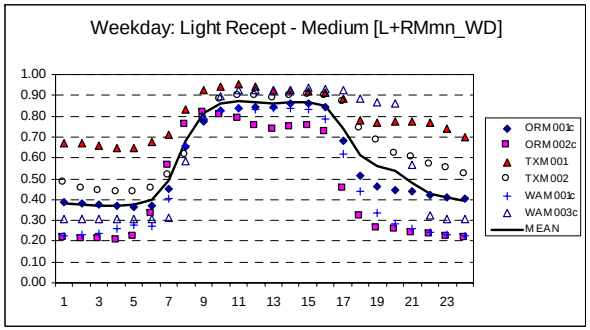


Fig 8a: Combined lights and receptacles weekday profile for *medium* buildings (50th percentile).

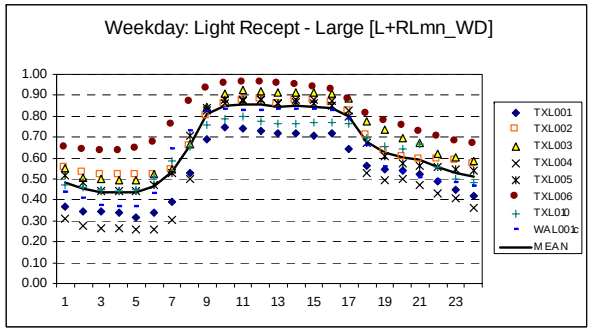


Fig 9a: Combined lights and receptacles weekday profile for *large* bldgs. (50th percentile).

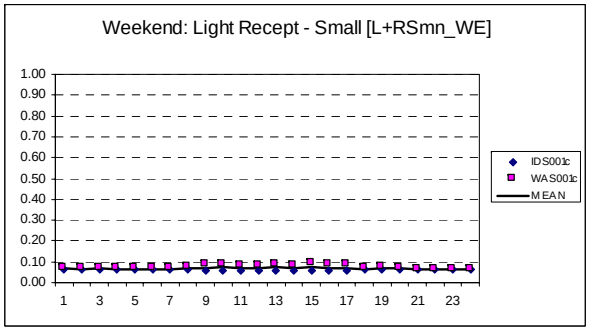


Fig 7b: Combined lights and receptacles weekend profile for *small* buildings (50th percentile).

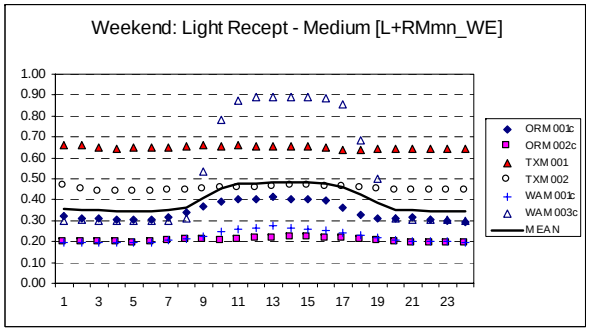


Fig 8b: Combined lights and receptacles weekend profile for *medium* buildings (50th percentile).

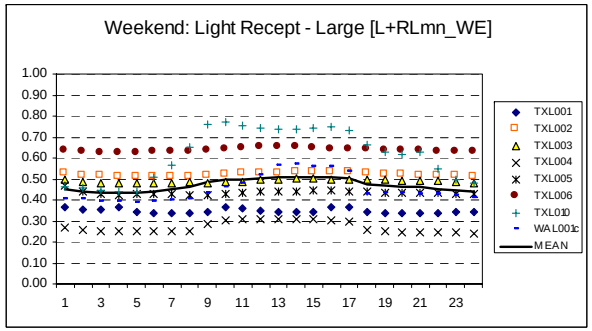


Fig 9b: Combined lights and receptacles weekend profile for *large* bldgs.(50th percentile).

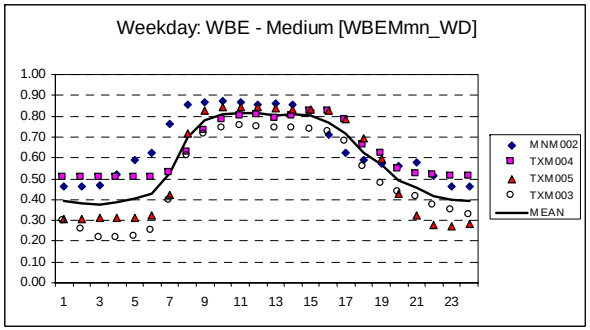


Fig 10a: Whole building electricity weekday profile for *medium* buildings (50th percentile).

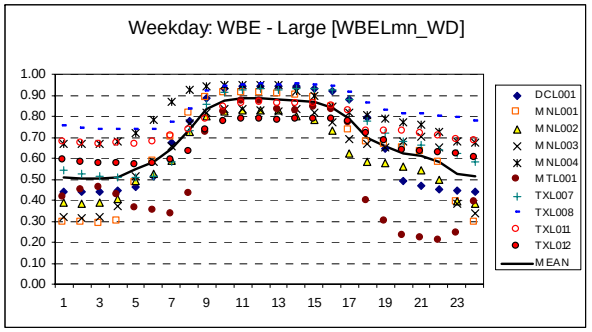


Fig 11a: Whole building electricity weekday profile for *large* buildings (50th percentile).

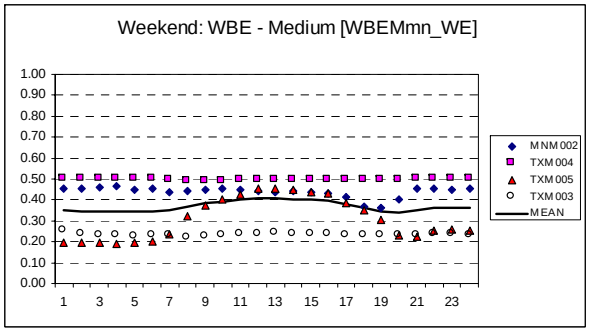


Fig 10b: Whole building electricity weekend profile for *medium* buildings (50th percentile).

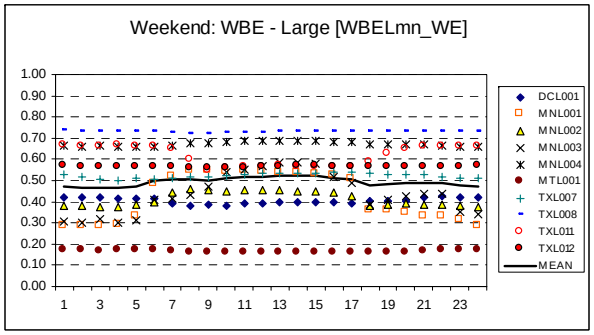


Fig 11b: Whole building electricity weekend profile for *large* buildings (50th percentile).

90th Percentile comparisons

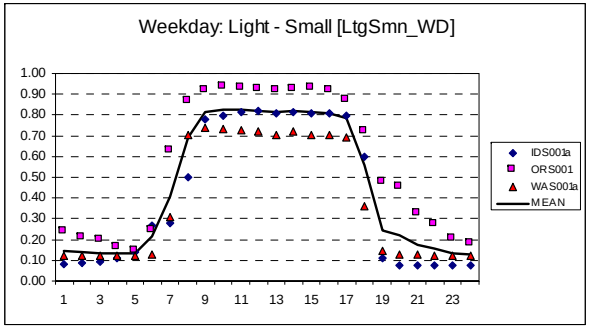


Fig 12a: Light-only weekday profile for *small* bldg. bldg (90th percentile).

.

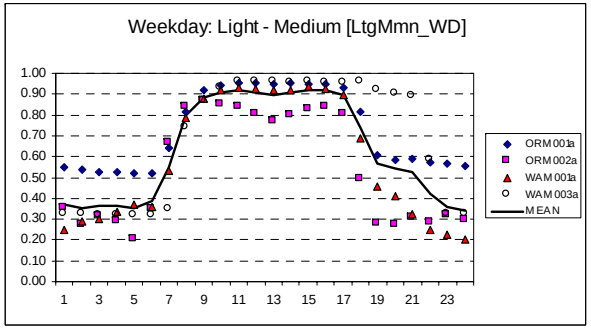


Fig 13a: Light-only weekday profile for *medium* bldg. (90th percentile)

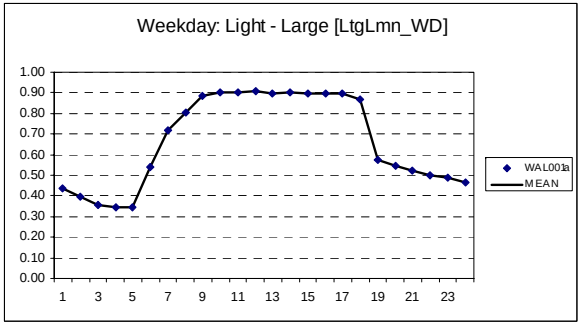


Fig 14a: Light-only weekday profile for *large* (90th percentile)

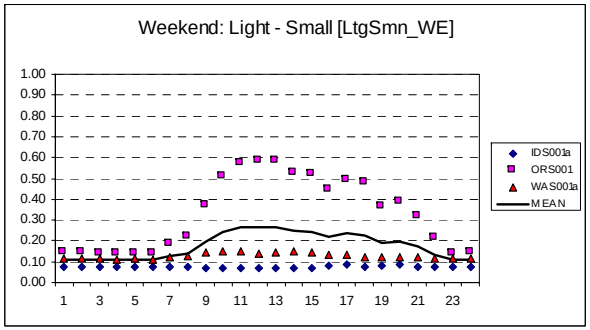


Fig 12b: Light-only weekend profile for *small* bldg. (90th percentile comparisons)

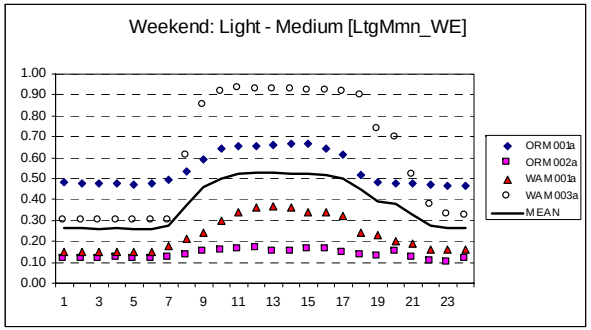


Fig 13b: Light-only weekend profile for *medium* bldg. (90th percentile)

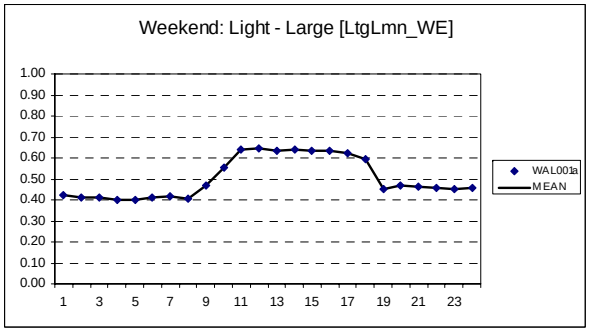


Fig 14b: Light-only weekend profile for *large* bldg (90th percentile).

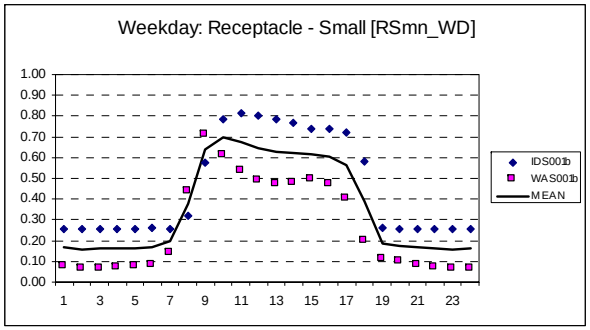


Fig 15a: Receptacle- weekday profile for *small* bldg. (90th percentile)

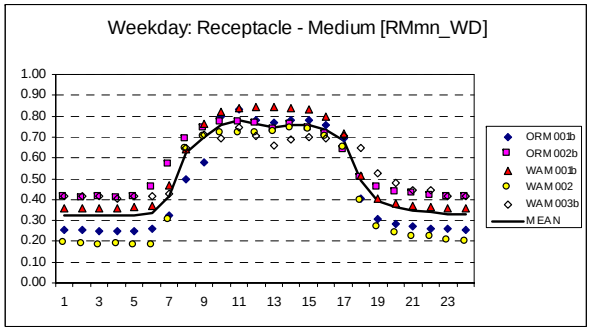


Fig 16a: Receptacle- weekday profile for *medium* bldg. (90th percentile)

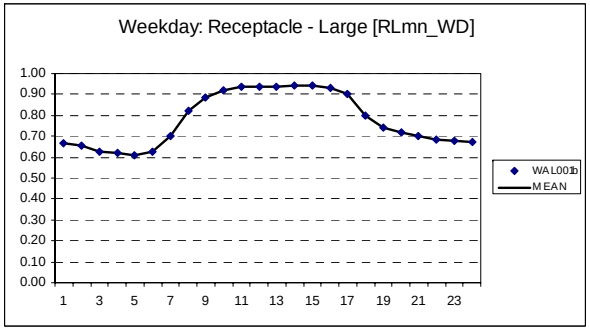


Fig 17a: Receptacle- weekday profile for *large* bldg. (90th percentile)

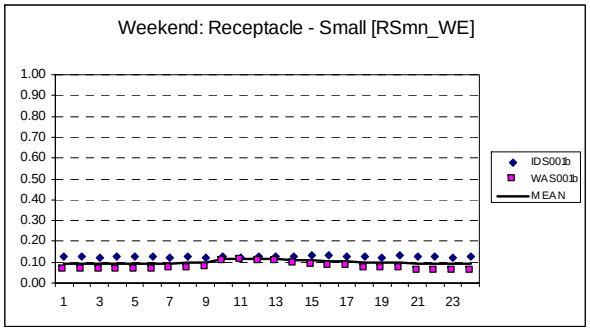


Fig 15b: Receptacle- weekend profile for *small* bldg. (90th percentile)

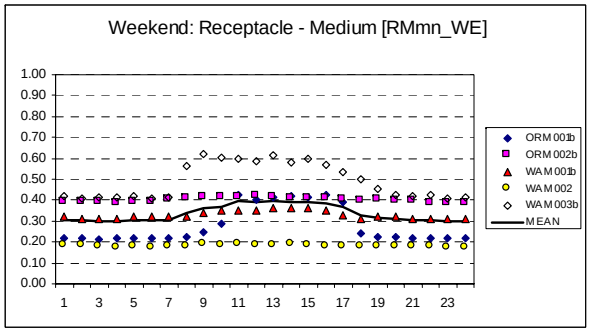


Fig 16b: Receptacle- weekend profile for *medium* bldg. (90th percentile)

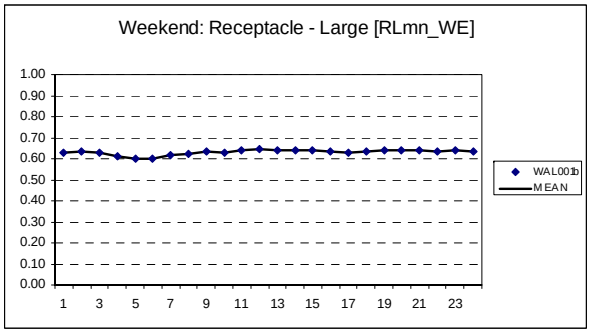


Fig 17b: Receptacle- weekend profile for *large* bldg (90th percentile).

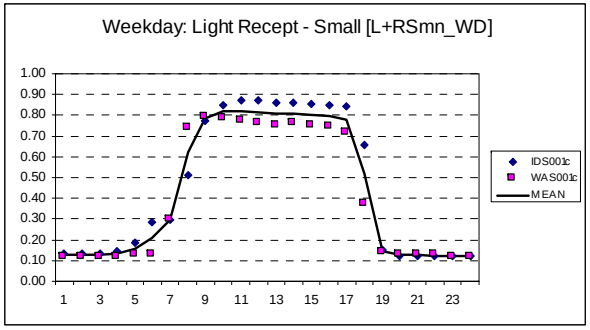


Fig 18a: Light+Recept- weekday profile for *small* bldg. (90th percentile)

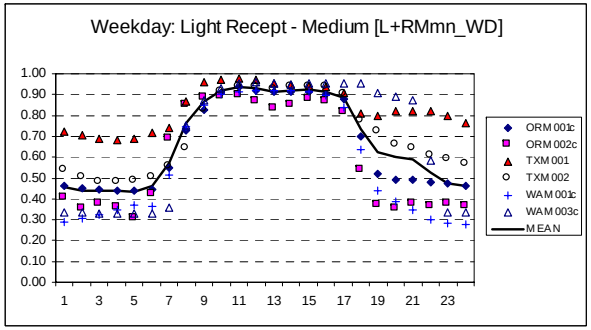


Fig 19a: Light+Recept- weekday profile for *medium* bldg. (90th percentile)

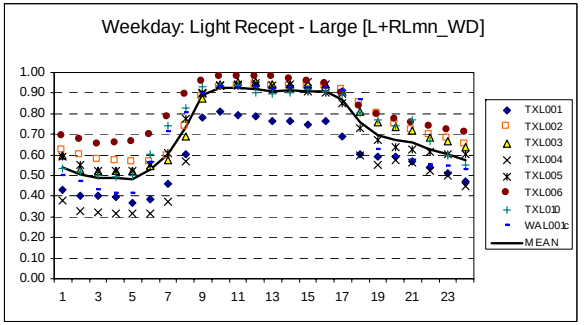


Fig 20a: Light+Recept- weekday profile for *large* bldg. (90th percentile)

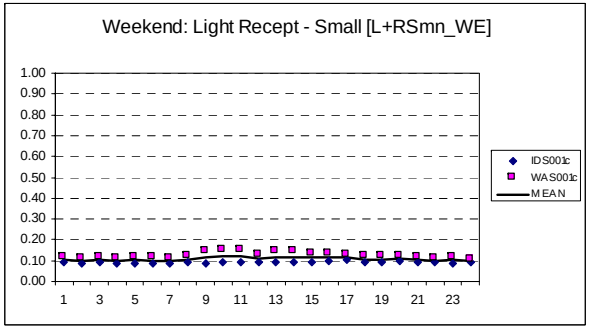


Fig 18b: Light+Recept- weekend profile for *small* bldg. (90th percentile)

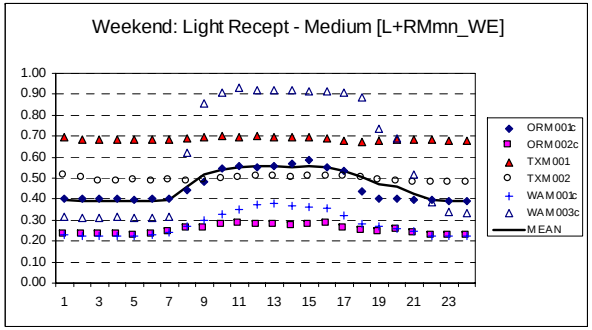


Fig 19b: Light+Recept- weekend profile for *medium* bldg. (90th percentile)

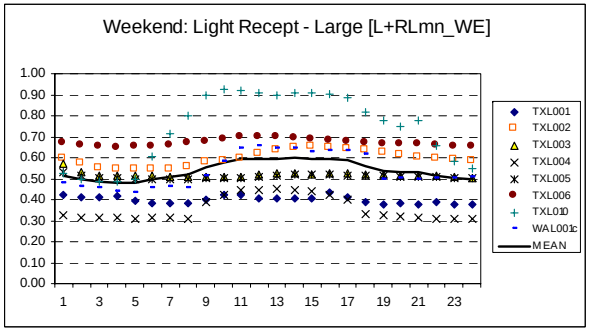


Fig 20b: Light+Recept- weekend profile for *la.rge* bldg (90th percentile).

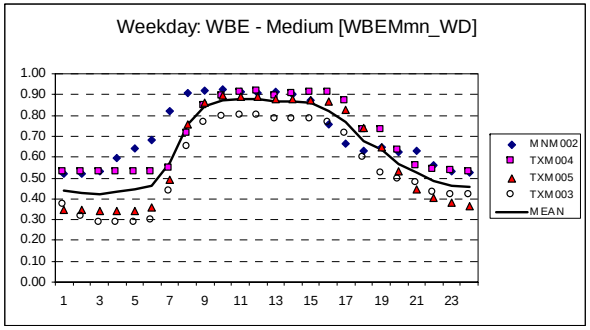


Fig 21a: WBE- weekday profile for *medium* bldg. (90th percentile)

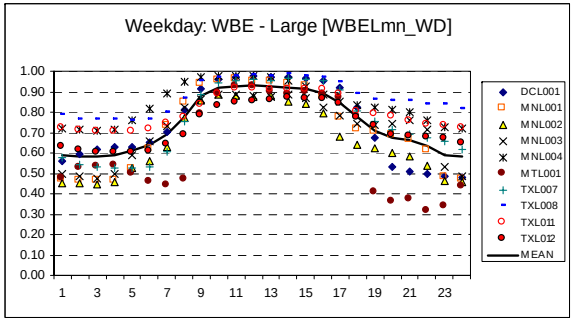


Fig 22a: WBE- weekday profile for *large* bldg. (90th percentile)

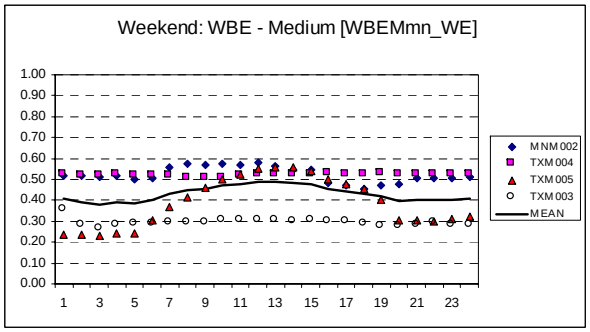


Fig 21b: WBE- weekend profile for *medium* bldg. (90th percentile)

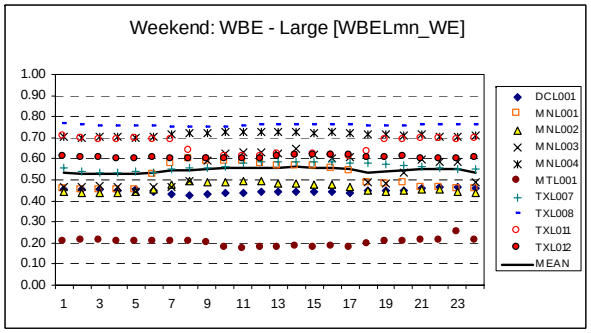


Fig 22b: WBE- weekend profile for *large* bldg. (90th percentile)

DIVERSITY FACTOR & STATISTICS (50th Percentile)

Table 1a: Lighting-only weekday profile for small buildings

Hour	IDS001a	ORS001	WAS001a	MEAN
1	0.04	0.09	0.07	0.07
2	0.04	0.09	0.07	0.07
3	0.05	0.09	0.07	0.07
4	0.05	0.09	0.07	0.07
5	0.05	0.08	0.08	0.07
6	0.07	0.12	0.08	0.09
7	0.05	0.41	0.12	0.20
8	0.38	0.72	0.54	0.55
9	0.69	0.83	0.66	0.73
10	0.75	0.86	0.66	0.76
11	0.76	0.86	0.65	0.76
12	0.76	0.86	0.63	0.75
13	0.75	0.86	0.63	0.75
14	0.76	0.86	0.65	0.76
15	0.76	0.86	0.66	0.76
16	0.75	0.85	0.65	0.75
17	0.58	0.71	0.35	0.55
18	0.09	0.40	0.12	0.20
19	0.05	0.23	0.09	0.12
20	0.04	0.15	0.09	0.09
21	0.04	0.14	0.09	0.09
22	0.04	0.11	0.09	0.08
23	0.04	0.10	0.08	0.07
24	0.04	0.10	0.08	0.07

Table 2a: Lighting-only weekday profile for medium buildings

Hour	ORM001a	ORM002a	WAM001a	WAM003a	MEAN
1	0.45	0.08	0.14	0.29	0.24
2	0.44	0.08	0.14	0.29	0.24
3	0.43	0.08	0.15	0.29	0.24
4	0.42	0.07	0.20	0.29	0.25
5	0.41	0.10	0.24	0.29	0.26
6	0.42	0.23	0.23	0.29	0.29
7	0.52	0.51	0.40	0.30	0.43
8	0.73	0.72	0.68	0.58	0.68
9	0.87	0.78	0.81	0.79	0.81
10	0.91	0.76	0.85	0.90	0.86
11	0.92	0.73	0.86	0.93	0.86
12	0.91	0.69	0.84	0.93	0.84
13	0.91	0.67	0.84	0.92	0.84
14	0.91	0.68	0.85	0.93	0.85
15	0.91	0.69	0.85	0.93	0.85
16	0.90	0.67	0.82	0.93	0.83
17	0.80	0.38	0.67	0.92	0.69
18	0.59	0.21	0.46	0.89	0.54
19	0.54	0.14	0.30	0.88	0.46
20	0.52	0.13	0.23	0.87	0.44
21	0.52	0.12	0.18	0.57	0.35
22	0.50	0.11	0.16	0.31	0.27
23	0.48	0.09	0.15	0.29	0.25
24	0.47	0.09	0.13	0.29	0.25

Table 3a: Lighting-only weekday profile for large buildings

Hour	WAL001a	MEAN
1	0.37	0.37
2	0.33	0.33
3	0.30	0.30
4	0.29	0.29
5	0.29	0.29
6	0.37	0.37
7	0.61	0.61
8	0.70	0.70
9	0.78	0.78
10	0.80	0.80
11	0.79	0.79
12	0.79	0.79
13	0.80	0.80
14	0.80	0.80
15	0.80	0.80
16	0.80	0.80
17	0.77	0.77
18	0.63	0.63
19	0.51	0.51
20	0.48	0.48
21	0.45	0.45
22	0.43	0.43
23	0.42	0.42
24	0.40	0.40

Table 1b: Lighting-only weekend profile for small buildings

Hour	IDS001a	ORS001	WAS001a	MEAN
1	0.04	0.10	0.06	0.07
2	0.04	0.09	0.06	0.07
3	0.04	0.09	0.06	0.06
4	0.04	0.09	0.06	0.06
5	0.04	0.09	0.06	0.07
6	0.04	0.08	0.06	0.06
7	0.04	0.09	0.07	0.07
8	0.04	0.10	0.08	0.08
9	0.04	0.13	0.09	0.09
10	0.04	0.18	0.09	0.10
11	0.04	0.23	0.08	0.12
12	0.04	0.24	0.08	0.12
13	0.04	0.23	0.08	0.12
14	0.04	0.17	0.09	0.10
15	0.04	0.16	0.09	0.10
16	0.04	0.15	0.08	0.09
17	0.04	0.13	0.09	0.08
18	0.04	0.12	0.07	0.08
19	0.04	0.10	0.07	0.07
20	0.04	0.10	0.07	0.07
21	0.04	0.10	0.06	0.07
22	0.04	0.09	0.06	0.06
23	0.04	0.08	0.06	0.06
24	0.04	0.08	0.06	0.06

Table 2b: Lighting-only weekend profile for medium buildings

Hour	ORM001a	ORM002a	WAM001a	WAM003a	MEAN
1	0.36	0.07	0.11	0.29	0.21
2	0.35	0.07	0.11	0.29	0.20
3	0.34	0.07	0.11	0.29	0.20
4	0.34	0.07	0.11	0.29	0.20
5	0.34	0.07	0.11	0.29	0.20
6	0.34	0.07	0.11	0.29	0.20
7	0.36	0.07	0.12	0.29	0.21
8	0.39	0.08	0.14	0.30	0.23
9	0.43	0.08	0.16	0.53	0.30
10	0.46	0.08	0.19	0.80	0.38
11	0.47	0.08	0.20	0.89	0.41
12	0.46	0.09	0.22	0.90	0.41
13	0.45	0.09	0.22	0.90	0.42
14	0.45	0.09	0.22	0.90	0.42
15	0.44	0.09	0.21	0.90	0.41
16	0.44	0.09	0.19	0.89	0.40
17	0.41	0.08	0.19	0.87	0.39
18	0.37	0.07	0.16	0.69	0.32
19	0.35	0.07	0.15	0.49	0.27
20	0.35	0.07	0.13	0.30	0.21
21	0.35	0.06	0.12	0.29	0.21
22	0.34	0.06	0.12	0.29	0.20
23	0.33	0.06	0.11	0.29	0.20
24	0.32	0.06	0.11	0.29	0.20

Table 3b: Lighting-only weekend profile for large buildings

Hour	WAL001a	MEAN
1	0.33	0.33
2	0.33	0.33
3	0.33	0.33
4	0.32	0.32
5	0.32	0.32
6	0.33	0.33
7	0.33	0.33
8	0.34	0.34
9	0.38	0.38
10	0.43	0.43
11	0.43	0.43
12	0.48	0.48
13	0.54	0.54
14	0.55	0.55
15	0.54	0.54
16	0.53	0.53
17	0.52	0.52
18	0.37	0.37
19	0.36	0.36
20	0.36	0.36
21	0.36	0.36
22	0.36	0.36
23	0.36	0.36
24	0.34	0.34

DIVERSITY FACTOR & STATISTICS (50th Percentile)

Table 4a: Receptacle-weekday profile for small buildings

Hour	IDS001b	WAS001b	MEAN
1	0.24	0.01	0.13
2	0.24	0.01	0.12
3	0.23	0.01	0.12
4	0.23	0.01	0.12
5	0.23	0.01	0.12
6	0.23	0.02	0.12
7	0.23	0.06	0.14
8	0.25	0.26	0.26
9	0.35	0.42	0.38
10	0.40	0.42	0.41
11	0.41	0.43	0.42
12	0.42	0.40	0.41
13	0.43	0.40	0.42
14	0.41	0.42	0.42
15	0.41	0.43	0.42
16	0.41	0.39	0.40
17	0.34	0.26	0.30
18	0.25	0.06	0.16
19	0.24	0.02	0.13
20	0.23	0.02	0.13
21	0.23	0.02	0.13
22	0.23	0.02	0.13
23	0.24	0.02	0.13
24	0.23	0.02	0.12

Table 5a: Receptable-weekday profile for medium buildings

Hour	ORM001b	ORM002b	WAM001b	WAM002	WAM003b	MEAN
1	0.24	0.38	0.30	0.14	0.38	0.29
2	0.24	0.38	0.30	0.14	0.38	0.29
3	0.23	0.38	0.31	0.14	0.37	0.29
4	0.24	0.38	0.30	0.14	0.37	0.29
5	0.24	0.38	0.31	0.14	0.37	0.29
6	0.24	0.41	0.31	0.13	0.38	0.29
7	0.27	0.50	0.37	0.18	0.39	0.34
8	0.42	0.61	0.54	0.46	0.45	0.49
9	0.51	0.66	0.68	0.60	0.55	0.60
10	0.57	0.67	0.73	0.60	0.56	0.63
11	0.59	0.67	0.75	0.60	0.59	0.64
12	0.61	0.66	0.75	0.59	0.59	0.64
13	0.62	0.65	0.75	0.58	0.58	0.64
14	0.64	0.65	0.75	0.61	0.60	0.65
15	0.69	0.65	0.73	0.59	0.62	0.66
16	0.66	0.61	0.68	0.52	0.61	0.62
17	0.41	0.49	0.52	0.33	0.62	0.47
18	0.31	0.44	0.39	0.21	0.52	0.38
19	0.27	0.41	0.34	0.19	0.45	0.33
20	0.25	0.39	0.32	0.18	0.42	0.31
21	0.25	0.39	0.32	0.16	0.41	0.30
22	0.24	0.38	0.31	0.15	0.40	0.30
23	0.24	0.38	0.31	0.15	0.38	0.29
24	0.24	0.38	0.31	0.15	0.37	0.29

Table 6a: Receptacle-weekday profile for large buildings

Hour	WAL001b	MEAN
1	0.63	0.63
2	0.61	0.61
3	0.60	0.60
4	0.58	0.58
5	0.58	0.58
6	0.59	0.59
7	0.65	0.65
8	0.76	0.76
9	0.86	0.86
10	0.88	0.88
11	0.89	0.89
12	0.88	0.88
13	0.89	0.89
14	0.88	0.88
15	0.88	0.88
16	0.85	0.85
17	0.78	0.78
18	0.71	0.71
19	0.68	0.68
20	0.67	0.67
21	0.66	0.66
22	0.65	0.65
23	0.65	0.65
24	0.64	0.64

Table 4b: Receptacle-weekend profile for small buildings

Hour	IDS001b	WAS001b	MEAN
1	0.10	0.01	0.06
2	0.10	0.01	0.06
3	0.11	0.01	0.06
4	0.10	0.01	0.06
5	0.10	0.01	0.06
6	0.10	0.01	0.06
7	0.10	0.01	0.06
8	0.10	0.01	0.06
9	0.10	0.01	0.06
10	0.10	0.01	0.06
11	0.10	0.01	0.06
12	0.10	0.01	0.06
13	0.10	0.01	0.06
14	0.11	0.01	0.06
15	0.10	0.01	0.06
16	0.10	0.01	0.06
17	0.10	0.01	0.06
18	0.10	0.01	0.06
19	0.10	0.01	0.06
20	0.10	0.01	0.06
21	0.10	0.01	0.06
22	0.10	0.01	0.06
23	0.10	0.01	0.06
24	0.10	0.01	0.06

Table 5b: Receptacle-weekend profile for medium buildings

Hour	ORM001b	ORM002b	WAM001b	WAM002	WAM003b	MEAN
1	0.20	0.37	0.27	0.14	0.37	0.27
2	0.21	0.37	0.27	0.14	0.37	0.27
3	0.20	0.37	0.27	0.15	0.38	0.27
4	0.20	0.37	0.27	0.14	0.38	0.27
5	0.20	0.37	0.27	0.13	0.37	0.27
6	0.20	0.37	0.27	0.14	0.37	0.27
7	0.20	0.37	0.27	0.14	0.37	0.27
8	0.21	0.38	0.28	0.14	0.39	0.28
9	0.21	0.38	0.29	0.14	0.42	0.29
10	0.22	0.37	0.30	0.15	0.42	0.29
11	0.23	0.38	0.30	0.15	0.45	0.30
12	0.23	0.38	0.30	0.14	0.47	0.30
13	0.23	0.38	0.30	0.15	0.47	0.31
14	0.24	0.38	0.30	0.14	0.47	0.30
15	0.24	0.38	0.30	0.15	0.48	0.31
16	0.23	0.38	0.30	0.14	0.48	0.31
17	0.22	0.38	0.30	0.14	0.44	0.29
18	0.22	0.37	0.29	0.14	0.42	0.29
19	0.21	0.37	0.28	0.14	0.40	0.28
20	0.21	0.37	0.28	0.14	0.38	0.27
21	0.21	0.37	0.28	0.14	0.38	0.27
22	0.21	0.37	0.28	0.14	0.38	0.27
23	0.20	0.37	0.27	0.14	0.37	0.27
24	0.20	0.36	0.27	0.13	0.38	0.27

Table 6b: Receptacle-weekend profile for large buildings

Hour	WAL001b	MEAN
1	0.59	0.59
2	0.59	0.59
3	0.58	0.58
4	0.57	0.57
5	0.57	0.57
6	0.57	0.57
7	0.58	0.58
8	0.58	0.58
9	0.58	0.58
10	0.59	0.59
11	0.59	0.59
12	0.60	0.60
13	0.59	0.59
14	0.59	0.59
15	0.59	0.59
16	0.59	0.59
17	0.59	0.59
18	0.59	0.59
19	0.60	0.60
20	0.60	0.60
21	0.61	0.61
22	0.61	0.61
23	0.60	0.60
24	0.59	0.59

DIVERSITY FACTOR & STATISTICS (50th Percentile)

Table 7a: Combined Lights and Receptacles weekday profile for small buildings

Hour	IDS001c	WAS001c	MEAN
1	0.10	0.08	0.09
2	0.10	0.08	0.09
3	0.10	0.08	0.09
4	0.10	0.08	0.09
5	0.10	0.08	0.09
6	0.11	0.08	0.10
7	0.10	0.13	0.12
8	0.39	0.55	0.47
9	0.68	0.69	0.69
10	0.75	0.69	0.72
11	0.77	0.69	0.73
12	0.78	0.67	0.72
13	0.77	0.66	0.72
14	0.76	0.69	0.72
15	0.76	0.69	0.72
16	0.76	0.68	0.72
17	0.58	0.37	0.48
18	0.14	0.12	0.13
19	0.10	0.09	0.09
20	0.10	0.09	0.09
21	0.10	0.09	0.09
22	0.10	0.08	0.09
23	0.10	0.08	0.09
24	0.10	0.08	0.09

Table 8a: Combined Lights and Receptacles weekday profile for medium buildings

Hour	ORM001c	ORM002c	TXM001	TXM002	WAM001c	WAM003c	MEAN
1	0.39	0.21	0.67	0.48	0.23	0.31	0.38
2	0.38	0.21	0.67	0.45	0.23	0.31	0.37
3	0.38	0.21	0.66	0.44	0.24	0.31	0.37
4	0.37	0.20	0.65	0.44	0.26	0.30	0.37
5	0.36	0.22	0.65	0.44	0.28	0.30	0.38
6	0.37	0.33	0.67	0.45	0.27	0.31	0.40
7	0.45	0.56	0.71	0.51	0.41	0.31	0.49
8	0.65	0.76	0.83	0.61	0.66	0.58	0.68
9	0.77	0.81	0.92	0.79	0.79	0.80	0.81
10	0.83	0.80	0.94	0.88	0.83	0.90	0.86
11	0.84	0.78	0.95	0.89	0.84	0.93	0.87
12	0.84	0.75	0.94	0.90	0.83	0.92	0.87
13	0.85	0.74	0.93	0.88	0.84	0.92	0.86
14	0.86	0.74	0.92	0.89	0.84	0.93	0.86
15	0.86	0.75	0.92	0.90	0.83	0.93	0.87
16	0.84	0.72	0.91	0.90	0.79	0.93	0.85
17	0.68	0.45	0.88	0.87	0.62	0.93	0.74
18	0.51	0.32	0.78	0.74	0.44	0.89	0.61
19	0.46	0.26	0.77	0.68	0.34	0.87	0.56
20	0.45	0.25	0.78	0.62	0.29	0.86	0.54
21	0.44	0.24	0.78	0.60	0.26	0.57	0.48
22	0.42	0.23	0.77	0.57	0.24	0.33	0.43
23	0.41	0.22	0.74	0.55	0.23	0.31	0.41
24	0.40	0.22	0.70	0.52	0.22	0.31	0.40

Table 7b: Combined Lights and Receptacles weekend profile for small buildings

Hour	IDS001c	WAS001c	MEAN
1	0.07	0.07	0.07
2	0.06	0.07	0.07
3	0.06	0.07	0.07
4	0.06	0.07	0.07
5	0.06	0.07	0.07
6	0.06	0.07	0.07
7	0.06	0.07	0.07
8	0.06	0.08	0.07
9	0.06	0.08	0.07
10	0.06	0.09	0.07
11	0.06	0.08	0.07
12	0.06	0.08	0.07
13	0.06	0.08	0.07
14	0.06	0.08	0.07
15	0.06	0.09	0.07
16	0.06	0.08	0.07
17	0.06	0.08	0.07
18	0.06	0.07	0.07
19	0.06	0.07	0.07
20	0.06	0.07	0.07
21	0.06	0.07	0.06
22	0.06	0.06	0.06
23	0.06	0.06	0.06
24	0.06	0.06	0.06

Table 8b: Combined Lights and Receptacles weekend profile for medium buildings

Hour	ORM001c	ORM002c	TXM001	TXM002	WAM001c	WAM003c	MEAN
1	0.32	0.19	0.66	0.46	0.20	0.30	0.36
2	0.31	0.19	0.66	0.45	0.20	0.30	0.35
3	0.31	0.19	0.65	0.44	0.20	0.30	0.35
4	0.31	0.19	0.64	0.44	0.19	0.30	0.35
5	0.30	0.19	0.65	0.44	0.19	0.30	0.35
6	0.30	0.19	0.65	0.44	0.20	0.30	0.35
7	0.32	0.20	0.65	0.44	0.20	0.30	0.35
8	0.34	0.21	0.66	0.44	0.21	0.31	0.36
9	0.37	0.20	0.66	0.45	0.23	0.54	0.41
10	0.39	0.20	0.66	0.45	0.25	0.78	0.46
11	0.40	0.21	0.66	0.45	0.26	0.88	0.48
12	0.40	0.21	0.66	0.45	0.26	0.89	0.48
13	0.41	0.21	0.66	0.46	0.27	0.89	0.48
14	0.40	0.22	0.66	0.46	0.26	0.89	0.48
15	0.40	0.22	0.65	0.47	0.26	0.89	0.48
16	0.40	0.21	0.65	0.46	0.25	0.89	0.48
17	0.36	0.21	0.64	0.46	0.24	0.86	0.46
18	0.33	0.20	0.64	0.45	0.23	0.68	0.42
19	0.31	0.20	0.64	0.45	0.22	0.50	0.39
20	0.31	0.19	0.64	0.45	0.21	0.31	0.35
21	0.31	0.19	0.64	0.44	0.20	0.30	0.35
22	0.31	0.19	0.64	0.44	0.20	0.30	0.35
23	0.30	0.19	0.65	0.44	0.20	0.30	0.35
24	0.30	0.19	0.64	0.44	0.20	0.30	0.34

Table 9a: Combined Lights and Receptacles weekday profile for large buildings

Hour	TXL001	TXL002	TXL003	TXL004	TXL005	TXL006	TXL010	WAL001c	MEAN
1	0.37	0.55	0.55	0.31	0.52	0.65	0.47	0.43	0.48
2	0.34	0.53	0.51	0.28	0.48	0.64	0.46	0.40	0.45
3	0.35	0.52	0.50	0.26	0.44	0.63	0.45	0.37	0.44
4	0.34	0.52	0.50	0.26	0.44	0.63	0.44	0.36	0.44
5	0.32	0.52	0.50	0.26	0.44	0.64	0.45	0.36	0.44
6	0.34	0.52	0.52	0.26	0.47	0.67	0.51	0.43	0.46
7	0.39	0.54	0.55	0.31	0.53	0.76	0.58	0.64	0.54
8	0.53	0.66	0.67	0.50	0.71	0.87	0.66	0.73	0.66
9	0.69	0.80	0.85	0.83	0.84	0.93	0.76	0.81	0.81
10	0.75	0.85	0.91	0.86	0.88	0.96	0.79	0.83	0.85
11	0.74	0.87	0.92	0.87	0.88	0.96	0.80	0.82	0.86
12	0.73	0.88	0.92	0.88	0.88	0.96	0.78	0.82	0.86
13	0.72	0.86	0.91	0.86	0.86	0.96	0.76	0.83	0.85
14	0.72	0.87	0.91	0.88	0.86	0.95	0.77	0.83	0.85
15	0.71	0.87	0.92	0.88	0.86	0.94	0.77	0.83	0.85
16	0.72	0.86	0.91	0.87	0.85	0.92	0.77	0.82	0.84
17	0.64	0.82	0.88	0.83	0.80	0.88	0.77	0.78	0.80
18	0.56	0.71	0.78	0.53	0.67	0.81	0.70	0.65	0.68
19	0.55	0.63	0.73	0.49	0.61	0.77	0.66	0.55	0.63
20	0.54	0.60	0.70	0.50	0.58	0.75	0.64	0.53	0.60
21	0.52	0.59	0.67	0.47	0.56	0.73	0.66	0.50	0.59
22	0.49	0.59	0.62	0.43	0.55	0.70	0.56	0.49	0.55
23	0.45	0.59	0.60	0.41	0.54	0.68	0.50	0.48	0.53
24	0.42	0.57	0.59	0.36	0.54	0.67	0.48	0.46	0.51

Table 9b: Combined Lights and Receptacles weekend profile for large buildings

Hour	TXL001	TXL002	TXL003	TXL004	TXL005	TXL006	TXL010	WAL001c	MEAN
1	0.36	0.52	0.50	0.27	0.47	0.63	0.46	0.40	0.45
2	0.36	0.52	0.49	0.26	0.44	0.63	0.46	0.40	0.44
3	0.36	0.51	0.48	0.25	0.43	0.62	0.45	0.39	0.44
4	0.37	0.51	0.48	0.25	0.43	0.62	0.44	0.39	0.44
5	0.34	0.51	0.48	0.25	0.43	0.62	0.44	0.38	0.43
6	0.34	0.51	0.48	0.25	0.43	0.63	0.51	0.39	0.44
7	0.33	0.51	0.48	0.25	0.43	0.63	0.57	0.39	0.45
8	0.34	0.51	0.48	0.25	0.42	0.63	0.65	0.40	0.46
9	0.34	0.51	0.48	0.29	0.42	0.63	0.76	0.43	0.48
10	0.36	0.52	0.48	0.30	0.43	0.64	0.77	0.46	0.50
11	0.36	0.52	0.49	0.31	0.43	0.65	0.75	0.47	0.50
12	0.35	0.53	0.50	0.31	0.44	0.65	0.74	0.51	0.50
13	0.34	0.53	0.50	0.31	0.44	0.65	0.74	0.56	0.51
14	0.34	0.53	0.50	0.31	0.44	0.65	0.74	0.56	0.51
15	0.34	0.53	0.50	0.31	0.44	0.65	0.74	0.55	0.51
16	0.37	0.53	0.50	0.30	0.44	0.64	0.75	0.55	0.51
17	0.36	0.53	0.50	0.30	0.44	0.64	0.73	0.53	0.50
18	0.35	0.52	0.50	0.26	0.44	0.64	0.66	0.42	0.47
19	0.34	0.52	0.50	0.25	0.44	0.63	0.63	0.43	0.47
20	0.34	0.52	0.49	0.25	0.43	0.63	0.62	0.43	0.46
21	0.34	0.52	0.49	0.25	0.43	0.63	0.63	0.43	0.46
22	0.34	0.51	0.49	0.25	0.43	0.63	0.55	0.42	0.45
23	0.34	0.51	0.49	0.25	0.43	0.63	0.49	0.42	0.45
24	0.34	0.51	0.48	0.24	0.43	0.63	0.48	0.41	0.44

DIVERSITY FACTOR & STATISTICS (50th Percentile)

Table 10a: Whole building electricity weekday profile for medium buildings

Hour	MNM002	TXM004	TXM005	TXM003	MEAN
1	0.46	0.51	0.30	0.30	0.39
2	0.46	0.51	0.31	0.25	0.38
3	0.47	0.50	0.31	0.21	0.37
4	0.52	0.50	0.31	0.21	0.39
5	0.59	0.50	0.31	0.22	0.41
6	0.62	0.51	0.32	0.25	0.42
7	0.77	0.53	0.42	0.39	0.53
8	0.86	0.62	0.71	0.61	0.70
9	0.87	0.73	0.82	0.71	0.78
10	0.87	0.78	0.85	0.74	0.81
11	0.87	0.80	0.84	0.75	0.81
12	0.86	0.80	0.85	0.75	0.81
13	0.86	0.79	0.84	0.74	0.81
14	0.86	0.80	0.83	0.74	0.81
15	0.83	0.82	0.83	0.74	0.80
16	0.71	0.82	0.83	0.72	0.77
17	0.62	0.78	0.79	0.67	0.72
18	0.59	0.66	0.69	0.55	0.62
19	0.57	0.62	0.60	0.48	0.57
20	0.56	0.55	0.43	0.44	0.49
21	0.58	0.52	0.32	0.41	0.46
22	0.52	0.52	0.27	0.37	0.42
23	0.46	0.51	0.27	0.35	0.40
24	0.46	0.51	0.28	0.33	0.39

Table 11a: Whole building electricity weekday profile for large buildings

Hour	DCL001	MNL001	MNL002	MNL003	MNL004	MTL001	TXL007	TXL008	TXL011	TXL012
1	0.44	0.29	0.39	0.32	0.67	0.41	0.55	0.75	0.67	0.59
2	0.44	0.29	0.38	0.32	0.67	0.45	0.52	0.74	0.67	0.58
3	0.44	0.29	0.39	0.32	0.67	0.46	0.51	0.73	0.66	0.57
4	0.45	0.30	0.40	0.37	0.68	0.42	0.51	0.73	0.67	0.57
5	0.46	0.48	0.49	0.52	0.72	0.36	0.51	0.73	0.66	0.57
6	0.51	0.58	0.53	0.58	0.78	0.35	0.52	0.73	0.67	0.57
7	0.68	0.69	0.59	0.66	0.87	0.33	0.58	0.77	0.70	0.59
8	0.78	0.81	0.73	0.77	0.92	0.43	0.73	0.83	0.73	0.63
9	0.88	0.89	0.80	0.82	0.94	0.72	0.86	0.91	0.79	0.73
10	0.93	0.91	0.82	0.84	0.95	0.82	0.91	0.94	0.84	0.77
11	0.94	0.91	0.83	0.84	0.95	0.87	0.93	0.94	0.86	0.78
12	0.94	0.91	0.83	0.83	0.95	0.87	0.93	0.95	0.86	0.78
13	0.94	0.90	0.83	0.82	0.95	0.83	0.93	0.94	0.86	0.78
14	0.94	0.89	0.80	0.84	0.92	0.82	0.93	0.95	0.86	0.78
15	0.93	0.88	0.78	0.82	0.90	0.84	0.93	0.94	0.86	0.78
16	0.92	0.84	0.73	0.77	0.85	0.83	0.92	0.94	0.85	0.78
17	0.88	0.73	0.62	0.69	0.82	0.76	0.88	0.91	0.82	0.77
18	0.79	0.67	0.59	0.67	0.80	0.39	0.78	0.86	0.73	0.72
19	0.65	0.66	0.57	0.65	0.79	0.30	0.72	0.82	0.73	0.68
20	0.49	0.65	0.56	0.68	0.77	0.23	0.68	0.81	0.73	0.64
21	0.47	0.63	0.54	0.70	0.76	0.22	0.67	0.80	0.72	0.63
22	0.45	0.58	0.50	0.65	0.72	0.20	0.64	0.79	0.70	0.62
23	0.45	0.39	0.39	0.39	0.68	0.24	0.62	0.79	0.69	0.61
24	0.44	0.29	0.38	0.34	0.68	0.39	0.58	0.77	0.68	0.60

Table 10b: Whole building electricity weekend profile for medium buildings

Hour	MNM002	TXM004	TXM005	TXM003	MEAN
1	0.45	0.50	0.20	0.25	0.35
2	0.45	0.50	0.20	0.24	0.35
3	0.46	0.50	0.19	0.23	0.35
4	0.46	0.50	0.19	0.23	0.35
5	0.45	0.50	0.20	0.23	0.34
6	0.45	0.50	0.20	0.23	0.35
7	0.44	0.49	0.23	0.23	0.35
8	0.44	0.49	0.32	0.22	0.37
9	0.45	0.49	0.38	0.22	0.38
10	0.45	0.49	0.40	0.23	0.39
11	0.45	0.49	0.43	0.24	0.40
12	0.44	0.49	0.45	0.24	0.41
13	0.44	0.49	0.45	0.24	0.41
14	0.44	0.49	0.45	0.24	0.41
15	0.43	0.49	0.44	0.23	0.40
16	0.43	0.49	0.43	0.23	0.40
17	0.41	0.49	0.38	0.23	0.38
18	0.37	0.49	0.35	0.23	0.36
19	0.36	0.49	0.30	0.23	0.35
20	0.40	0.49	0.23	0.23	0.34
21	0.45	0.50	0.23	0.23	0.35
22	0.45	0.50	0.25	0.23	0.36
23	0.45	0.50	0.26	0.23	0.36
24	0.45	0.50	0.25	0.23	0.36

Table 11b: Whole building electricity weekend profile for large buildings

Hour	DCL001	MNL001	MNL002	MNL003	MNL004	MTL001	TXL007	TXL008	TXL011	TXL012
1	0.42	0.28	0.38	0.31	0.66	0.17	0.53	0.73	0.66	0.57
2	0.42	0.28	0.38	0.30	0.66	0.17	0.52	0.73	0.66	0.56
3	0.42	0.28	0.38	0.32	0.66	0.17	0.51	0.73	0.66	0.56
4	0.41	0.29	0.38	0.30	0.66	0.17	0.50	0.73	0.66	0.56
5	0.41	0.33	0.39	0.31	0.66	0.17	0.51	0.73	0.66	0.56
6	0.41	0.48	0.40	0.41	0.66	0.17	0.51	0.73	0.66	0.56
7	0.39	0.52	0.45	0.42	0.67	0.17	0.51	0.72	0.65	0.56
8	0.38	0.54	0.46	0.43	0.68	0.16	0.52	0.72	0.60	0.56
9	0.39	0.54	0.46	0.47	0.68	0.16	0.52	0.72	0.55	0.55
10	0.38	0.54	0.45	0.54	0.68	0.16	0.52	0.72	0.55	0.56
11	0.39	0.54	0.46	0.55	0.68	0.16	0.53	0.72	0.56	0.56
12	0.39	0.54	0.46	0.57	0.69	0.16	0.53	0.72	0.56	0.56
13	0.40	0.54	0.46	0.59	0.69	0.16	0.54	0.73	0.57	0.56
14	0.40	0.53	0.45	0.59	0.69	0.16	0.53	0.73	0.57	0.57
15	0.40	0.53	0.45	0.58	0.69	0.16	0.54	0.73	0.56	0.57
16	0.40	0.53	0.45	0.52	0.68	0.16	0.54	0.73	0.56	0.57
17	0.39	0.51	0.42	0.49	0.68	0.16	0.54	0.73	0.56	0.56
18	0.40	0.36	0.38	0.39	0.67	0.16	0.53	0.73	0.58	0.56
19	0.40	0.36	0.39	0.41	0.67	0.16	0.53	0.73	0.63	0.56
20	0.40	0.35	0.39	0.43	0.67	0.16	0.53	0.73	0.65	0.56
21	0.42	0.33	0.39	0.44	0.67	0.17	0.53	0.73	0.66	0.56
22	0.42	0.33	0.39	0.43	0.67	0.17	0.52	0.73	0.66	0.56
23	0.42	0.31	0.38	0.35	0.66	0.17	0.51	0.73	0.66	0.56
24	0.42	0.28	0.38	0.34	0.66	0.17	0.51	0.73	0.66	0.57

DIVERSITY FACTOR & STATISTICS (90th Percentile)

Table 12a: Lighting-only weekday profile for small buildings

Hour	IDS001a	ORS001	WAS001a	MEAN
1	0.08	0.24	0.12	0.15
2	0.08	0.21	0.12	0.14
3	0.09	0.20	0.12	0.14
4	0.11	0.16	0.12	0.13
5	0.14	0.14	0.12	0.13
6	0.27	0.24	0.13	0.21
7	0.28	0.63	0.31	0.41
8	0.50	0.87	0.70	0.69
9	0.78	0.92	0.74	0.81
10	0.80	0.94	0.73	0.82
11	0.81	0.93	0.72	0.82
12	0.82	0.92	0.72	0.82
13	0.81	0.92	0.71	0.81
14	0.81	0.93	0.72	0.82
15	0.81	0.93	0.71	0.82
16	0.81	0.92	0.70	0.81
17	0.79	0.87	0.69	0.79
18	0.60	0.72	0.36	0.56
19	0.11	0.48	0.14	0.24
20	0.08	0.45	0.13	0.22
21	0.08	0.33	0.13	0.18
22	0.08	0.27	0.12	0.16
23	0.07	0.20	0.12	0.13
24	0.08	0.18	0.12	0.13

Table 13a: Lighting-only weekday profile for medium buildings

Hour	ORM001a	ORM002a	WAM001a	WAM003a	MEAN
1	0.55	0.35	0.25	0.32	0.37
2	0.54	0.27	0.29	0.32	0.35
3	0.53	0.31	0.30	0.32	0.36
4	0.52	0.29	0.34	0.32	0.37
5	0.52	0.20	0.37	0.32	0.35
6	0.52	0.35	0.36	0.32	0.39
7	0.64	0.66	0.53	0.35	0.55
8	0.82	0.84	0.79	0.74	0.80
9	0.92	0.87	0.88	0.87	0.88
10	0.94	0.85	0.92	0.93	0.91
11	0.95	0.84	0.93	0.96	0.92
12	0.95	0.80	0.93	0.96	0.91
13	0.95	0.77	0.92	0.96	0.90
14	0.95	0.80	0.92	0.95	0.91
15	0.95	0.82	0.93	0.96	0.92
16	0.95	0.84	0.93	0.96	0.92
17	0.93	0.80	0.90	0.96	0.90
18	0.82	0.49	0.69	0.96	0.74
19	0.61	0.28	0.46	0.92	0.57
20	0.58	0.27	0.41	0.90	0.54
21	0.59	0.31	0.32	0.89	0.53
22	0.57	0.29	0.25	0.59	0.42
23	0.57	0.32	0.22	0.32	0.36
24	0.55	0.29	0.20	0.32	0.34

Table 14a: Lighting-only weekday profile for large buildings

Hour	WAL001a	MEAN
1	0.44	0.44
2	0.40	0.40
3	0.36	0.36
4	0.35	0.35
5	0.35	0.35
6	0.54	0.54
7	0.72	0.72
8	0.80	0.80
9	0.89	0.89
10	0.90	0.90
11	0.90	0.90
12	0.91	0.91
13	0.89	0.89
14	0.90	0.90
15	0.89	0.89
16	0.90	0.90
17	0.89	0.89
18	0.87	0.87
19	0.57	0.57
20	0.54	0.54
21	0.53	0.53
22	0.50	0.50
23	0.49	0.49
24	0.47	0.47

Table 12b: Lighting-only weekend profile for small buildings

Hour	IDS001a	ORS001	WAS001a	MEAN
1	0.08	0.15	0.11	0.11
2	0.07	0.14	0.11	0.11
3	0.07	0.14	0.11	0.11
4	0.07	0.14	0.11	0.11
5	0.07	0.14	0.11	0.11
6	0.07	0.14	0.11	0.11
7	0.07	0.18	0.12	0.13
8	0.07	0.22	0.13	0.14
9	0.07	0.37	0.15	0.20
10	0.07	0.51	0.15	0.24
11	0.07	0.57	0.15	0.26
12	0.07	0.58	0.14	0.26
13	0.07	0.58	0.14	0.27
14	0.07	0.53	0.15	0.25
15	0.07	0.52	0.14	0.24
16	0.08	0.45	0.13	0.22
17	0.09	0.49	0.13	0.24
18	0.08	0.48	0.12	0.22
19	0.08	0.36	0.12	0.19
20	0.09	0.39	0.12	0.20
21	0.08	0.32	0.12	0.17
22	0.07	0.21	0.12	0.13
23	0.07	0.14	0.11	0.11
24	0.08	0.14	0.11	0.11

Table 13b: Lighting-only weekend profile for medium buildings

Hour	ORM001a	ORM002a	WAM001a	WAM003a	MEAN
1	0.48	0.11	0.15	0.30	0.26
2	0.48	0.12	0.15	0.30	0.26
3	0.48	0.12	0.15	0.30	0.26
4	0.48	0.12	0.15	0.30	0.26
5	0.47	0.11	0.15	0.30	0.26
6	0.47	0.12	0.15	0.30	0.26
7	0.49	0.12	0.18	0.30	0.27
8	0.53	0.14	0.21	0.61	0.37
9	0.59	0.15	0.24	0.85	0.46
10	0.64	0.15	0.30	0.91	0.50
11	0.65	0.16	0.34	0.93	0.52
12	0.66	0.16	0.36	0.93	0.53
13	0.66	0.15	0.37	0.93	0.53
14	0.67	0.15	0.36	0.92	0.53
15	0.66	0.16	0.34	0.92	0.52
16	0.64	0.16	0.34	0.92	0.52
17	0.61	0.14	0.32	0.91	0.50
18	0.52	0.13	0.24	0.90	0.45
19	0.48	0.13	0.23	0.74	0.39
20	0.48	0.15	0.20	0.70	0.38
21	0.47	0.12	0.19	0.52	0.32
22	0.47	0.10	0.16	0.37	0.28
23	0.47	0.10	0.16	0.33	0.26
24	0.46	0.11	0.16	0.32	0.27

Table 14b: Lighting-only weekend profile for large buildings

Hour	WAL001a	MEAN
1	0.42	0.42
2	0.41	0.41
3	0.41	0.41
4	0.40	0.40
5	0.40	0.40
6	0.41	0.41
7	0.42	0.42
8	0.41	0.41
9	0.47	0.47
10	0.55	0.55
11	0.64	0.64
12	0.64	0.64
13	0.63	0.63
14	0.64	0.64
15	0.63	0.63
16	0.64	0.64
17	0.62	0.62
18	0.59	0.59
19	0.45	0.45
20	0.47	0.47
21	0.46	0.46
22	0.46	0.46
23	0.45	0.45
24	0.46	0.46

DIVERSITY FACTOR & STATISTICS (90th Percentile)

Table 15a: Receptacle-weekday profile for small buildings

Hour	IDS001b	WAS001b	MEAN
1	0.26	0.07	0.17
2	0.25	0.06	0.16
3	0.26	0.06	0.16
4	0.25	0.07	0.16
5	0.26	0.07	0.16
6	0.26	0.08	0.17
7	0.26	0.14	0.20
8	0.32	0.43	0.38
9	0.57	0.71	0.64
10	0.79	0.61	0.70
11	0.81	0.54	0.67
12	0.80	0.49	0.65
13	0.78	0.47	0.63
14	0.77	0.48	0.62
15	0.74	0.49	0.61
16	0.74	0.47	0.60
17	0.72	0.40	0.56
18	0.58	0.20	0.39
19	0.26	0.11	0.19
20	0.25	0.10	0.18
21	0.25	0.08	0.17
22	0.26	0.07	0.16
23	0.25	0.07	0.16
24	0.26	0.06	0.16

Table 16a: Receptable-weekday profile for medium buildings

Hour	ORM001b	ORM002b	WAM001b	WAM002	WAM003b	MEAN
1	0.25	0.41	0.36	0.19	0.42	0.33
2	0.25	0.41	0.36	0.19	0.42	0.32
3	0.25	0.41	0.36	0.18	0.41	0.32
4	0.25	0.41	0.36	0.18	0.41	0.32
5	0.25	0.41	0.36	0.18	0.42	0.32
6	0.26	0.46	0.37	0.18	0.42	0.34
7	0.32	0.57	0.47	0.30	0.43	0.42
8	0.50	0.69	0.64	0.64	0.65	0.62
9	0.58	0.74	0.76	0.70	0.71	0.70
10	0.80	0.77	0.82	0.71	0.70	0.76
11	0.83	0.77	0.84	0.72	0.75	0.78
12	0.78	0.76	0.85	0.72	0.71	0.76
13	0.77	0.73	0.84	0.72	0.66	0.74
14	0.78	0.76	0.84	0.74	0.69	0.76
15	0.78	0.74	0.83	0.73	0.70	0.76
16	0.75	0.71	0.80	0.70	0.70	0.73
17	0.69	0.64	0.71	0.65	0.70	0.68
18	0.40	0.50	0.51	0.39	0.65	0.49
19	0.30	0.46	0.40	0.27	0.52	0.39
20	0.28	0.43	0.38	0.24	0.48	0.36
21	0.27	0.43	0.37	0.22	0.45	0.35
22	0.26	0.42	0.37	0.22	0.44	0.34
23	0.26	0.41	0.36	0.20	0.42	0.33
24	0.25	0.41	0.36	0.19	0.42	0.33

Table 17a: Receptacle-weekday profile for large buildings

Hour	WAL001b	MEAN
1	0.66	0.66
2	0.66	0.66
3	0.63	0.63
4	0.62	0.62
5	0.61	0.61
6	0.63	0.63
7	0.70	0.70
8	0.82	0.82
9	0.89	0.89
10	0.92	0.92
11	0.93	0.93
12	0.94	0.94
13	0.94	0.94
14	0.94	0.94
15	0.94	0.94
16	0.93	0.93
17	0.90	0.90
18	0.80	0.80
19	0.74	0.74
20	0.72	0.72
21	0.70	0.70
22	0.68	0.68
23	0.68	0.68
24	0.67	0.67

Table 15b: Receptacle-weekdend profile for small buildings

Hour	IDS001b	WAS001b	MEAN
1	0.13	0.06	0.09
2	0.13	0.06	0.10
3	0.12	0.06	0.09
4	0.13	0.06	0.09
5	0.13	0.06	0.09
6	0.12	0.06	0.09
7	0.12	0.07	0.09
8	0.13	0.07	0.10
9	0.12	0.07	0.10
10	0.13	0.10	0.12
11	0.12	0.11	0.12
12	0.12	0.10	0.11
13	0.13	0.11	0.12
14	0.13	0.09	0.11
15	0.13	0.09	0.11
16	0.13	0.08	0.11
17	0.13	0.08	0.10
18	0.13	0.07	0.10
19	0.12	0.07	0.10
20	0.13	0.07	0.10
21	0.12	0.06	0.09
22	0.13	0.06	0.09
23	0.12	0.06	0.09
24	0.12	0.06	0.09

Table 16b: Receptable-weekend profile for medium buildings

Hour	ORM001b	ORM002b	WAM001b	WAM002	WAM003b	MEAN
1	0.22	0.39	0.32	0.18	0.42	0.31
2	0.22	0.39	0.31	0.19	0.41	0.30
3	0.21	0.39	0.31	0.18	0.42	0.30
4	0.22	0.39	0.31	0.17	0.42	0.30
5	0.22	0.39	0.32	0.18	0.42	0.30
6	0.22	0.39	0.32	0.18	0.41	0.30
7	0.22	0.40	0.32	0.18	0.42	0.31
8	0.23	0.41	0.32	0.18	0.56	0.34
9	0.25	0.42	0.34	0.19	0.62	0.36
10	0.29	0.41	0.35	0.19	0.60	0.37
11	0.42	0.41	0.35	0.19	0.60	0.39
12	0.40	0.42	0.35	0.18	0.59	0.39
13	0.41	0.41	0.36	0.19	0.61	0.40
14	0.42	0.41	0.36	0.19	0.58	0.39
15	0.41	0.41	0.36	0.18	0.60	0.39
16	0.42	0.41	0.35	0.18	0.57	0.39
17	0.39	0.40	0.33	0.18	0.54	0.37
18	0.24	0.40	0.31	0.18	0.50	0.33
19	0.23	0.40	0.32	0.18	0.46	0.32
20	0.22	0.40	0.32	0.18	0.43	0.31
21	0.22	0.40	0.31	0.18	0.42	0.30
22	0.22	0.39	0.31	0.18	0.42	0.30
23	0.22	0.38	0.31	0.17	0.41	0.30
24	0.22	0.38	0.31	0.18	0.42	0.30

Table 17b: Receptacle-weekdend profile for large buildings

Hour	WAL001b	MEAN
1	0.63	0.63
2	0.63	0.63
3	0.63	0.63
4	0.61	0.61
5	0.60	0.60
6	0.60	0.60
7	0.62	0.62
8	0.63	0.63
9	0.63	0.63
10	0.63	0.63
11	0.64	0.64
12	0.64	0.64
13	0.64	0.64
14	0.64	0.64
15	0.64	0.64
16	0.64	0.64
17	0.63	0.63
18	0.63	0.63
19	0.64	0.64
20	0.64	0.64
21	0.64	0.64
22	0.63	0.63
23	0.64	0.64
24	0.64	0.64

DIVERSITY FACTOR & STATISTICS (90th Percentile)

Table 18a: Combined Lights and Receptacles weekday profile for small buildings

Hour	IDS001c	WAS001c	MEAN
1	0.13	0.12	0.13
2	0.13	0.12	0.13
3	0.13	0.12	0.13
4	0.15	0.12	0.13
5	0.18	0.13	0.15
6	0.29	0.13	0.21
7	0.29	0.29	0.29
8	0.51	0.74	0.62
9	0.77	0.79	0.78
10	0.85	0.79	0.82
11	0.87	0.77	0.82
12	0.87	0.76	0.82
13	0.86	0.75	0.81
14	0.86	0.76	0.81
15	0.85	0.75	0.80
16	0.85	0.74	0.80
17	0.84	0.72	0.78
18	0.66	0.37	0.51
19	0.15	0.14	0.15
20	0.12	0.13	0.13
21	0.12	0.13	0.13
22	0.12	0.13	0.12
23	0.12	0.12	0.12
24	0.12	0.12	0.12

Table 18b: Combined Lights and Receptacles weekend profile for small buildings

Hour	IDS001c	WAS001c	MEAN
1	0.09	0.11	0.10
2	0.09	0.11	0.10
3	0.09	0.11	0.10
4	0.09	0.11	0.10
5	0.09	0.11	0.10
6	0.09	0.11	0.10
7	0.09	0.11	0.10
8	0.09	0.12	0.11
9	0.08	0.14	0.11
10	0.09	0.15	0.12
11	0.09	0.15	0.12
12	0.09	0.13	0.11
13	0.09	0.14	0.12
14	0.09	0.14	0.12
15	0.09	0.13	0.11
16	0.10	0.13	0.11
17	0.10	0.13	0.12
18	0.09	0.12	0.11
19	0.09	0.12	0.11
20	0.10	0.12	0.11
21	0.09	0.11	0.10
22	0.09	0.11	0.10
23	0.09	0.11	0.10
24	0.09	0.11	0.10

Table 19a: Combined Lights and Receptacles weekday profile for medium buildings

Hour	ORM001c	ORM002c	TXM001	TXM002	WAM001c	WAM003c	MEAN
1	0.46	0.40	0.72	0.54	0.29	0.33	0.46
2	0.45	0.35	0.70	0.51	0.30	0.33	0.44
3	0.44	0.38	0.69	0.48	0.32	0.33	0.44
4	0.44	0.36	0.68	0.48	0.35	0.33	0.44
5	0.44	0.31	0.69	0.48	0.37	0.33	0.44
6	0.44	0.42	0.71	0.51	0.36	0.33	0.46
7	0.55	0.69	0.74	0.56	0.52	0.36	0.57
8	0.73	0.85	0.87	0.64	0.74	0.75	0.76
9	0.83	0.89	0.96	0.82	0.85	0.87	0.87
10	0.91	0.89	0.97	0.91	0.90	0.93	0.92
11	0.93	0.89	0.98	0.94	0.92	0.95	0.94
12	0.92	0.87	0.97	0.94	0.92	0.96	0.93
13	0.91	0.84	0.95	0.92	0.92	0.95	0.92
14	0.91	0.85	0.95	0.93	0.92	0.95	0.92
15	0.91	0.88	0.94	0.94	0.91	0.95	0.92
16	0.90	0.86	0.94	0.94	0.90	0.95	0.92
17	0.88	0.81	0.91	0.90	0.84	0.95	0.88
18	0.70	0.54	0.81	0.77	0.64	0.95	0.73
19	0.52	0.37	0.80	0.72	0.44	0.91	0.63
20	0.49	0.35	0.82	0.66	0.39	0.89	0.60
21	0.49	0.38	0.82	0.64	0.35	0.87	0.59
22	0.48	0.36	0.82	0.61	0.30	0.59	0.53
23	0.47	0.38	0.80	0.59	0.28	0.34	0.48
24	0.47	0.36	0.76	0.56	0.28	0.33	0.46

Table 19b: Combined Lights and Receptacles weekdend profile for medium buildings

Hour	ORM001c	ORM002c	TXM001	TXM002	WAM001c	WAM003c	MEAN
1	0.40	0.23	0.70	0.51	0.23	0.31	0.40
2	0.40	0.23	0.69	0.50	0.22	0.31	0.39
3	0.40	0.23	0.68	0.48	0.22	0.31	0.39
4	0.40	0.23	0.68	0.48	0.22	0.31	0.39
5	0.40	0.23	0.68	0.49	0.23	0.31	0.39
6	0.40	0.23	0.68	0.49	0.23	0.31	0.39
7	0.40	0.24	0.69	0.49	0.24	0.31	0.40
8	0.44	0.26	0.69	0.48	0.27	0.62	0.46
9	0.49	0.26	0.70	0.49	0.30	0.86	0.51
10	0.55	0.28	0.70	0.50	0.33	0.91	0.54
11	0.56	0.28	0.69	0.50	0.35	0.93	0.55
12	0.55	0.28	0.70	0.51	0.37	0.92	0.56
13	0.56	0.27	0.70	0.50	0.38	0.92	0.56
14	0.57	0.27	0.69	0.50	0.37	0.92	0.55
15	0.58	0.28	0.70	0.51	0.36	0.92	0.56
16	0.55	0.28	0.69	0.51	0.35	0.92	0.55
17	0.54	0.26	0.68	0.51	0.32	0.91	0.53
18	0.44	0.25	0.67	0.50	0.28	0.89	0.50
19	0.40	0.24	0.68	0.49	0.27	0.73	0.47
20	0.40	0.25	0.68	0.48	0.26	0.69	0.46
21	0.40	0.24	0.69	0.47	0.25	0.52	0.43
22	0.40	0.22	0.68	0.48	0.22	0.38	0.40
23	0.39	0.22	0.68	0.48	0.22	0.34	0.39
24	0.39	0.22	0.68	0.48	0.22	0.33	0.39

Table 20a: Combined Lights and Receptacles weekday profile for large buildings

Hour	TXL001	TXL002	TXL003	TXL004	TXL005	TXL006	TXL010	WAL001c	MEAN
1	0.43	0.62	0.60	0.38	0.59	0.69	0.54	0.50	0.54
2	0.40	0.60	0.53	0.33	0.55	0.67	0.52	0.46	0.51
3	0.40	0.58	0.52	0.32	0.53	0.65	0.50	0.42	0.49
4	0.40	0.57	0.52	0.32	0.52	0.65	0.50	0.41	0.49
5	0.37	0.56	0.52	0.32	0.53	0.66	0.50	0.41	0.48
6	0.38	0.56	0.54	0.32	0.55	0.69	0.60	0.56	0.53
7	0.46	0.59	0.57	0.37	0.61	0.78	0.74	0.71	0.60
8	0.60	0.74	0.69	0.57	0.77	0.89	0.83	0.80	0.74
9	0.78	0.88	0.87	0.90	0.90	0.96	0.93	0.89	0.89
10	0.81	0.92	0.94	0.94	0.94	0.98	0.94	0.92	0.92
11	0.79	0.93	0.96	0.95	0.94	0.98	0.94	0.92	0.93
12	0.79	0.93	0.95	0.95	0.93	0.98	0.90	0.93	0.92
13	0.77	0.93	0.95	0.94	0.92	0.97	0.90	0.92	0.91
14	0.76	0.93	0.94	0.95	0.92	0.97	0.90	0.92	0.91
15	0.75	0.93	0.94	0.95	0.91	0.96	0.92	0.92	0.91
16	0.77	0.93	0.94	0.94	0.90	0.94	0.91	0.92	0.91
17	0.69	0.91	0.91	0.90	0.85	0.90	0.89	0.91	0.87
18	0.60	0.85	0.81	0.60	0.73	0.83	0.81	0.86	0.76
19	0.59	0.80	0.76	0.55	0.67	0.79	0.77	0.62	0.69
20	0.59	0.75	0.74	0.57	0.64	0.77	0.74	0.59	0.67
21	0.57	0.72	0.72	0.56	0.63	0.75	0.77	0.57	0.66
22	0.54	0.69	0.68	0.52	0.62	0.74	0.66	0.55	0.63
23	0.51	0.68	0.66	0.50	0.61	0.72	0.60	0.54	0.60
24	0.47	0.65	0.64	0.45	0.61	0.71	0.55	0.52	0.57

Table 20b: Combined Lights and Receptacles weekend profile for large buildings

Hour	TXL001	TXL002	TXL003	TXL004	TXL005	TXL006	TXL010	WAL001c	MEAN
1	0.42	0.59	0.57	0.33	0.53	0.67	0.52	0.47	0.51
2	0.41	0.57	0.53	0.31	0.51	0.65	0.50	0.46	0.49
3	0.41	0.55	0.51	0.31	0.50	0.65	0.49	0.45	0.48
4	0.42	0.54	0.51	0.31	0.50	0.65	0.49	0.43	0.48
5	0.39	0.54	0.52	0.31	0.50	0.65	0.50	0.43	0.48
6	0.38	0.54	0.51	0.31	0.50	0.65	0.60	0.45	0.49
7	0.38	0.55	0.51	0.31	0.50	0.66	0.71	0.46	0.51
8	0.38	0.55	0.51	0.31	0.50	0.67	0.80	0.45	0.52
9	0.40	0.57	0.51	0.39	0.50	0.68	0.90	0.51	0.56
10	0.42	0.59	0.51	0.43	0.50	0.68	0.93	0.58	0.58
11	0.42	0.60	0.51	0.44	0.50	0.70	0.92	0.64	0.59
12	0.41	0.62	0.52	0.44	0.51	0.70	0.91	0.65	0.59
13	0.41	0.63	0.52	0.45	0.52	0.70	0.90	0.64	0.60
14	0.41	0.64	0.53	0.45	0.52	0.69	0.91	0.64	0.60
15	0.41	0.65	0.52	0.44	0.52	0.69	0.91	0.62	0.59
16	0.43	0.64	0.53	0.42	0.52	0.68	0.90	0.63	0.60
17	0.41	0.64	0.53	0.40	0.52	0.68	0.89	0.63	0.59
18	0.39	0.63	0.52	0.33	0.51	0.67	0.82	0.61	0.56
19	0.38	0.62	0.52	0.33	0.51	0.66	0.78	0.49	0.54
20	0.38	0.61	0.52	0.32	0.51	0.66	0.75	0.50	0.53
21	0.38	0.60	0.52	0.31	0.51	0.66	0.78	0.49	0.53
22	0.39	0.59	0.51	0.31	0.51	0.66	0.66	0.50	0.52
23	0.38	0.59	0.51	0.31	0.50	0.65	0.58	0.50	0.50
24	0.38	0.58	0.50	0.31	0.50	0.65	0.55	0.50	0.50

DIVERSITY FACTOR & STATISTICS (90th Percentile)

Table 21a: Whole building electricity weekday profile for medium buildings

Hour	MNM002	TXM004	TXM005	TXM003	MEAN
1	0.52	0.53	0.34	0.37	0.44
2	0.52	0.52	0.35	0.31	0.43
3	0.53	0.52	0.34	0.28	0.42
4	0.59	0.52	0.34	0.28	0.44
5	0.64	0.52	0.34	0.28	0.45
6	0.68	0.52	0.36	0.29	0.46
7	0.82	0.55	0.49	0.44	0.57
8	0.91	0.71	0.76	0.65	0.76
9	0.92	0.84	0.86	0.76	0.85
10	0.93	0.89	0.89	0.79	0.88
11	0.91	0.91	0.89	0.80	0.88
12	0.91	0.91	0.89	0.80	0.88
13	0.91	0.89	0.88	0.78	0.86
14	0.90	0.90	0.88	0.78	0.87
15	0.87	0.91	0.87	0.78	0.86
16	0.75	0.91	0.86	0.76	0.82
17	0.66	0.87	0.83	0.71	0.77
18	0.63	0.73	0.74	0.60	0.67
19	0.65	0.73	0.65	0.52	0.63
20	0.62	0.63	0.53	0.49	0.57
21	0.63	0.55	0.45	0.47	0.53
22	0.56	0.54	0.40	0.43	0.48
23	0.53	0.53	0.38	0.41	0.46
24	0.53	0.53	0.36	0.41	0.46

Table 21b: Whole building electricity weekdend profile for medium buildings

Hour	MNM002	TXM004	TXM005	TXM003	MEAN
1	0.52	0.52	0.24	0.36	0.41
2	0.52	0.52	0.24	0.28	0.39
3	0.51	0.52	0.23	0.27	0.38
4	0.52	0.52	0.24	0.28	0.39
5	0.50	0.52	0.24	0.29	0.39
6	0.51	0.52	0.30	0.29	0.40
7	0.56	0.52	0.37	0.29	0.43
8	0.57	0.51	0.41	0.29	0.45
9	0.57	0.51	0.46	0.29	0.46
10	0.57	0.51	0.50	0.30	0.47
11	0.57	0.52	0.52	0.30	0.48
12	0.58	0.52	0.55	0.31	0.49
13	0.56	0.52	0.55	0.30	0.49
14	0.55	0.52	0.56	0.30	0.48
15	0.55	0.52	0.54	0.30	0.48
16	0.48	0.53	0.50	0.30	0.45
17	0.47	0.52	0.47	0.30	0.44
18	0.45	0.52	0.45	0.29	0.43
19	0.47	0.53	0.40	0.27	0.42
20	0.48	0.52	0.31	0.27	0.39
21	0.51	0.52	0.30	0.28	0.40
22	0.51	0.52	0.30	0.29	0.40
23	0.51	0.52	0.31	0.28	0.40
24	0.51	0.52	0.32	0.28	0.41

Table 22a: Whole building electricity weekday profile for large buildings

Hour	DCL001	MNL001	MNL002	MNL003	MNL004	MTL001	TXL007	TXL008	TXL011	TXL012
1	0.56	0.47	0.45	0.50	0.72	0.47	0.58	0.78	0.72	0.63
2	0.59	0.47	0.45	0.48	0.72	0.52	0.54	0.76	0.71	0.61
3	0.62	0.46	0.45	0.48	0.71	0.53	0.53	0.76	0.70	0.60
4	0.63	0.46	0.46	0.49	0.72	0.54	0.53	0.76	0.70	0.60
5	0.63	0.52	0.53	0.59	0.76	0.50	0.53	0.76	0.70	0.60
6	0.65	0.62	0.56	0.66	0.82	0.46	0.53	0.76	0.71	0.60
7	0.70	0.73	0.63	0.73	0.89	0.44	0.60	0.79	0.74	0.64
8	0.81	0.85	0.77	0.82	0.95	0.47	0.75	0.86	0.77	0.69
9	0.91	0.93	0.85	0.86	0.97	0.79	0.89	0.95	0.83	0.78
10	0.96	0.95	0.89	0.88	0.98	0.89	0.95	0.97	0.89	0.83
11	0.97	0.96	0.88	0.89	0.98	0.92	0.96	0.97	0.91	0.84
12	0.97	0.95	0.88	0.88	0.98	0.92	0.96	0.98	0.91	0.85
13	0.97	0.95	0.88	0.88	0.97	0.90	0.96	0.97	0.91	0.86
14	0.97	0.94	0.85	0.88	0.95	0.89	0.97	0.98	0.91	0.87
15	0.97	0.93	0.84	0.87	0.93	0.90	0.96	0.97	0.91	0.86
16	0.95	0.88	0.79	0.82	0.88	0.89	0.95	0.97	0.91	0.86
17	0.92	0.77	0.68	0.78	0.85	0.87	0.91	0.94	0.89	0.84
18	0.82	0.71	0.64	0.74	0.83	0.78	0.80	0.89	0.80	0.77
19	0.68	0.71	0.62	0.74	0.82	0.41	0.75	0.86	0.79	0.73
20	0.53	0.68	0.60	0.74	0.81	0.36	0.71	0.85	0.78	0.68
21	0.51	0.66	0.58	0.76	0.80	0.37	0.69	0.85	0.75	0.68
22	0.50	0.61	0.54	0.71	0.76	0.31	0.67	0.84	0.74	0.67
23	0.49	0.48	0.46	0.53	0.72	0.34	0.66	0.83	0.73	0.67
24	0.48	0.47	0.46	0.48	0.72	0.44	0.62	0.81	0.72	0.65

Table 22b: Whole building electricity weekend profile for large buildings

Hour	DCL001	MNL001	MNL002	MNL003	MNL004	MTL001	TXL007	TXL008	TXL011	TXL012
1	0.45	0.45	0.45	0.47	0.70	0.20	0.56	0.76	0.70	0.61
2	0.45	0.45	0.44	0.47	0.70	0.21	0.54	0.75	0.69	0.60
3	0.45	0.45	0.44	0.47	0.70	0.21	0.54	0.75	0.69	0.60
4	0.45	0.45	0.44	0.47	0.70	0.20	0.54	0.75	0.69	0.60
5	0.45	0.45	0.45	0.45	0.70	0.20	0.54	0.75	0.69	0.60
6	0.44	0.52	0.46	0.46	0.71	0.20	0.54	0.75	0.69	0.60
7	0.43	0.57	0.48	0.46	0.72	0.20	0.55	0.75	0.68	0.60
8	0.43	0.59	0.49	0.49	0.72	0.20	0.56	0.74	0.64	0.60
9	0.43	0.58	0.49	0.59	0.72	0.20	0.56	0.75	0.60	0.60
10	0.44	0.58	0.49	0.63	0.72	0.18	0.56	0.75	0.61	0.59
11	0.44	0.59	0.49	0.63	0.72	0.17	0.58	0.75	0.61	0.60
12	0.44	0.57	0.49	0.63	0.73	0.18	0.58	0.76	0.61	0.60
13	0.44	0.56	0.48	0.63	0.72	0.18	0.58	0.75	0.62	0.61
14	0.44	0.56	0.48	0.65	0.72	0.18	0.58	0.76	0.62	0.61
15	0.44	0.56	0.48	0.62	0.72	0.18	0.58	0.76	0.62	0.61
16	0.44	0.55	0.48	0.60	0.73	0.18	0.59	0.76	0.61	0.62
17	0.44	0.54	0.47	0.61	0.72	0.18	0.58	0.76	0.61	0.61
18	0.45	0.48	0.45	0.49	0.71	0.19	0.58	0.75	0.63	0.60
19	0.45	0.48	0.45	0.48	0.71	0.20	0.57	0.75	0.69	0.60
20	0.45	0.48	0.45	0.53	0.71	0.20	0.57	0.75	0.69	0.61
21	0.46	0.46	0.46	0.60	0.71	0.21	0.56	0.75	0.69	0.60
22	0.46	0.46	0.46	0.59	0.71	0.21	0.56	0.76	0.69	0.60
23	0.47	0.46	0.44	0.59	0.71	0.25	0.55	0.75	0.69	0.60
24	0.46	0.46	0.44	0.49	0.71	0.21	0.55	0.76	0.69	0.60

6.0 DIVERSITY FACTORS FOR CASE STUDY BUILDINGS

This section of the report contains the diversity factors for the case study buildings analyzed for this project. Each site contains the following information: general site description, typical load shape daytypes, diversity factors and statistics, DOE-2 input file, BLAST input file, and ENERGYPLUS input file.

Category	No.	Bldg I.D.	Site ID.	Building	Location	Building Area (sqft)	Data Type
L	1	904	DCL001	USDOE Forrestal Building	Washington D.C	1,200,000	WBE
S	2		IDS001a	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT
S	3		IDS001b	East Idaho Crd.Union	Idaho Falls, ID	5,300	RECEPT
S	4		IDS001c	East Idaho Crd.Union	Idaho Falls, ID	5,300	LIGHT+RECEPT
L	5	704	MNL001	State Office Bldg.1	St. Paul, MN	200,829	WBE
L	6	707	MNL002	State Office Bldg.2	St. Paul, MN	281,850	WBE
L	7	710	MNL003	State Office Bldg.3	St. Paul, MN	366,805	WBE
L	8	711	MNL004	State Office Bldg.4	St. Paul, MN	317,286	WBE
M	9	709	MNM002	State Office Bldg.5	St. Paul, MN	87,664	WBE
L	10	963	MTL001	State Office Bldg.8	Butte, MT	100,000	WBE
M	11		ORM001a	Director	Portland, OR	79,700	LIGHT
M	12		ORM001b	Director	Portland, OR	79,700	RECEPT
M	13		ORM001c	Director	Portland, OR	79,700	LIGHT+RECEPT
M	14		ORM002a	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT
M	15		ORM002b	Emerald PUD, HQ.	Eugene, OR	24,800	RECEPT
M	16		ORM002c	Emerald PUD, HQ.	Eugene, OR	24,800	LIGHT+RECEPT
S	17		ORS001	Dubal Beck	Portland, OR	8,500	LIGHT
L	18	146	TXL001	Government Center	Dallas, TX	473,800	WBE-MCC
L	19	203	TXL002	John H. Reagan	Austin, TX	169,746	WBE-MCC
L	20	206	TXL003	Insurance Building	Austin, TX	102,000	WBE-MCC
L	21	208	TXL004	Archives Building	Austin, TX	120,000	WBE-MCC
L	22	209	TXL005	W.B. Travis	Austin, TX	491,000	WBE-MCC
L	23	210	TXL006	L.B. Johnson	Austin, TX	308,080	WBE-MCC-AHU
L	24	228	TXL007	Price Daniels Building	Austin, TX	151,620	WBE
L	25	229	TXL008	Tom C. Clark Building	Austin, TX	121,654	WBE
L	26	975	TXL010	Brazos County Courthouse	Bryan, TX	100,000	WBE-MCC
L	27	200	TXL011	Capitol Building	Austin, TX	282,499	WBE
L	28	201	TXL012	Sam Houston Building	Austin, TX	182,961	WBE
M	29	205	TXM001	James E. Rudder	Austin, TX	80,000	WBE-MCC
M	30	207	TXM002	Insurance Annex	Austin, TX	62,000	WBE-MCC-Chill
M	31	226	TXM003	Central Services Building	Austin, TX	97,030	WBE - Chill
M	32	227	TXM004	Supreme Court Building	Austin, TX	72,737	WBE
M	33	951	TXM005	Administration Building	Dallas, TX	42,385	WBE
L	34		WAL001a	Bellevue Place	Bellevue, WA	389,000	LIGHT
L	35		WAL001b	Bellevue Place	Bellevue, WA	389,000	RECEPT
L	36		WAL001c	Bellevue Place	Bellevue, WA	389,000	LIGHT+RECEPT
L	37		WAM001a	Eastgate	Bellevue, WA	25,100	LIGHT
L	38		WAM001b	Eastgate	Bellevue, WA	25,100	RECEPT
L	39		WAM001c	Eastgate	Bellevue, WA	25,100	LIGHT+RECEPT
L	40		WAM002	West Yakima	Yakima, WA	16,200	RECEPT
L	41		WAM003a	Evergreen	Tacoma, WA	21,100	LIGHT
L	42		WAM003b	Evergreen	Tacoma, WA	21,100	RECEPT
L	43		WAM003c	Evergreen	Tacoma, WA	21,100	LIGHT+RECEPT
S	44		WAS001a	STS	Ellensburg, WA	4,000	LIGHT
S	45		WAS001b	STS	Ellensburg, WA	4,000	RECEPT
S	46		WAS001c	STS	Ellensburg, WA	4,000	LIGHT+RECEPT

SITE # 1 - DCL001

Category	:	Large
Building ID	:	904
Building	:	USDOE Forrestal Building
Location	:	Washington D.C.
Building Area (ft^2)	:	1,200,000
Data Type	:	WBE
Max Load (W/ft^2)	:	3.93
Source	:	ESL
EUI (kWh/ft^2-yr)	:	19.99
Start Date	:	1/1/94
End date	:	12/31/94

(Page 1) Building Descriptions: (DCL001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: USDOE Forrestal Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Washington, DC.

Category: Large Office Building, based on the CBECS classification.

Square footage: 1,200,000 ft^2 .

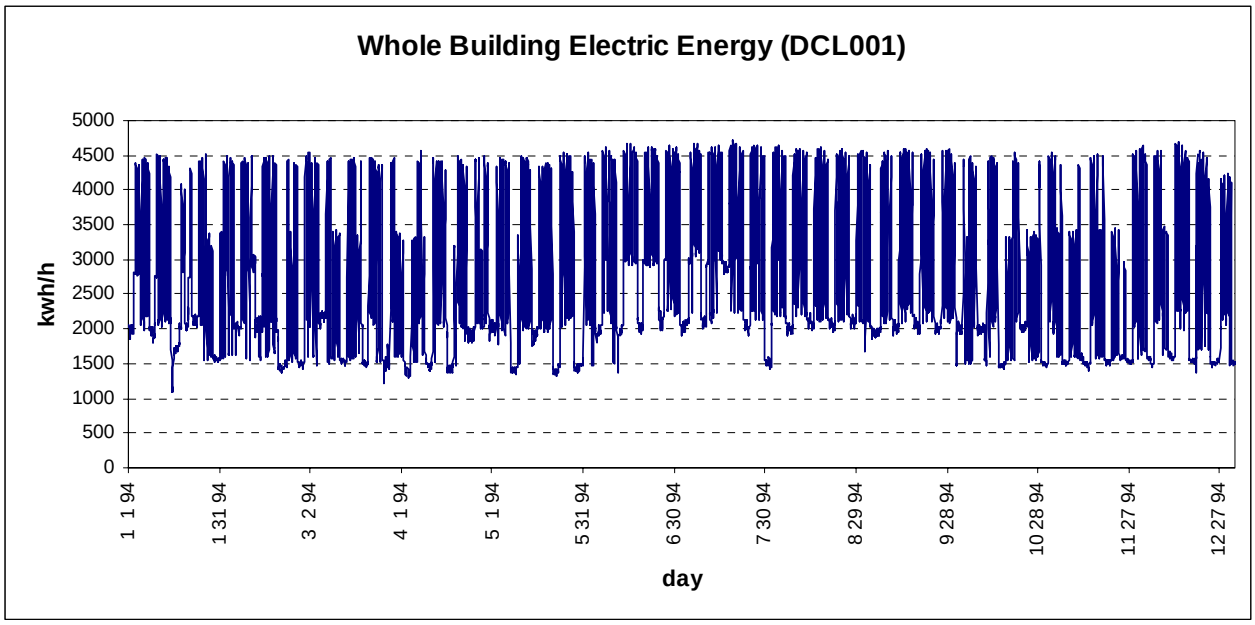
Lighting EUI: [(15.78 x 5) + (9.18 x 2)] x 52 x 3.93 = 19.99 kWh/ft^2.year

Lighting Type: N/A

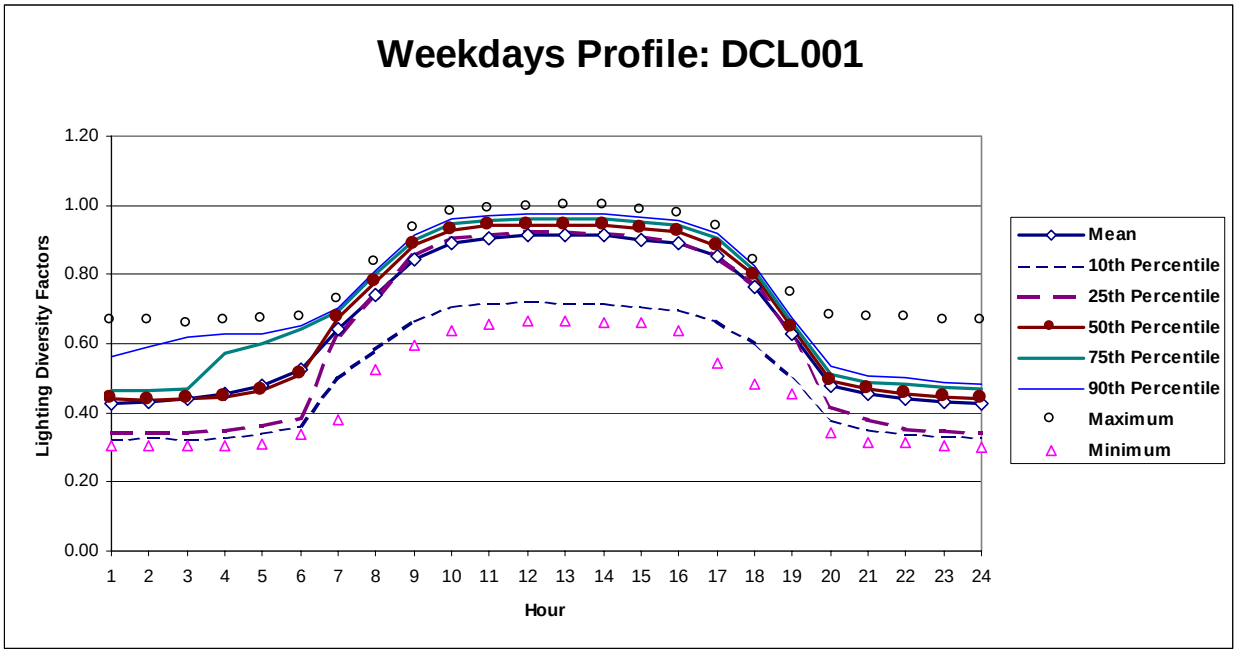
Dates: 1/1/94 - 12/31/94

Data Type: WBE = ch0299

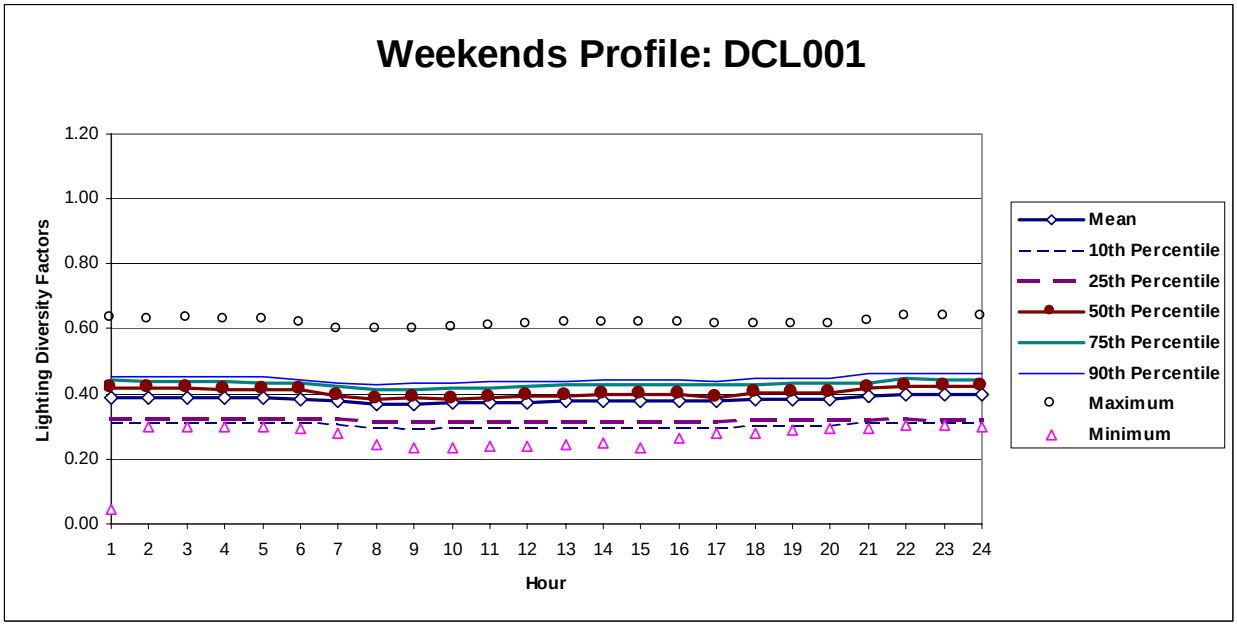
Maximum kW: 4,720 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/17/94, 1/20/94, 2/11/94, 2/21/94, 5/9/94, 5/30/94, 7/4/94, 9/5/94, 10/10/94, 11/11/94, 11/24/94, 11/25/94, and 12/26/94.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.43	0.52	0.34	0.32	0.34	0.44	0.46	0.56	0.66	0.30
2.00	0.43	0.52	0.34	0.33	0.34	0.44	0.46	0.59	0.66	0.31
3.00	0.44	0.54	0.34	0.33	0.34	0.44	0.47	0.62	0.66	0.31
4.00	0.46	0.56	0.35	0.33	0.35	0.45	0.57	0.63	0.66	0.30
5.00	0.48	0.59	0.37	0.34	0.36	0.46	0.60	0.63	0.67	0.31
6.00	0.52	0.64	0.41	0.36	0.38	0.51	0.64	0.65	0.67	0.34
7.00	0.64	0.72	0.56	0.50	0.63	0.68	0.69	0.70	0.73	0.38
8.00	0.74	0.83	0.65	0.58	0.73	0.78	0.80	0.81	0.83	0.53
9.00	0.85	0.94	0.76	0.67	0.85	0.88	0.90	0.91	0.94	0.60
10.00	0.89	0.98	0.80	0.71	0.91	0.93	0.94	0.96	0.98	0.64
11.00	0.91	1.00	0.82	0.72	0.92	0.94	0.96	0.97	0.99	0.66
12.00	0.91	1.00	0.83	0.72	0.92	0.94	0.96	0.97	0.99	0.67
13.00	0.91	1.00	0.83	0.72	0.92	0.94	0.96	0.97	1.00	0.66
14.00	0.91	1.00	0.83	0.72	0.92	0.94	0.96	0.97	1.00	0.66
15.00	0.90	0.99	0.81	0.71	0.91	0.93	0.95	0.97	0.99	0.66
16.00	0.89	0.98	0.80	0.70	0.90	0.92	0.94	0.95	0.97	0.64
17.00	0.85	0.94	0.77	0.67	0.85	0.88	0.91	0.92	0.94	0.54
18.00	0.77	0.85	0.69	0.60	0.77	0.79	0.81	0.82	0.84	0.48
19.00	0.63	0.69	0.56	0.50	0.62	0.65	0.66	0.68	0.75	0.45
20.00	0.48	0.55	0.41	0.38	0.42	0.49	0.51	0.53	0.68	0.34
21.00	0.45	0.53	0.38	0.35	0.38	0.47	0.49	0.51	0.67	0.31
22.00	0.44	0.52	0.36	0.34	0.35	0.45	0.48	0.50	0.67	0.31
23.00	0.43	0.51	0.35	0.33	0.34	0.45	0.47	0.49	0.67	0.30
24.00	0.43	0.50	0.35	0.33	0.34	0.44	0.47	0.48	0.66	0.30
Daily Values	15.78	17.51	14.06	12.47	15.05	16.09	16.95	17.62	19.08	11.53
Daily Sum from Hourly	15.80	17.90	13.70	12.23	14.81	16.26	17.09	17.81	19.29	11.00

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.39	0.46	0.31	0.32	0.32	0.42	0.44	0.45	0.63	0.04
2.00	0.39	0.46	0.32	0.32	0.32	0.42	0.44	0.45	0.63	0.30
3.00	0.39	0.46	0.32	0.31	0.33	0.42	0.44	0.45	0.63	0.30
4.00	0.39	0.46	0.32	0.31	0.32	0.41	0.44	0.45	0.63	0.30
5.00	0.39	0.45	0.32	0.31	0.32	0.41	0.43	0.45	0.63	0.30
6.00	0.39	0.45	0.32	0.31	0.32	0.41	0.43	0.44	0.62	0.30
7.00	0.38	0.44	0.31	0.31	0.32	0.39	0.42	0.43	0.60	0.28
8.00	0.37	0.43	0.30	0.30	0.32	0.38	0.41	0.43	0.60	0.24
9.00	0.37	0.43	0.30	0.30	0.31	0.39	0.41	0.43	0.60	0.23
10.00	0.37	0.44	0.30	0.30	0.31	0.38	0.42	0.44	0.60	0.23
11.00	0.37	0.44	0.30	0.30	0.31	0.39	0.42	0.44	0.61	0.24
12.00	0.38	0.45	0.31	0.30	0.31	0.39	0.42	0.44	0.61	0.24
13.00	0.38	0.45	0.31	0.30	0.31	0.40	0.43	0.44	0.62	0.25
14.00	0.38	0.45	0.31	0.30	0.31	0.40	0.43	0.44	0.62	0.25
15.00	0.38	0.45	0.31	0.30	0.31	0.40	0.43	0.44	0.62	0.23
16.00	0.38	0.45	0.31	0.30	0.31	0.40	0.43	0.44	0.62	0.26
17.00	0.38	0.45	0.31	0.30	0.31	0.39	0.43	0.44	0.61	0.28
18.00	0.38	0.45	0.31	0.30	0.32	0.40	0.43	0.45	0.61	0.28
19.00	0.38	0.45	0.31	0.30	0.32	0.40	0.43	0.45	0.61	0.29
20.00	0.38	0.45	0.31	0.31	0.32	0.40	0.43	0.45	0.61	0.29
21.00	0.39	0.47	0.31	0.31	0.32	0.42	0.44	0.46	0.62	0.29
22.00	0.40	0.48	0.31	0.31	0.32	0.42	0.45	0.46	0.64	0.30
23.00	0.40	0.48	0.31	0.31	0.32	0.42	0.44	0.47	0.64	0.30
24.00	0.40	0.48	0.31	0.31	0.32	0.42	0.44	0.46	0.64	0.30
Daily Values	9.18	10.81	7.54	7.38	7.67	9.59	10.31	10.76	14.70	6.78
Daily Sum from Hourly	9.18	10.88	7.48	7.34	7.65	9.69	10.34	10.72	14.83	6.33

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (USDOE Forrestal Building, Washington, DC) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.44)  (2) (0.44)  (3) (0.44)  (4) (0.45)  (5) (0.46)  (6) (0.51)
(7) (0.68)  (8) (0.78)  (9) (0.88) (10) (0.93) (11) (0.94) (12) (0.94)
(13) (0.94) (14) (0.94) (15) (0.93) (16) (0.92) (17) (0.88) (18) (0.79)
(19) (0.65) (20) (0.49) (21) (0.47) (22) (0.45) (23) (0.45) (24) (0.44) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.42)  (2) (0.42)  (3) (0.42)  (4) (0.41)  (5) (0.41)  (6) (0.41)
(7) (0.39)  (8) (0.38)  (9) (0.39) (10) (0.38) (11) (0.39) (12) (0.39)
(13) (0.40) (14) (0.40) (15) (0.40) (16) (0.40) (17) (0.39) (18) (0.40)
(19) (0.40) (20) (0.40) (21) (0.42) (22) (0.42) (23) (0.42) (24) (0.42) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.93  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1- Dec 31, 1994.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (USDOE Forrestal Building, Washington, DC) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.44, 0.44, 0.44, 0.45, 0.46, 0.51,
       0.68, 0.78, 0.88, 0.93, 0.94, 0.94,
       0.94, 0.94, 0.93, 0.92, 0.88, 0.79,
       0.65, 0.49, 0.47, 0.45, 0.45, 0.44),
    SATURDAY THRU SUNDAY =
      (0.42, 0.42, 0.42, 0.41, 0.41, 0.41,
       0.39, 0.38, 0.39, 0.38, 0.39, 0.39,
       0.40, 0.40, 0.40, 0.40, 0.39, 0.40,
       0.40, 0.40, 0.42, 0.42, 0.42, 0.42),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.42, 0.42, 0.42, 0.41, 0.41, 0.41,
       0.39, 0.38, 0.39, 0.38, 0.39, 0.39,
       0.40, 0.40, 0.40, 0.40, 0.39, 0.40,
       0.40, 0.40, 0.42, 0.42, 0.42, 0.42),
    SATURDAY THRU SUNDAY =
      (0.42, 0.42, 0.42, 0.41, 0.41, 0.41,
       0.39, 0.38, 0.39, 0.38, 0.39, 0.39,
       0.40, 0.40, 0.40, 0.40, 0.39, 0.40,
       0.40, 0.40, 0.42, 0.42, 0.42, 0.42),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.93 W/sqft, Area=1200000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 4720 kW (Metric units)
      LIGHTS= 16108,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 16108,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 16108,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 16108,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 16108,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 16108,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 16108,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 16108,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 16108,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (USDOE Forrestal Building, Washington, DC) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.44, 0.44, 0.44, 0.45, 0.46, 0.51,
   0.68, 0.78, 0.88, 0.93, 0.94, 0.94,
   0.94, 0.94, 0.93, 0.92, 0.88, 0.79,
   0.65, 0.49, 0.47, 0.45, 0.45, 0.44;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.42, 0.42, 0.42, 0.41, 0.41, 0.41,
   0.39, 0.38, 0.39, 0.38, 0.39, 0.39,
   0.40, 0.40, 0.40, 0.40, 0.39, 0.40,
   0.40, 0.40, 0.42, 0.42, 0.42, 0.42;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.93 W/sqft, Area=1200000 sqft
```

```
  4719744,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 2 - IDS001a

Category	:	Small
Building ID	:	N/A
Building	:	East Idaho Crd. Union
Location	:	Idaho Falls, ID
Building Area (ft^2)	:	5,300
Data Type	:	Light
Max Load (W/ft^2)	:	1.46
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	3.19
Start Date	:	1/1/89
End date	:	12/31/89

(Page 1) Building Descriptions: (IDS001a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: East Idaho Credit Union Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Idaho Falls, Idaho.

Category: Small Office Building, based on the CBECS classification.

Square footage: 5,300 ft^2 .

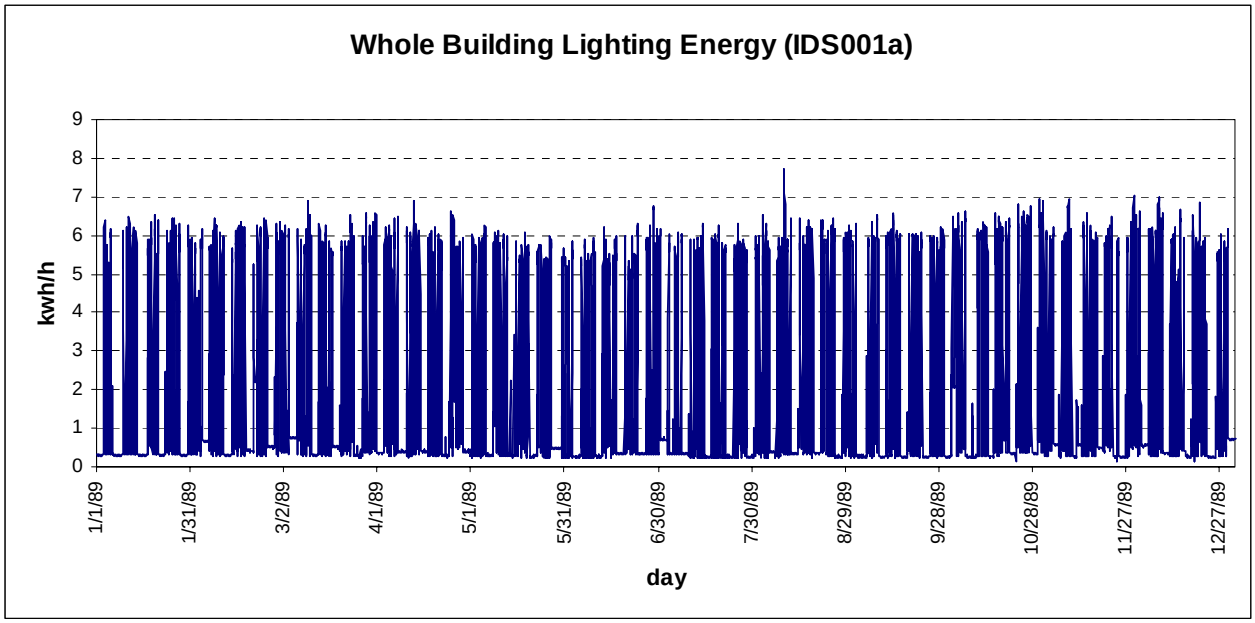
Lighting EUI: [(7.92 x 5) + (1.18 x 2)] x 52 x 1.46 = 3.19 kWh/ft^2.year

Lighting Type: N/A

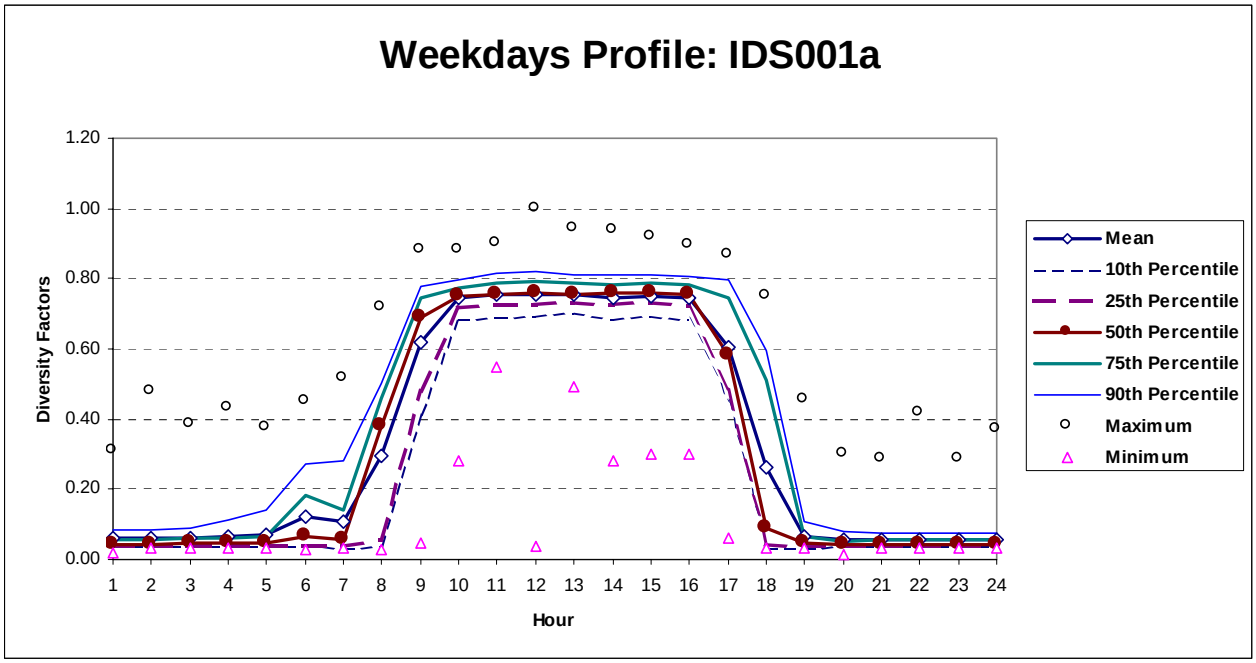
Dates: 1/1/89 - 12/31/89

Data Type: Lights

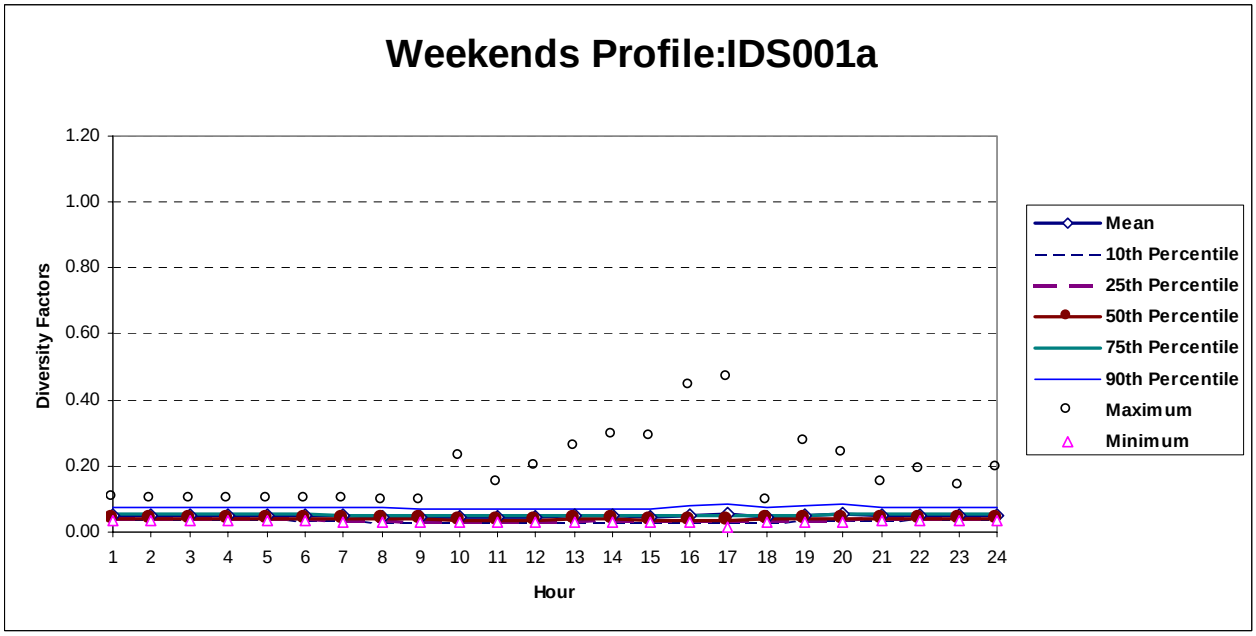
Maximum kW: 7.74 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/2/89, 1/6/89, 1/16/89, 5/29/89, 7/4/89, 9/4/89, 10/9/89, 11/10/89, 11/23/89, and 12/25/89.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.06	0.11	0.01	0.04	0.04	0.04	0.06	0.08	0.31	0.02
2.00	0.06	0.12	0.01	0.04	0.04	0.04	0.06	0.08	0.48	0.03
3.00	0.06	0.11	0.01	0.04	0.04	0.05	0.06	0.09	0.38	0.03
4.00	0.07	0.13	0.00	0.04	0.04	0.05	0.06	0.11	0.43	0.03
5.00	0.07	0.13	0.01	0.04	0.04	0.05	0.07	0.14	0.37	0.03
6.00	0.12	0.22	0.02	0.04	0.04	0.07	0.18	0.27	0.45	0.03
7.00	0.11	0.21	0.00	0.03	0.04	0.05	0.14	0.28	0.51	0.03
8.00	0.30	0.49	0.10	0.04	0.06	0.38	0.46	0.50	0.72	0.03
9.00	0.62	0.78	0.46	0.41	0.48	0.69	0.74	0.78	0.88	0.05
10.00	0.74	0.80	0.68	0.68	0.72	0.75	0.77	0.80	0.88	0.28
11.00	0.75	0.81	0.70	0.69	0.73	0.76	0.79	0.81	0.90	0.55
12.00	0.75	0.83	0.68	0.69	0.73	0.76	0.79	0.82	1.00	0.04
13.00	0.75	0.81	0.70	0.70	0.73	0.75	0.79	0.81	0.94	0.49
14.00	0.75	0.83	0.67	0.68	0.72	0.76	0.78	0.81	0.94	0.28
15.00	0.75	0.82	0.68	0.69	0.73	0.76	0.79	0.81	0.92	0.30
16.00	0.75	0.82	0.67	0.69	0.72	0.75	0.78	0.81	0.90	0.30
17.00	0.60	0.75	0.46	0.45	0.48	0.58	0.75	0.79	0.87	0.06
18.00	0.26	0.51	0.02	0.03	0.04	0.09	0.51	0.60	0.75	0.03
19.00	0.06	0.12	0.01	0.03	0.04	0.05	0.07	0.11	0.45	0.03
20.00	0.05	0.09	0.02	0.04	0.04	0.04	0.05	0.08	0.30	0.02
21.00	0.05	0.09	0.02	0.04	0.04	0.04	0.05	0.08	0.28	0.03
22.00	0.06	0.10	0.01	0.04	0.04	0.04	0.05	0.08	0.42	0.03
23.00	0.05	0.09	0.02	0.04	0.04	0.04	0.05	0.07	0.29	0.03
24.00	0.06	0.10	0.01	0.04	0.04	0.04	0.06	0.08	0.37	0.03
Daily Values	7.92	8.48	7.36	7.29	7.61	7.92	8.20	8.57	10.01	5.99
Daily Sum from Hourly	7.92	9.88	5.97	6.23	6.63	7.63	8.92	9.90	14.75	2.79

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.08	0.10	0.03
2.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.10	0.03
3.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.10	0.03
4.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.10	0.03
5.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.10	0.03
6.00	0.05	0.07	0.03	0.04	0.04	0.04	0.05	0.07	0.10	0.03
7.00	0.05	0.06	0.03	0.03	0.04	0.04	0.05	0.07	0.10	0.03
8.00	0.05	0.06	0.03	0.03	0.03	0.04	0.05	0.07	0.10	0.03
9.00	0.04	0.06	0.03	0.03	0.03	0.04	0.05	0.07	0.09	0.03
10.00	0.05	0.07	0.02	0.03	0.03	0.04	0.05	0.07	0.23	0.03
11.00	0.05	0.07	0.03	0.03	0.03	0.04	0.05	0.07	0.15	0.03
12.00	0.05	0.07	0.02	0.03	0.03	0.04	0.05	0.07	0.20	0.03
13.00	0.05	0.08	0.02	0.03	0.03	0.04	0.05	0.07	0.26	0.03
14.00	0.05	0.08	0.02	0.03	0.03	0.04	0.05	0.07	0.29	0.03
15.00	0.05	0.08	0.02	0.03	0.03	0.04	0.05	0.07	0.29	0.03
16.00	0.05	0.10	0.00	0.03	0.03	0.04	0.05	0.08	0.44	0.03
17.00	0.06	0.12	-0.01	0.03	0.03	0.04	0.05	0.09	0.47	0.02
18.00	0.05	0.06	0.03	0.03	0.03	0.04	0.05	0.08	0.10	0.03
19.00	0.05	0.08	0.02	0.03	0.03	0.04	0.05	0.08	0.28	0.03
20.00	0.05	0.08	0.02	0.04	0.04	0.04	0.06	0.09	0.24	0.03
21.00	0.05	0.07	0.03	0.04	0.04	0.04	0.05	0.08	0.15	0.03
22.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.19	0.03
23.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.07	0.14	0.03
24.00	0.05	0.07	0.03	0.04	0.04	0.04	0.06	0.08	0.20	0.03
Daily Values	1.18	1.59	0.77	0.84	0.85	1.06	1.31	1.77	2.36	0.79
Daily Sum from Hourly	1.18	1.76	0.61	0.83	0.85	0.94	1.26	1.80	4.51	0.74

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.04)   (2) (0.04)   (3) (0.05)   (4) (0.05)   (5) (0.05)   (6) (0.07)
 (7) (0.05)   (8) (0.38)   (9) (0.69)  (10) (0.75)  (11) (0.76)  (12) (0.76)
(13) (0.75)  (14) (0.76)  (15) (0.76)  (16) (0.75)  (17) (0.58)  (18) (0.09)
(19) (0.05)  (20) (0.04)  (21) (0.04)  (22) (0.04)  (23) (0.04)  (24) (0.04) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.04)   (2) (0.04)   (3) (0.04)   (4) (0.04)   (5) (0.04)   (6) (0.04)
 (7) (0.04)   (8) (0.04)   (9) (0.04)  (10) (0.04)  (11) (0.04)  (12) (0.04)
(13) (0.04)  (14) (0.04)  (15) (0.04)  (16) (0.04)  (17) (0.04)  (18) (0.04)
(19) (0.04)  (20) (0.04)  (21) (0.04)  (22) (0.04)  (23) (0.04)  (24) (0.04) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.46 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1989.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL.) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.04, 0.04, 0.05, 0.05, 0.05, 0.07,
       0.05, 0.38, 0.69, 0.75, 0.76, 0.76,
       0.75, 0.76, 0.76, 0.75, 0.58, 0.09,
       0.05, 0.04, 0.04, 0.04, 0.04, 0.04),
    SATURDAY THRU SUNDAY =
      (0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04),
    SATURDAY THRU SUNDAY =
      (0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.46 W/sqft, Area=5300 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 8 kW (Metric units)
      LIGHTS= 26,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 26,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.04, 0.04, 0.05, 0.05, 0.05, 0.07,
   0.05, 0.38, 0.69, 0.75, 0.76, 0.76,
   0.75, 0.76, 0.76, 0.75, 0.58, 0.09,
   0.05, 0.04, 0.04, 0.04, 0.04, 0.04;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
   0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
   0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
   0.04, 0.04, 0.04, 0.04, 0.04, 0.04;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.46 W/sqft, Area=5300 sqft
```

```
7743,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 3 - IDS001b

Category	:	Small
Building ID	:	N/A
Building	:	East Idaho Crd. Union
Location	:	Idaho Falls, ID
Building Area (ft^2)	:	5,300
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.45
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	1.00
Start Date	:	1/1/89
End date	:	12/31/89

(Page 1) Building Descriptions: (IDS001b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: East Idaho Credit Union Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Idaho Falls, Idaho.

Category: Small Office Building, based on the CBECS classification.

Square footage: 5,300 ft^2 .

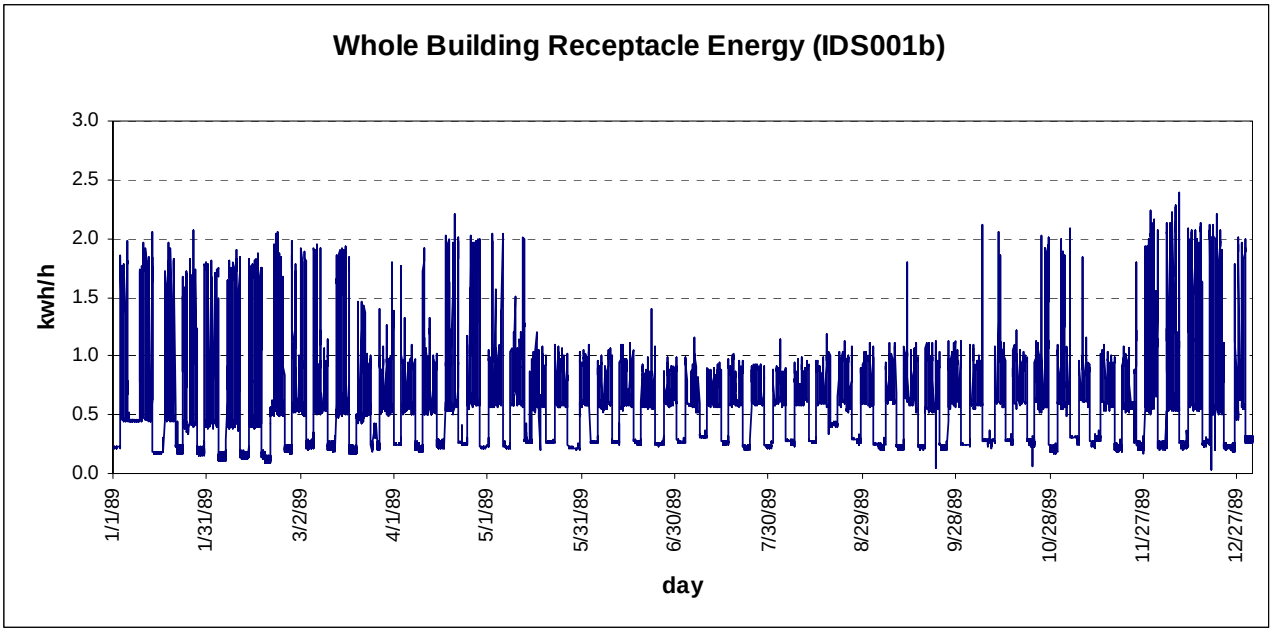
Lighting EUI: [(7.52 x 5) + (2.49 x 2)] x 52 x 0.45 = 1.00 kWh/ft^2.year

Lighting Type: N/A

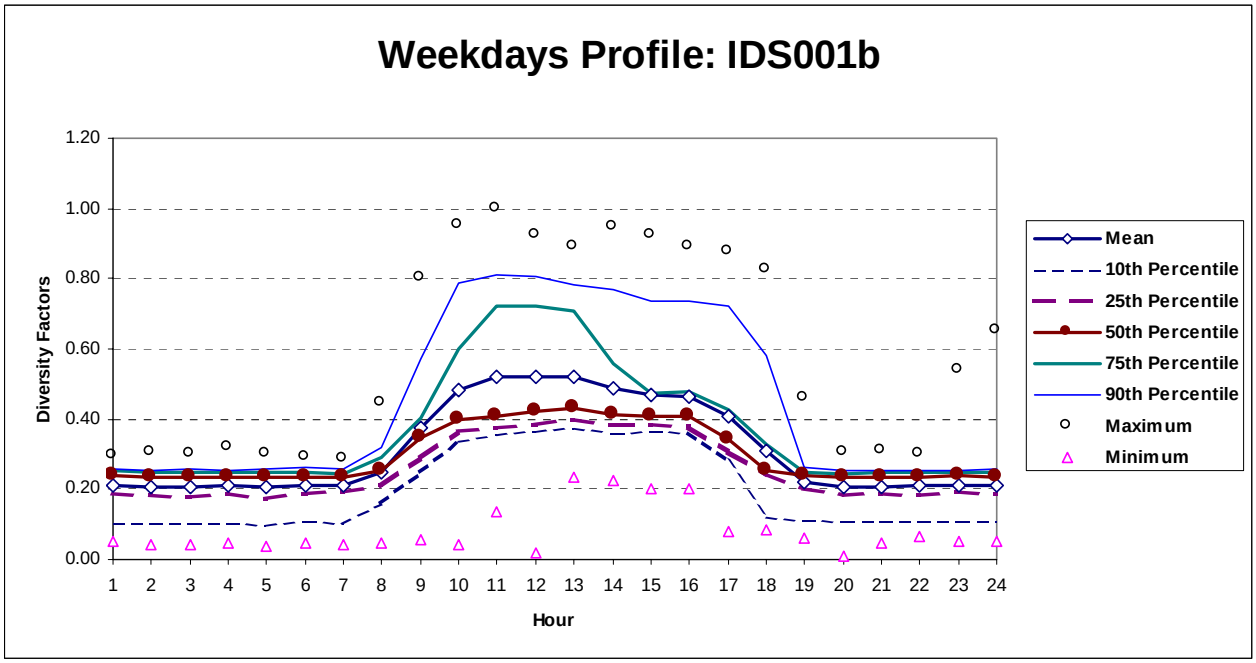
Dates: 1/1/89 - 12/31/89

Data Type: Receptacles

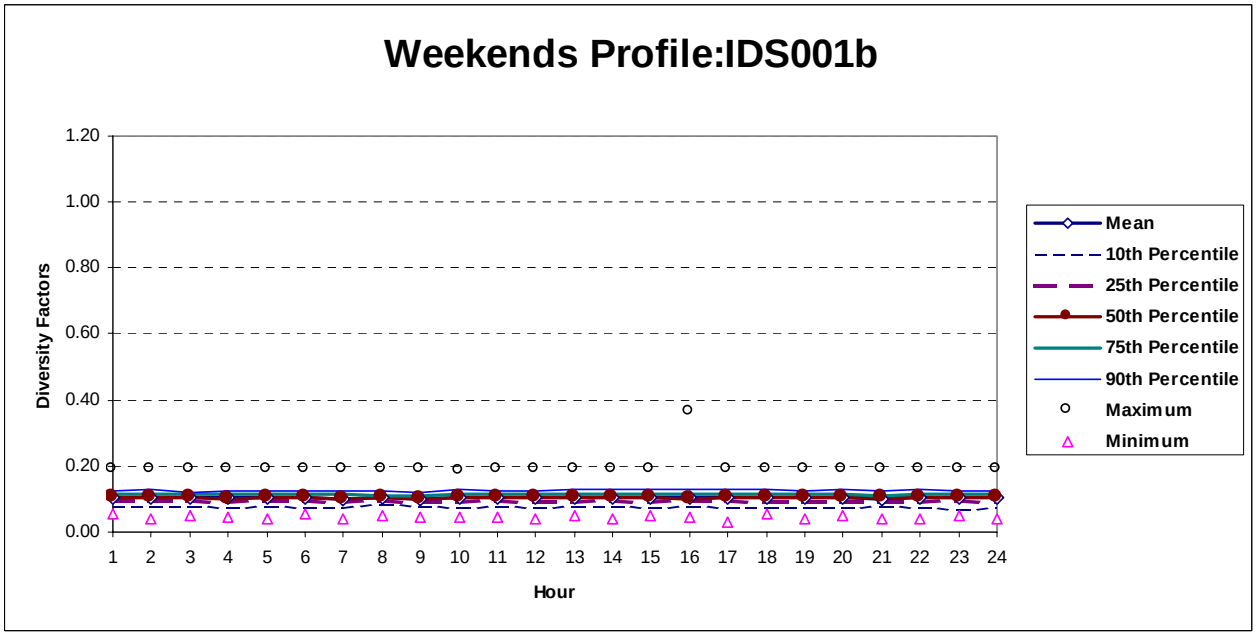
Maximum kW: 2.40 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/2/89, 1/6/89, 1/16/89, 5/29/89, 7/4/89, 9/4/89, 10/9/89, 11/10/89, 11/23/89, and 12/25/89.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.21	0.27	0.15	0.11	0.19	0.24	0.25	0.26	0.29	0.05
2.00	0.21	0.27	0.15	0.10	0.18	0.24	0.25	0.25	0.30	0.04
3.00	0.21	0.26	0.15	0.10	0.18	0.23	0.25	0.26	0.30	0.04
4.00	0.21	0.27	0.15	0.10	0.19	0.23	0.25	0.25	0.32	0.05
5.00	0.21	0.27	0.15	0.10	0.18	0.23	0.25	0.26	0.30	0.04
6.00	0.21	0.27	0.15	0.11	0.19	0.23	0.25	0.26	0.29	0.05
7.00	0.21	0.27	0.15	0.10	0.19	0.23	0.24	0.26	0.29	0.04
8.00	0.25	0.31	0.18	0.16	0.21	0.25	0.29	0.32	0.44	0.05
9.00	0.37	0.50	0.25	0.25	0.29	0.35	0.41	0.57	0.80	0.06
10.00	0.48	0.66	0.30	0.34	0.37	0.40	0.60	0.79	0.95	0.04
11.00	0.52	0.71	0.33	0.36	0.37	0.41	0.72	0.81	1.00	0.14
12.00	0.52	0.71	0.34	0.37	0.38	0.42	0.72	0.80	0.92	0.02
13.00	0.52	0.69	0.35	0.37	0.40	0.43	0.71	0.78	0.89	0.24
14.00	0.49	0.65	0.32	0.36	0.38	0.41	0.56	0.77	0.95	0.22
15.00	0.47	0.61	0.32	0.36	0.38	0.41	0.47	0.74	0.92	0.20
16.00	0.46	0.61	0.32	0.36	0.38	0.41	0.48	0.74	0.89	0.20
17.00	0.41	0.57	0.25	0.28	0.31	0.34	0.42	0.72	0.88	0.08
18.00	0.31	0.46	0.15	0.12	0.24	0.25	0.33	0.58	0.82	0.09
19.00	0.22	0.28	0.16	0.11	0.20	0.24	0.25	0.26	0.46	0.06
20.00	0.21	0.27	0.15	0.11	0.18	0.23	0.25	0.25	0.30	0.01
21.00	0.21	0.27	0.15	0.11	0.19	0.23	0.25	0.25	0.31	0.05
22.00	0.21	0.27	0.15	0.11	0.18	0.23	0.25	0.26	0.30	0.06
23.00	0.21	0.27	0.15	0.11	0.19	0.24	0.25	0.25	0.54	0.05
24.00	0.21	0.27	0.15	0.11	0.19	0.23	0.25	0.26	0.65	0.05
Daily Values	7.53	8.83	6.23	6.07	6.65	7.22	8.21	9.49	11.37	3.44
Daily Sum from Hourly	7.52	9.96	5.09	4.70	6.16	7.16	8.93	10.96	14.12	1.93

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.11	0.13	0.08	0.08	0.09	0.10	0.12	0.13	0.19	0.06
2.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.13	0.19	0.04
3.00	0.11	0.13	0.08	0.08	0.09	0.11	0.11	0.12	0.19	0.05
4.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.04
5.00	0.10	0.13	0.08	0.08	0.10	0.10	0.11	0.13	0.19	0.04
6.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.12	0.19	0.05
7.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.12	0.19	0.04
8.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.13	0.19	0.05
9.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.12	0.19	0.04
10.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.05
11.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.12	0.19	0.05
12.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.12	0.19	0.04
13.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.13	0.19	0.05
14.00	0.11	0.13	0.08	0.08	0.09	0.11	0.11	0.13	0.19	0.04
15.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.05
16.00	0.11	0.14	0.07	0.08	0.09	0.10	0.11	0.13	0.36	0.05
17.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.03
18.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.06
19.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.12	0.19	0.04
20.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.05
21.00	0.10	0.13	0.08	0.08	0.09	0.10	0.11	0.12	0.19	0.04
22.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.13	0.19	0.04
23.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.12	0.19	0.05
24.00	0.10	0.13	0.08	0.07	0.09	0.10	0.11	0.12	0.19	0.04
Daily Values	2.49	3.03	1.95	1.96	2.23	2.44	2.71	2.96	4.51	1.20
Daily Sum from Hourly	2.49	3.08	1.90	1.84	2.20	2.48	2.71	3.03	4.69	1.08

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.24)  (2) (0.24)  (3) (0.23)  (4) (0.23)  (5) (0.23)  (6) (0.23)
 (7) (0.23)  (8) (0.25)  (9) (0.35) (10) (0.40) (11) (0.41) (12) (0.42)
(13) (0.43) (14) (0.41) (15) (0.41) (16) (0.41) (17) (0.34) (18) (0.25)
(19) (0.24) (20) (0.23) (21) (0.23) (22) (0.23) (23) (0.24) (24) (0.23) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.10)  (2) (0.10)  (3) (0.11)  (4) (0.10)  (5) (0.10)  (6) (0.10)
 (7) (0.10)  (8) (0.10)  (9) (0.10) (10) (0.10) (11) (0.10) (12) (0.10)
(13) (0.10) (14) (0.11) (15) (0.10) (16) (0.10) (17) (0.10) (18) (0.10)
(19) (0.10) (20) (0.10) (21) (0.10) (22) (0.10) (23) (0.10) (24) (0.10) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.45 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1989.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
       0.23, 0.25, 0.35, 0.40, 0.41, 0.42,
       0.43, 0.41, 0.41, 0.41, 0.34, 0.25,
       0.24, 0.23, 0.23, 0.23, 0.24, 0.23),
    SATURDAY THRU SUNDAY =
      (0.10, 0.10, 0.11, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.11, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.10, 0.10, 0.11, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.11, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10),
    SATURDAY THRU SUNDAY =
      (0.10, 0.10, 0.11, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.11, 0.10, 0.10, 0.10, 0.10,
       0.10, 0.10, 0.10, 0.10, 0.10, 0.10),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.45 W/sqft, Area=5300 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 2 kW (Metric units)
      LIGHTS= 8,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 8,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 8,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 8,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 8,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 8,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 8,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 8,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 8,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
   0.23, 0.25, 0.35, 0.40, 0.41, 0.42,
   0.43, 0.41, 0.41, 0.41, 0.34, 0.25,
   0.24, 0.23, 0.23, 0.23, 0.24, 0.23;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.10, 0.10, 0.11, 0.10, 0.10, 0.10,
   0.10, 0.10, 0.10, 0.10, 0.10, 0.10,
   0.10, 0.11, 0.10, 0.10, 0.10, 0.10,
   0.10, 0.10, 0.10, 0.10, 0.10, 0.10;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.45 W/sqft, Area=5300 sqft
```

```
2398,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 4 - IDS001c

Category	:	Small
Building ID	:	N/A
Building	:	East Idaho Crd. Union
Location	:	Idaho Falls, ID
Building Area (ft^2)	:	5,300
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	1.72
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	4.20
Start Date	:	1/1/89
End date	:	12/31/89

(Page 1) Building Descriptions: (IDS001c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: East Idaho Credit Union Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Idaho Falls, Idaho.

Category: Small Office Building, based on the CBECS classification.

Square footage: 5,300 ft^2 .

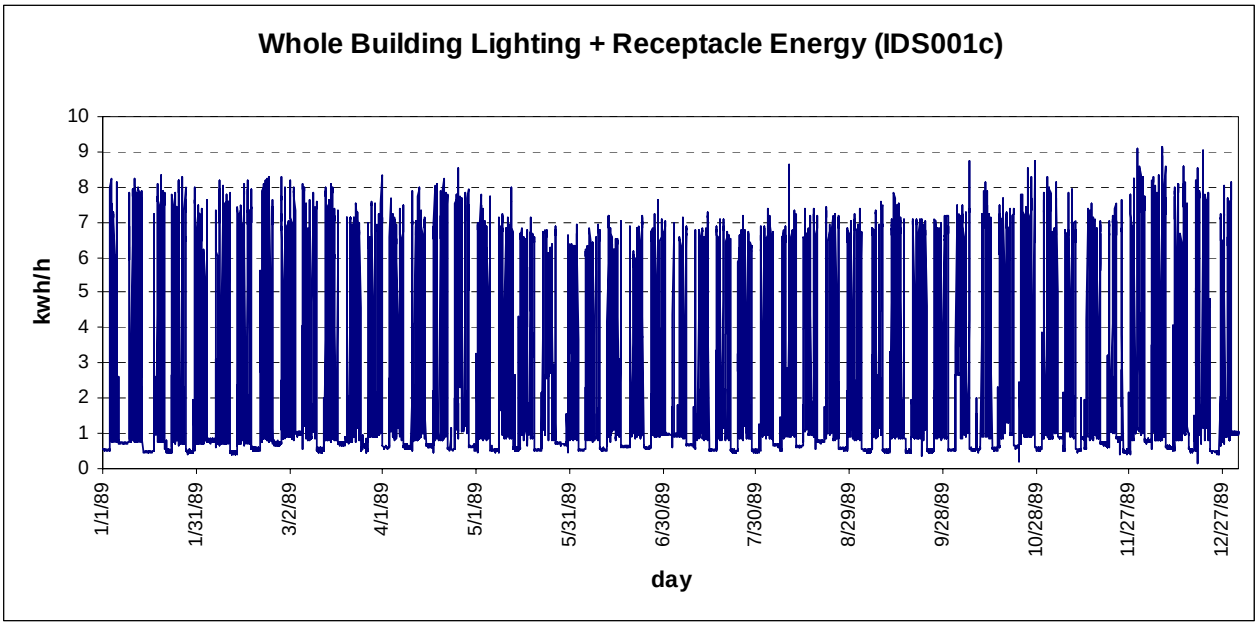
Lighting EUI: [(8.71 x 5) + (1.66 x 2)] x 52 x 1.72 = 4.20 kWh/ft^2.year

Lighting Type: N/A

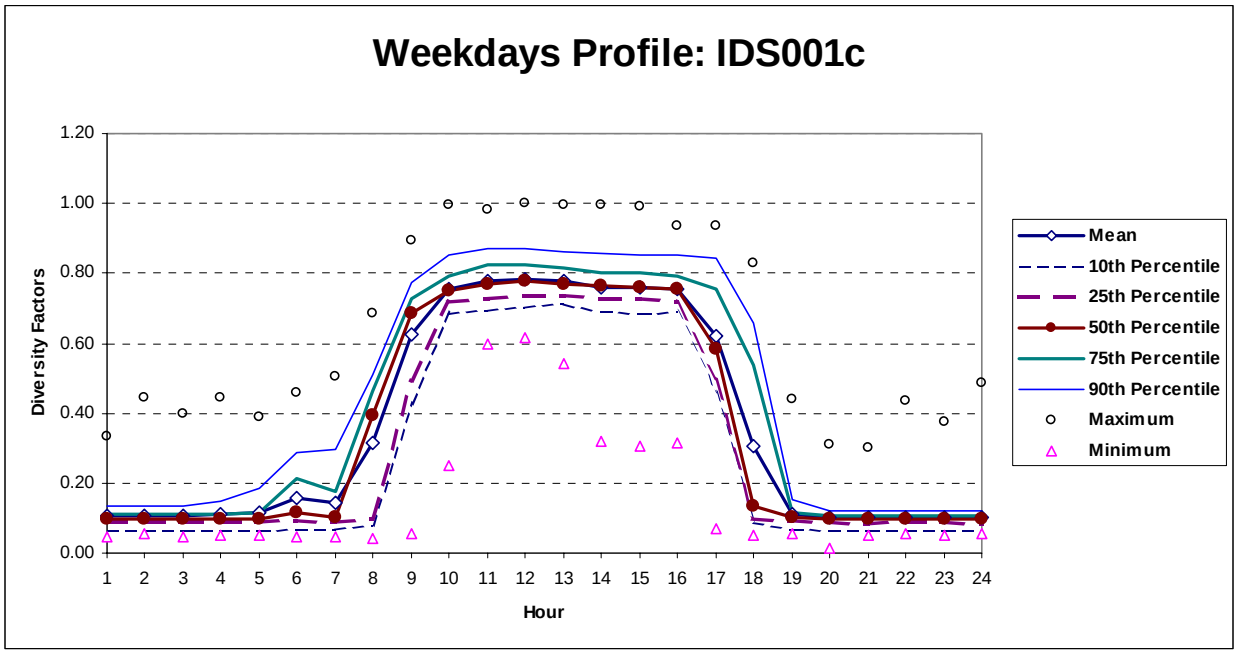
Dates: 1/1/89 - 12/31/89

Data Type: Lights + Receptacles

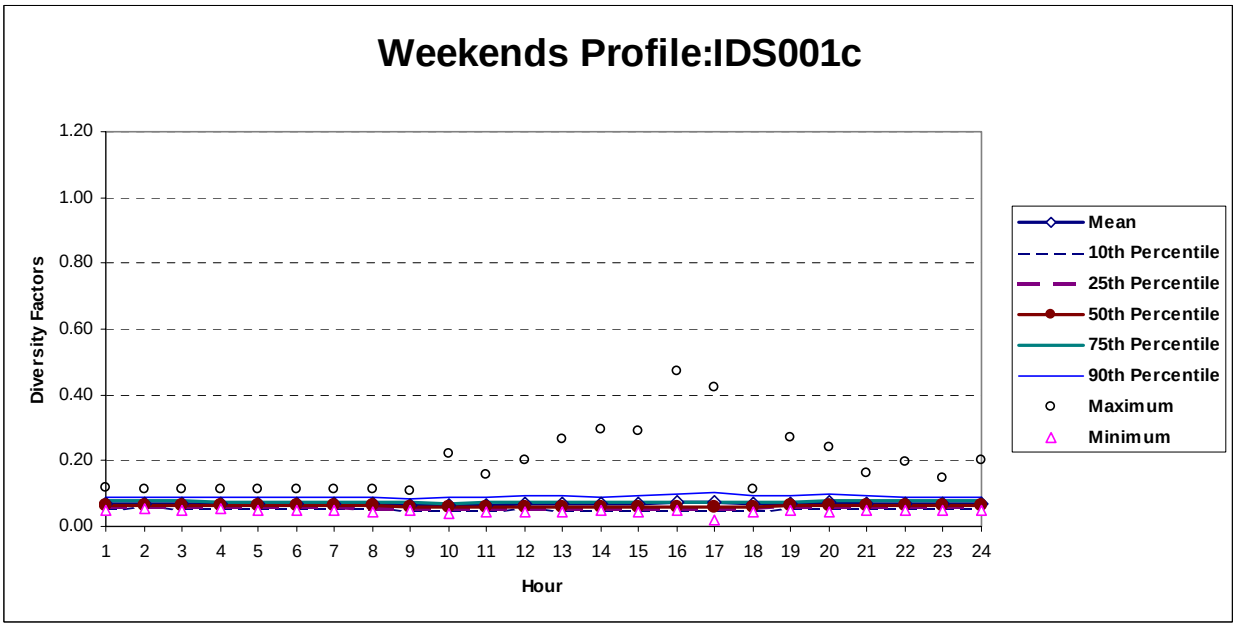
Maximum kW: 9.12 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/2/89, 1/6/89, 1/16/89, 5/29/89, 7/4/89, 9/4/89, 10/9/89, 11/10/89, 11/23/89, and 12/25/89.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.11	0.15	0.06	0.06	0.09	0.10	0.11	0.13	0.33	0.04
2.00	0.11	0.16	0.06	0.06	0.09	0.10	0.11	0.13	0.44	0.05
3.00	0.11	0.16	0.06	0.06	0.09	0.10	0.11	0.13	0.40	0.05
4.00	0.11	0.17	0.05	0.07	0.09	0.10	0.11	0.15	0.44	0.05
5.00	0.12	0.17	0.06	0.06	0.09	0.10	0.12	0.18	0.39	0.05
6.00	0.16	0.25	0.07	0.07	0.09	0.11	0.21	0.29	0.46	0.05
7.00	0.14	0.24	0.05	0.07	0.09	0.10	0.17	0.29	0.51	0.05
8.00	0.32	0.50	0.14	0.08	0.10	0.39	0.46	0.51	0.69	0.04
9.00	0.62	0.77	0.48	0.43	0.49	0.68	0.73	0.77	0.89	0.06
10.00	0.76	0.83	0.68	0.69	0.72	0.75	0.79	0.85	0.99	0.25
11.00	0.78	0.84	0.71	0.69	0.73	0.77	0.82	0.87	0.98	0.60
12.00	0.78	0.85	0.71	0.70	0.74	0.78	0.83	0.87	1.00	0.62
13.00	0.78	0.84	0.71	0.71	0.74	0.77	0.82	0.86	0.99	0.54
14.00	0.76	0.85	0.68	0.69	0.73	0.76	0.80	0.86	1.00	0.32
15.00	0.76	0.84	0.68	0.69	0.73	0.76	0.80	0.85	0.99	0.31
16.00	0.76	0.83	0.68	0.69	0.72	0.76	0.79	0.85	0.94	0.31
17.00	0.62	0.77	0.47	0.46	0.49	0.58	0.75	0.84	0.94	0.07
18.00	0.30	0.54	0.07	0.09	0.10	0.14	0.54	0.66	0.83	0.05
19.00	0.11	0.16	0.06	0.07	0.09	0.10	0.12	0.15	0.44	0.05
20.00	0.10	0.14	0.06	0.06	0.09	0.10	0.11	0.12	0.31	0.02
21.00	0.10	0.14	0.07	0.06	0.09	0.10	0.11	0.12	0.30	0.05
22.00	0.10	0.15	0.06	0.07	0.09	0.10	0.11	0.12	0.43	0.05
23.00	0.10	0.14	0.06	0.07	0.09	0.10	0.11	0.12	0.37	0.05
24.00	0.10	0.15	0.06	0.06	0.09	0.10	0.11	0.12	0.49	0.05
Daily Values	8.70	9.35	8.06	7.99	8.27	8.67	9.05	9.47	10.84	6.05
Daily Sum from Hourly	8.71	10.64	6.78	6.76	7.41	8.43	9.74	10.88	15.56	3.78

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.07	0.09	0.06	0.06	0.06	0.07	0.08	0.09	0.12	0.05
2.00	0.07	0.08	0.06	0.06	0.06	0.06	0.08	0.09	0.11	0.05
3.00	0.07	0.09	0.05	0.06	0.06	0.06	0.08	0.09	0.12	0.05
4.00	0.07	0.08	0.05	0.06	0.06	0.06	0.08	0.09	0.11	0.05
5.00	0.07	0.08	0.05	0.06	0.06	0.06	0.08	0.09	0.11	0.05
6.00	0.07	0.08	0.05	0.05	0.06	0.06	0.08	0.09	0.11	0.05
7.00	0.07	0.08	0.05	0.05	0.06	0.06	0.07	0.09	0.11	0.05
8.00	0.07	0.08	0.05	0.05	0.06	0.06	0.07	0.09	0.11	0.05
9.00	0.06	0.08	0.05	0.05	0.05	0.06	0.07	0.08	0.11	0.05
10.00	0.07	0.09	0.04	0.05	0.05	0.06	0.07	0.09	0.22	0.04
11.00	0.07	0.08	0.05	0.05	0.05	0.06	0.07	0.09	0.16	0.05
12.00	0.07	0.09	0.05	0.05	0.05	0.06	0.07	0.09	0.20	0.05
13.00	0.07	0.09	0.04	0.05	0.05	0.06	0.07	0.09	0.27	0.04
14.00	0.07	0.09	0.04	0.05	0.05	0.06	0.07	0.09	0.29	0.05
15.00	0.07	0.09	0.04	0.05	0.05	0.06	0.07	0.09	0.29	0.04
16.00	0.07	0.12	0.03	0.05	0.05	0.06	0.07	0.10	0.47	0.05
17.00	0.08	0.13	0.02	0.05	0.05	0.06	0.07	0.10	0.42	0.02
18.00	0.07	0.08	0.05	0.05	0.06	0.06	0.07	0.09	0.11	0.05
19.00	0.07	0.09	0.04	0.05	0.06	0.06	0.07	0.09	0.27	0.05
20.00	0.07	0.10	0.05	0.05	0.06	0.06	0.08	0.10	0.24	0.05
21.00	0.07	0.09	0.05	0.06	0.06	0.06	0.08	0.09	0.16	0.05
22.00	0.07	0.09	0.05	0.05	0.06	0.06	0.08	0.09	0.19	0.05
23.00	0.07	0.09	0.05	0.05	0.06	0.06	0.08	0.09	0.15	0.05
24.00	0.07	0.09	0.05	0.06	0.06	0.06	0.08	0.09	0.20	0.05
Daily Values	1.66	2.03	1.29	1.29	1.37	1.57	1.86	2.15	2.63	1.16
Daily Sum from Hourly	1.66	2.18	1.14	1.27	1.36	1.49	1.80	2.19	4.67	1.12

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.10)   (2) (0.10)   (3) (0.10)   (4) (0.10)   (5) (0.10)   (6) (0.11)
 (7) (0.10)   (8) (0.39)   (9) (0.68)  (10) (0.75)  (11) (0.77)  (12) (0.78)
(13) (0.77)  (14) (0.76)  (15) (0.76)  (16) (0.76)  (17) (0.58)  (18) (0.14)
(19) (0.10)  (20) (0.10)  (21) (0.10)  (22) (0.10)  (23) (0.10)  (24) (0.10) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.07)   (2) (0.06)   (3) (0.06)   (4) (0.06)   (5) (0.06)   (6) (0.06)
 (7) (0.06)   (8) (0.06)   (9) (0.06)  (10) (0.06)  (11) (0.06)  (12) (0.06)
(13) (0.06)  (14) (0.06)  (15) (0.06)  (16) (0.06)  (17) (0.06)  (18) (0.06)
(19) (0.06)  (20) (0.06)  (21) (0.06)  (22) (0.06)  (23) (0.06)  (24) (0.06) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.72 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1989.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.10, 0.10, 0.10, 0.10, 0.10, 0.11,
      0.10, 0.39, 0.68, 0.75, 0.77, 0.78,
      0.77, 0.76, 0.76, 0.76, 0.58, 0.14,
      0.10, 0.10, 0.10, 0.10, 0.10, 0.10),
    SATURDAY THRU SUNDAY =
     (0.07, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.07, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06),
    SATURDAY THRU SUNDAY =
     (0.07, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.06, 0.06, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.72 W/sqft, Area=5300 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 9 kW (Metric units)
      LIGHTS= 31,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 31,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 31,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 31,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 31,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 31,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 31,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 31,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 31,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (East Idaho Credit Union Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.10, 0.10, 0.10, 0.10, 0.10, 0.11,
   0.10, 0.39, 0.68, 0.75, 0.77, 0.78,
   0.77, 0.76, 0.76, 0.76, 0.58, 0.14,
   0.10, 0.10, 0.10, 0.10, 0.10, 0.10;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.07, 0.06, 0.06, 0.06, 0.06, 0.06,
   0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
   0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
   0.06, 0.06, 0.06, 0.06, 0.06, 0.06;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.72 W/sqft, Area=5300 sqft
```

```
9124,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 5 - MNL001

Category	:	Large
Building ID	:	704
Building	:	State Office Building 1
Location	:	St. Paul, MN
Building Area (ft^2)	:	200,829
Data Type	:	WBE
Max Load (W/ft^2)	:	3.30
Source	:	ESL
EUI (kWh/ft^2-yr)	:	16.90
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (MNL001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 1.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: St. Paul, MN.

Category: Large Office Building, based on the CBECS classification.

Square footage: 200,829 ft^2 .

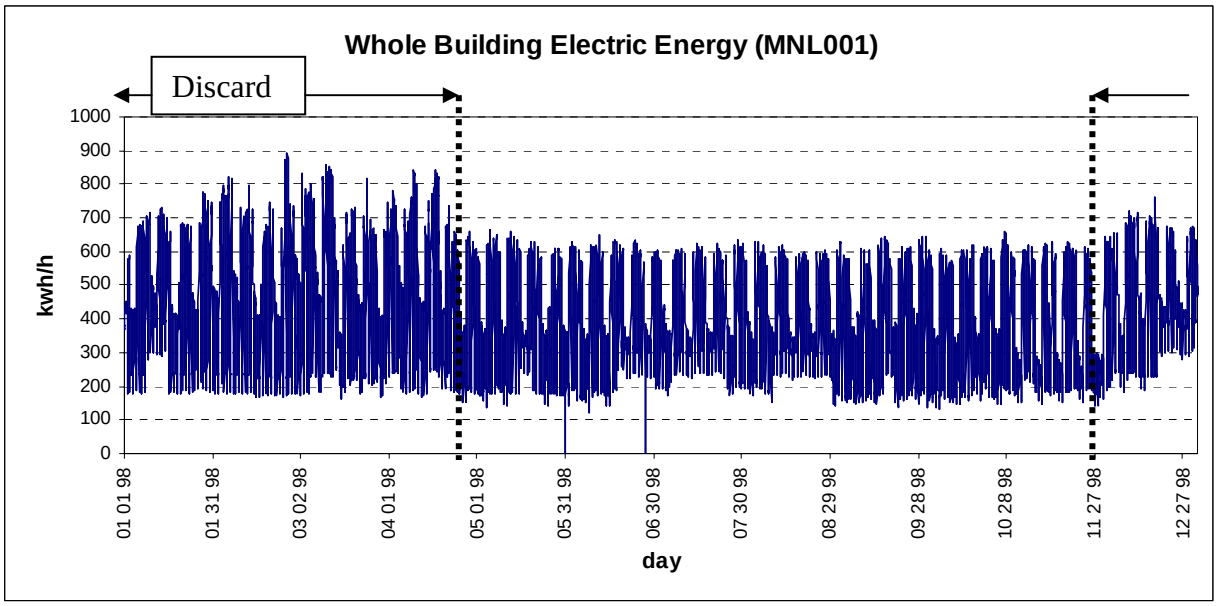
Lighting EUI: [(14.65 x 5) + (12.61 x 2)] x 52 x 3.30 = 16.90 kWh/ft^2.year

Lighting Type: Fluorescent

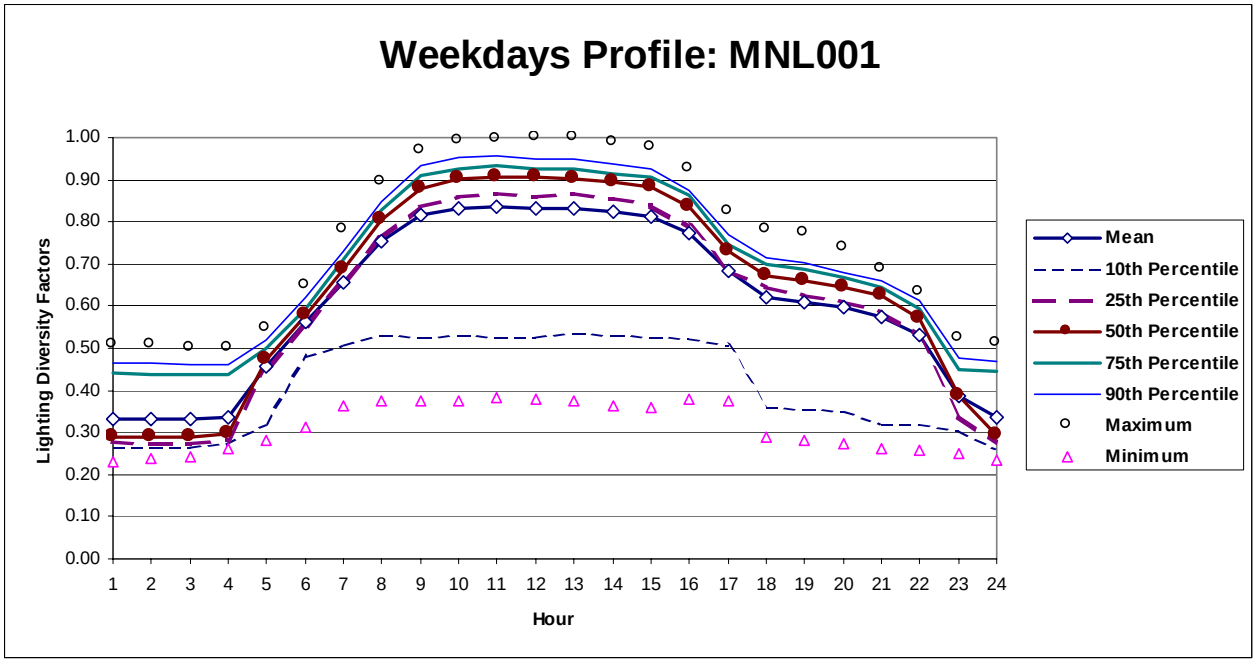
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2484

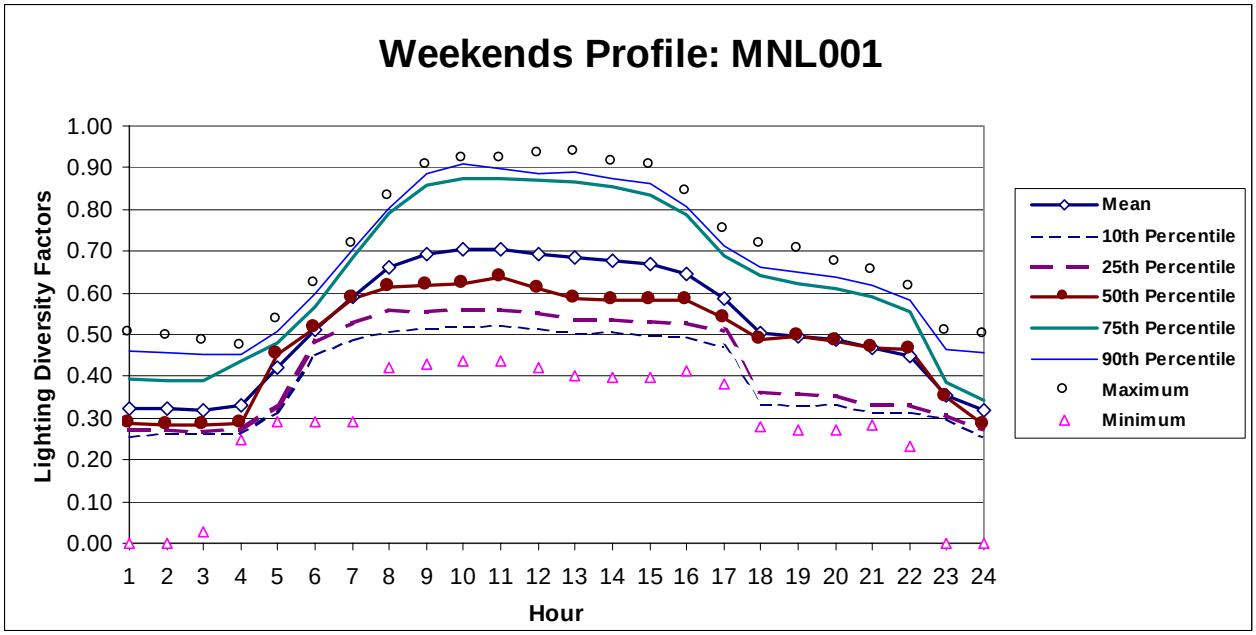
Maximum kW: 663 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98-4/20/98, 5/25/98, 9/7/98, 11/11/98, 11/26/98, 11/27/98, and 12/1-12/31/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.33	0.41	0.25	0.26	0.28	0.29	0.44	0.47	0.51	0.23
2.00	0.33	0.41	0.25	0.26	0.27	0.29	0.44	0.47	0.51	0.24
3.00	0.33	0.41	0.25	0.26	0.27	0.29	0.44	0.46	0.50	0.24
4.00	0.34	0.41	0.26	0.27	0.28	0.30	0.44	0.46	0.50	0.26
5.00	0.46	0.52	0.39	0.32	0.45	0.47	0.50	0.52	0.55	0.28
6.00	0.56	0.62	0.50	0.48	0.55	0.58	0.59	0.62	0.65	0.31
7.00	0.66	0.75	0.57	0.51	0.66	0.69	0.71	0.73	0.78	0.36
8.00	0.75	0.88	0.63	0.53	0.76	0.81	0.83	0.85	0.89	0.37
9.00	0.81	0.97	0.66	0.53	0.83	0.88	0.91	0.93	0.97	0.38
10.00	0.83	1.00	0.66	0.53	0.86	0.90	0.93	0.95	0.99	0.37
11.00	0.83	1.00	0.67	0.53	0.87	0.91	0.93	0.96	1.00	0.38
12.00	0.83	1.00	0.67	0.53	0.86	0.90	0.93	0.95	1.00	0.38
13.00	0.83	1.00	0.67	0.53	0.87	0.90	0.92	0.95	1.00	0.37
14.00	0.82	0.98	0.66	0.53	0.86	0.89	0.92	0.94	0.99	0.36
15.00	0.81	0.97	0.66	0.53	0.84	0.88	0.91	0.93	0.98	0.36
16.00	0.78	0.91	0.64	0.52	0.79	0.84	0.86	0.88	0.93	0.38
17.00	0.69	0.79	0.58	0.51	0.68	0.73	0.75	0.77	0.82	0.38
18.00	0.62	0.75	0.49	0.36	0.65	0.67	0.70	0.71	0.78	0.29
19.00	0.61	0.74	0.48	0.35	0.63	0.66	0.69	0.70	0.77	0.28
20.00	0.60	0.72	0.48	0.35	0.61	0.64	0.67	0.68	0.74	0.27
21.00	0.57	0.69	0.46	0.32	0.59	0.62	0.64	0.66	0.69	0.26
22.00	0.53	0.63	0.43	0.32	0.53	0.57	0.59	0.61	0.63	0.26
23.00	0.39	0.45	0.32	0.31	0.34	0.39	0.45	0.48	0.52	0.25
24.00	0.34	0.42	0.25	0.26	0.28	0.29	0.45	0.47	0.51	0.23
Daily Values	14.65	17.00	12.31	10.24	14.80	15.69	16.12	16.36	17.02	8.26
Daily Sum from Hourly	14.65	17.43	11.87	9.91	14.60	15.39	16.62	17.13	18.21	7.52

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.32	0.41	0.23	0.26	0.27	0.29	0.39	0.46	0.50	0.00
2.00	0.32	0.41	0.23	0.26	0.27	0.28	0.39	0.46	0.50	0.00
3.00	0.32	0.41	0.23	0.26	0.27	0.28	0.39	0.45	0.48	0.03
4.00	0.33	0.41	0.25	0.27	0.27	0.29	0.44	0.45	0.47	0.25
5.00	0.42	0.50	0.34	0.32	0.33	0.45	0.48	0.51	0.54	0.29
6.00	0.51	0.58	0.44	0.45	0.48	0.51	0.57	0.60	0.62	0.29
7.00	0.59	0.70	0.49	0.49	0.53	0.58	0.69	0.71	0.72	0.29
8.00	0.66	0.79	0.53	0.51	0.56	0.61	0.79	0.80	0.83	0.42
9.00	0.69	0.86	0.53	0.52	0.55	0.62	0.86	0.89	0.90	0.43
10.00	0.70	0.87	0.53	0.52	0.56	0.62	0.87	0.91	0.92	0.44
11.00	0.70	0.87	0.53	0.52	0.56	0.64	0.88	0.90	0.92	0.44
12.00	0.69	0.87	0.52	0.52	0.55	0.61	0.87	0.89	0.93	0.42
13.00	0.68	0.87	0.50	0.50	0.54	0.59	0.87	0.89	0.94	0.40
14.00	0.68	0.85	0.50	0.51	0.53	0.58	0.85	0.87	0.91	0.40
15.00	0.67	0.84	0.50	0.50	0.53	0.58	0.83	0.86	0.91	0.40
16.00	0.64	0.79	0.50	0.50	0.53	0.58	0.79	0.81	0.84	0.41
17.00	0.59	0.69	0.48	0.47	0.51	0.54	0.69	0.71	0.75	0.38
18.00	0.50	0.64	0.36	0.33	0.36	0.49	0.64	0.66	0.72	0.28
19.00	0.50	0.63	0.36	0.33	0.36	0.50	0.62	0.65	0.71	0.27
20.00	0.49	0.62	0.36	0.33	0.35	0.48	0.61	0.64	0.67	0.27
21.00	0.47	0.60	0.34	0.32	0.33	0.47	0.59	0.62	0.65	0.28
22.00	0.45	0.56	0.34	0.32	0.33	0.46	0.56	0.58	0.61	0.23
23.00	0.36	0.44	0.27	0.30	0.31	0.35	0.39	0.46	0.51	0.00
24.00	0.32	0.41	0.22	0.26	0.27	0.28	0.34	0.46	0.50	0.00
Daily Values	12.62	15.15	10.09	9.51	10.37	12.07	15.06	15.69	16.39	8.34
Daily Sum from Hourly	12.61	15.62	9.61	9.56	10.16	11.70	15.39	16.23	17.06	6.63

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg 1., St. Paul, MN) into the DOE-2 program. The calculated **50th Percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.29)  (2) (0.29)  (3) (0.29)  (4) (0.30)  (5) (0.47)  (6) (0.58)
 (7) (0.69)  (8) (0.81)  (9) (0.88)  (10) (0.90)  (11) (0.91)  (12) (0.90)
(13) (0.90)  (14) (0.89)  (15) (0.88)  (16) (0.84)  (17) (0.73)  (18) (0.67)
(19) (0.66)  (20) (0.64)  (21) (0.62)  (22) (0.57)  (23) (0.39)  (24) (0.29) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.29)  (2) (0.28)  (3) (0.28)  (4) (0.29)  (5) (0.45)  (6) (0.51)
 (7) (0.58)  (8) (0.61)  (9) (0.62)  (10) (0.62)  (11) (0.64)  (12) (0.61)
(13) (0.59)  (14) (0.58)  (15) (0.58)  (16) (0.58)  (17) (0.54)  (18) (0.49)
(19) (0.50)  (20) (0.48)  (21) (0.47)  (22) (0.46)  (23) (0.35)  (24) (0.28) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.30 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.1, St. Paul, MN) into the BLAST program. The calculated **50th Percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.29, 0.29, 0.29, 0.30, 0.47, 0.58,
       0.69, 0.81, 0.88, 0.90, 0.91, 0.90,
       0.90, 0.89, 0.88, 0.84, 0.73, 0.67,
       0.66, 0.64, 0.62, 0.57, 0.39, 0.29),
    SATURDAY THRU SUNDAY =
      (0.29, 0.28, 0.28, 0.29, 0.45, 0.51,
       0.58, 0.61, 0.62, 0.62, 0.64, 0.61,
       0.59, 0.58, 0.58, 0.58, 0.54, 0.49,
       0.50, 0.48, 0.47, 0.46, 0.35, 0.28),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.29, 0.28, 0.28, 0.29, 0.45, 0.51,
       0.58, 0.61, 0.62, 0.62, 0.64, 0.61,
       0.59, 0.58, 0.58, 0.58, 0.54, 0.49,
       0.50, 0.48, 0.47, 0.46, 0.35, 0.28),
    SATURDAY THRU SUNDAY =
      (0.29, 0.28, 0.28, 0.29, 0.45, 0.51,
       0.58, 0.61, 0.62, 0.62, 0.64, 0.61,
       0.59, 0.58, 0.58, 0.58, 0.54, 0.49,
       0.50, 0.48, 0.47, 0.46, 0.35, 0.28),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.30 W/sqft, Area=200859 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 663 kW (Metric units)
      LIGHTS= 2262,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 2262,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 2262,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 2262,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 2262,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 2262,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 2262,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 2262,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 2262,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.1, St. Paul, MN) into the EnergyPlus program. The calculated **50th Percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.29, 0.29, 0.29, 0.30, 0.47, 0.58,
   0.69, 0.81, 0.88, 0.90, 0.91, 0.90,
   0.90, 0.89, 0.88, 0.84, 0.73, 0.67,
   0.66, 0.64, 0.62, 0.57, 0.39, 0.29;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.29, 0.28, 0.28, 0.29, 0.45, 0.51,
   0.58, 0.61, 0.62, 0.62, 0.64, 0.61,
   0.59, 0.58, 0.58, 0.58, 0.54, 0.49,
   0.50, 0.48, 0.47, 0.46, 0.35, 0.28;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.30 W/sqft, Area=200859 sqft
```

```
662800,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 6 - MNL002

Category	:	Large
Building ID	:	707
Building	:	State Office Bldg 2.
Location	:	St. Paul, MN
Building Area (ft^2)	:	281,850
Data Type	:	WBE
Max Load (W/ft^2)	:	2.37
Source	:	ESL
EUI (kWh/ft^2-yr)	:	11.45
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (MNL002)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 2.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: St. Paul, MN.

Category: Large Office Building, based on the CBECS classification.

Square footage: 281,850 ft^2 .

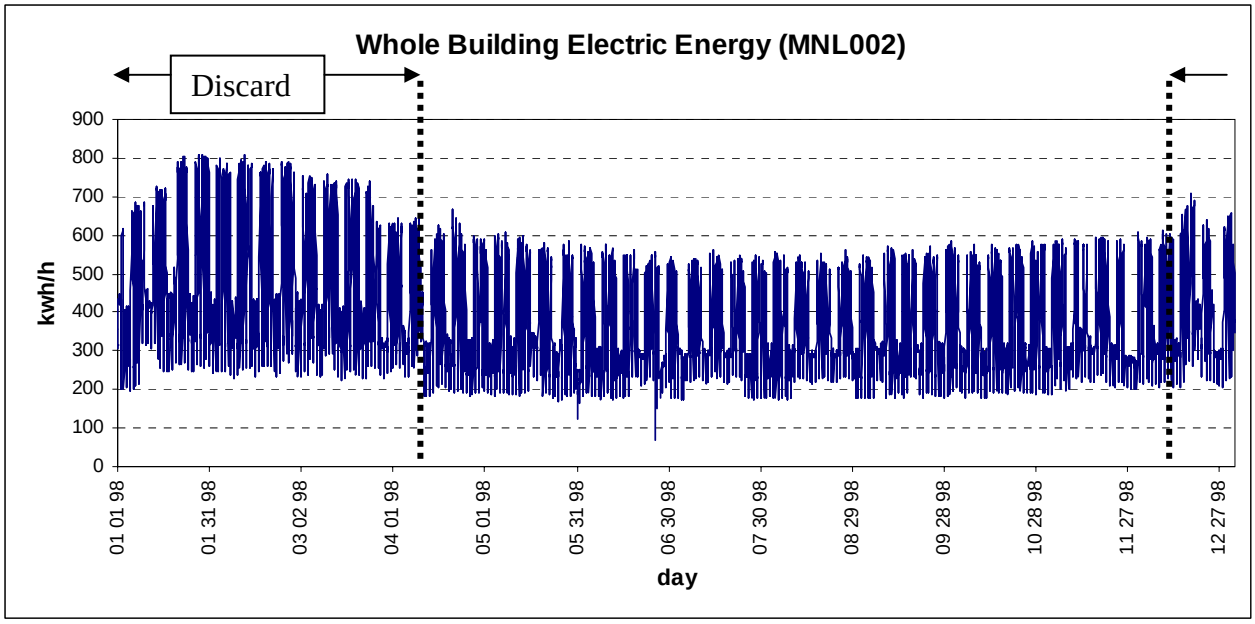
Lighting EUI: [(14.57 x 5) + (10.09 x 2)] x 52 x 2.37 = 11.45 kWh/ft^2.year

Lighting Type: N/A

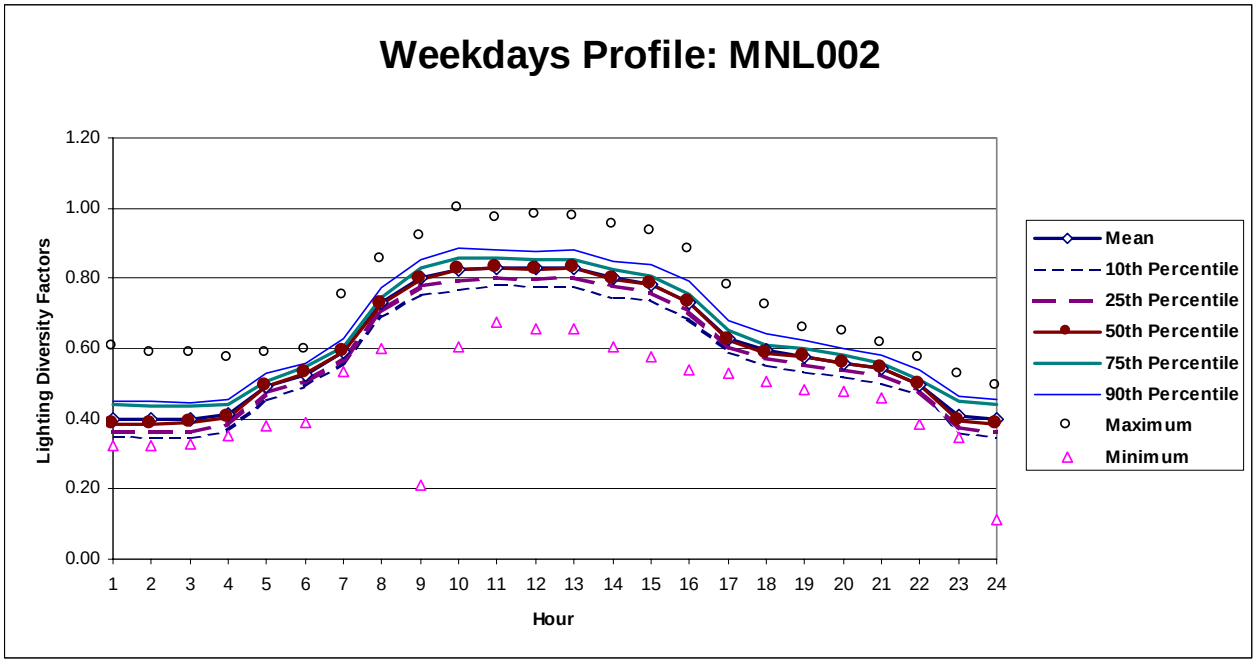
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2515 + ch2516

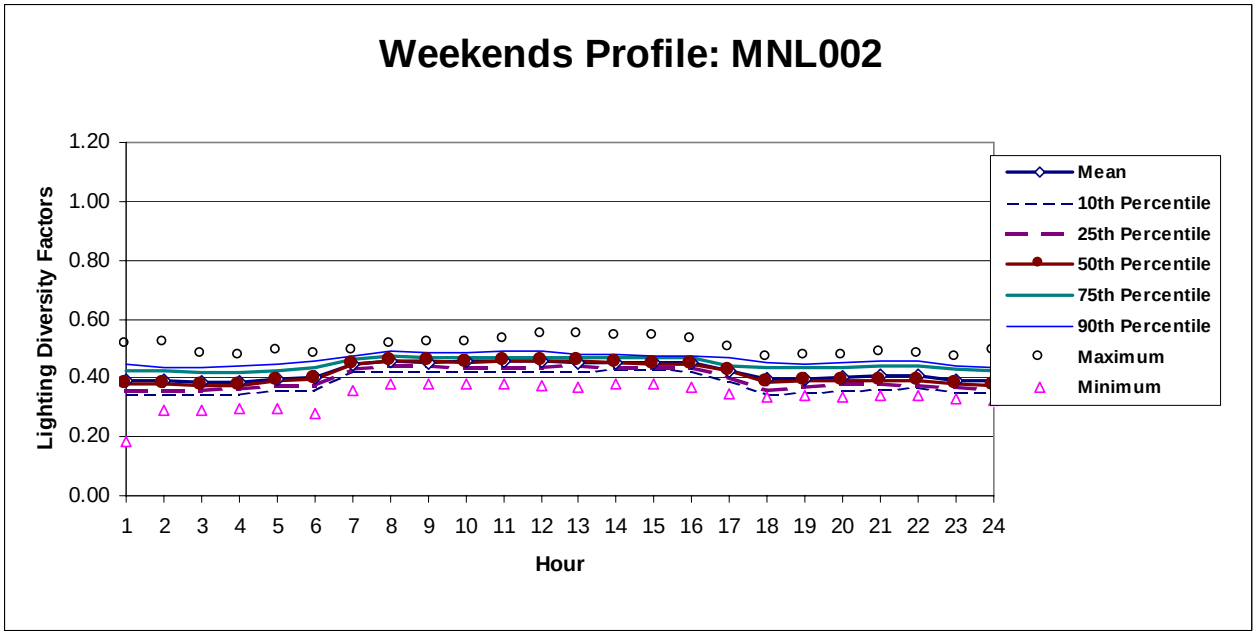
Maximum kW: 667.20 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98 -4/9/98, 5/25/98, 7/3/98, 9/7/98, 11/11/98, 11/26/98, 11/27/98, and 12/15-12/31/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.40	0.44	0.36	0.35	0.36	0.39	0.44	0.45	0.61	0.32
2.00	0.40	0.44	0.36	0.35	0.36	0.38	0.44	0.45	0.59	0.32
3.00	0.40	0.44	0.36	0.35	0.36	0.39	0.44	0.45	0.59	0.33
4.00	0.41	0.45	0.37	0.37	0.38	0.40	0.44	0.46	0.57	0.35
5.00	0.49	0.52	0.46	0.46	0.47	0.49	0.51	0.53	0.59	0.38
6.00	0.53	0.56	0.50	0.49	0.51	0.53	0.55	0.56	0.60	0.39
7.00	0.59	0.62	0.56	0.56	0.57	0.59	0.61	0.63	0.75	0.53
8.00	0.73	0.77	0.69	0.69	0.71	0.73	0.75	0.77	0.85	0.60
9.00	0.80	0.86	0.74	0.76	0.78	0.80	0.83	0.85	0.92	0.21
10.00	0.82	0.88	0.77	0.77	0.79	0.82	0.86	0.89	1.00	0.61
11.00	0.83	0.87	0.79	0.78	0.80	0.83	0.86	0.88	0.97	0.67
12.00	0.83	0.87	0.78	0.78	0.80	0.83	0.85	0.88	0.98	0.66
13.00	0.83	0.87	0.79	0.78	0.80	0.83	0.85	0.88	0.97	0.66
14.00	0.80	0.84	0.76	0.75	0.78	0.80	0.82	0.85	0.95	0.61
15.00	0.78	0.83	0.74	0.74	0.76	0.78	0.81	0.84	0.93	0.57
16.00	0.73	0.78	0.69	0.68	0.71	0.73	0.76	0.79	0.88	0.54
17.00	0.63	0.67	0.59	0.59	0.61	0.62	0.65	0.68	0.78	0.53
18.00	0.59	0.63	0.56	0.55	0.57	0.59	0.61	0.64	0.72	0.51
19.00	0.58	0.61	0.54	0.53	0.55	0.57	0.60	0.62	0.66	0.48
20.00	0.56	0.59	0.53	0.52	0.54	0.56	0.58	0.60	0.65	0.48
21.00	0.54	0.57	0.51	0.50	0.52	0.54	0.56	0.58	0.62	0.46
22.00	0.50	0.53	0.47	0.47	0.48	0.50	0.51	0.54	0.57	0.38
23.00	0.41	0.45	0.37	0.36	0.37	0.39	0.45	0.46	0.53	0.35
24.00	0.40	0.44	0.35	0.35	0.36	0.38	0.44	0.46	0.49	0.11
Daily Values	14.57	15.21	13.92	13.87	14.17	14.47	14.92	15.49	16.54	12.28
Daily Sum from Hourly	14.57	15.52	13.63	13.51	13.96	14.47	15.21	15.73	17.74	11.04

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.39	0.43	0.34	0.35	0.36	0.38	0.42	0.45	0.51	0.19
2.00	0.39	0.43	0.35	0.35	0.36	0.38	0.42	0.44	0.52	0.29
3.00	0.39	0.42	0.35	0.35	0.36	0.38	0.42	0.44	0.48	0.29
4.00	0.39	0.43	0.35	0.35	0.36	0.38	0.42	0.44	0.48	0.29
5.00	0.40	0.44	0.36	0.36	0.37	0.39	0.42	0.45	0.49	0.29
6.00	0.40	0.44	0.36	0.36	0.37	0.40	0.44	0.46	0.48	0.28
7.00	0.45	0.47	0.42	0.42	0.43	0.45	0.46	0.48	0.49	0.36
8.00	0.46	0.48	0.43	0.42	0.44	0.46	0.48	0.49	0.51	0.38
9.00	0.45	0.48	0.43	0.42	0.44	0.46	0.47	0.49	0.52	0.38
10.00	0.46	0.48	0.43	0.42	0.44	0.45	0.47	0.49	0.52	0.38
11.00	0.46	0.48	0.43	0.42	0.44	0.46	0.47	0.49	0.53	0.38
12.00	0.46	0.48	0.43	0.42	0.44	0.46	0.47	0.49	0.55	0.37
13.00	0.45	0.48	0.43	0.42	0.44	0.46	0.47	0.48	0.55	0.37
14.00	0.45	0.48	0.43	0.43	0.44	0.45	0.47	0.48	0.54	0.38
15.00	0.45	0.48	0.43	0.43	0.44	0.45	0.47	0.48	0.54	0.38
16.00	0.45	0.47	0.42	0.42	0.44	0.45	0.47	0.48	0.53	0.37
17.00	0.42	0.45	0.40	0.39	0.40	0.42	0.44	0.47	0.50	0.35
18.00	0.40	0.44	0.35	0.35	0.36	0.38	0.44	0.45	0.47	0.34
19.00	0.40	0.44	0.36	0.35	0.37	0.39	0.44	0.45	0.48	0.34
20.00	0.40	0.44	0.36	0.36	0.38	0.39	0.44	0.45	0.48	0.34
21.00	0.41	0.44	0.37	0.36	0.38	0.39	0.44	0.46	0.49	0.34
22.00	0.40	0.44	0.37	0.37	0.37	0.39	0.44	0.46	0.48	0.34
23.00	0.39	0.43	0.36	0.35	0.37	0.38	0.43	0.44	0.47	0.33
24.00	0.39	0.43	0.36	0.35	0.36	0.38	0.42	0.44	0.49	0.33
Daily Values	10.09	10.67	9.51	9.45	9.71	10.01	10.48	10.73	11.57	8.10
Daily Sum from Hourly	10.09	10.89	9.30	9.24	9.53	9.93	10.71	11.11	12.10	8.08

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.2, St. Paul, MN) into the DOE-2 program. The calculated **50th Percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.39)  (2) (0.38)  (3) (0.39)  (4) (0.40)  (5) (0.49)  (6) (0.53)
 (7) (0.59)  (8) (0.73)  (9) (0.80) (10) (0.82) (11) (0.83) (12) (0.83)
(13) (0.83) (14) (0.80) (15) (0.78) (16) (0.73) (17) (0.62) (18) (0.59)
(19) (0.57) (20) (0.56) (21) (0.54) (22) (0.50) (23) (0.39) (24) (0.38) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.38)  (2) (0.38)  (3) (0.38)  (4) (0.38)  (5) (0.39)  (6) (0.40)
 (7) (0.45)  (8) (0.46)  (9) (0.46) (10) (0.45) (11) (0.46) (12) (0.46)
(13) (0.46) (14) (0.45) (15) (0.45) (16) (0.45) (17) (0.42) (18) (0.38)
(19) (0.39) (20) (0.39) (21) (0.39) (22) (0.39) (23) (0.38) (24) (0.38) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.37 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.2, St. Paul, MN) into the BLAST program. The calculated **50th Percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.39, 0.38, 0.39, 0.40, 0.49, 0.53,
      0.59, 0.73, 0.80, 0.82, 0.83, 0.83,
      0.83, 0.80, 0.78, 0.73, 0.62, 0.59,
      0.57, 0.56, 0.54, 0.50, 0.39, 0.38),
    SATURDAY THRU SUNDAY =
     (0.38, 0.38, 0.38, 0.38, 0.39, 0.40,
      0.45, 0.46, 0.46, 0.45, 0.46, 0.46,
      0.46, 0.45, 0.45, 0.45, 0.42, 0.38,
      0.39, 0.39, 0.39, 0.39, 0.38, 0.38),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.38, 0.38, 0.38, 0.38, 0.39, 0.40,
      0.45, 0.46, 0.46, 0.45, 0.46, 0.46,
      0.46, 0.45, 0.45, 0.45, 0.42, 0.38,
      0.39, 0.39, 0.39, 0.39, 0.38, 0.38),
    SATURDAY THRU SUNDAY =
     (0.38, 0.38, 0.38, 0.38, 0.39, 0.40,
      0.45, 0.46, 0.46, 0.45, 0.46, 0.46,
      0.46, 0.45, 0.45, 0.45, 0.42, 0.38,
      0.39, 0.39, 0.39, 0.39, 0.38, 0.38),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.37 W/sqft, Area=281850 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 667 kW (Metric units)
      LIGHTS= 2277,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 2277,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 2277,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 2277,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 2277,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 2277,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 2277,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 2277,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 2277,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.2, St. Paul, MN) into the EnergyPlus program. The calculated **50th Percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.39, 0.38, 0.39, 0.40, 0.49, 0.53,
   0.59, 0.73, 0.80, 0.82, 0.83, 0.83,
   0.83, 0.80, 0.78, 0.73, 0.62, 0.59,
   0.57, 0.56, 0.54, 0.50, 0.39, 0.38;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.38, 0.38, 0.38, 0.38, 0.39, 0.40,
   0.45, 0.46, 0.46, 0.45, 0.46, 0.46,
   0.46, 0.45, 0.45, 0.45, 0.42, 0.38,
   0.39, 0.39, 0.39, 0.39, 0.38, 0.38;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
```

```
! Lighting level=2.37 W/sqft, Area=281850 sqft
667200,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 7 - MNL003

Category	:	Large
Building ID	:	710
Building	:	State Office Building 3.
Location	:	St. Paul, MN
Building Area (ft^2)	:	366,805
Data Type	:	WBE
Max Load (W/ft^2)	:	2.31
Source	:	ESL
EUI (kWh/ft^2-yr)	:	11.80
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (MNL003)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 3.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: St. Paul, MN.

Category: Large Office Building, based on the CBECS classification.

Square footage: 366,805 ft^2 .

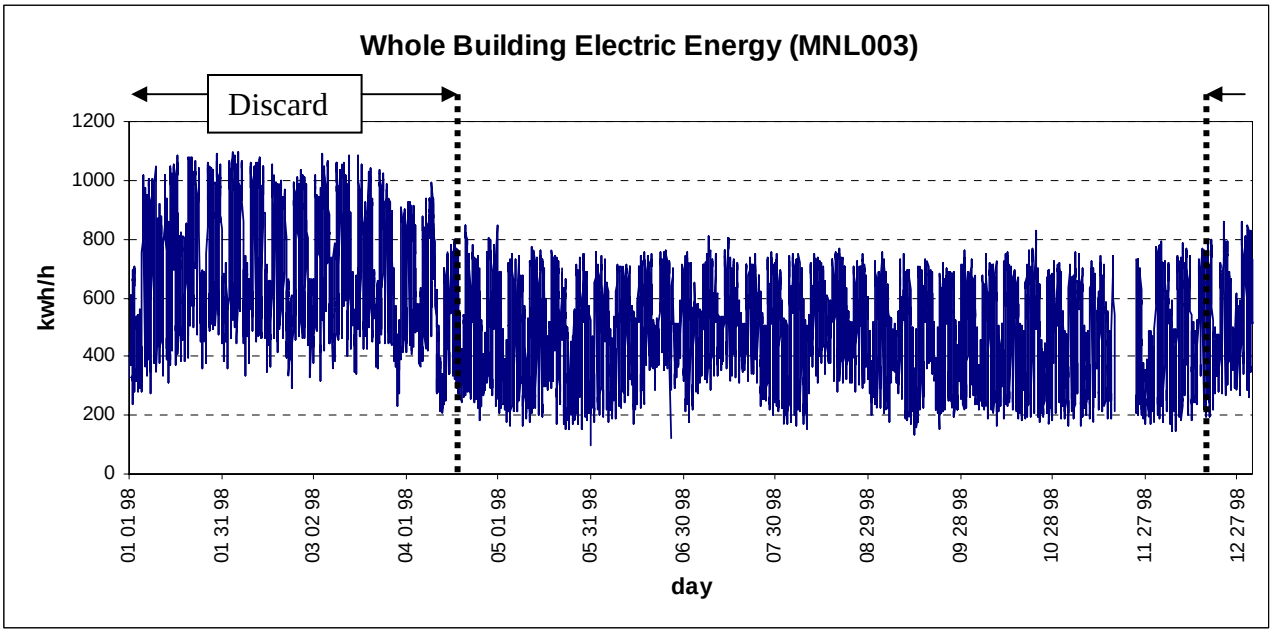
Lighting EUI: [(15.35 x 5) + (10.65 x 2)] x 52 x 2.31 = 11.80 kWh/ft^2.year

Lighting Type: N/A

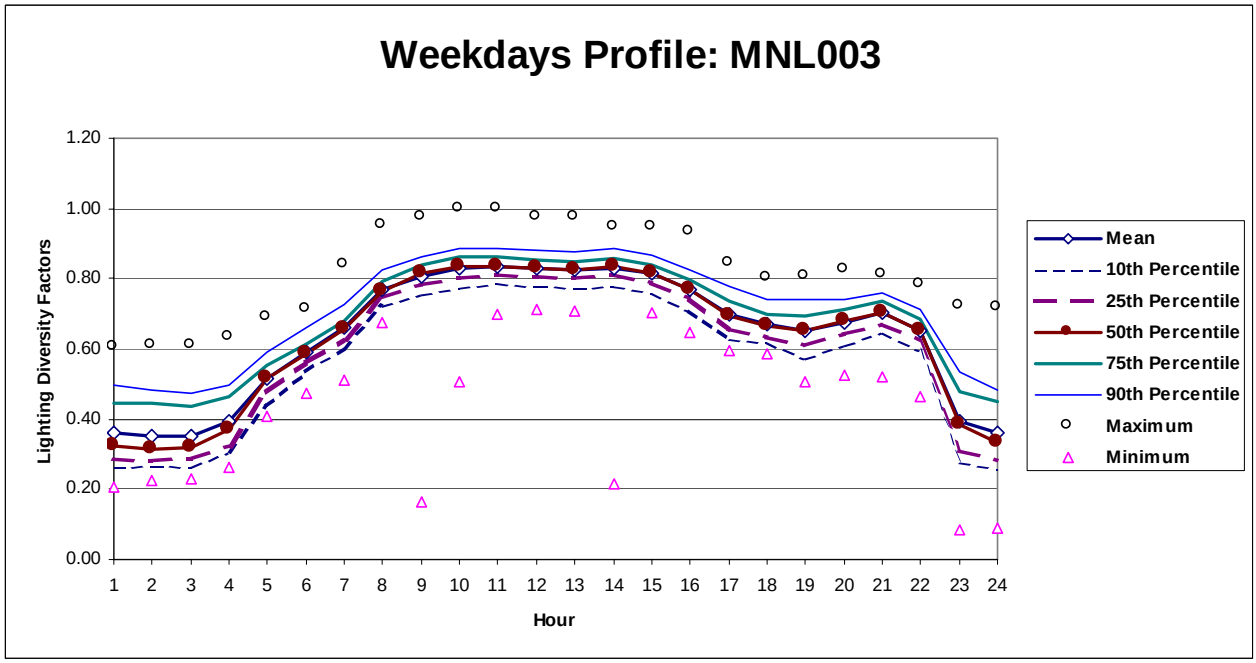
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2539 + ch2540 + ch2541 + ch2542

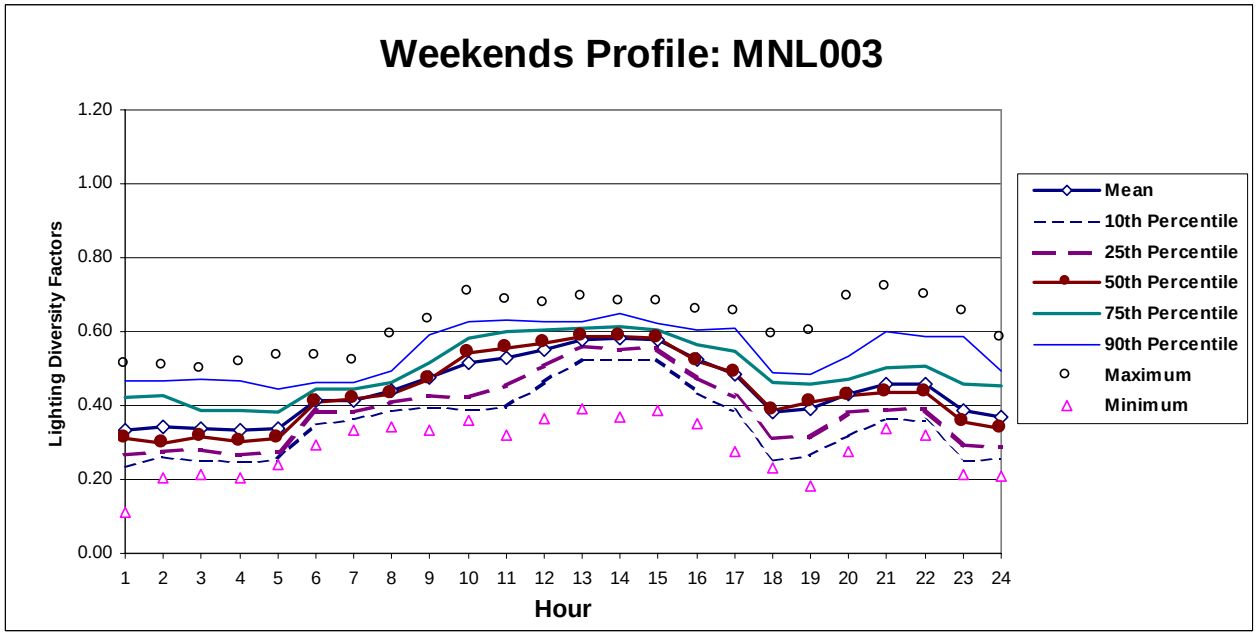
Maximum kW: 849 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98 - 4/10/98, 5/25/98, 7/3/98, 9/7/98, 11/11/98, 11/26/98, 11/27/98, and 12/15-12/31/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.36	0.45	0.27	0.26	0.28	0.32	0.44	0.50	0.61	0.21
2.00	0.35	0.44	0.26	0.27	0.28	0.32	0.45	0.48	0.61	0.23
3.00	0.35	0.44	0.27	0.26	0.28	0.32	0.44	0.48	0.61	0.23
4.00	0.39	0.47	0.31	0.30	0.33	0.37	0.46	0.49	0.63	0.26
5.00	0.52	0.58	0.46	0.44	0.48	0.52	0.55	0.59	0.69	0.41
6.00	0.59	0.64	0.54	0.54	0.56	0.58	0.61	0.66	0.71	0.47
7.00	0.66	0.71	0.61	0.60	0.63	0.66	0.68	0.73	0.84	0.51
8.00	0.77	0.81	0.73	0.72	0.74	0.77	0.79	0.82	0.95	0.67
9.00	0.81	0.88	0.74	0.76	0.79	0.82	0.84	0.86	0.97	0.16
10.00	0.83	0.88	0.78	0.78	0.80	0.84	0.86	0.88	1.00	0.50
11.00	0.84	0.88	0.79	0.79	0.81	0.84	0.86	0.89	1.00	0.70
12.00	0.83	0.87	0.79	0.78	0.81	0.83	0.85	0.88	0.97	0.71
13.00	0.82	0.87	0.78	0.77	0.80	0.82	0.85	0.88	0.97	0.71
14.00	0.83	0.89	0.77	0.78	0.81	0.83	0.86	0.88	0.95	0.22
15.00	0.81	0.86	0.77	0.76	0.79	0.82	0.84	0.87	0.95	0.70
16.00	0.77	0.81	0.72	0.71	0.74	0.77	0.80	0.82	0.93	0.65
17.00	0.70	0.75	0.64	0.63	0.66	0.69	0.73	0.78	0.84	0.59
18.00	0.67	0.72	0.62	0.62	0.63	0.67	0.70	0.74	0.80	0.58
19.00	0.65	0.72	0.59	0.57	0.61	0.65	0.70	0.74	0.81	0.51
20.00	0.68	0.73	0.62	0.61	0.64	0.68	0.71	0.74	0.83	0.52
21.00	0.70	0.75	0.65	0.65	0.67	0.70	0.74	0.76	0.81	0.52
22.00	0.65	0.70	0.60	0.59	0.62	0.65	0.69	0.71	0.78	0.46
23.00	0.40	0.50	0.29	0.28	0.31	0.39	0.48	0.53	0.72	0.08
24.00	0.36	0.46	0.26	0.26	0.28	0.33	0.45	0.48	0.72	0.09
Daily Values	15.33	16.15	14.51	14.44	14.80	15.21	15.98	16.54	17.32	12.98
Daily Sum from Hourly	15.35	16.81	13.88	13.71	14.37	15.18	16.38	17.20	19.70	10.71

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.34	0.42	0.25	0.24	0.27	0.31	0.42	0.47	0.51	0.11
2.00	0.34	0.42	0.26	0.26	0.27	0.30	0.43	0.47	0.51	0.20
3.00	0.34	0.41	0.26	0.25	0.28	0.32	0.39	0.47	0.50	0.21
4.00	0.33	0.42	0.25	0.25	0.27	0.30	0.39	0.47	0.51	0.20
5.00	0.34	0.41	0.26	0.26	0.27	0.31	0.38	0.45	0.53	0.24
6.00	0.41	0.46	0.37	0.35	0.38	0.41	0.45	0.46	0.53	0.29
7.00	0.41	0.46	0.37	0.36	0.38	0.42	0.44	0.46	0.52	0.33
8.00	0.44	0.49	0.39	0.39	0.41	0.43	0.46	0.49	0.59	0.34
9.00	0.48	0.55	0.40	0.39	0.43	0.47	0.52	0.59	0.63	0.34
10.00	0.52	0.61	0.42	0.39	0.42	0.54	0.58	0.63	0.71	0.36
11.00	0.53	0.62	0.44	0.40	0.45	0.55	0.60	0.63	0.68	0.32
12.00	0.55	0.62	0.48	0.46	0.51	0.57	0.60	0.63	0.67	0.37
13.00	0.58	0.63	0.53	0.52	0.56	0.59	0.61	0.63	0.69	0.39
14.00	0.58	0.63	0.53	0.52	0.55	0.59	0.61	0.65	0.68	0.37
15.00	0.58	0.62	0.53	0.52	0.56	0.58	0.61	0.62	0.68	0.39
16.00	0.52	0.59	0.46	0.44	0.48	0.52	0.57	0.60	0.66	0.35
17.00	0.49	0.57	0.40	0.39	0.42	0.49	0.55	0.61	0.65	0.27
18.00	0.38	0.48	0.29	0.26	0.31	0.39	0.46	0.49	0.59	0.23
19.00	0.39	0.48	0.30	0.27	0.31	0.41	0.46	0.48	0.60	0.18
20.00	0.43	0.52	0.35	0.32	0.38	0.43	0.47	0.53	0.69	0.28
21.00	0.46	0.56	0.36	0.36	0.39	0.44	0.50	0.60	0.72	0.34
22.00	0.46	0.55	0.37	0.36	0.39	0.43	0.51	0.59	0.70	0.32
23.00	0.38	0.51	0.26	0.26	0.29	0.35	0.46	0.59	0.65	0.21
24.00	0.37	0.47	0.27	0.26	0.29	0.34	0.45	0.49	0.58	0.21
Daily Values	10.65	11.91	9.39	9.13	9.73	10.45	11.47	12.55	13.58	8.28
Daily Sum from Hourly	10.65	12.49	8.80	8.48	9.28	10.49	11.90	13.10	14.80	6.87

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.3, St. Paul, MN) into the DOE-2 program. The calculated **50th Percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.32)  (2) (0.32)  (3) (0.32)  (4) (0.37)  (5) (0.52)  (6) (0.58)
 (7) (0.66)  (8) (0.77)  (9) (0.82) (10) (0.84) (11) (0.84) (12) (0.83)
(13) (0.82) (14) (0.83) (15) (0.82) (16) (0.77) (17) (0.69) (18) (0.67)
(19) (0.65) (20) (0.68) (21) (0.70) (22) (0.65) (23) (0.39) (24) (0.33) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.31)  (2) (0.30)  (3) (0.32)  (4) (0.30)  (5) (0.31)  (6) (0.41)
 (7) (0.42)  (8) (0.43)  (9) (0.47) (10) (0.54) (11) (0.55) (12) (0.57)
(13) (0.59) (14) (0.59) (15) (0.58) (16) (0.52) (17) (0.49) (18) (0.39)
(19) (0.41) (20) (0.43) (21) (0.44) (22) (0.43) (23) (0.35) (24) (0.34) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.31 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg. 3, St. Paul, MN) into the BLAST program. The calculated **50th Percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.32, 0.32, 0.32, 0.37, 0.52, 0.58,
       0.66, 0.77, 0.82, 0.84, 0.84, 0.83,
       0.82, 0.83, 0.82, 0.77, 0.69, 0.67,
       0.65, 0.68, 0.70, 0.65, 0.39, 0.33),
    SATURDAY THRU SUNDAY =
      (0.31, 0.30, 0.32, 0.30, 0.31, 0.41,
       0.42, 0.43, 0.47, 0.54, 0.55, 0.57,
       0.59, 0.59, 0.58, 0.52, 0.49, 0.39,
       0.41, 0.43, 0.44, 0.43, 0.35, 0.34),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.31, 0.30, 0.32, 0.30, 0.31, 0.41,
       0.42, 0.43, 0.47, 0.54, 0.55, 0.57,
       0.59, 0.59, 0.58, 0.52, 0.49, 0.39,
       0.41, 0.43, 0.44, 0.43, 0.35, 0.34),
    SATURDAY THRU SUNDAY =
      (0.31, 0.30, 0.32, 0.30, 0.31, 0.41,
       0.42, 0.43, 0.47, 0.54, 0.55, 0.57,
       0.59, 0.59, 0.58, 0.52, 0.49, 0.39,
       0.41, 0.43, 0.44, 0.43, 0.35, 0.34),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.31 W/sqft, Area=366805 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 849 kW (Metric units)
      LIGHTS= 2898,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 2898,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 2898,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 2898,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 2898,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 2898,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 2898,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 2898,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 2898,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.3, St. Paul, MN) into the EnergyPlus program. The calculated **50th Percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.32, 0.32, 0.32, 0.37, 0.52, 0.58,
   0.66, 0.77, 0.82, 0.84, 0.84, 0.83,
   0.82, 0.83, 0.82, 0.77, 0.69, 0.67,
   0.65, 0.68, 0.70, 0.65, 0.39, 0.33;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.31, 0.30, 0.32, 0.30, 0.31, 0.41,
   0.42, 0.43, 0.47, 0.54, 0.55, 0.57,
   0.59, 0.59, 0.58, 0.52, 0.49, 0.39,
   0.41, 0.43, 0.44, 0.43, 0.35, 0.34;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.31 W/sqft, Area=366805 sqft
```

```
  849000,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 8 - MNL004

Category	:	Large
Building ID	:	711
Building	:	State Office Bldg. 4
Location	:	St. Paul, MN
Building Area (ft^2)	:	317,286
Data Type	:	WBE
Max Load (W/ft^2)	:	4.38
Source	:	ESL
EUI (kWh/ft^2-yr)	:	29.41
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (MNL004)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 4.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: St. Paul, MN.

Category: Large Office Building, based on the CBECS classification.

Square footage: 317,286 ft^2 .

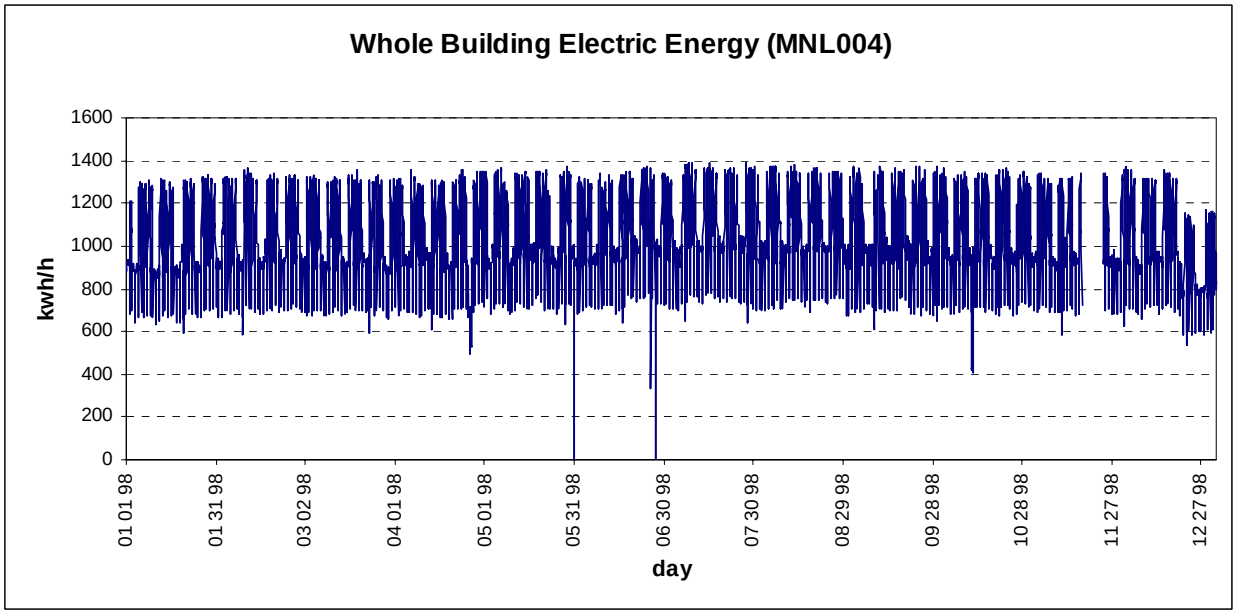
Lighting EUI: [(19.41 x 5) + (16.08 x 2)] x 52 x 4.38 = 29.41 kWh/ft^2.year

Lighting Type: N/A

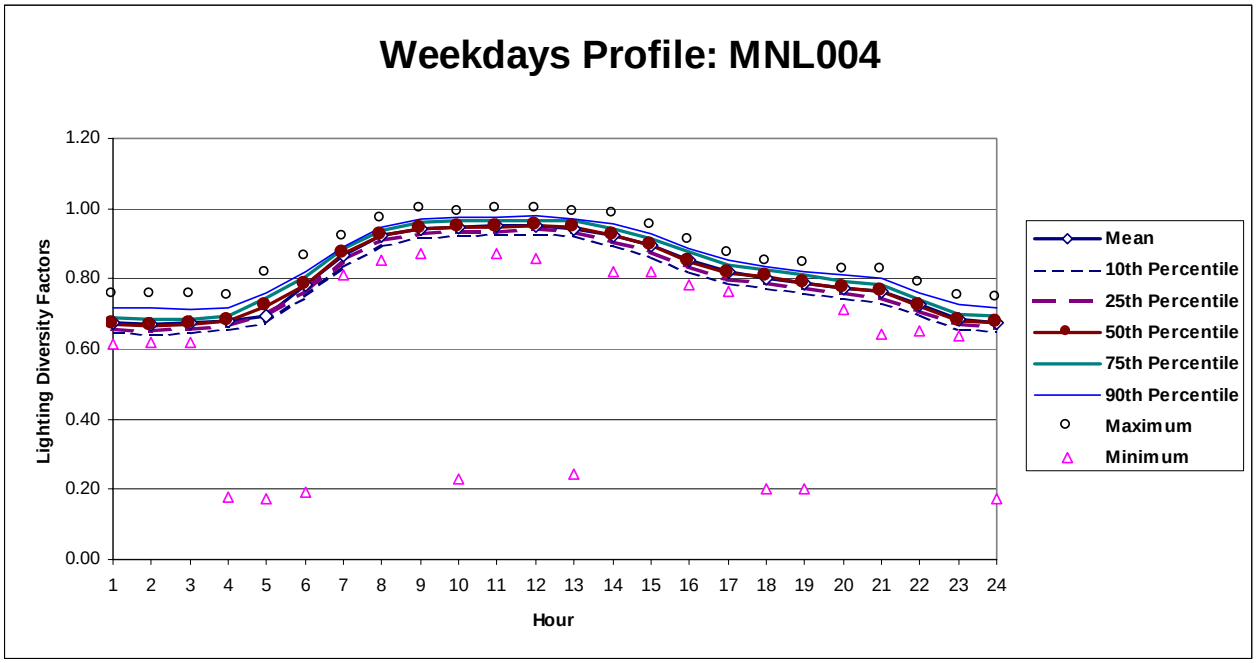
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2545 + ch2546

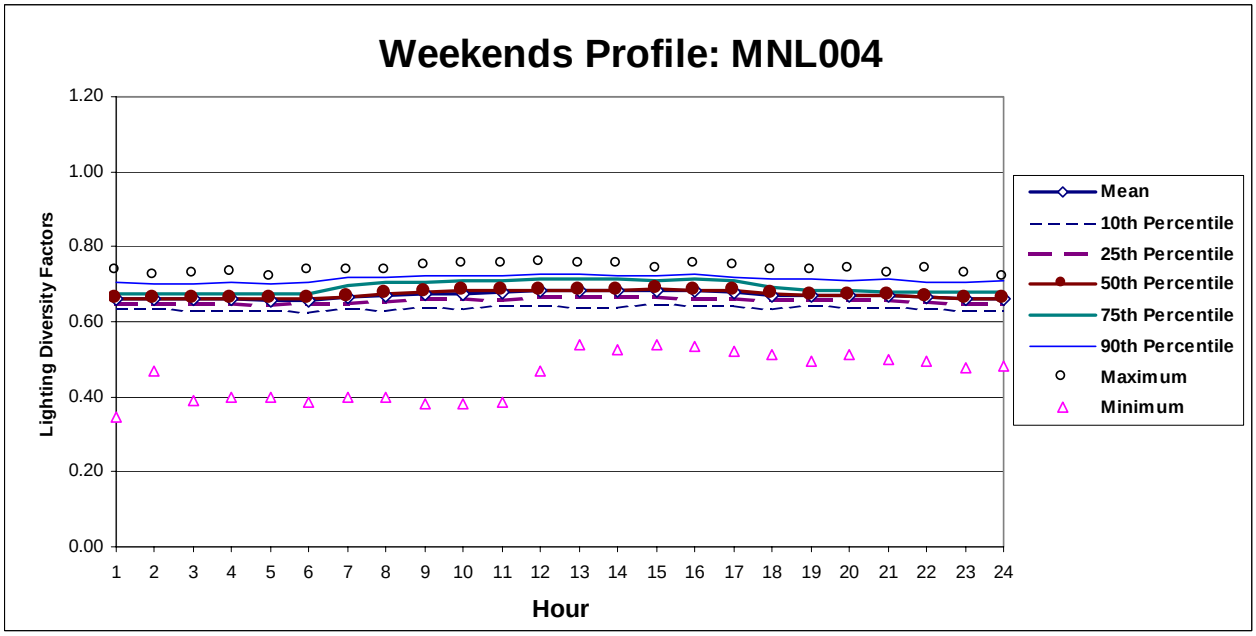
Maximum kW: 1389 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98, 1/19/98, 2/16/98, 5/25/98, 9/7/98, 7/3/98, 11/11/98, 11/26/98, 11/27/98, and 12/21 - 12/31/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.67	0.70	0.65	0.65	0.66	0.67	0.69	0.72	0.76	0.61
2.00	0.67	0.70	0.64	0.64	0.65	0.67	0.68	0.72	0.75	0.62
3.00	0.67	0.70	0.65	0.65	0.65	0.67	0.69	0.71	0.76	0.62
4.00	0.68	0.72	0.64	0.65	0.67	0.68	0.69	0.72	0.75	0.18
5.00	0.69	0.82	0.57	0.68	0.70	0.72	0.75	0.76	0.82	0.17
6.00	0.78	0.83	0.74	0.75	0.77	0.78	0.81	0.82	0.86	0.19
7.00	0.87	0.89	0.85	0.83	0.85	0.87	0.88	0.89	0.92	0.81
8.00	0.92	0.94	0.90	0.90	0.91	0.92	0.94	0.95	0.97	0.85
9.00	0.94	0.96	0.92	0.92	0.93	0.94	0.96	0.97	1.00	0.87
10.00	0.95	1.00	0.89	0.92	0.93	0.95	0.96	0.98	0.99	0.23
11.00	0.95	0.97	0.93	0.93	0.93	0.95	0.97	0.98	1.00	0.87
12.00	0.95	0.97	0.93	0.93	0.94	0.95	0.97	0.98	1.00	0.86
13.00	0.94	0.99	0.89	0.92	0.93	0.95	0.96	0.97	0.99	0.24
14.00	0.92	0.95	0.90	0.90	0.90	0.92	0.94	0.95	0.98	0.82
15.00	0.89	0.92	0.87	0.86	0.88	0.90	0.91	0.93	0.95	0.82
16.00	0.85	0.88	0.83	0.82	0.83	0.85	0.88	0.88	0.91	0.78
17.00	0.82	0.84	0.79	0.79	0.80	0.82	0.84	0.85	0.87	0.76
18.00	0.80	0.85	0.76	0.78	0.79	0.80	0.83	0.83	0.85	0.20
19.00	0.79	0.83	0.74	0.76	0.77	0.79	0.81	0.82	0.85	0.20
20.00	0.77	0.80	0.75	0.75	0.76	0.77	0.79	0.81	0.83	0.71
21.00	0.76	0.79	0.74	0.73	0.75	0.76	0.78	0.80	0.83	0.64
22.00	0.73	0.75	0.70	0.70	0.71	0.72	0.74	0.76	0.79	0.65
23.00	0.69	0.71	0.66	0.66	0.67	0.68	0.70	0.72	0.75	0.64
24.00	0.67	0.73	0.62	0.65	0.66	0.68	0.69	0.72	0.74	0.17
Daily Values	19.43	19.89	18.96	18.85	19.13	19.38	19.73	20.07	20.62	18.20
Daily Sum from Hourly	19.41	20.26	18.57	18.76	19.04	19.41	19.86	20.25	20.91	13.55

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.66	0.71	0.61	0.63	0.65	0.66	0.68	0.70	0.74	0.35
2.00	0.66	0.69	0.63	0.64	0.65	0.66	0.68	0.70	0.72	0.47
3.00	0.66	0.70	0.62	0.63	0.65	0.66	0.67	0.70	0.73	0.39
4.00	0.66	0.70	0.62	0.63	0.65	0.66	0.68	0.70	0.73	0.40
5.00	0.66	0.70	0.61	0.63	0.65	0.66	0.68	0.70	0.72	0.40
6.00	0.66	0.70	0.61	0.63	0.65	0.66	0.68	0.71	0.74	0.39
7.00	0.67	0.72	0.62	0.64	0.65	0.67	0.70	0.72	0.73	0.40
8.00	0.67	0.72	0.62	0.63	0.65	0.68	0.71	0.72	0.74	0.40
9.00	0.67	0.73	0.62	0.64	0.66	0.68	0.70	0.72	0.75	0.38
10.00	0.68	0.73	0.62	0.64	0.66	0.68	0.71	0.72	0.75	0.38
11.00	0.68	0.73	0.63	0.64	0.66	0.68	0.71	0.72	0.75	0.39
12.00	0.68	0.73	0.64	0.64	0.66	0.69	0.71	0.73	0.76	0.47
13.00	0.68	0.73	0.64	0.64	0.67	0.69	0.71	0.72	0.75	0.54
14.00	0.68	0.73	0.64	0.64	0.66	0.69	0.71	0.72	0.75	0.52
15.00	0.68	0.72	0.64	0.65	0.67	0.69	0.71	0.72	0.74	0.54
16.00	0.68	0.72	0.64	0.64	0.66	0.68	0.71	0.73	0.75	0.54
17.00	0.68	0.72	0.64	0.64	0.66	0.68	0.71	0.72	0.75	0.52
18.00	0.67	0.71	0.64	0.64	0.66	0.67	0.69	0.71	0.74	0.51
19.00	0.67	0.70	0.63	0.64	0.66	0.67	0.68	0.71	0.73	0.50
20.00	0.67	0.70	0.63	0.64	0.66	0.67	0.68	0.71	0.74	0.51
21.00	0.67	0.70	0.63	0.64	0.66	0.67	0.68	0.71	0.73	0.50
22.00	0.66	0.70	0.63	0.63	0.65	0.67	0.68	0.71	0.74	0.49
23.00	0.66	0.70	0.63	0.63	0.65	0.66	0.68	0.71	0.73	0.48
24.00	0.66	0.70	0.63	0.63	0.65	0.66	0.68	0.71	0.72	0.48
Daily Values	16.08	16.96	15.20	15.26	15.74	16.17	16.64	17.00	17.59	12.89
Daily Sum from Hourly	16.08	17.09	15.07	15.29	15.73	16.13	16.63	17.15	17.73	10.93

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.4, St. Paul, MN) into the DOE-2 program. The calculated **50th Percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.67)   (2) (0.67)   (3) (0.67)   (4) (0.68)   (5) (0.72)   (6) (0.78)
 (7) (0.87)   (8) (0.92)   (9) (0.94)  (10) (0.95)  (11) (0.95)  (12) (0.95)
(13) (0.95)  (14) (0.92)  (15) (0.90)  (16) (0.85)  (17) (0.82)  (18) (0.80)
(19) (0.79)  (20) (0.77)  (21) (0.76)  (22) (0.72)  (23) (0.68)  (24) (0.68) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.66)   (2) (0.66)   (3) (0.66)   (4) (0.66)   (5) (0.66)   (6) (0.66)
 (7) (0.67)   (8) (0.68)   (9) (0.68)  (10) (0.68)  (11) (0.68)  (12) (0.69)
(13) (0.69)  (14) (0.69)  (15) (0.69)  (16) (0.68)  (17) (0.68)  (18) (0.67)
(19) (0.67)  (20) (0.67)  (21) (0.67)  (22) (0.67)  (23) (0.66)  (24) (0.66) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 4.38 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.4, St. Paul, MN) into the BLAST program. The calculated **50th Percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.67, 0.67, 0.67, 0.68, 0.72, 0.78,
      0.87, 0.92, 0.94, 0.95, 0.95, 0.95,
      0.95, 0.92, 0.90, 0.85, 0.82, 0.80,
      0.79, 0.77, 0.76, 0.72, 0.68, 0.68),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.67, 0.68, 0.68, 0.68, 0.68, 0.69,
      0.69, 0.69, 0.69, 0.68, 0.68, 0.67,
      0.67, 0.67, 0.67, 0.67, 0.66, 0.66),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.67, 0.68, 0.68, 0.68, 0.68, 0.69,
      0.69, 0.69, 0.69, 0.68, 0.68, 0.67,
      0.67, 0.67, 0.67, 0.67, 0.66, 0.66),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.67, 0.68, 0.68, 0.68, 0.68, 0.69,
      0.69, 0.69, 0.69, 0.68, 0.68, 0.67,
      0.67, 0.67, 0.67, 0.67, 0.66, 0.66),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=4.38 W/sqft, Area=317286 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 1389 kW (Metric units)
      LIGHTS= 4739,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 4739,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 4739,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 4739,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 4739,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 4739,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 4739,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 4739,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 4739,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.4, St. Paul, MN) into the EnergyPlus program. The calculated **50th Percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.67, 0.67, 0.67, 0.68, 0.72, 0.78,
   0.87, 0.92, 0.94, 0.95, 0.95, 0.95,
   0.95, 0.92, 0.90, 0.85, 0.82, 0.80,
   0.79, 0.77, 0.76, 0.72, 0.68, 0.68;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
   0.67, 0.68, 0.68, 0.68, 0.68, 0.69,
   0.69, 0.69, 0.69, 0.68, 0.68, 0.67,
   0.67, 0.67, 0.67, 0.67, 0.66, 0.66;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=4.38 W/sqft, Area=317286 sqft
```

```
1388637,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 9 - MNM002

Category	:	Medium
Building ID	:	709
Building	:	State Office Bldg. 5
Location	:	St. Paul, MN
Building Area (ft^2)	:	87,664
Data Type	:	WBE
Max Load (W/ft^2)	:	2.10
Source	:	ESL
EUI (kWh/ft^2-yr)	:	10.88
Start Date	:	3/1/96
End date	:	3/1/97

(Page 1) Building Descriptions: (MNM002)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 5.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: St. Paul, MN.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 87,664 ft^2 .

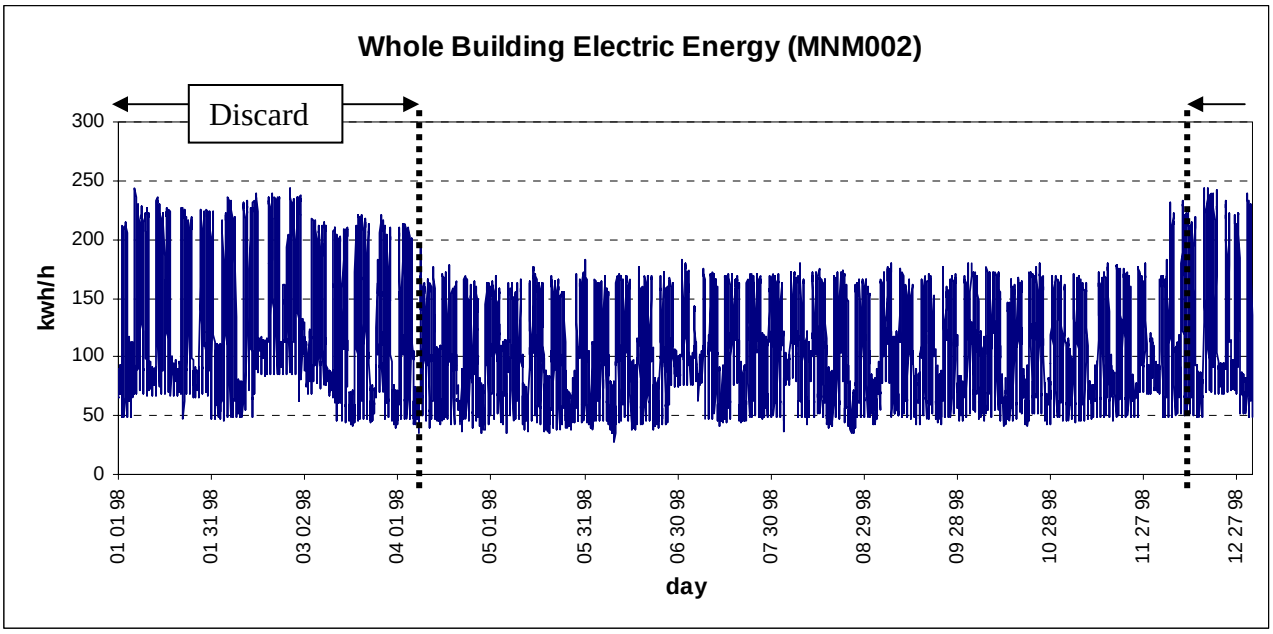
Lighting EUI: [(15.72 x 5) + (10.42 x 2)] x 52 x 2.10 = 10.88 kWh/ft^2.year

Lighting Type: N/A

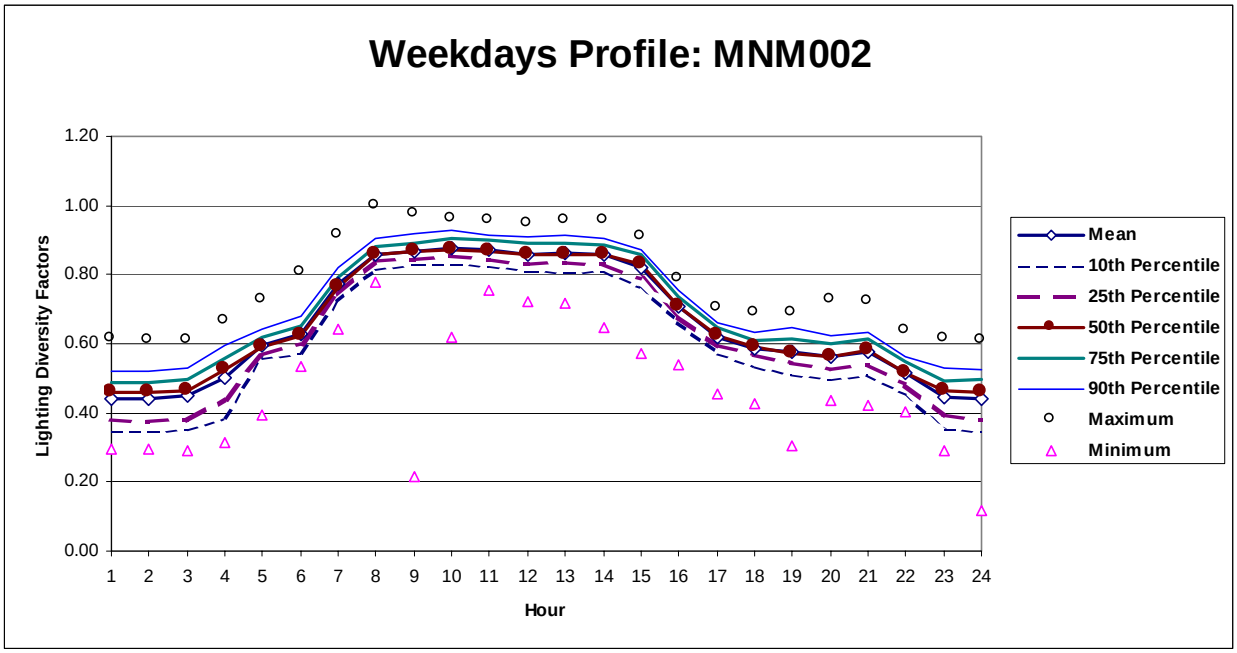
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2532

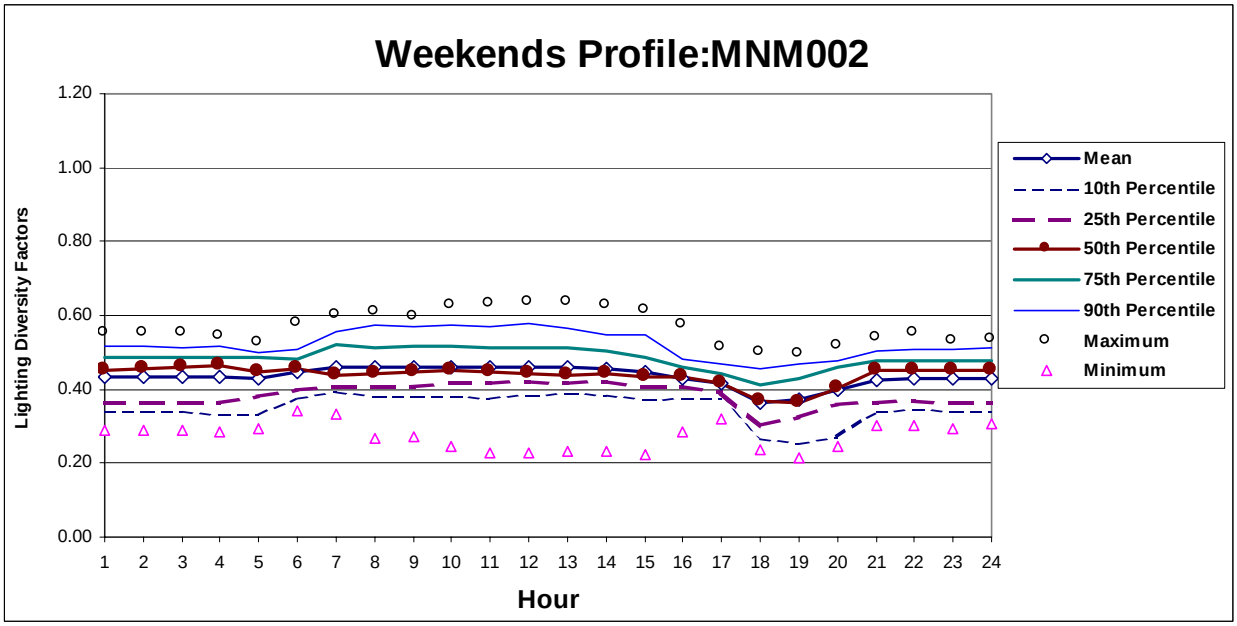
Maximum kW: 184 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98 - 12/10/98, 5/25/98, 7/3/98, 9/7/98, 11/11/98, 11/26/98, 11/27/98, and 12/10 -12/25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.44	0.51	0.37	0.35	0.38	0.46	0.49	0.52	0.61	0.30
2.00	0.44	0.51	0.37	0.35	0.38	0.46	0.49	0.52	0.61	0.30
3.00	0.45	0.52	0.38	0.35	0.38	0.47	0.50	0.53	0.61	0.29
4.00	0.50	0.58	0.42	0.39	0.44	0.52	0.56	0.59	0.66	0.31
5.00	0.59	0.63	0.56	0.56	0.57	0.59	0.62	0.64	0.73	0.39
6.00	0.63	0.68	0.58	0.57	0.60	0.62	0.65	0.68	0.81	0.53
7.00	0.77	0.81	0.73	0.72	0.74	0.77	0.79	0.82	0.91	0.64
8.00	0.86	0.90	0.82	0.82	0.84	0.86	0.88	0.91	1.00	0.78
9.00	0.87	0.93	0.81	0.83	0.85	0.87	0.89	0.92	0.98	0.22
10.00	0.88	0.92	0.84	0.83	0.85	0.87	0.90	0.93	0.96	0.62
11.00	0.87	0.91	0.83	0.82	0.85	0.87	0.90	0.91	0.95	0.75
12.00	0.86	0.90	0.82	0.81	0.83	0.86	0.89	0.91	0.95	0.72
13.00	0.86	0.90	0.82	0.81	0.84	0.86	0.89	0.91	0.95	0.72
14.00	0.86	0.90	0.81	0.81	0.83	0.86	0.89	0.90	0.95	0.65
15.00	0.82	0.87	0.77	0.77	0.79	0.83	0.86	0.87	0.91	0.57
16.00	0.71	0.75	0.66	0.66	0.68	0.71	0.74	0.75	0.79	0.54
17.00	0.62	0.66	0.58	0.57	0.60	0.62	0.65	0.66	0.70	0.45
18.00	0.59	0.62	0.55	0.53	0.57	0.59	0.61	0.63	0.69	0.43
19.00	0.58	0.63	0.52	0.51	0.54	0.57	0.61	0.65	0.69	0.31
20.00	0.56	0.62	0.51	0.50	0.53	0.56	0.60	0.62	0.73	0.44
21.00	0.58	0.63	0.53	0.51	0.54	0.58	0.61	0.63	0.72	0.42
22.00	0.51	0.56	0.47	0.45	0.48	0.52	0.55	0.56	0.64	0.40
23.00	0.45	0.52	0.38	0.35	0.39	0.46	0.49	0.53	0.61	0.29
24.00	0.44	0.52	0.37	0.35	0.38	0.46	0.49	0.53	0.61	0.12
Daily Values	15.70	16.45	14.94	14.75	15.23	15.76	16.20	16.63	17.13	12.88
Daily Sum from Hourly	15.72	16.95	14.49	14.21	14.87	15.83	16.55	17.14	18.77	11.18

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.43	0.50	0.36	0.34	0.36	0.45	0.49	0.52	0.55	0.29
2.00	0.43	0.50	0.36	0.34	0.36	0.45	0.49	0.52	0.55	0.29
3.00	0.43	0.50	0.36	0.34	0.36	0.46	0.49	0.51	0.55	0.29
4.00	0.43	0.50	0.37	0.33	0.37	0.46	0.49	0.52	0.54	0.28
5.00	0.43	0.50	0.37	0.33	0.38	0.45	0.49	0.50	0.53	0.30
6.00	0.45	0.50	0.39	0.38	0.40	0.45	0.48	0.51	0.58	0.34
7.00	0.46	0.53	0.39	0.39	0.41	0.44	0.52	0.56	0.60	0.33
8.00	0.46	0.54	0.38	0.38	0.41	0.44	0.51	0.57	0.61	0.27
9.00	0.46	0.53	0.38	0.38	0.41	0.45	0.52	0.57	0.60	0.27
10.00	0.46	0.54	0.38	0.38	0.41	0.45	0.52	0.57	0.62	0.25
11.00	0.46	0.54	0.38	0.37	0.41	0.45	0.51	0.57	0.63	0.23
12.00	0.46	0.54	0.38	0.39	0.42	0.44	0.51	0.58	0.64	0.23
13.00	0.46	0.54	0.38	0.39	0.42	0.44	0.51	0.56	0.64	0.23
14.00	0.46	0.54	0.38	0.39	0.42	0.44	0.50	0.55	0.62	0.23
15.00	0.45	0.52	0.37	0.37	0.41	0.43	0.49	0.55	0.61	0.22
16.00	0.43	0.48	0.38	0.38	0.41	0.43	0.46	0.48	0.57	0.28
17.00	0.42	0.46	0.38	0.38	0.39	0.41	0.44	0.47	0.51	0.32
18.00	0.36	0.43	0.29	0.27	0.30	0.37	0.41	0.45	0.50	0.24
19.00	0.37	0.45	0.29	0.25	0.32	0.36	0.43	0.47	0.49	0.21
20.00	0.40	0.47	0.33	0.27	0.36	0.40	0.46	0.48	0.52	0.25
21.00	0.43	0.49	0.36	0.34	0.36	0.45	0.48	0.51	0.54	0.30
22.00	0.43	0.49	0.36	0.35	0.37	0.45	0.48	0.51	0.55	0.30
23.00	0.43	0.50	0.36	0.34	0.36	0.45	0.48	0.51	0.53	0.30
24.00	0.43	0.50	0.36	0.34	0.36	0.45	0.48	0.51	0.53	0.31
Daily Values	10.42	11.65	9.19	9.03	9.36	10.45	11.18	12.09	12.75	7.51
Daily Sum from Hourly	10.42	12.08	8.76	8.42	9.20	10.49	11.62	12.54	13.62	6.55

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.5, St. Paul, MN) into the DOE-2 program. The calculated **50th Percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.46)  (2) (0.46)  (3) (0.47)  (4) (0.52)  (5) (0.59)  (6) (0.62)
 (7) (0.77)  (8) (0.86)  (9) (0.87) (10) (0.87) (11) (0.87) (12) (0.86)
(13) (0.86) (14) (0.86) (15) (0.83) (16) (0.71) (17) (0.62) (18) (0.59)
(19) (0.57) (20) (0.56) (21) (0.58) (22) (0.52) (23) (0.46) (24) (0.46) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.45)  (2) (0.45)  (3) (0.46)  (4) (0.46)  (5) (0.45)  (6) (0.45)
 (7) (0.44)  (8) (0.44)  (9) (0.45) (10) (0.45) (11) (0.45) (12) (0.44)
(13) (0.44) (14) (0.44) (15) (0.43) (16) (0.43) (17) (0.41) (18) (0.37)
(19) (0.36) (20) (0.40) (21) (0.45) (22) (0.45) (23) (0.45) (24) (0.45) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.10 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.5, St. Paul, MN) into the BLAST program. The calculated **50th Percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.46, 0.46, 0.47, 0.52, 0.59, 0.62,
       0.77, 0.86, 0.87, 0.87, 0.87, 0.86,
       0.86, 0.86, 0.83, 0.71, 0.62, 0.59,
       0.57, 0.56, 0.58, 0.52, 0.46, 0.46),
    SATURDAY THRU SUNDAY =
      (0.45, 0.45, 0.46, 0.46, 0.45, 0.45,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.44,
       0.44, 0.44, 0.43, 0.43, 0.41, 0.37,
       0.36, 0.40, 0.45, 0.45, 0.45, 0.45),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.45, 0.45, 0.46, 0.46, 0.45, 0.45,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.44,
       0.44, 0.44, 0.43, 0.43, 0.41, 0.37,
       0.36, 0.40, 0.45, 0.45, 0.45, 0.45),
    SATURDAY THRU SUNDAY =
      (0.45, 0.45, 0.46, 0.46, 0.45, 0.45,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.44,
       0.44, 0.44, 0.43, 0.43, 0.41, 0.37,
       0.36, 0.40, 0.45, 0.45, 0.45, 0.45),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.10 W/sqft, Area=87664 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 184 kW (Metric units)
      LIGHTS= 629,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 629,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 629,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 629,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 629,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 629,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 629,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 629,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 629,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.5, St. Paul, MN) into the EnergyPlus program. The calculated **50th Percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.46, 0.46, 0.47, 0.52, 0.59, 0.62,
   0.77, 0.86, 0.87, 0.87, 0.87, 0.86,
   0.86, 0.86, 0.83, 0.71, 0.62, 0.59,
   0.57, 0.56, 0.58, 0.52, 0.46, 0.46;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.45, 0.45, 0.46, 0.46, 0.45, 0.45,
   0.44, 0.44, 0.45, 0.45, 0.45, 0.44,
   0.44, 0.44, 0.43, 0.43, 0.41, 0.37,
   0.36, 0.40, 0.45, 0.45, 0.45, 0.45;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.10 W/sqft, Area=87664 sqft
```

```
184400,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 10 - MTL001

Category	:	Large
Building ID	:	963
Building	:	State Office Bldg. 8
Location	:	Butte, MT
Building Area (ft^2)	:	100,000
Data Type	:	WBE
Max Load (W/ft^2)	:	1.13
Source	:	ESL
EUI (kWh/ft^2-yr)	:	4.19
Start Date	:	7/1/98
End date	:	7/1/99

(Page 1) Building Descriptions: (MTL001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: State Office Building 8

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Butte, MT.

Category: Large Office Building, based on the CBECS classification.

Square footage: 100,000 ft^2 .

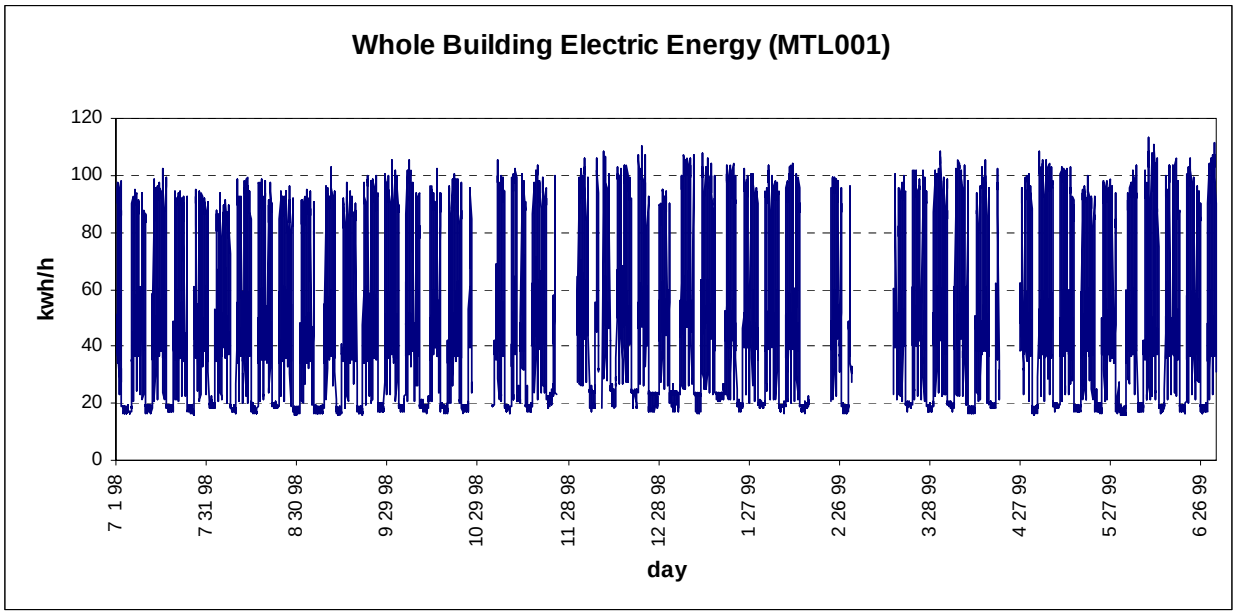
Lighting EUI: [(12.64 x 5) + (4.07 x 2)] x 52 x 1.13 = 4.19 kWh/ft^2.year

Lighting Type: Fluorescent

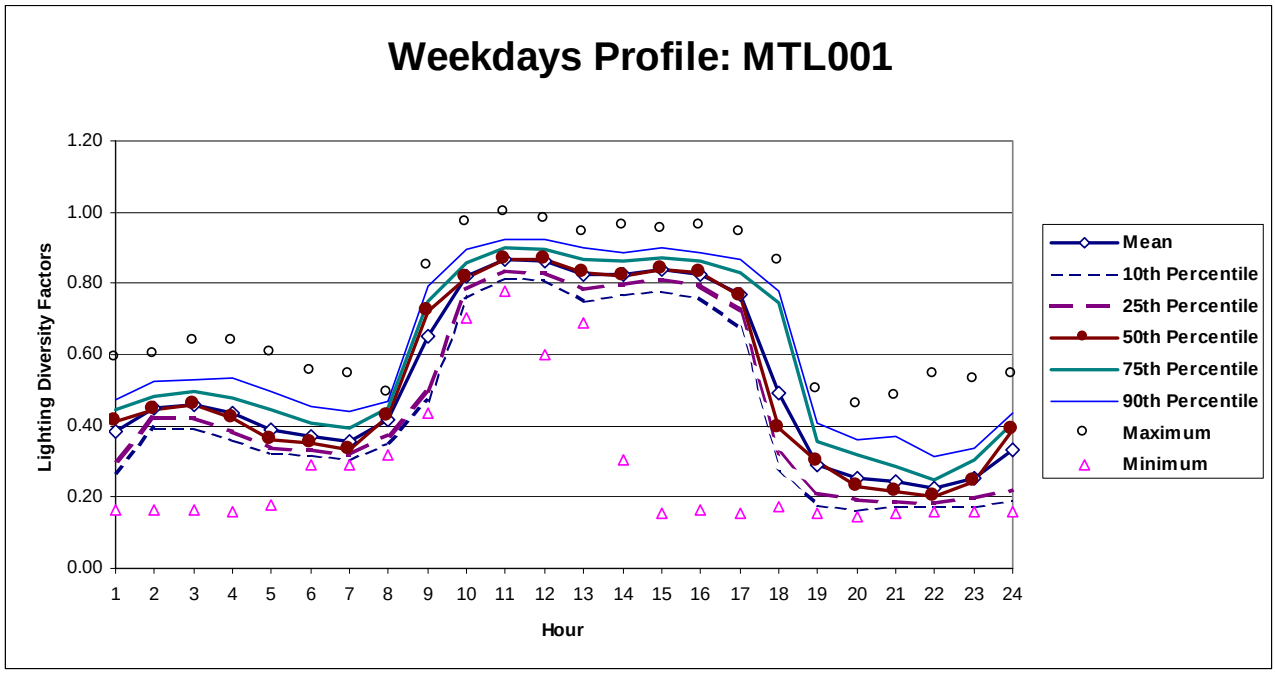
Dates: 7/1/98 - 7/1/99

Data Type: WBE = ch4058

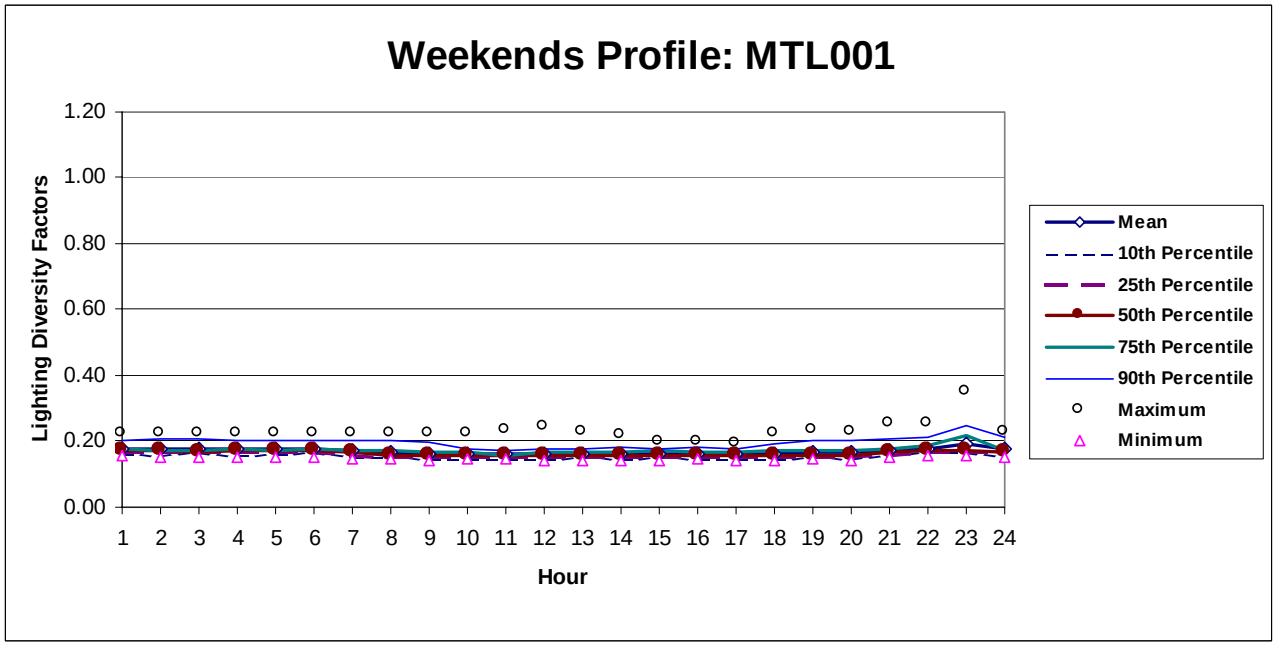
Maximum kW: 113 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 7/3/98, 9/7/98, 10/12/98, 11/11/98, 12/25/98, 12/31/98, 1/1/99, 1/18/99, and 5/31/99.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.38	0.47	0.30	0.27	0.31	0.41	0.45	0.47	0.59	0.17
2.00	0.45	0.51	0.39	0.39	0.42	0.45	0.48	0.52	0.60	0.17
3.00	0.46	0.52	0.40	0.39	0.42	0.46	0.50	0.53	0.64	0.17
4.00	0.44	0.51	0.36	0.36	0.38	0.42	0.48	0.54	0.64	0.16
5.00	0.39	0.46	0.32	0.32	0.34	0.36	0.44	0.50	0.61	0.18
6.00	0.37	0.43	0.32	0.32	0.33	0.35	0.41	0.46	0.55	0.29
7.00	0.36	0.41	0.30	0.31	0.32	0.33	0.39	0.44	0.54	0.29
8.00	0.42	0.46	0.37	0.35	0.38	0.43	0.45	0.47	0.49	0.32
9.00	0.65	0.78	0.52	0.47	0.50	0.72	0.75	0.79	0.85	0.43
10.00	0.82	0.87	0.77	0.76	0.78	0.82	0.86	0.89	0.97	0.70
11.00	0.87	0.91	0.83	0.82	0.83	0.87	0.90	0.92	1.00	0.78
12.00	0.86	0.91	0.81	0.81	0.83	0.87	0.90	0.92	0.98	0.60
13.00	0.83	0.88	0.77	0.75	0.78	0.83	0.87	0.90	0.94	0.69
14.00	0.82	0.88	0.77	0.77	0.80	0.82	0.86	0.89	0.96	0.31
15.00	0.84	0.90	0.77	0.78	0.81	0.84	0.87	0.90	0.95	0.15
16.00	0.82	0.89	0.76	0.76	0.80	0.83	0.86	0.89	0.96	0.17
17.00	0.77	0.85	0.69	0.68	0.73	0.76	0.83	0.87	0.94	0.15
18.00	0.49	0.70	0.28	0.27	0.32	0.39	0.75	0.78	0.86	0.17
19.00	0.29	0.38	0.20	0.18	0.21	0.30	0.36	0.41	0.50	0.15
20.00	0.25	0.33	0.18	0.16	0.19	0.23	0.32	0.36	0.46	0.15
21.00	0.24	0.32	0.17	0.17	0.19	0.22	0.29	0.37	0.48	0.15
22.00	0.23	0.29	0.17	0.17	0.18	0.20	0.25	0.31	0.54	0.16
23.00	0.25	0.32	0.19	0.17	0.20	0.24	0.31	0.34	0.53	0.16
24.00	0.33	0.44	0.23	0.19	0.22	0.39	0.41	0.44	0.54	0.16
Daily Values	12.64	13.42	11.86	11.67	12.15	12.65	13.15	13.56	14.37	8.85
Daily Sum from Hourly	12.64	14.43	10.85	10.63	11.26	12.54	13.97	14.89	17.13	6.82

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.18	0.19	0.16	0.16	0.17	0.17	0.18	0.20	0.22	0.16
2.00	0.17	0.19	0.16	0.16	0.17	0.17	0.17	0.21	0.22	0.15
3.00	0.17	0.19	0.16	0.17	0.17	0.17	0.17	0.21	0.22	0.15
4.00	0.17	0.19	0.16	0.16	0.17	0.17	0.18	0.20	0.22	0.15
5.00	0.18	0.19	0.16	0.16	0.17	0.17	0.17	0.20	0.22	0.15
6.00	0.18	0.19	0.16	0.17	0.17	0.17	0.18	0.20	0.22	0.15
7.00	0.17	0.19	0.15	0.15	0.16	0.17	0.17	0.20	0.22	0.15
8.00	0.17	0.19	0.15	0.15	0.15	0.16	0.17	0.20	0.22	0.15
9.00	0.16	0.18	0.14	0.15	0.15	0.16	0.17	0.20	0.22	0.14
10.00	0.16	0.17	0.15	0.15	0.15	0.16	0.17	0.18	0.22	0.15
11.00	0.16	0.17	0.15	0.15	0.15	0.16	0.16	0.17	0.24	0.15
12.00	0.16	0.18	0.15	0.15	0.15	0.16	0.17	0.18	0.24	0.14
13.00	0.16	0.18	0.15	0.15	0.15	0.16	0.17	0.18	0.23	0.14
14.00	0.16	0.18	0.15	0.15	0.15	0.16	0.17	0.18	0.22	0.14
15.00	0.16	0.18	0.15	0.15	0.15	0.16	0.17	0.18	0.20	0.14
16.00	0.16	0.17	0.15	0.15	0.15	0.16	0.17	0.18	0.20	0.15
17.00	0.16	0.17	0.15	0.15	0.15	0.16	0.17	0.18	0.19	0.14
18.00	0.16	0.18	0.15	0.15	0.15	0.16	0.17	0.19	0.22	0.14
19.00	0.17	0.19	0.15	0.15	0.15	0.16	0.17	0.20	0.24	0.15
20.00	0.17	0.19	0.15	0.15	0.15	0.16	0.17	0.20	0.23	0.14
21.00	0.17	0.19	0.15	0.16	0.16	0.17	0.18	0.21	0.25	0.15
22.00	0.18	0.20	0.16	0.17	0.17	0.17	0.18	0.21	0.25	0.16
23.00	0.19	0.23	0.16	0.17	0.17	0.17	0.22	0.25	0.35	0.16
24.00	0.17	0.19	0.16	0.16	0.17	0.17	0.17	0.21	0.23	0.15
Daily Values	4.07	4.40	3.74	3.77	3.86	3.95	4.11	4.71	5.02	3.64
Daily Sum from Hourly	4.07	4.49	3.65	3.71	3.80	3.94	4.15	4.75	5.52	3.55

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.8, Butte, MT) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.41)  (2) (0.45)  (3) (0.46)  (4) (0.42)  (5) (0.36)  (6) (0.35)
(7) (0.33)  (8) (0.43)  (9) (0.72) (10) (0.82) (11) (0.87) (12) (0.87)
(13) (0.83) (14) (0.82) (15) (0.84) (16) (0.83) (17) (0.76) (18) (0.39)
(19) (0.30) (20) (0.23) (21) (0.22) (22) (0.20) (23) (0.24) (24) (0.39) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.17)  (2) (0.17)  (3) (0.17)  (4) (0.17)  (5) (0.17)  (6) (0.17)
(7) (0.17)  (8) (0.16)  (9) (0.16) (10) (0.16) (11) (0.16) (12) (0.16)
(13) (0.16) (14) (0.16) (15) (0.16) (16) (0.16) (17) (0.16) (18) (0.16)
(19) (0.16) (20) (0.16) (21) (0.17) (22) (0.17) (23) (0.17) (24) (0.17) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.13  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jul 1, 1998 - Jul 1, 1999.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.8, Butte, MT) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.41, 0.45, 0.46, 0.42, 0.36, 0.35,
       0.33, 0.43, 0.72, 0.82, 0.87, 0.87,
       0.83, 0.82, 0.84, 0.83, 0.76, 0.39,
       0.30, 0.23, 0.22, 0.20, 0.24, 0.39),
    SATURDAY THRU SUNDAY =
      (0.17, 0.17, 0.17, 0.17, 0.17, 0.17,
       0.17, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.17, 0.17, 0.17, 0.17),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.17, 0.17, 0.17, 0.17, 0.17, 0.17,
       0.17, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.17, 0.17, 0.17, 0.17),
    SATURDAY THRU SUNDAY =
      (0.17, 0.17, 0.17, 0.17, 0.17, 0.17,
       0.17, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.16, 0.16, 0.16, 0.16,
       0.16, 0.16, 0.17, 0.17, 0.17, 0.17),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.13 W/sqft, Area=100000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 113 kW (Metric units)
      LIGHTS= 386,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 386,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 386,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 386,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 386,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 386,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 386,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 386,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 386,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (State Office Bldg.8, Butte, MT) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.41, 0.45, 0.46, 0.42, 0.36, 0.35,
   0.33, 0.43, 0.72, 0.82, 0.87, 0.87,
   0.83, 0.82, 0.84, 0.83, 0.76, 0.39,
   0.30, 0.23, 0.22, 0.20, 0.24, 0.39;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.17, 0.17, 0.17, 0.17, 0.17, 0.17,
   0.17, 0.16, 0.16, 0.16, 0.16, 0.16,
   0.16, 0.16, 0.16, 0.16, 0.16, 0.16,
   0.16, 0.16, 0.17, 0.17, 0.17, 0.17;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.13 W/sqft, Area=100000 sqft
```

```
113040,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 11 - ORM001a

Category	:	Medium
Building ID	:	N/A
Building	:	Director Bldg.
Location	:	Portland, OR
Building Area (ft^2)	:	79,700
Data Type	:	Light
Max Load (W/ft^2)	:	1.15
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	5.58
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM001a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Director.

Source of Data: An Energy Edge Building, LBNL.

Location: Portland, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 79,700 ft^2 .

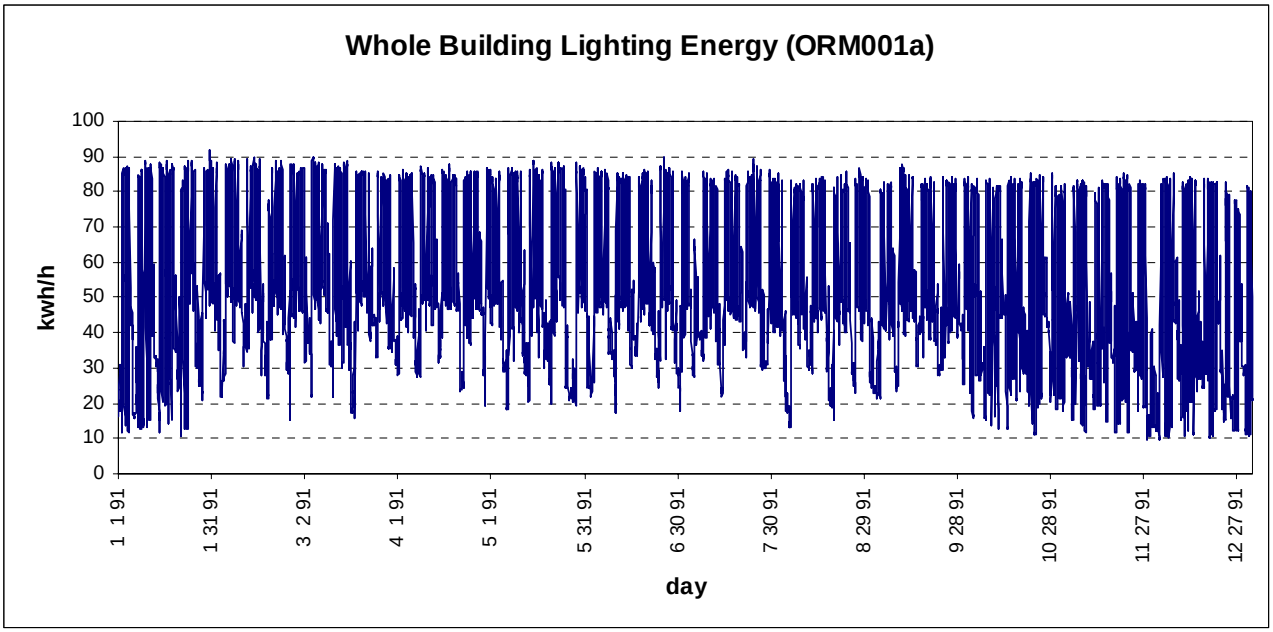
Lighting EUI: [(14.88 x 5) + (9.43 x 2)] x 52 x 1.15 = 5.58 kWh/ft^2.year

Lighting Type: N/A

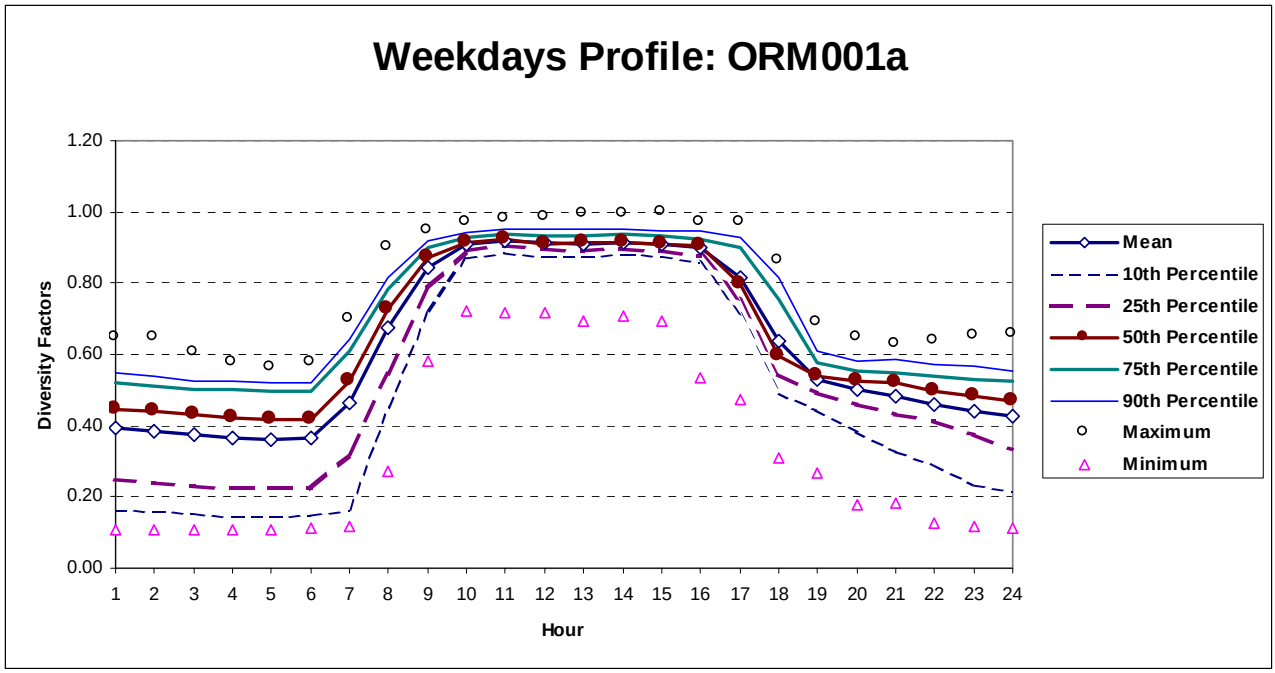
Dates: 1/1/91 - 12/31/91

Data Type: Lights

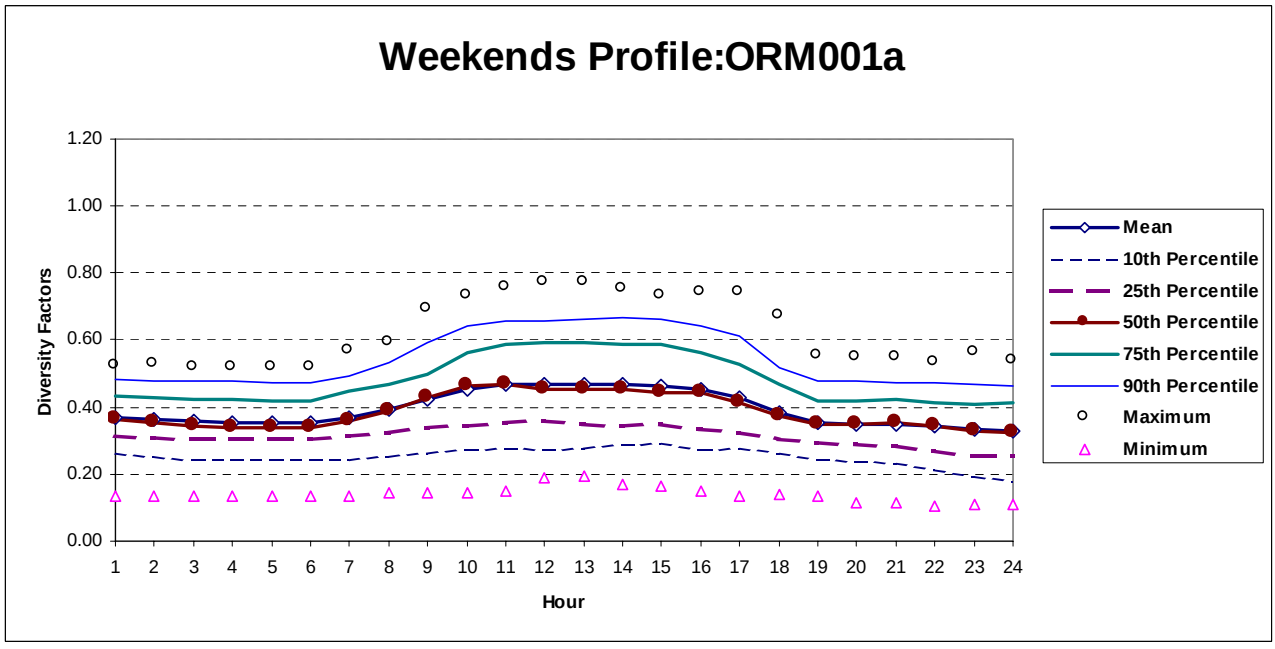
Maximum kW: 92 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.39	0.54	0.25	0.17	0.25	0.45	0.52	0.55	0.65	0.11
2.00	0.38	0.53	0.24	0.16	0.24	0.44	0.51	0.54	0.65	0.11
3.00	0.37	0.52	0.23	0.15	0.23	0.43	0.50	0.53	0.60	0.11
4.00	0.37	0.51	0.22	0.15	0.23	0.42	0.50	0.52	0.58	0.11
5.00	0.36	0.51	0.22	0.14	0.22	0.41	0.50	0.52	0.56	0.11
6.00	0.37	0.51	0.22	0.15	0.23	0.42	0.50	0.52	0.57	0.11
7.00	0.47	0.64	0.29	0.16	0.32	0.52	0.61	0.64	0.70	0.11
8.00	0.68	0.82	0.53	0.45	0.54	0.73	0.78	0.82	0.90	0.27
9.00	0.84	0.92	0.77	0.72	0.79	0.87	0.90	0.92	0.95	0.58
10.00	0.91	0.94	0.87	0.87	0.89	0.91	0.93	0.94	0.97	0.72
11.00	0.92	0.95	0.89	0.88	0.90	0.92	0.94	0.95	0.98	0.72
12.00	0.91	0.95	0.88	0.88	0.89	0.91	0.94	0.95	0.98	0.72
13.00	0.91	0.94	0.87	0.88	0.89	0.91	0.93	0.95	0.99	0.69
14.00	0.91	0.95	0.88	0.88	0.89	0.91	0.94	0.95	1.00	0.71
15.00	0.91	0.95	0.87	0.87	0.89	0.91	0.93	0.95	1.00	0.69
16.00	0.90	0.94	0.85	0.86	0.88	0.90	0.92	0.95	0.97	0.53
17.00	0.81	0.90	0.72	0.71	0.75	0.80	0.90	0.93	0.97	0.47
18.00	0.64	0.76	0.51	0.49	0.54	0.59	0.75	0.82	0.86	0.31
19.00	0.53	0.60	0.46	0.45	0.49	0.54	0.58	0.61	0.69	0.27
20.00	0.50	0.58	0.42	0.38	0.46	0.52	0.55	0.58	0.65	0.18
21.00	0.48	0.58	0.39	0.33	0.43	0.52	0.55	0.59	0.63	0.18
22.00	0.46	0.57	0.34	0.29	0.41	0.50	0.54	0.57	0.64	0.12
23.00	0.44	0.57	0.32	0.23	0.37	0.48	0.53	0.57	0.65	0.12
24.00	0.42	0.56	0.29	0.22	0.33	0.47	0.52	0.55	0.65	0.11
Daily Values	14.88	16.55	13.22	12.45	13.41	15.33	16.25	16.76	17.76	10.14
Daily Sum from Hourly	14.88	17.23	12.54	11.48	13.08	15.51	16.78	17.42	18.78	8.16

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.37	0.45	0.28	0.26	0.31	0.36	0.43	0.48	0.52	0.13
2.00	0.36	0.45	0.28	0.26	0.31	0.35	0.43	0.48	0.53	0.14
3.00	0.36	0.44	0.27	0.25	0.31	0.34	0.42	0.48	0.52	0.14
4.00	0.35	0.44	0.27	0.24	0.31	0.34	0.42	0.48	0.52	0.13
5.00	0.35	0.44	0.27	0.24	0.30	0.34	0.42	0.47	0.52	0.14
6.00	0.35	0.44	0.27	0.24	0.30	0.34	0.42	0.47	0.52	0.14
7.00	0.37	0.47	0.27	0.25	0.31	0.36	0.45	0.49	0.57	0.13
8.00	0.39	0.50	0.29	0.26	0.32	0.39	0.47	0.53	0.59	0.14
9.00	0.42	0.54	0.30	0.26	0.34	0.43	0.50	0.59	0.69	0.14
10.00	0.45	0.59	0.32	0.27	0.34	0.46	0.56	0.64	0.73	0.15
11.00	0.47	0.61	0.32	0.28	0.35	0.47	0.59	0.65	0.76	0.15
12.00	0.47	0.61	0.32	0.28	0.36	0.46	0.59	0.66	0.77	0.19
13.00	0.47	0.61	0.32	0.28	0.35	0.45	0.59	0.66	0.77	0.20
14.00	0.47	0.61	0.32	0.29	0.34	0.45	0.59	0.67	0.75	0.17
15.00	0.46	0.61	0.32	0.29	0.35	0.44	0.59	0.66	0.73	0.17
16.00	0.45	0.59	0.31	0.27	0.33	0.44	0.56	0.64	0.74	0.15
17.00	0.43	0.56	0.30	0.28	0.32	0.41	0.53	0.61	0.74	0.13
18.00	0.38	0.49	0.28	0.26	0.30	0.37	0.47	0.52	0.67	0.14
19.00	0.35	0.44	0.26	0.24	0.29	0.35	0.42	0.48	0.55	0.14
20.00	0.35	0.44	0.25	0.24	0.29	0.35	0.42	0.48	0.55	0.12
21.00	0.35	0.45	0.25	0.23	0.28	0.35	0.42	0.47	0.55	0.11
22.00	0.34	0.44	0.24	0.21	0.27	0.34	0.41	0.47	0.54	0.11
23.00	0.33	0.44	0.23	0.20	0.25	0.33	0.41	0.47	0.56	0.11
24.00	0.33	0.44	0.22	0.18	0.25	0.32	0.41	0.46	0.54	0.11
Daily Values	9.43	11.66	7.21	6.93	7.95	9.42	10.83	12.49	14.41	3.61
Daily Sum from Hourly	9.43	12.11	6.76	6.07	7.52	9.26	11.51	13.04	14.92	3.36

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.45)  (2) (0.44)  (3) (0.43)  (4) (0.42)  (5) (0.41)  (6) (0.42)
 (7) (0.52)  (8) (0.73)  (9) (0.87)  (10) (0.91)  (11) (0.92)  (12) (0.91)
(13) (0.91)  (14) (0.91)  (15) (0.91)  (16) (0.90)  (17) (0.80)  (18) (0.59)
(19) (0.54)  (20) (0.52)  (21) (0.52)  (22) (0.50)  (23) (0.48)  (24) (0.47) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.36)  (2) (0.35)  (3) (0.34)  (4) (0.34)  (5) (0.34)  (6) (0.34)
 (7) (0.36)  (8) (0.39)  (9) (0.43)  (10) (0.46)  (11) (0.47)  (12) (0.46)
(13) (0.45)  (14) (0.45)  (15) (0.44)  (16) (0.44)  (17) (0.41)  (18) (0.37)
(19) (0.35)  (20) (0.35)  (21) (0.35)  (22) (0.34)  (23) (0.33)  (24) (0.32) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.15 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.45, 0.44, 0.43, 0.42, 0.41, 0.42,
       0.52, 0.73, 0.87, 0.91, 0.92, 0.91,
       0.91, 0.91, 0.91, 0.90, 0.80, 0.59,
       0.54, 0.52, 0.52, 0.50, 0.48, 0.47),
    SATURDAY THRU SUNDAY =
      (0.36, 0.35, 0.34, 0.34, 0.34, 0.34,
       0.36, 0.39, 0.43, 0.46, 0.47, 0.46,
       0.45, 0.45, 0.44, 0.44, 0.41, 0.37,
       0.35, 0.35, 0.35, 0.34, 0.33, 0.32),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.36, 0.35, 0.34, 0.34, 0.34, 0.34,
       0.36, 0.39, 0.43, 0.46, 0.47, 0.46,
       0.45, 0.45, 0.44, 0.44, 0.41, 0.37,
       0.35, 0.35, 0.35, 0.34, 0.33, 0.32),
    SATURDAY THRU SUNDAY =
      (0.36, 0.35, 0.34, 0.34, 0.34, 0.34,
       0.36, 0.39, 0.43, 0.46, 0.47, 0.46,
       0.45, 0.45, 0.44, 0.44, 0.41, 0.37,
       0.35, 0.35, 0.35, 0.34, 0.33, 0.32),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.15 W/sqft, Area=79700 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 92 kW (Metric units)
      LIGHTS= 313,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 313,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 313,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 313,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 313,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 313,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 313,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 313,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 313,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.45, 0.44, 0.43, 0.42, 0.41, 0.42,
   0.52, 0.73, 0.87, 0.91, 0.92, 0.91,
   0.91, 0.91, 0.91, 0.90, 0.80, 0.59,
   0.54, 0.52, 0.52, 0.50, 0.48, 0.47;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.36, 0.35, 0.34, 0.34, 0.34, 0.34,
   0.36, 0.39, 0.43, 0.46, 0.47, 0.46,
   0.45, 0.45, 0.44, 0.44, 0.41, 0.37,
   0.35, 0.35, 0.35, 0.34, 0.33, 0.32;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.15 W/sqft, Area=79700 sqft
```

```
91644,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 12 - ORM001b

Category	:	Medium
Building ID	:	N/A
Building	:	Director Bldg.
Location	:	Portland, OR
Building Area (ft^2)	:	79,700
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.60
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	1.79
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM001b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Director.

Source of Data: An Energy Edge Building, LBNL.

Location: Portland, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 79,700 ft^2 .

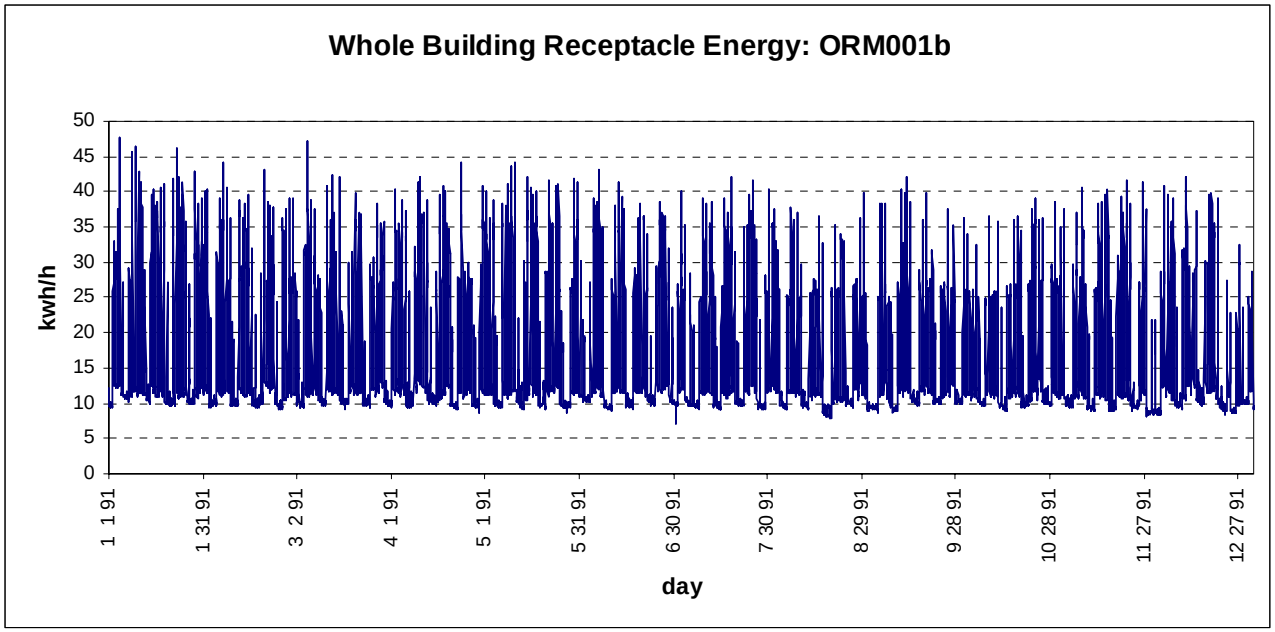
Receptacle EUI: [(9.31 x 5) + (5.47 x 2)] x 52 x 0.60 = 1.79 kWh/ft^2.year

Lighting Type: N/A

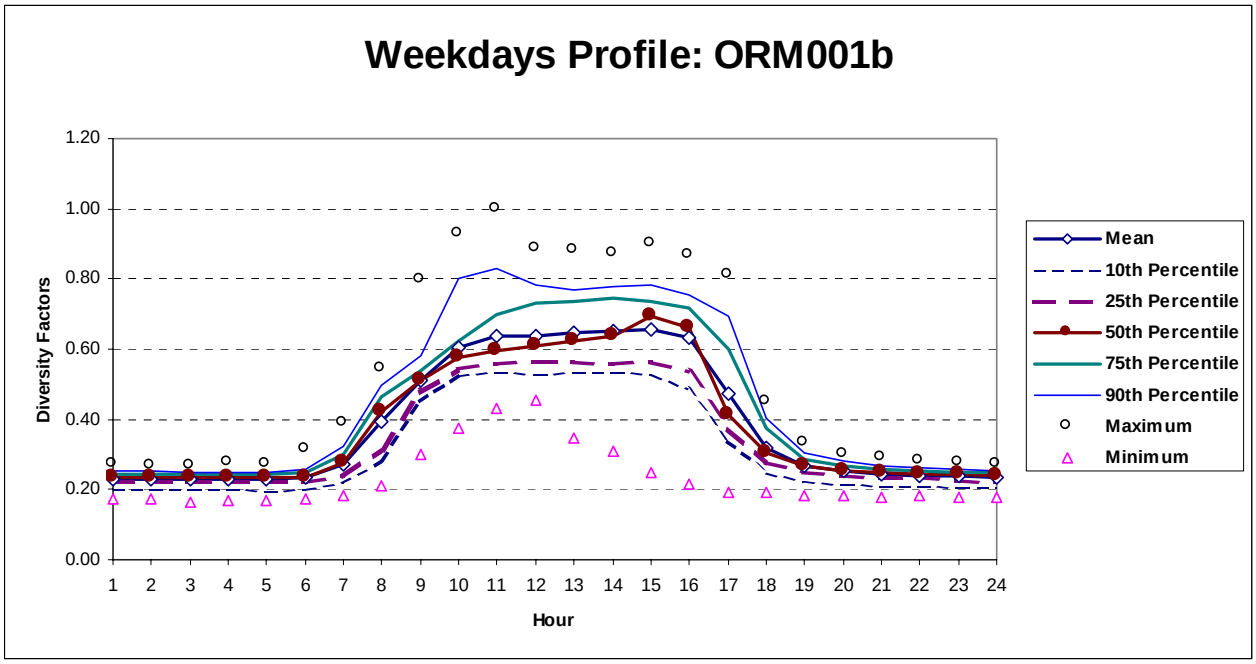
Dates: 1/1/91 - 12/31/91

Data Type: Receptacles

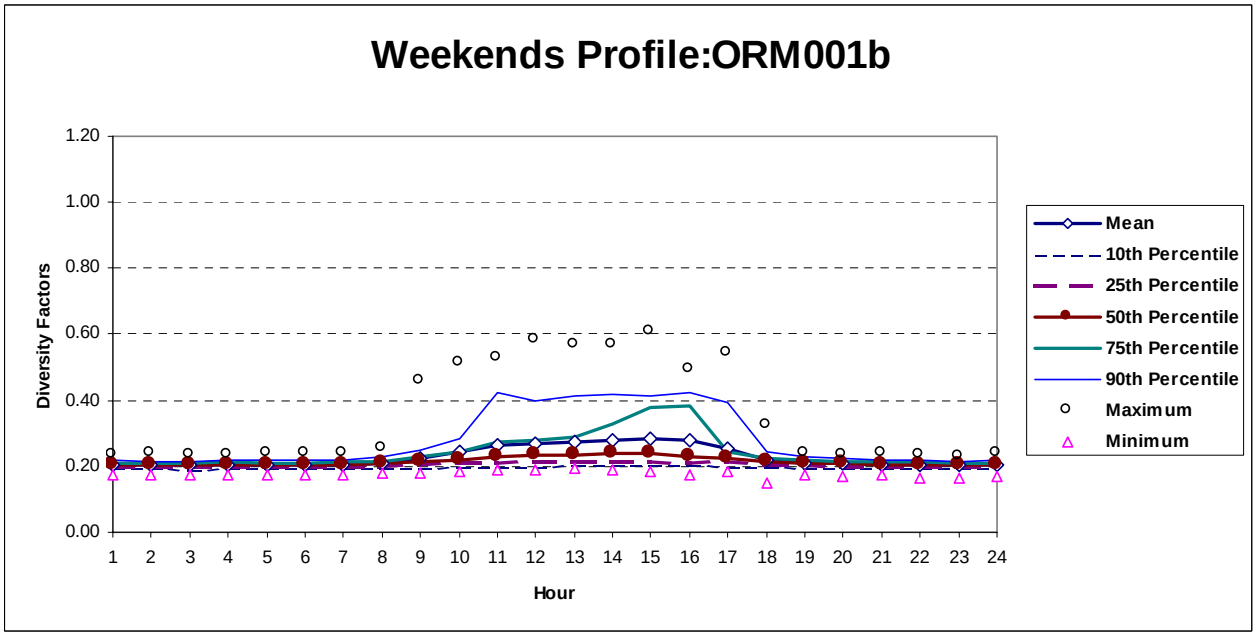
Maximum kW: 48 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.23	0.25	0.21	0.20	0.22	0.24	0.24	0.25	0.27	0.17
2.00	0.23	0.25	0.21	0.20	0.22	0.24	0.24	0.25	0.27	0.17
3.00	0.23	0.25	0.21	0.20	0.22	0.23	0.24	0.25	0.27	0.17
4.00	0.23	0.25	0.21	0.20	0.22	0.24	0.24	0.25	0.28	0.17
5.00	0.23	0.25	0.21	0.20	0.22	0.24	0.24	0.25	0.27	0.17
6.00	0.23	0.25	0.21	0.20	0.22	0.24	0.25	0.26	0.31	0.17
7.00	0.27	0.31	0.23	0.22	0.24	0.27	0.30	0.32	0.39	0.18
8.00	0.39	0.48	0.31	0.28	0.31	0.42	0.47	0.50	0.54	0.21
9.00	0.51	0.57	0.46	0.45	0.48	0.51	0.54	0.58	0.80	0.30
10.00	0.61	0.71	0.50	0.52	0.54	0.57	0.62	0.80	0.93	0.37
11.00	0.64	0.75	0.52	0.53	0.56	0.59	0.70	0.83	1.00	0.43
12.00	0.64	0.74	0.54	0.53	0.56	0.61	0.73	0.78	0.89	0.45
13.00	0.65	0.74	0.55	0.53	0.56	0.62	0.74	0.77	0.88	0.35
14.00	0.65	0.76	0.55	0.53	0.56	0.64	0.74	0.78	0.87	0.31
15.00	0.66	0.76	0.55	0.53	0.56	0.69	0.74	0.78	0.90	0.25
16.00	0.63	0.74	0.52	0.49	0.54	0.66	0.72	0.75	0.87	0.21
17.00	0.48	0.62	0.33	0.34	0.37	0.41	0.60	0.69	0.81	0.19
18.00	0.32	0.38	0.26	0.25	0.28	0.31	0.38	0.40	0.45	0.19
19.00	0.27	0.30	0.24	0.23	0.25	0.27	0.29	0.30	0.33	0.18
20.00	0.25	0.28	0.23	0.22	0.24	0.25	0.27	0.28	0.30	0.18
21.00	0.24	0.27	0.22	0.21	0.23	0.25	0.26	0.27	0.29	0.18
22.00	0.24	0.26	0.22	0.21	0.23	0.24	0.25	0.26	0.28	0.18
23.00	0.24	0.26	0.22	0.21	0.23	0.24	0.25	0.26	0.28	0.18
24.00	0.23	0.25	0.22	0.21	0.22	0.24	0.25	0.25	0.27	0.18
Daily Values	9.31	10.11	8.51	8.31	8.71	9.38	9.90	10.38	10.78	6.37
Daily Sum from Hourly	9.31	10.68	7.94	7.69	8.29	9.23	10.30	11.14	12.76	5.55

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.20	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.17
2.00	0.21	0.22	0.19	0.19	0.20	0.21	0.21	0.22	0.24	0.18
3.00	0.20	0.22	0.19	0.19	0.20	0.20	0.21	0.21	0.24	0.17
4.00	0.21	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.17
5.00	0.21	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.17
6.00	0.21	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.18
7.00	0.21	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.18
8.00	0.21	0.22	0.20	0.19	0.20	0.21	0.22	0.23	0.25	0.18
9.00	0.23	0.28	0.18	0.20	0.20	0.21	0.23	0.25	0.46	0.18
10.00	0.24	0.31	0.18	0.20	0.21	0.22	0.25	0.29	0.51	0.18
11.00	0.26	0.35	0.18	0.20	0.21	0.23	0.27	0.42	0.53	0.19
12.00	0.27	0.36	0.18	0.20	0.21	0.23	0.28	0.40	0.58	0.19
13.00	0.27	0.36	0.19	0.20	0.21	0.23	0.29	0.41	0.57	0.19
14.00	0.28	0.37	0.19	0.20	0.21	0.24	0.33	0.42	0.57	0.19
15.00	0.28	0.38	0.19	0.20	0.21	0.24	0.38	0.41	0.61	0.19
16.00	0.28	0.37	0.19	0.20	0.21	0.23	0.38	0.42	0.49	0.18
17.00	0.25	0.33	0.18	0.20	0.21	0.22	0.25	0.39	0.54	0.18
18.00	0.22	0.25	0.19	0.20	0.21	0.22	0.23	0.24	0.32	0.15
19.00	0.21	0.22	0.20	0.20	0.20	0.21	0.22	0.23	0.24	0.18
20.00	0.21	0.22	0.20	0.19	0.20	0.21	0.21	0.22	0.23	0.17
21.00	0.21	0.22	0.20	0.19	0.20	0.21	0.21	0.22	0.24	0.17
22.00	0.21	0.22	0.19	0.19	0.20	0.21	0.21	0.22	0.23	0.17
23.00	0.20	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.23	0.17
24.00	0.20	0.22	0.19	0.19	0.20	0.20	0.21	0.22	0.24	0.17
Daily Values	5.47	6.13	4.81	4.77	5.01	5.26	5.99	6.42	7.23	4.38
Daily Sum from Hourly	5.47	6.39	4.56	4.72	4.90	5.15	5.85	6.73	8.52	4.24

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.24)  (2) (0.24)  (3) (0.23)  (4) (0.24)  (5) (0.24)  (6) (0.24)
 (7) (0.27)  (8) (0.42)  (9) (0.51)  (10) (0.57)  (11) (0.59)  (12) (0.61)
(13) (0.62)  (14) (0.64)  (15) (0.69)  (16) (0.66)  (17) (0.41)  (18) (0.31)
(19) (0.27)  (20) (0.25)  (21) (0.25)  (22) (0.24)  (23) (0.24)  (24) (0.24) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.20)  (2) (0.21)  (3) (0.20)  (4) (0.20)  (5) (0.20)  (6) (0.20)
 (7) (0.20)  (8) (0.21)  (9) (0.21)  (10) (0.22)  (11) (0.23)  (12) (0.23)
(13) (0.23)  (14) (0.24)  (15) (0.24)  (16) (0.23)  (17) (0.22)  (18) (0.22)
(19) (0.21)  (20) (0.21)  (21) (0.21)  (22) (0.21)  (23) (0.20)  (24) (0.20) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.60 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.24, 0.24, 0.23, 0.24, 0.24, 0.24,
       0.27, 0.42, 0.51, 0.57, 0.59, 0.61,
       0.62, 0.64, 0.69, 0.66, 0.41, 0.31,
       0.27, 0.25, 0.25, 0.24, 0.24, 0.24),
    SATURDAY THRU SUNDAY =
      (0.20, 0.21, 0.20, 0.20, 0.20, 0.20,
       0.20, 0.21, 0.21, 0.22, 0.23, 0.23,
       0.23, 0.24, 0.24, 0.23, 0.22, 0.22,
       0.21, 0.21, 0.21, 0.21, 0.20, 0.20),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.20, 0.21, 0.20, 0.20, 0.20, 0.20,
       0.20, 0.21, 0.21, 0.22, 0.23, 0.23,
       0.23, 0.24, 0.24, 0.23, 0.22, 0.22,
       0.21, 0.21, 0.21, 0.21, 0.20, 0.20),
    SATURDAY THRU SUNDAY =
      (0.20, 0.21, 0.20, 0.20, 0.20, 0.20,
       0.20, 0.21, 0.21, 0.22, 0.23, 0.23,
       0.23, 0.24, 0.24, 0.23, 0.22, 0.22,
       0.21, 0.21, 0.21, 0.21, 0.20, 0.20),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.60 W/sqft, Area=79700 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 48 kW (Metric units)
      LIGHTS= 162,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 162,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 162,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 162,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 162,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 162,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 162,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 162,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 162,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.24, 0.24, 0.23, 0.24, 0.24, 0.24,
   0.27, 0.42, 0.51, 0.57, 0.59, 0.61,
   0.62, 0.64, 0.69, 0.66, 0.41, 0.31,
   0.27, 0.25, 0.25, 0.24, 0.24, 0.24;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.20, 0.21, 0.20, 0.20, 0.20, 0.20,
   0.20, 0.21, 0.21, 0.22, 0.23, 0.23,
   0.23, 0.24, 0.24, 0.23, 0.22, 0.22,
   0.21, 0.21, 0.21, 0.21, 0.20, 0.20;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.60 W/sqft, Area=79700 sqft
```

```
47595,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 13 - ORM001c

Category	:	Medium
Building ID	:	N/A
Building	:	Director Bldg.
Location	:	Portland, OR
Building Area (ft^2)	:	79,700
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	1.69
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	7.36
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM001c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Director.

Source of Data: An Energy Edge Building, LBNL.

Location: Portland, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 79,700 ft^2 .

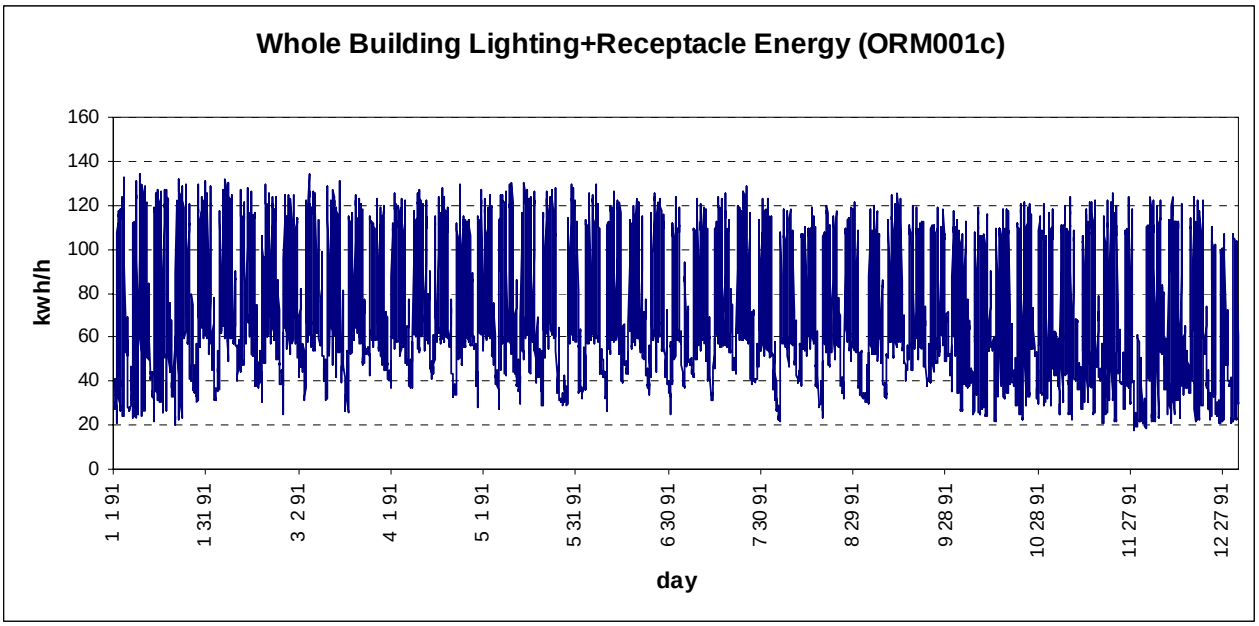
Receptacle EUI: [(13.45 x 5) + (8.37 x 2)] x 52 x 1.69 = 7.36 kWh/ft^2.year

Lighting Type: N/A

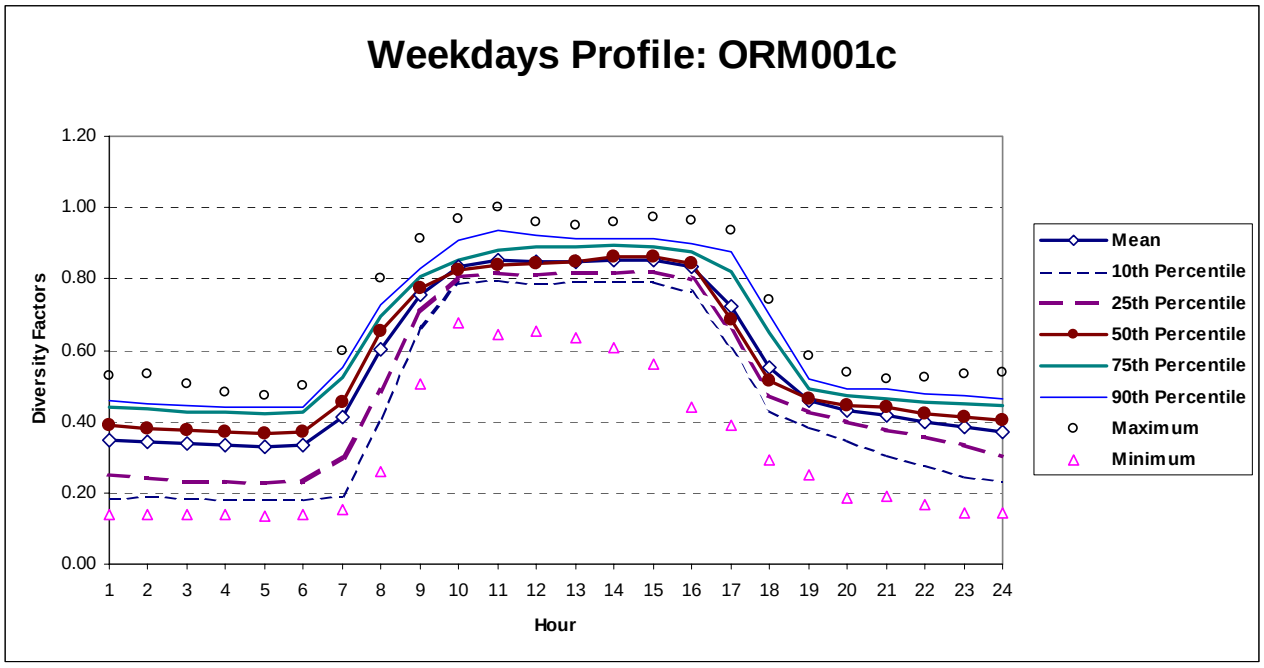
Dates: 1/1/91 - 12/31/91

Data Type: Lights + Receptacles

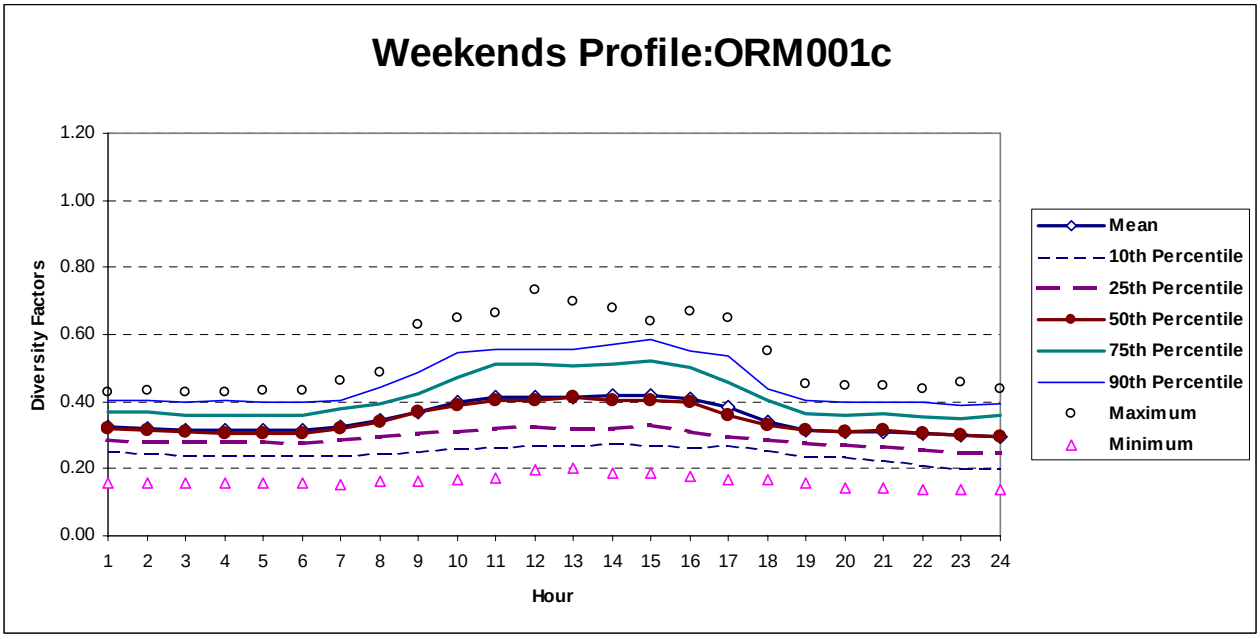
Maximum kW: 134 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.35	0.45	0.25	0.19	0.25	0.39	0.44	0.46	0.53	0.14
2.00	0.34	0.45	0.24	0.19	0.24	0.38	0.43	0.45	0.53	0.14
3.00	0.34	0.44	0.23	0.19	0.23	0.38	0.43	0.44	0.50	0.14
4.00	0.33	0.43	0.23	0.18	0.23	0.37	0.42	0.44	0.48	0.14
5.00	0.33	0.43	0.23	0.18	0.23	0.36	0.42	0.44	0.47	0.14
6.00	0.33	0.43	0.23	0.18	0.23	0.37	0.43	0.44	0.50	0.14
7.00	0.41	0.55	0.28	0.19	0.30	0.45	0.52	0.55	0.60	0.15
8.00	0.60	0.72	0.48	0.41	0.48	0.65	0.70	0.73	0.80	0.26
9.00	0.76	0.82	0.69	0.66	0.71	0.77	0.80	0.83	0.91	0.50
10.00	0.83	0.88	0.79	0.79	0.81	0.83	0.85	0.91	0.97	0.68
11.00	0.85	0.91	0.80	0.80	0.82	0.84	0.88	0.93	1.00	0.64
12.00	0.85	0.90	0.80	0.79	0.81	0.84	0.89	0.92	0.96	0.65
13.00	0.85	0.90	0.80	0.79	0.81	0.85	0.89	0.91	0.95	0.64
14.00	0.85	0.91	0.80	0.79	0.82	0.86	0.90	0.91	0.96	0.61
15.00	0.85	0.91	0.80	0.79	0.82	0.86	0.89	0.91	0.97	0.56
16.00	0.84	0.90	0.78	0.77	0.80	0.84	0.88	0.90	0.96	0.44
17.00	0.72	0.83	0.62	0.60	0.65	0.68	0.82	0.88	0.93	0.39
18.00	0.55	0.65	0.44	0.43	0.47	0.51	0.65	0.70	0.74	0.29
19.00	0.46	0.51	0.40	0.39	0.43	0.46	0.49	0.52	0.58	0.25
20.00	0.43	0.49	0.37	0.35	0.40	0.45	0.47	0.49	0.54	0.19
21.00	0.42	0.49	0.35	0.31	0.38	0.44	0.47	0.49	0.52	0.19
22.00	0.40	0.48	0.32	0.28	0.36	0.42	0.46	0.48	0.52	0.17
23.00	0.38	0.47	0.30	0.25	0.33	0.41	0.45	0.47	0.53	0.14
24.00	0.37	0.46	0.28	0.23	0.30	0.40	0.44	0.47	0.54	0.14
Daily Values	13.45	14.73	12.16	11.63	12.39	13.67	14.45	14.99	15.84	9.17
Daily Sum from Hourly	13.45	15.41	11.49	10.71	11.90	13.84	15.01	15.69	17.02	7.72

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.32	0.38	0.26	0.25	0.29	0.32	0.37	0.40	0.43	0.16
2.00	0.32	0.38	0.26	0.25	0.28	0.31	0.37	0.40	0.43	0.16
3.00	0.32	0.38	0.26	0.24	0.28	0.31	0.36	0.40	0.43	0.16
4.00	0.31	0.38	0.25	0.24	0.28	0.31	0.36	0.40	0.43	0.16
5.00	0.31	0.37	0.25	0.24	0.28	0.30	0.36	0.40	0.43	0.16
6.00	0.31	0.37	0.25	0.24	0.28	0.30	0.36	0.40	0.43	0.16
7.00	0.32	0.39	0.26	0.24	0.29	0.32	0.38	0.40	0.46	0.15
8.00	0.34	0.42	0.27	0.25	0.29	0.34	0.39	0.44	0.49	0.16
9.00	0.37	0.46	0.28	0.25	0.30	0.37	0.42	0.49	0.63	0.16
10.00	0.40	0.50	0.29	0.26	0.31	0.39	0.47	0.55	0.65	0.16
11.00	0.41	0.53	0.30	0.26	0.32	0.40	0.51	0.56	0.66	0.17
12.00	0.41	0.53	0.30	0.27	0.32	0.40	0.51	0.55	0.73	0.20
13.00	0.42	0.53	0.30	0.27	0.32	0.41	0.51	0.56	0.70	0.20
14.00	0.42	0.54	0.30	0.28	0.32	0.40	0.51	0.57	0.68	0.18
15.00	0.42	0.54	0.30	0.27	0.33	0.40	0.52	0.58	0.64	0.18
16.00	0.41	0.52	0.29	0.26	0.31	0.40	0.50	0.55	0.67	0.18
17.00	0.38	0.49	0.28	0.27	0.30	0.36	0.46	0.54	0.65	0.17
18.00	0.34	0.41	0.26	0.25	0.28	0.33	0.40	0.44	0.55	0.17
19.00	0.31	0.38	0.25	0.24	0.28	0.31	0.36	0.40	0.45	0.16
20.00	0.31	0.38	0.25	0.23	0.27	0.31	0.36	0.40	0.45	0.14
21.00	0.31	0.38	0.24	0.22	0.27	0.31	0.36	0.40	0.45	0.14
22.00	0.31	0.38	0.24	0.21	0.26	0.31	0.36	0.40	0.44	0.14
23.00	0.30	0.37	0.23	0.20	0.24	0.30	0.35	0.39	0.46	0.14
24.00	0.30	0.37	0.22	0.20	0.24	0.30	0.36	0.39	0.44	0.14
Daily Values	8.37	10.03	6.71	6.50	7.26	8.40	9.50	10.55	12.21	4.02
Daily Sum from Hourly	8.37	10.38	6.37	5.91	6.94	8.21	9.91	11.01	12.76	3.89

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.39)  (2) (0.38)  (3) (0.38)  (4) (0.37)  (5) (0.36)  (6) (0.37)
 (7) (0.45)  (8) (0.65)  (9) (0.77)  (10) (0.83)  (11) (0.84)  (12) (0.84)
(13) (0.85)  (14) (0.86)  (15) (0.86)  (16) (0.84)  (17) (0.68)  (18) (0.51)
(19) (0.46)  (20) (0.45)  (21) (0.44)  (22) (0.42)  (23) (0.41)  (24) (0.40) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.32)  (2) (0.31)  (3) (0.31)  (4) (0.31)  (5) (0.30)  (6) (0.30)
 (7) (0.32)  (8) (0.34)  (9) (0.37)  (10) (0.39)  (11) (0.40)  (12) (0.40)
(13) (0.41)  (14) (0.40)  (15) (0.40)  (16) (0.40)  (17) (0.36)  (18) (0.33)
(19) (0.31)  (20) (0.31)  (21) (0.31)  (22) (0.31)  (23) (0.30)  (24) (0.30) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.69 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.39, 0.38, 0.38, 0.37, 0.36, 0.37,
       0.45, 0.65, 0.77, 0.83, 0.84, 0.84,
       0.85, 0.86, 0.86, 0.84, 0.68, 0.51,
       0.46, 0.45, 0.44, 0.42, 0.41, 0.40),
    SATURDAY THRU SUNDAY =
      (0.32, 0.31, 0.31, 0.31, 0.30, 0.30,
       0.32, 0.34, 0.37, 0.39, 0.40, 0.40,
       0.41, 0.40, 0.40, 0.40, 0.36, 0.33,
       0.31, 0.31, 0.31, 0.31, 0.30, 0.30),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.32, 0.31, 0.31, 0.31, 0.30, 0.30,
       0.32, 0.34, 0.37, 0.39, 0.40, 0.40,
       0.41, 0.40, 0.40, 0.40, 0.36, 0.33,
       0.31, 0.31, 0.31, 0.31, 0.30, 0.30),
    SATURDAY THRU SUNDAY =
      (0.32, 0.31, 0.31, 0.31, 0.30, 0.30,
       0.32, 0.34, 0.37, 0.39, 0.40, 0.40,
       0.41, 0.40, 0.40, 0.40, 0.36, 0.33,
       0.31, 0.31, 0.31, 0.31, 0.30, 0.30),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.69 W/sqft, Area=79700 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 134 kW (Metric units)
      LIGHTS= 459,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 459,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 459,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 459,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 459,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 459,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 459,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 459,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 459,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Director Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.39, 0.38, 0.38, 0.37, 0.36, 0.37,
   0.45, 0.65, 0.77, 0.83, 0.84, 0.84,
   0.85, 0.86, 0.86, 0.84, 0.68, 0.51,
   0.46, 0.45, 0.44, 0.42, 0.41, 0.40;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.32, 0.31, 0.31, 0.31, 0.30, 0.30,
   0.32, 0.34, 0.37, 0.39, 0.40, 0.40,
   0.41, 0.40, 0.40, 0.40, 0.36, 0.33,
   0.31, 0.31, 0.31, 0.31, 0.30, 0.30;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.69 W/sqft, Area=79700 sqft
```

```
  134371,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 14 - ORM002a

Category	:	Medium
Building ID	:	N/A
Building	:	Emerald PUD HQ.
Location	:	Eugene, OR
Building Area (ft^2)	:	24,800
Data Type	:	Light
Max Load (W/ft^2)	:	1.16
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	3.07
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM002a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Emerald PUD Headquarters.

Source of Data: An Energy Edge Building, LBNL.

Location: Eugene, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 24,800 ft^2 .

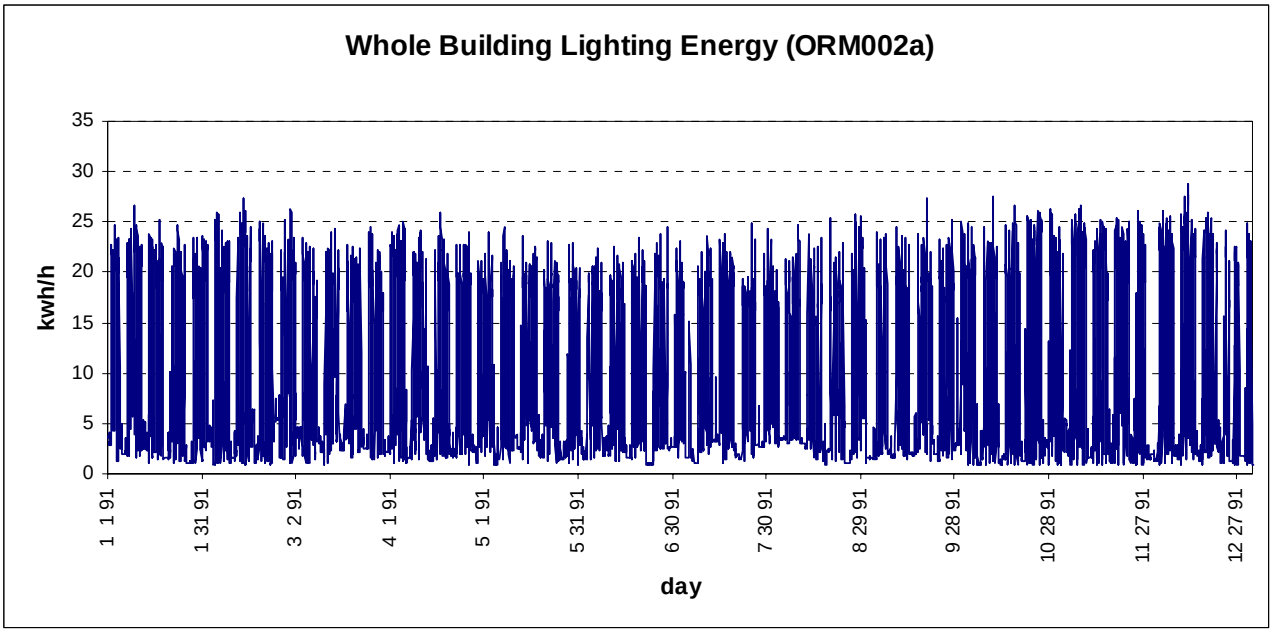
Lighting EUI: [(9.38 x 5) + (1.99 x 2)] x 52 x 1.15 = 3.07 kWh/ft^2.year

Lighting Type: N/A

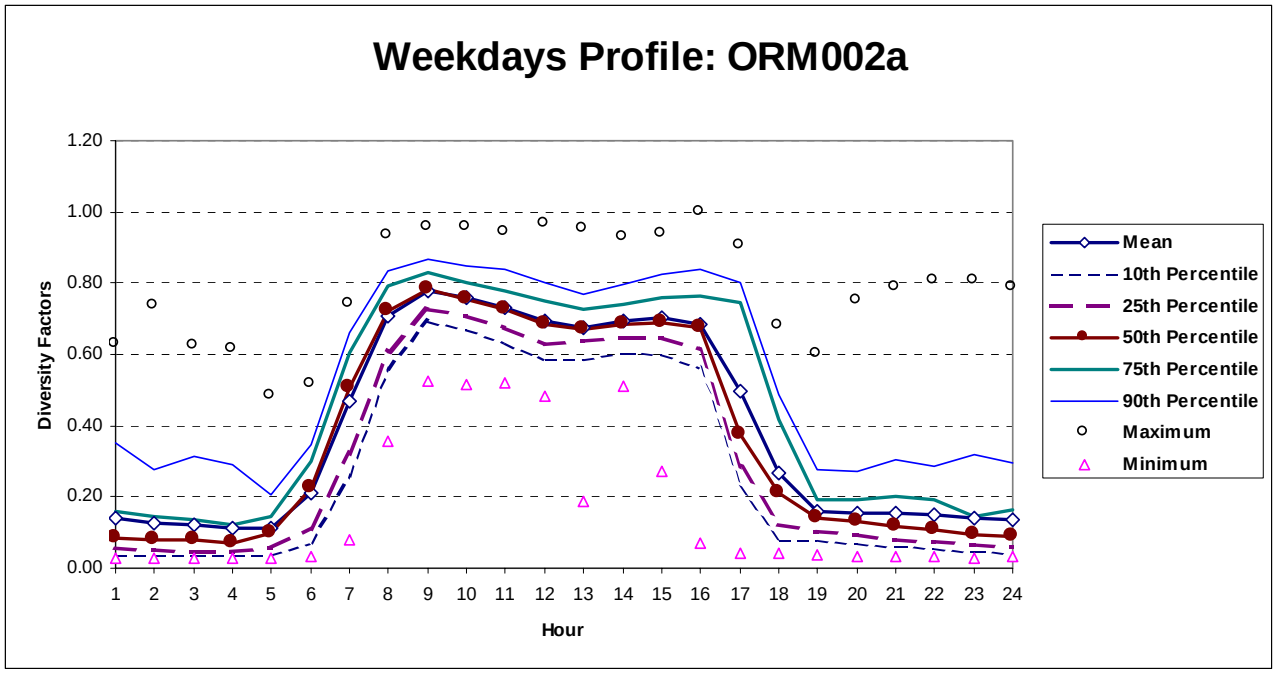
Dates: 1/1/91 - 12/31/91

Data Type: Lights

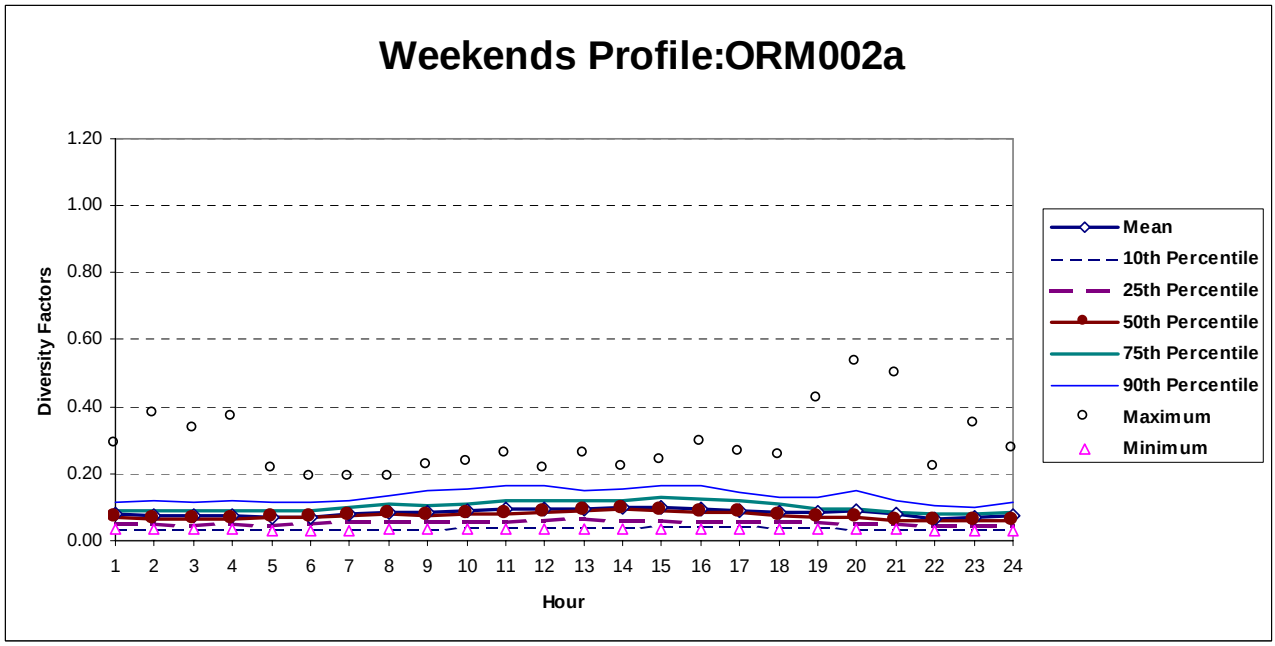
Maximum kW: 28.8 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.14	0.27	0.01	0.04	0.05	0.08	0.16	0.35	0.63	0.03
2.00	0.12	0.24	0.01	0.04	0.05	0.08	0.15	0.27	0.73	0.03
3.00	0.12	0.24	0.01	0.04	0.05	0.08	0.14	0.31	0.62	0.03
4.00	0.11	0.23	0.00	0.04	0.05	0.07	0.12	0.29	0.61	0.03
5.00	0.11	0.19	0.04	0.04	0.06	0.10	0.14	0.20	0.48	0.03
6.00	0.21	0.32	0.10	0.07	0.11	0.23	0.30	0.35	0.52	0.03
7.00	0.47	0.63	0.31	0.26	0.32	0.51	0.60	0.66	0.74	0.08
8.00	0.71	0.82	0.59	0.56	0.61	0.72	0.79	0.84	0.93	0.36
9.00	0.78	0.85	0.71	0.69	0.73	0.78	0.83	0.87	0.96	0.53
10.00	0.76	0.83	0.69	0.67	0.71	0.76	0.80	0.85	0.96	0.52
11.00	0.73	0.81	0.65	0.63	0.67	0.73	0.78	0.84	0.94	0.52
12.00	0.69	0.78	0.61	0.59	0.63	0.69	0.75	0.80	0.96	0.48
13.00	0.68	0.76	0.59	0.59	0.64	0.67	0.73	0.77	0.95	0.19
14.00	0.69	0.77	0.62	0.60	0.65	0.68	0.74	0.80	0.93	0.51
15.00	0.70	0.79	0.61	0.60	0.65	0.69	0.76	0.82	0.94	0.27
16.00	0.68	0.80	0.57	0.56	0.61	0.67	0.76	0.84	1.00	0.07
17.00	0.50	0.74	0.25	0.22	0.28	0.38	0.75	0.80	0.91	0.04
18.00	0.27	0.43	0.11	0.08	0.12	0.21	0.42	0.49	0.68	0.04
19.00	0.16	0.24	0.07	0.08	0.10	0.14	0.19	0.28	0.60	0.04
20.00	0.15	0.25	0.06	0.07	0.09	0.13	0.19	0.27	0.75	0.03
21.00	0.16	0.27	0.04	0.06	0.08	0.12	0.20	0.31	0.79	0.03
22.00	0.15	0.27	0.03	0.05	0.07	0.11	0.19	0.29	0.81	0.03
23.00	0.14	0.27	0.01	0.05	0.07	0.09	0.14	0.32	0.81	0.03
24.00	0.14	0.26	0.01	0.04	0.06	0.09	0.17	0.29	0.79	0.03
Daily Values	9.38	10.40	8.36	8.27	8.74	9.26	9.96	10.80	13.30	5.83
Daily Sum from Hourly	9.38	12.04	6.72	6.67	7.46	8.81	10.81	12.91	19.04	3.98

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.08	0.12	0.03	0.04	0.05	0.07	0.09	0.11	0.29	0.03
2.00	0.08	0.13	0.03	0.04	0.05	0.07	0.09	0.12	0.38	0.03
3.00	0.08	0.12	0.03	0.04	0.05	0.07	0.09	0.12	0.33	0.03
4.00	0.07	0.12	0.03	0.04	0.05	0.07	0.09	0.12	0.37	0.03
5.00	0.07	0.10	0.04	0.04	0.04	0.07	0.09	0.11	0.22	0.03
6.00	0.07	0.10	0.04	0.03	0.05	0.07	0.09	0.12	0.19	0.03
7.00	0.08	0.11	0.04	0.04	0.05	0.07	0.10	0.12	0.19	0.03
8.00	0.08	0.12	0.05	0.04	0.05	0.08	0.11	0.14	0.19	0.03
9.00	0.09	0.13	0.04	0.04	0.05	0.08	0.11	0.15	0.22	0.03
10.00	0.09	0.13	0.04	0.04	0.05	0.08	0.11	0.15	0.23	0.03
11.00	0.09	0.14	0.04	0.04	0.06	0.08	0.12	0.16	0.26	0.03
12.00	0.09	0.14	0.05	0.04	0.06	0.09	0.12	0.16	0.22	0.03
13.00	0.10	0.14	0.05	0.04	0.06	0.09	0.12	0.15	0.26	0.03
14.00	0.10	0.14	0.05	0.04	0.06	0.09	0.12	0.15	0.22	0.03
15.00	0.10	0.15	0.05	0.04	0.06	0.09	0.13	0.16	0.24	0.03
16.00	0.10	0.14	0.05	0.04	0.06	0.09	0.13	0.16	0.29	0.03
17.00	0.09	0.13	0.05	0.04	0.06	0.08	0.12	0.14	0.26	0.03
18.00	0.08	0.13	0.04	0.04	0.05	0.07	0.11	0.13	0.26	0.03
19.00	0.08	0.13	0.03	0.04	0.05	0.07	0.10	0.13	0.42	0.03
20.00	0.09	0.17	0.01	0.04	0.05	0.07	0.09	0.15	0.53	0.03
21.00	0.08	0.15	0.01	0.04	0.05	0.06	0.09	0.12	0.50	0.03
22.00	0.07	0.10	0.04	0.04	0.05	0.06	0.08	0.10	0.22	0.03
23.00	0.07	0.11	0.03	0.03	0.05	0.06	0.08	0.10	0.35	0.03
24.00	0.07	0.12	0.03	0.04	0.05	0.06	0.08	0.11	0.27	0.03
Daily Values	1.99	2.70	1.28	1.21	1.46	1.87	2.41	2.91	4.20	0.82
Daily Sum from Hourly	1.99	3.09	0.89	0.90	1.26	1.77	2.45	3.20	6.91	0.79

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.08)   (2) (0.08)   (3) (0.08)   (4) (0.07)   (5) (0.10)   (6) (0.23)
 (7) (0.51)   (8) (0.72)   (9) (0.78)  (10) (0.76)  (11) (0.73)  (12) (0.69)
(13) (0.67)  (14) (0.68)  (15) (0.69)  (16) (0.67)  (17) (0.38)  (18) (0.21)
(19) (0.14)  (20) (0.13)  (21) (0.12)  (22) (0.11)  (23) (0.09)  (24) (0.09) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.07)   (2) (0.07)   (3) (0.07)   (4) (0.07)   (5) (0.07)   (6) (0.07)
 (7) (0.07)   (8) (0.08)   (9) (0.08)  (10) (0.08)  (11) (0.08)  (12) (0.09)
(13) (0.09)  (14) (0.09)  (15) (0.09)  (16) (0.09)  (17) (0.08)  (18) (0.07)
(19) (0.07)  (20) (0.07)  (21) (0.06)  (22) (0.06)  (23) (0.06)  (24) (0.06) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.16 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.08, 0.08, 0.08, 0.07, 0.10, 0.23,
      0.51, 0.72, 0.78, 0.76, 0.73, 0.69,
      0.67, 0.68, 0.69, 0.67, 0.38, 0.21,
      0.14, 0.13, 0.12, 0.11, 0.09, 0.09),
    SATURDAY THRU SUNDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.08, 0.08, 0.09,
      0.09, 0.09, 0.09, 0.09, 0.08, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.08, 0.08, 0.09,
      0.09, 0.09, 0.09, 0.09, 0.08, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    SATURDAY THRU SUNDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.08, 0.08, 0.09,
      0.09, 0.09, 0.09, 0.09, 0.08, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.16 W/sqft, Area=24800 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 29 kW (Metric units)
      LIGHTS= 98,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 98,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 98,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 98,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 98,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 98,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 98,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 98,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 98,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.08, 0.08, 0.08, 0.07, 0.10, 0.23,
   0.51, 0.72, 0.78, 0.76, 0.73, 0.69,
   0.67, 0.68, 0.69, 0.67, 0.38, 0.21,
   0.14, 0.13, 0.12, 0.11, 0.09, 0.09;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
   0.07, 0.08, 0.08, 0.08, 0.08, 0.09,
   0.09, 0.09, 0.09, 0.09, 0.08, 0.07,
   0.07, 0.07, 0.06, 0.06, 0.06, 0.06;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.16 W/sqft, Area=24800 sqft
```

```
28765,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 15 - ORM002b

Category	:	Medium
Building ID	:	N/A
Building	:	Emerald PUD HQ.
Location	:	Eugene, OR
Building Area (ft^2)	:	24,800
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.66
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	2.68
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM002b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Emerald PUD Headquarters.

Source of Data: An Energy Edge Building, LBNL.

Location: Eugene, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 24,800 ft^2 .

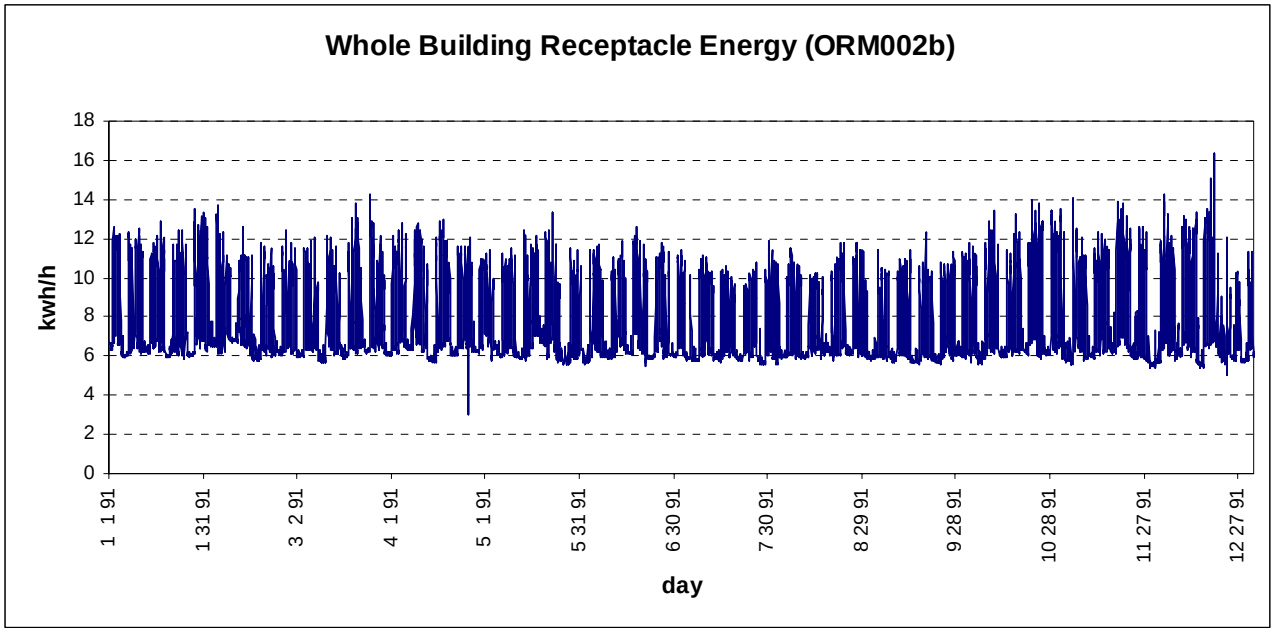
Lighting EUI: [(12.0 x 5) + (8.98 x 2)] x 52 x 0.66 = 2.68 kWh/ft^2.year

Lighting Type: N/A

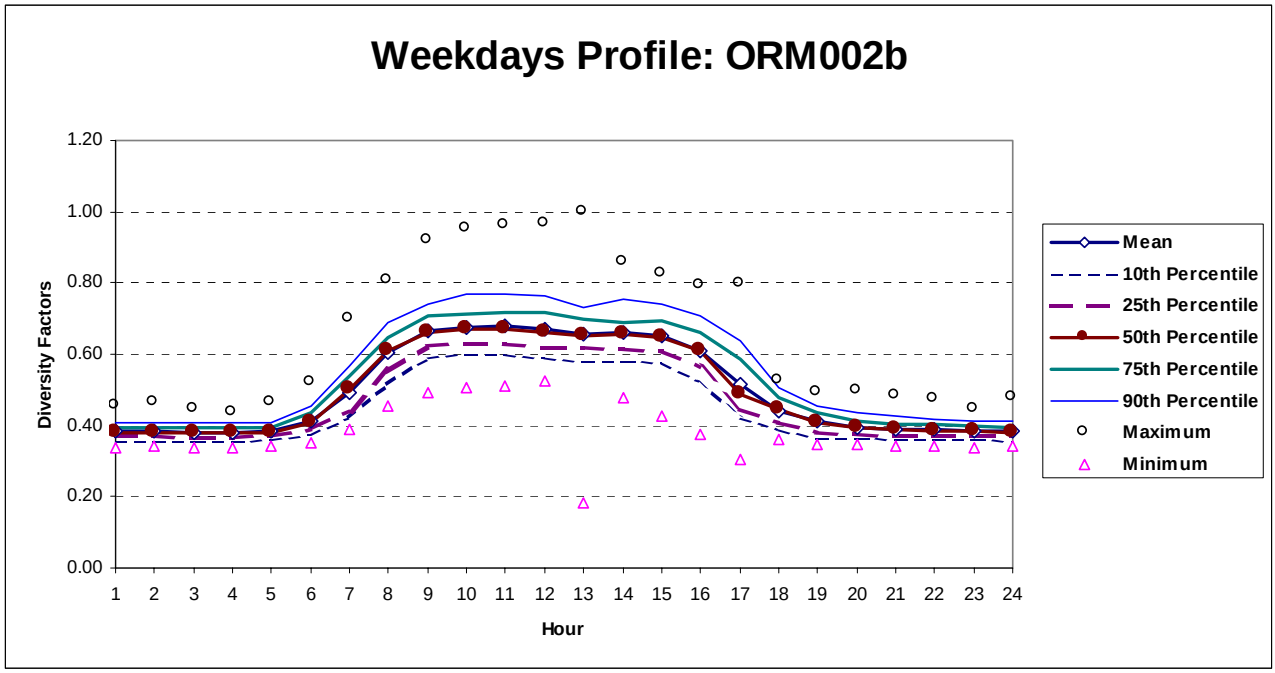
Dates: 1/1/91 - 12/31/91

Data Type: Receptacles

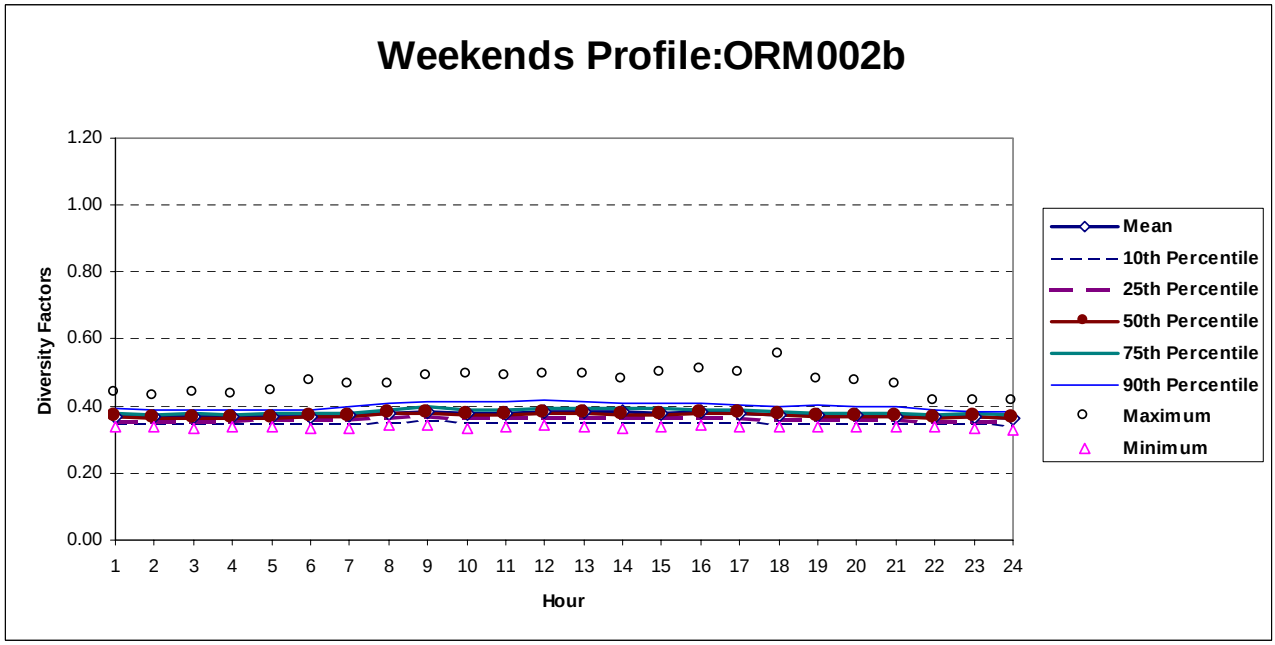
Maximum kW: 16.39 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.38	0.40	0.36	0.36	0.37	0.38	0.39	0.41	0.45	0.34
2.00	0.38	0.40	0.36	0.36	0.37	0.38	0.40	0.41	0.46	0.34
3.00	0.38	0.40	0.36	0.36	0.37	0.38	0.39	0.41	0.45	0.34
4.00	0.38	0.40	0.36	0.36	0.37	0.38	0.39	0.41	0.43	0.34
5.00	0.38	0.40	0.36	0.36	0.37	0.38	0.39	0.41	0.46	0.34
6.00	0.41	0.44	0.38	0.38	0.39	0.41	0.43	0.46	0.52	0.35
7.00	0.49	0.55	0.44	0.42	0.44	0.50	0.54	0.57	0.70	0.39
8.00	0.60	0.67	0.54	0.51	0.55	0.61	0.65	0.69	0.81	0.46
9.00	0.67	0.73	0.60	0.59	0.63	0.66	0.71	0.74	0.92	0.49
10.00	0.68	0.74	0.61	0.60	0.63	0.67	0.71	0.77	0.95	0.51
11.00	0.68	0.75	0.61	0.60	0.63	0.67	0.72	0.77	0.96	0.51
12.00	0.67	0.74	0.60	0.59	0.62	0.66	0.72	0.76	0.97	0.52
13.00	0.66	0.73	0.59	0.58	0.62	0.65	0.70	0.73	1.00	0.18
14.00	0.66	0.72	0.60	0.58	0.62	0.65	0.69	0.76	0.86	0.48
15.00	0.65	0.72	0.59	0.58	0.61	0.65	0.69	0.74	0.82	0.42
16.00	0.61	0.68	0.54	0.53	0.56	0.61	0.66	0.71	0.79	0.37
17.00	0.52	0.60	0.43	0.42	0.44	0.49	0.59	0.64	0.80	0.30
18.00	0.44	0.48	0.40	0.39	0.41	0.44	0.48	0.50	0.53	0.36
19.00	0.41	0.44	0.38	0.37	0.38	0.41	0.44	0.46	0.49	0.35
20.00	0.40	0.42	0.37	0.36	0.37	0.39	0.41	0.43	0.50	0.34
21.00	0.39	0.42	0.36	0.36	0.37	0.39	0.40	0.43	0.48	0.34
22.00	0.39	0.41	0.36	0.36	0.37	0.38	0.40	0.42	0.47	0.34
23.00	0.38	0.40	0.36	0.36	0.37	0.38	0.40	0.41	0.45	0.34
24.00	0.38	0.40	0.36	0.36	0.37	0.38	0.40	0.41	0.48	0.34
Daily Values	12.00	12.71	11.30	11.12	11.46	12.00	12.44	12.96	14.36	10.19
Daily Sum from Hourly	12.00	13.07	10.93	10.73	11.22	11.91	12.70	13.43	15.77	9.11

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.37	0.39	0.35	0.35	0.35	0.37	0.38	0.39	0.44	0.34
2.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.39	0.43	0.34
3.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.39	0.44	0.34
4.00	0.37	0.38	0.35	0.35	0.35	0.37	0.38	0.39	0.43	0.34
5.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.39	0.44	0.34
6.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.39	0.47	0.33
7.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.40	0.46	0.34
8.00	0.38	0.40	0.36	0.36	0.36	0.38	0.39	0.41	0.46	0.34
9.00	0.38	0.41	0.36	0.36	0.37	0.38	0.40	0.42	0.49	0.34
10.00	0.38	0.41	0.35	0.35	0.36	0.37	0.39	0.41	0.49	0.34
11.00	0.38	0.41	0.35	0.35	0.36	0.38	0.39	0.41	0.49	0.34
12.00	0.38	0.41	0.35	0.35	0.36	0.38	0.39	0.42	0.49	0.34
13.00	0.38	0.41	0.35	0.35	0.36	0.38	0.39	0.41	0.49	0.34
14.00	0.38	0.41	0.36	0.35	0.37	0.38	0.39	0.41	0.48	0.33
15.00	0.38	0.41	0.36	0.35	0.36	0.38	0.39	0.41	0.50	0.34
16.00	0.38	0.41	0.35	0.35	0.37	0.38	0.39	0.41	0.51	0.34
17.00	0.38	0.41	0.35	0.35	0.36	0.38	0.39	0.40	0.50	0.34
18.00	0.38	0.40	0.35	0.35	0.36	0.37	0.38	0.40	0.55	0.34
19.00	0.37	0.40	0.35	0.35	0.36	0.37	0.38	0.40	0.48	0.34
20.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.40	0.47	0.34
21.00	0.37	0.39	0.35	0.35	0.36	0.37	0.38	0.40	0.46	0.34
22.00	0.37	0.38	0.35	0.35	0.36	0.37	0.38	0.39	0.42	0.34
23.00	0.37	0.38	0.35	0.35	0.36	0.37	0.38	0.38	0.42	0.33
24.00	0.37	0.38	0.35	0.35	0.35	0.36	0.37	0.38	0.41	0.33
Daily Values	8.98	9.40	8.57	8.52	8.69	8.93	9.16	9.51	10.42	8.30
Daily Sum from Hourly	8.98	9.52	8.44	8.42	8.63	8.90	9.20	9.60	11.22	8.11

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.38)   (2) (0.38)   (3) (0.38)   (4) (0.38)   (5) (0.38)   (6) (0.41)
 (7) (0.50)   (8) (0.61)   (9) (0.66)  (10) (0.67)  (11) (0.67)  (12) (0.66)
(13) (0.65)  (14) (0.65)  (15) (0.65)  (16) (0.61)  (17) (0.49)  (18) (0.44)
(19) (0.41)  (20) (0.39)  (21) (0.39)  (22) (0.38)  (23) (0.38)  (24) (0.38) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.37)   (2) (0.37)   (3) (0.37)   (4) (0.37)   (5) (0.37)   (6) (0.37)
 (7) (0.37)   (8) (0.38)   (9) (0.38)  (10) (0.37)  (11) (0.38)  (12) (0.38)
(13) (0.38)  (14) (0.38)  (15) (0.38)  (16) (0.38)  (17) (0.38)  (18) (0.37)
(19) (0.37)  (20) (0.37)  (21) (0.37)  (22) (0.37)  (23) (0.37)  (24) (0.36) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.66 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.38, 0.38, 0.38, 0.38, 0.38, 0.41,
       0.50, 0.61, 0.66, 0.67, 0.67, 0.66,
       0.65, 0.65, 0.65, 0.61, 0.49, 0.44,
       0.41, 0.39, 0.39, 0.38, 0.38, 0.38),
    SATURDAY THRU SUNDAY =
      (0.37, 0.37, 0.37, 0.37, 0.37, 0.37,
       0.37, 0.38, 0.38, 0.37, 0.38, 0.38,
       0.38, 0.38, 0.38, 0.38, 0.38, 0.37,
       0.37, 0.37, 0.37, 0.37, 0.37, 0.36),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.37, 0.37, 0.37, 0.37, 0.37, 0.37,
       0.37, 0.38, 0.38, 0.37, 0.38, 0.38,
       0.38, 0.38, 0.38, 0.38, 0.38, 0.37,
       0.37, 0.37, 0.37, 0.37, 0.37, 0.36),
    SATURDAY THRU SUNDAY =
      (0.37, 0.37, 0.37, 0.37, 0.37, 0.37,
       0.37, 0.38, 0.38, 0.37, 0.38, 0.38,
       0.38, 0.38, 0.38, 0.38, 0.38, 0.37,
       0.37, 0.37, 0.37, 0.37, 0.37, 0.36),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.66 W/sqft, Area=24800 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 16 kW (Metric units)
      LIGHTS= 56,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 56,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 56,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 56,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 56,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 56,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 56,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 56,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 56,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.38, 0.38, 0.38, 0.38, 0.38, 0.41,
   0.50, 0.61, 0.66, 0.67, 0.67, 0.66,
   0.65, 0.65, 0.65, 0.61, 0.49, 0.44,
   0.41, 0.39, 0.39, 0.38, 0.38, 0.38;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.37, 0.37, 0.37, 0.37, 0.37, 0.37,
   0.37, 0.38, 0.38, 0.37, 0.38, 0.38,
   0.38, 0.38, 0.38, 0.38, 0.38, 0.37,
   0.37, 0.37, 0.37, 0.37, 0.37, 0.36;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.66 W/sqft, Area=24800 sqft
```

```
16390,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 16 - ORM002c

Category	:	Medium
Building ID	:	N/A
Building	:	Emerald PUD HQ.
Location	:	Eugene, OR
Building Area (ft^2)	:	24,800
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	1.65
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	5.75
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (ORM002c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Emerald PUD Headquarters.

Source of Data: An Energy Edge Building, LBNL.

Location: Eugene, Oregon.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 24,800 ft^2 .

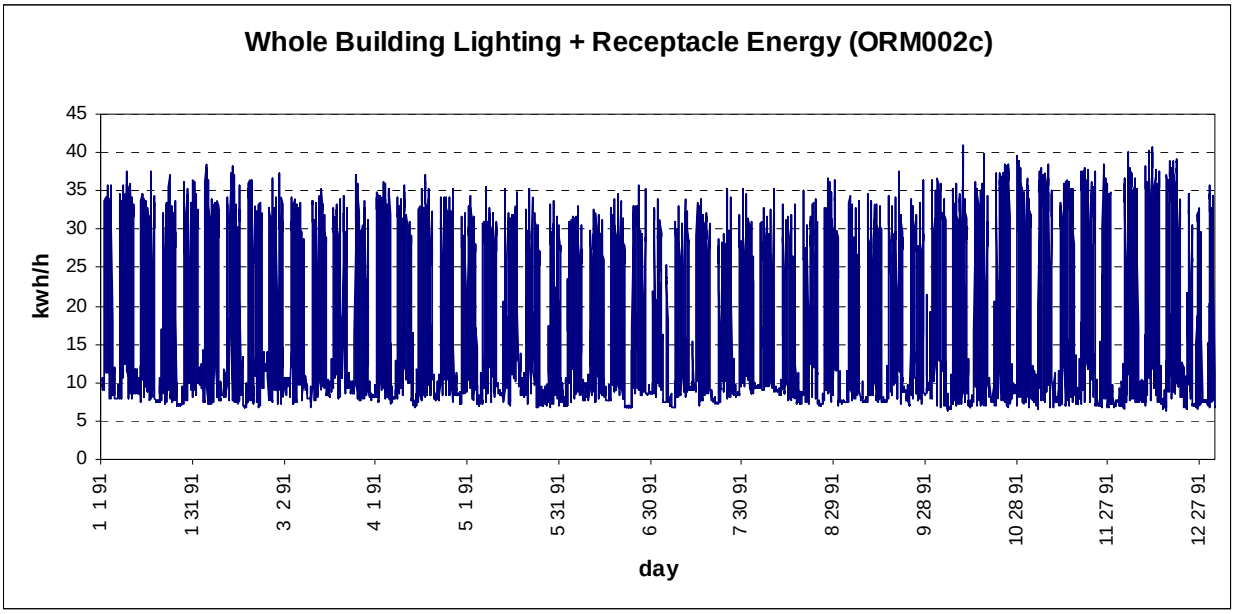
Lighting EUI: [(11.43 x 5) + (5.01 x 2)] x 52 x 1.65 = 5.75 kWh/ft^2.year

Lighting Type: N/A

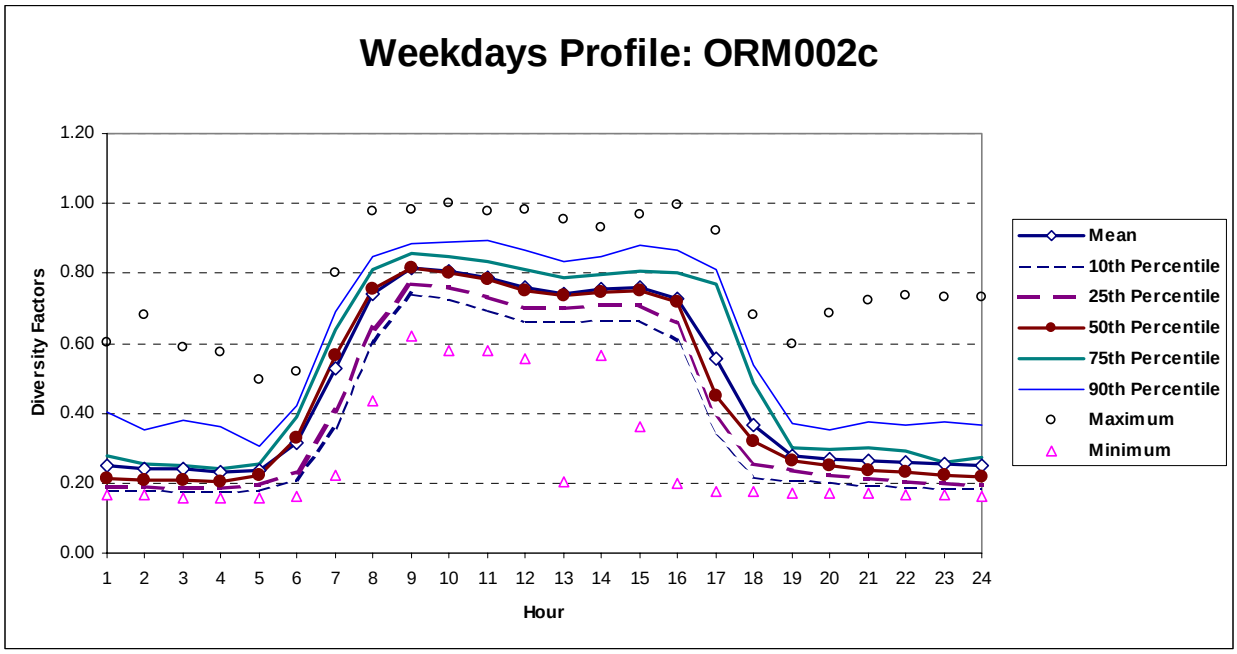
Dates: 1/1/91 - 12/31/91

Data Type: Lights + Receptacles

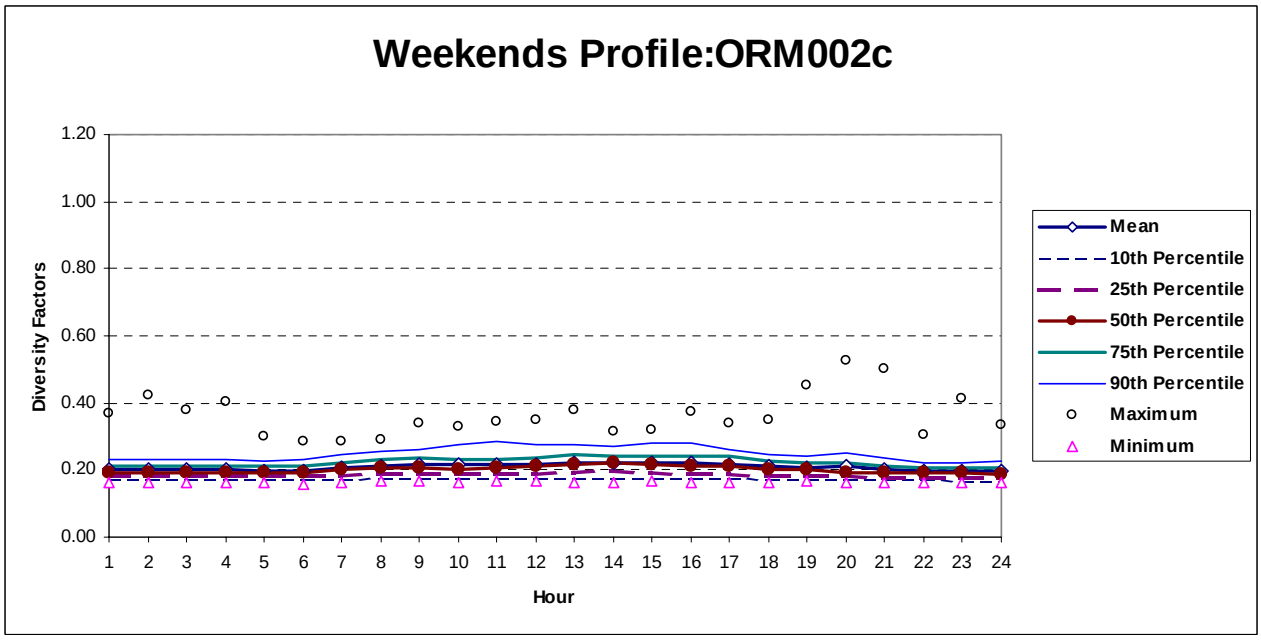
Maximum kW: 41 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 1/14/91, 5/27/91, 7/4/91, 9/02/91, 11/28/91, 11/29/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.25	0.34	0.16	0.18	0.19	0.21	0.28	0.40	0.60	0.16
2.00	0.24	0.32	0.16	0.18	0.19	0.21	0.25	0.35	0.68	0.17
3.00	0.24	0.32	0.16	0.18	0.19	0.21	0.25	0.38	0.59	0.16
4.00	0.23	0.31	0.15	0.18	0.18	0.20	0.24	0.36	0.57	0.16
5.00	0.23	0.29	0.18	0.18	0.19	0.22	0.25	0.31	0.50	0.16
6.00	0.32	0.40	0.23	0.21	0.23	0.33	0.39	0.42	0.52	0.16
7.00	0.53	0.66	0.40	0.36	0.40	0.56	0.64	0.69	0.80	0.22
8.00	0.74	0.84	0.64	0.60	0.65	0.76	0.81	0.85	0.98	0.43
9.00	0.82	0.88	0.76	0.74	0.77	0.81	0.85	0.89	0.98	0.62
10.00	0.81	0.87	0.74	0.73	0.76	0.80	0.85	0.89	1.00	0.58
11.00	0.79	0.86	0.71	0.69	0.73	0.78	0.83	0.89	0.98	0.58
12.00	0.76	0.84	0.68	0.66	0.70	0.75	0.81	0.87	0.98	0.56
13.00	0.74	0.82	0.66	0.66	0.70	0.74	0.79	0.84	0.96	0.20
14.00	0.75	0.83	0.68	0.67	0.71	0.74	0.80	0.85	0.93	0.56
15.00	0.76	0.84	0.68	0.67	0.71	0.75	0.81	0.88	0.97	0.36
16.00	0.73	0.83	0.62	0.61	0.66	0.72	0.80	0.86	1.00	0.20
17.00	0.56	0.76	0.35	0.33	0.38	0.45	0.77	0.81	0.92	0.18
18.00	0.37	0.49	0.24	0.22	0.25	0.32	0.49	0.54	0.68	0.17
19.00	0.28	0.34	0.21	0.21	0.23	0.26	0.30	0.37	0.60	0.17
20.00	0.27	0.34	0.20	0.21	0.22	0.25	0.30	0.35	0.68	0.17
21.00	0.27	0.35	0.18	0.20	0.21	0.24	0.30	0.38	0.72	0.17
22.00	0.26	0.35	0.17	0.19	0.21	0.23	0.29	0.36	0.74	0.17
23.00	0.25	0.35	0.16	0.19	0.20	0.22	0.26	0.38	0.73	0.17
24.00	0.25	0.34	0.16	0.18	0.19	0.22	0.27	0.36	0.73	0.16
Daily Values	11.43	12.35	10.50	10.37	10.78	11.35	11.99	12.56	14.86	8.20
Daily Sum from Hourly	11.43	13.57	9.28	9.21	9.87	11.00	12.63	14.29	18.83	6.64

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.20	0.24	0.17	0.17	0.18	0.19	0.21	0.23	0.37	0.16
2.00	0.20	0.24	0.16	0.17	0.18	0.19	0.21	0.23	0.42	0.16
3.00	0.20	0.24	0.17	0.17	0.18	0.19	0.21	0.23	0.38	0.16
4.00	0.20	0.23	0.17	0.17	0.18	0.19	0.21	0.23	0.40	0.16
5.00	0.20	0.22	0.17	0.17	0.18	0.19	0.21	0.23	0.30	0.16
6.00	0.20	0.22	0.17	0.17	0.18	0.19	0.21	0.23	0.28	0.16
7.00	0.20	0.23	0.18	0.17	0.18	0.20	0.22	0.24	0.29	0.16
8.00	0.21	0.24	0.18	0.18	0.19	0.21	0.23	0.26	0.29	0.17
9.00	0.21	0.25	0.18	0.18	0.19	0.20	0.24	0.26	0.34	0.17
10.00	0.21	0.25	0.18	0.18	0.19	0.20	0.23	0.28	0.33	0.16
11.00	0.22	0.26	0.18	0.18	0.19	0.21	0.23	0.28	0.35	0.17
12.00	0.22	0.26	0.18	0.17	0.19	0.21	0.24	0.28	0.35	0.17
13.00	0.22	0.26	0.18	0.18	0.19	0.21	0.24	0.27	0.38	0.16
14.00	0.22	0.26	0.19	0.18	0.19	0.22	0.24	0.27	0.31	0.16
15.00	0.22	0.26	0.18	0.18	0.19	0.22	0.24	0.28	0.32	0.17
16.00	0.22	0.26	0.18	0.18	0.19	0.21	0.24	0.28	0.37	0.16
17.00	0.22	0.25	0.18	0.18	0.19	0.21	0.24	0.26	0.34	0.16
18.00	0.21	0.25	0.17	0.17	0.18	0.20	0.23	0.25	0.35	0.16
19.00	0.21	0.25	0.17	0.17	0.18	0.20	0.22	0.24	0.45	0.17
20.00	0.21	0.27	0.15	0.17	0.18	0.19	0.22	0.25	0.53	0.16
21.00	0.20	0.25	0.15	0.17	0.18	0.19	0.21	0.24	0.50	0.16
22.00	0.19	0.22	0.17	0.17	0.18	0.19	0.21	0.22	0.30	0.16
23.00	0.20	0.23	0.16	0.17	0.18	0.19	0.21	0.22	0.41	0.16
24.00	0.20	0.23	0.16	0.17	0.18	0.19	0.21	0.22	0.34	0.16
Daily Values	5.01	5.56	4.45	4.38	4.56	4.93	5.34	5.67	6.67	3.99
Daily Sum from Hourly	5.01	5.88	4.14	4.17	4.42	4.83	5.37	5.99	8.71	3.93

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.21)  (2) (0.21)  (3) (0.21)  (4) (0.20)  (5) (0.22)  (6) (0.33)
 (7) (0.56)  (8) (0.76)  (9) (0.81) (10) (0.80) (11) (0.78) (12) (0.75)
(13) (0.74) (14) (0.74) (15) (0.75) (16) (0.72) (17) (0.45) (18) (0.32)
(19) (0.26) (20) (0.25) (21) (0.24) (22) (0.23) (23) (0.22) (24) (0.22) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.19)  (2) (0.19)  (3) (0.19)  (4) (0.19)  (5) (0.19)  (6) (0.19)
 (7) (0.20)  (8) (0.21)  (9) (0.20) (10) (0.20) (11) (0.21) (12) (0.21)
(13) (0.21) (14) (0.22) (15) (0.22) (16) (0.21) (17) (0.21) (18) (0.20)
(19) (0.20) (20) (0.19) (21) (0.19) (22) (0.19) (23) (0.19) (24) (0.19) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.65 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.21, 0.21, 0.21, 0.20, 0.22, 0.33,
      0.56, 0.76, 0.81, 0.80, 0.78, 0.75,
      0.74, 0.74, 0.75, 0.72, 0.45, 0.32,
      0.26, 0.25, 0.24, 0.23, 0.22, 0.22),
    SATURDAY THRU SUNDAY =
     (0.19, 0.19, 0.19, 0.19, 0.19, 0.19,
      0.20, 0.21, 0.20, 0.20, 0.21, 0.21,
      0.21, 0.22, 0.22, 0.21, 0.21, 0.20,
      0.20, 0.19, 0.19, 0.19, 0.19, 0.19),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.19, 0.19, 0.19, 0.19, 0.19, 0.19,
      0.20, 0.21, 0.20, 0.20, 0.21, 0.21,
      0.21, 0.22, 0.22, 0.21, 0.21, 0.20,
      0.20, 0.19, 0.19, 0.19, 0.19, 0.19),
    SATURDAY THRU SUNDAY =
     (0.19, 0.19, 0.19, 0.19, 0.19, 0.19,
      0.20, 0.21, 0.20, 0.20, 0.21, 0.21,
      0.21, 0.22, 0.22, 0.21, 0.21, 0.20,
      0.20, 0.19, 0.19, 0.19, 0.19, 0.19),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.65 W/sqft, Area=24800 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 41 kW (Metric units)
      LIGHTS= 139,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 139,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 139,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 139,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 139,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 139,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 139,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 139,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 139,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Large Office Building (Emerald PUD Headquarters Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.21, 0.21, 0.21, 0.20, 0.22, 0.33,
   0.56, 0.76, 0.81, 0.80, 0.78, 0.75,
   0.74, 0.74, 0.75, 0.72, 0.45, 0.32,
   0.26, 0.25, 0.24, 0.23, 0.22, 0.22;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.19, 0.19, 0.19, 0.19, 0.19, 0.19,
   0.20, 0.21, 0.20, 0.20, 0.21, 0.21,
   0.21, 0.22, 0.22, 0.21, 0.21, 0.20,
   0.20, 0.19, 0.19, 0.19, 0.19, 0.19;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.65 W/sqft, Area=24800 sqft
```

```
  40821,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 17 - ORS001

Category	:	Small
Building ID	:	N/A
Building	:	Dubal Beck Bldg.
Location	:	Portland, OR
Building Area (ft^2)	:	8,500
Data Type	:	Light
Max Load (W/ft^2)	:	1.34
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	4.28
Start Date	:	1/1/88
End date	:	12/31/88

(Page 1) Building Descriptions: (ORS001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Dubal Beck Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Portland, Oregon.

Category: Small Office Building, based on the CBECS classification.

Square footage: 8,500 ft^2 .

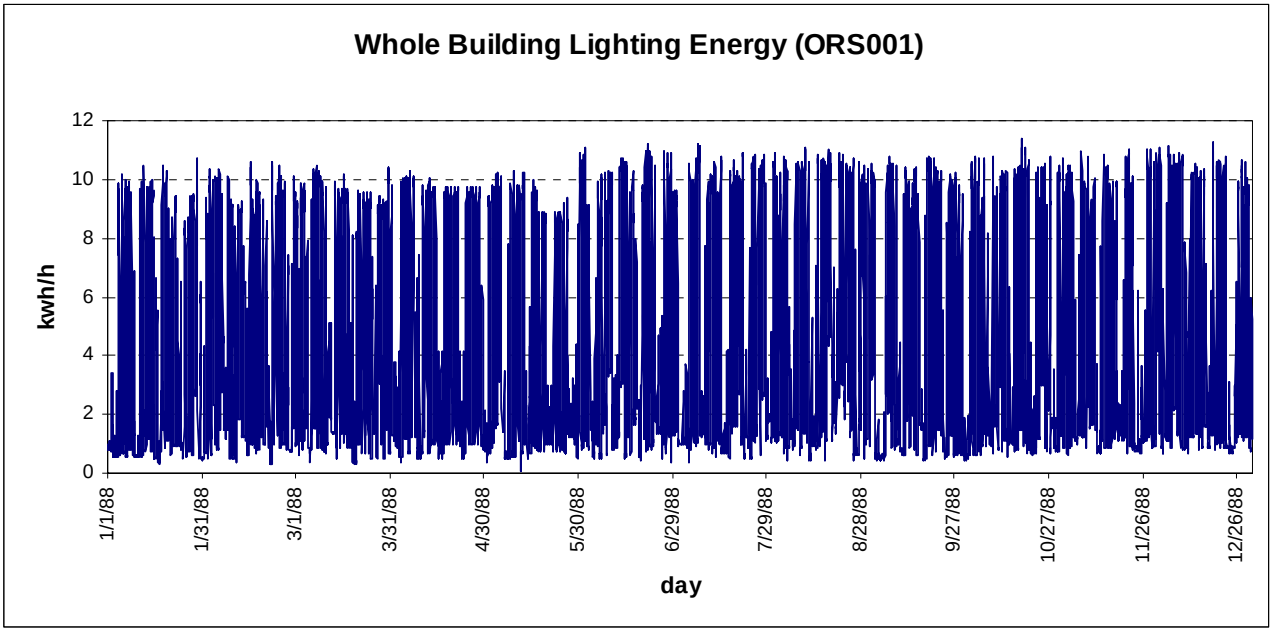
Lighting EUI: [(10.72 x 5) + (3.93 x 2)] x 52 x 1.34 = 4.28 kWh/ft^2.year

Lighting Type: N/A

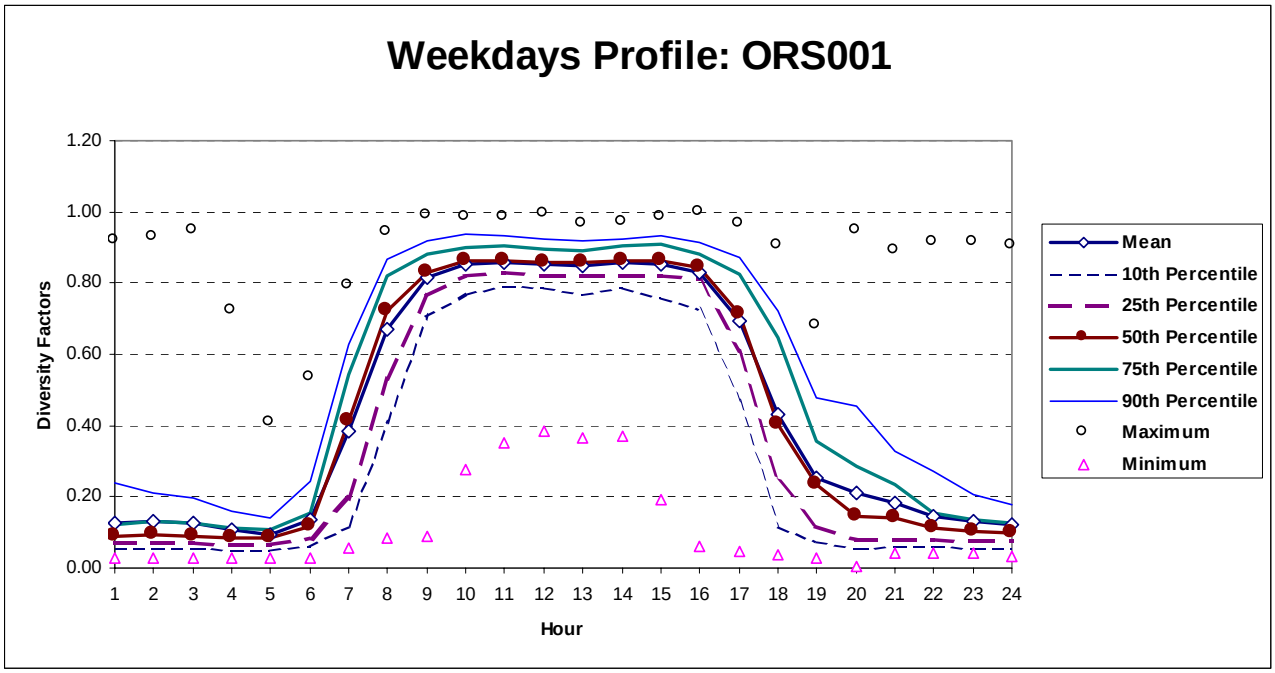
Dates: 1/1/88 - 12/31/88

Data Type: Lights

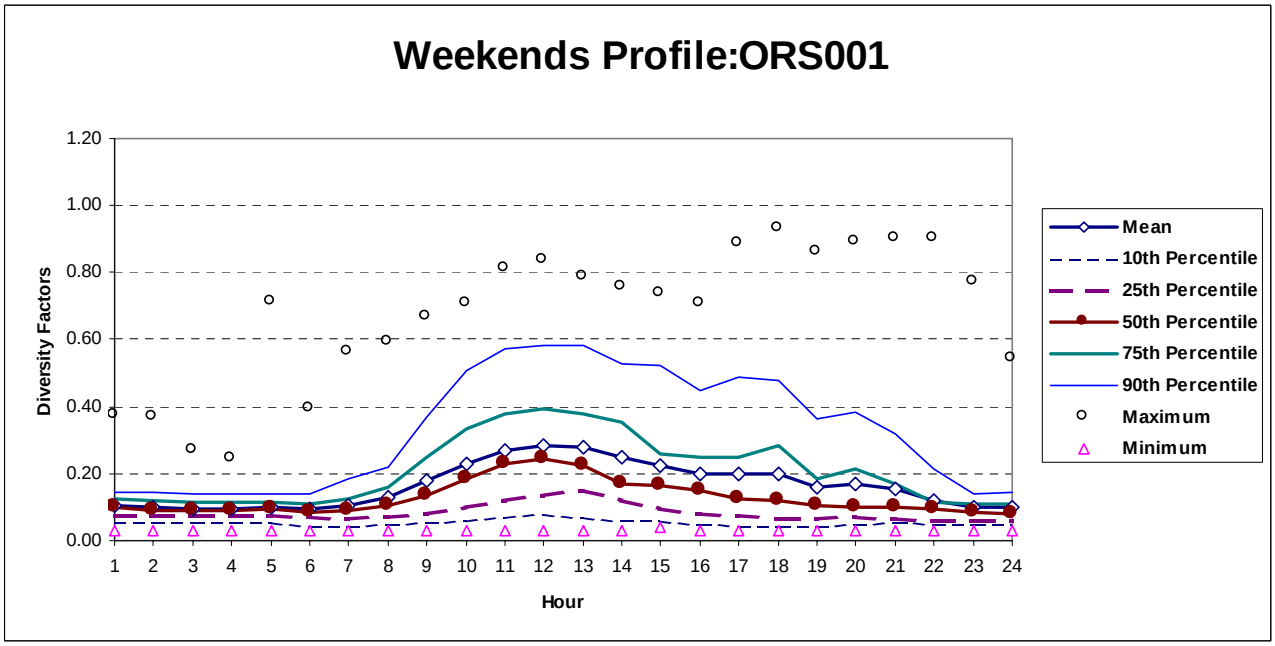
Maximum kW: 11.37 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/88, 5/26/88, 7/4/88, 9/5/88, 10/6/88, 11/24/88, 11/25/88, and 12/26/88.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.13	0.25	0.00	0.06	0.07	0.09	0.12	0.24	0.92	0.03
2.00	0.13	0.27	-0.01	0.05	0.07	0.09	0.13	0.21	0.93	0.03
3.00	0.13	0.26	-0.01	0.05	0.07	0.09	0.13	0.20	0.95	0.03
4.00	0.11	0.19	0.03	0.05	0.07	0.09	0.11	0.16	0.72	0.03
5.00	0.10	0.15	0.04	0.05	0.06	0.08	0.11	0.14	0.41	0.03
6.00	0.13	0.22	0.05	0.06	0.08	0.12	0.15	0.24	0.53	0.03
7.00	0.39	0.58	0.19	0.12	0.19	0.41	0.54	0.63	0.79	0.06
8.00	0.67	0.85	0.49	0.41	0.53	0.72	0.82	0.87	0.94	0.08
9.00	0.82	0.92	0.71	0.71	0.76	0.83	0.88	0.92	0.99	0.09
10.00	0.86	0.93	0.78	0.77	0.82	0.86	0.90	0.94	0.98	0.28
11.00	0.86	0.93	0.79	0.79	0.83	0.86	0.90	0.93	0.98	0.35
12.00	0.85	0.91	0.79	0.79	0.82	0.86	0.89	0.92	0.99	0.39
13.00	0.85	0.92	0.78	0.77	0.82	0.86	0.89	0.92	0.97	0.37
14.00	0.86	0.92	0.80	0.79	0.82	0.86	0.90	0.93	0.97	0.37
15.00	0.85	0.94	0.76	0.76	0.82	0.86	0.91	0.93	0.98	0.19
16.00	0.83	0.93	0.73	0.73	0.81	0.85	0.88	0.92	1.00	0.06
17.00	0.69	0.86	0.53	0.47	0.61	0.71	0.83	0.87	0.97	0.05
18.00	0.43	0.66	0.20	0.12	0.24	0.40	0.65	0.72	0.90	0.04
19.00	0.25	0.41	0.10	0.07	0.12	0.23	0.36	0.48	0.68	0.03
20.00	0.21	0.39	0.03	0.06	0.08	0.15	0.29	0.45	0.95	0.00
21.00	0.18	0.33	0.04	0.06	0.08	0.14	0.23	0.33	0.89	0.04
22.00	0.14	0.26	0.03	0.06	0.08	0.11	0.15	0.27	0.91	0.04
23.00	0.13	0.25	0.01	0.06	0.07	0.10	0.13	0.20	0.91	0.04
24.00	0.12	0.22	0.02	0.06	0.07	0.10	0.13	0.18	0.91	0.03
Daily Values	10.72	11.82	9.63	9.48	10.08	10.62	11.26	11.95	15.29	3.70
Daily Sum from Hourly	10.72	13.57	7.87	7.90	9.02	10.49	12.05	13.60	21.17	2.69

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.10	0.16	0.05	0.06	0.07	0.10	0.12	0.15	0.37	0.03
2.00	0.10	0.14	0.05	0.05	0.07	0.09	0.12	0.14	0.37	0.03
3.00	0.10	0.13	0.06	0.05	0.07	0.09	0.11	0.14	0.27	0.03
4.00	0.10	0.13	0.06	0.05	0.07	0.09	0.11	0.14	0.25	0.03
5.00	0.10	0.17	0.03	0.05	0.07	0.09	0.11	0.14	0.71	0.03
6.00	0.09	0.14	0.05	0.05	0.07	0.08	0.11	0.14	0.40	0.03
7.00	0.11	0.18	0.04	0.04	0.07	0.09	0.13	0.18	0.56	0.03
8.00	0.13	0.23	0.04	0.05	0.07	0.10	0.16	0.22	0.59	0.03
9.00	0.18	0.32	0.04	0.06	0.08	0.13	0.25	0.37	0.67	0.03
10.00	0.23	0.40	0.06	0.06	0.10	0.18	0.33	0.51	0.71	0.03
11.00	0.27	0.46	0.08	0.07	0.12	0.23	0.38	0.57	0.81	0.03
12.00	0.28	0.48	0.09	0.08	0.13	0.24	0.39	0.58	0.84	0.03
13.00	0.28	0.47	0.09	0.07	0.15	0.23	0.38	0.58	0.79	0.03
14.00	0.25	0.43	0.07	0.06	0.12	0.17	0.35	0.53	0.75	0.03
15.00	0.22	0.40	0.04	0.06	0.09	0.16	0.26	0.52	0.74	0.04
16.00	0.20	0.36	0.03	0.05	0.08	0.15	0.25	0.45	0.71	0.03
17.00	0.20	0.39	0.01	0.05	0.07	0.13	0.25	0.49	0.89	0.03
18.00	0.20	0.39	0.01	0.04	0.07	0.12	0.28	0.48	0.93	0.03
19.00	0.16	0.31	0.00	0.05	0.06	0.10	0.19	0.36	0.86	0.03
20.00	0.17	0.33	0.00	0.05	0.07	0.10	0.21	0.39	0.89	0.03
21.00	0.15	0.30	0.00	0.05	0.07	0.10	0.17	0.32	0.90	0.03
22.00	0.12	0.23	0.01	0.05	0.06	0.09	0.12	0.21	0.90	0.03
23.00	0.10	0.19	0.01	0.05	0.06	0.08	0.11	0.14	0.77	0.03
24.00	0.10	0.18	0.02	0.05	0.06	0.08	0.11	0.14	0.54	0.03
Daily Values	3.93	5.65	2.21	2.03	2.84	3.52	4.72	5.79	11.24	1.13
Daily Sum from Hourly	3.93	6.92	0.93	1.30	1.96	3.04	5.01	7.89	16.21	0.74

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (Dubal Beck Bldg., Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.09)   (2) (0.09)   (3) (0.09)   (4) (0.09)   (5) (0.08)   (6) (0.12)
 (7) (0.41)   (8) (0.72)   (9) (0.83)  (10) (0.86)  (11) (0.86)  (12) (0.86)
(13) (0.86)  (14) (0.86)  (15) (0.86)  (16) (0.85)  (17) (0.71)  (18) (0.40)
(19) (0.23)  (20) (0.15)  (21) (0.14)  (22) (0.11)  (23) (0.10)  (24) (0.10) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.10)   (2) (0.09)   (3) (0.09)   (4) (0.09)   (5) (0.09)   (6) (0.08)
 (7) (0.09)   (8) (0.10)   (9) (0.13)  (10) (0.18)  (11) (0.23)  (12) (0.24)
(13) (0.23)  (14) (0.17)  (15) (0.16)  (16) (0.15)  (17) (0.13)  (18) (0.12)
(19) (0.10)  (20) (0.10)  (21) (0.10)  (22) (0.09)  (23) (0.08)  (24) (0.08) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.34 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1988.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (Dubal Beck Bldg., Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.09, 0.09, 0.09, 0.09, 0.08, 0.12,
      0.41, 0.72, 0.83, 0.86, 0.86, 0.86,
      0.86, 0.86, 0.86, 0.85, 0.71, 0.40,
      0.23, 0.15, 0.14, 0.11, 0.10, 0.10),
    SATURDAY THRU SUNDAY =
     (0.10, 0.09, 0.09, 0.09, 0.09, 0.08,
      0.09, 0.10, 0.13, 0.18, 0.23, 0.24,
      0.23, 0.17, 0.16, 0.15, 0.13, 0.12,
      0.10, 0.10, 0.10, 0.09, 0.08, 0.08),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.10, 0.09, 0.09, 0.09, 0.09, 0.08,
      0.09, 0.10, 0.13, 0.18, 0.23, 0.24,
      0.23, 0.17, 0.16, 0.15, 0.13, 0.12,
      0.10, 0.10, 0.10, 0.09, 0.08, 0.08),
    SATURDAY THRU SUNDAY =
     (0.10, 0.09, 0.09, 0.09, 0.09, 0.08,
      0.09, 0.10, 0.13, 0.18, 0.23, 0.24,
      0.23, 0.17, 0.16, 0.15, 0.13, 0.12,
      0.10, 0.10, 0.10, 0.09, 0.08, 0.08),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.34 W/sqft, Area=8500 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 11 kW (Metric units)
      LIGHTS= 39,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 39,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 39,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 39,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 39,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 39,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 39,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 39,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 39,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (Dubal Beck Bldg., Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.09, 0.09, 0.09, 0.09, 0.08, 0.12,
   0.41, 0.72, 0.83, 0.86, 0.86, 0.86,
   0.86, 0.86, 0.86, 0.85, 0.71, 0.40,
   0.23, 0.15, 0.14, 0.11, 0.10, 0.10;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.10, 0.09, 0.09, 0.09, 0.09, 0.08,
   0.09, 0.10, 0.13, 0.18, 0.23, 0.24,
   0.23, 0.17, 0.16, 0.15, 0.13, 0.12,
   0.10, 0.10, 0.10, 0.09, 0.08, 0.08;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.34 W/sqft, Area=8500 sqft
```

```
11371,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 18 - TXL001

Category	:	Large
Building ID	:	146
Building	:	Dallas Government Center
Location	:	Dallas, TX
Building Area (ft^2)	:	473,800
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	2.51
Source	:	ESL
EUI (kWh/ft^2-yr)	:	10.61
Start Date	:	1/1/95
End date	:	12/31/95

(Page 1) Building Descriptions: (TXL001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Government Center Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Dallas, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Fourteen story, 473,800 ft^2 .

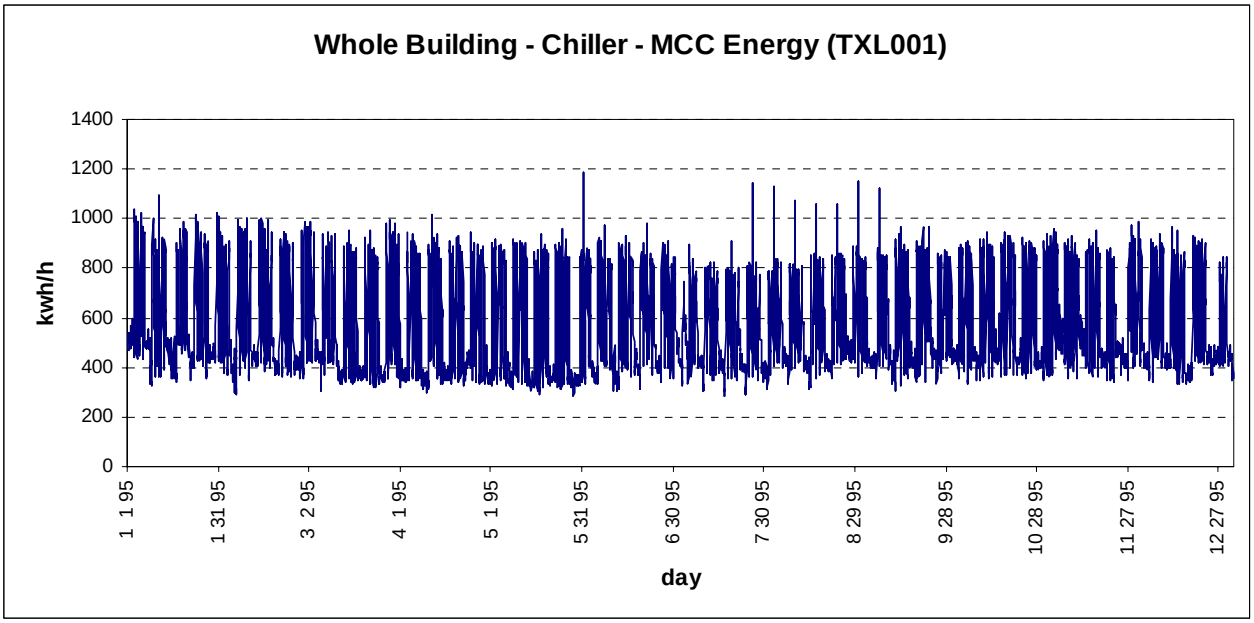
Lighting EUI: [(12.93 x 5) + (8.34 x 2)] x 52 x 2.51 = 10.61 kWh/ft^2.year

Lighting Type: mixture of 34-W fluorescent (5,422 lamps) and incandescent lamps.

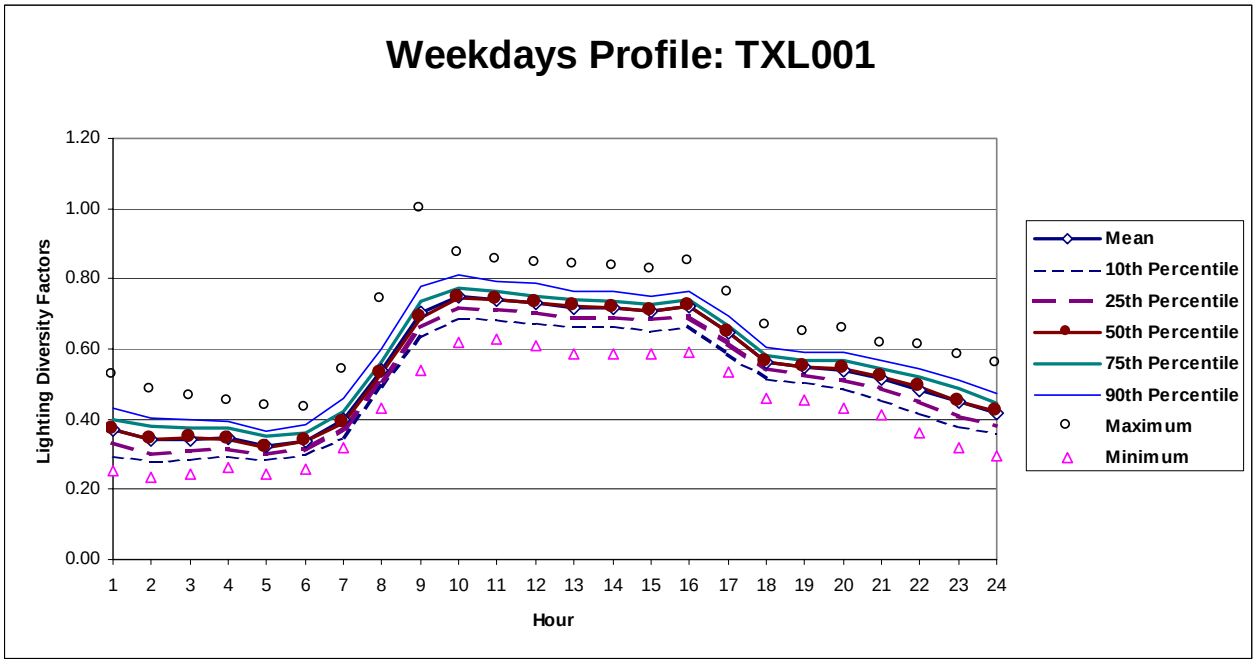
Dates: 1/1/95 - 12/31/95

Data Type: Lighting + Receptacles = WBE - MCC - Chillers = ch1016 - (ch1010 + ch1011 + ch1012 + ch1013 + ch1526) - (ch1000 + ch1001 + ch1002 + ch1004 + ch1005 + ch1006 + ch1007 + ch1008 + ch1009 + ch1014 + ch1015 + ch1022)

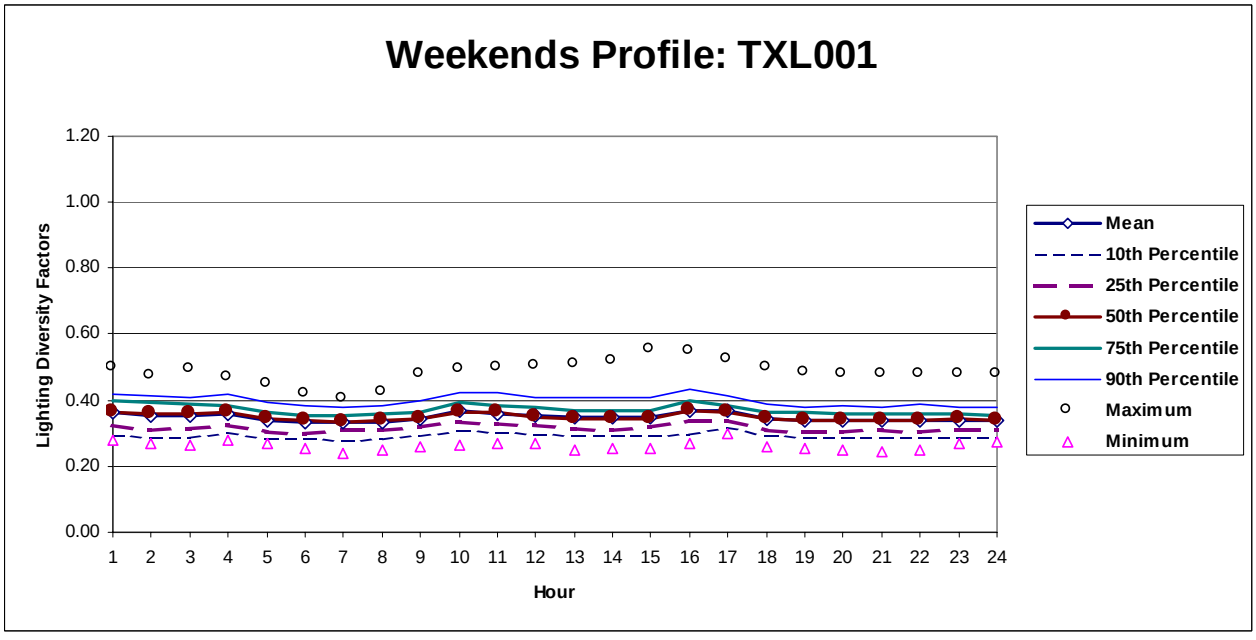
Maximum kW: 1,189 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 01/02/95, 01/16/95, 05/29/95, 07/04/95, 09/04/95, 11/23/95, 11/24/95, 12/25/95, and 12/26/95.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1std	Mean-1StD	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.37	0.42	0.32	0.30	0.33	0.37	0.40	0.43	0.52	0.25
2.00	0.34	0.39	0.29	0.28	0.30	0.34	0.38	0.40	0.48	0.24
3.00	0.34	0.39	0.30	0.29	0.31	0.35	0.38	0.40	0.46	0.24
4.00	0.35	0.39	0.31	0.30	0.32	0.34	0.38	0.40	0.45	0.26
5.00	0.32	0.36	0.29	0.28	0.30	0.32	0.35	0.37	0.44	0.24
6.00	0.34	0.37	0.31	0.30	0.31	0.34	0.36	0.38	0.43	0.26
7.00	0.40	0.43	0.36	0.35	0.37	0.39	0.42	0.46	0.54	0.32
8.00	0.54	0.58	0.49	0.49	0.51	0.53	0.56	0.60	0.74	0.43
9.00	0.70	0.77	0.63	0.63	0.66	0.69	0.73	0.78	1.00	0.54
10.00	0.75	0.80	0.70	0.69	0.72	0.75	0.77	0.81	0.87	0.62
11.00	0.74	0.78	0.70	0.68	0.71	0.74	0.76	0.79	0.85	0.63
12.00	0.73	0.77	0.69	0.68	0.70	0.73	0.75	0.79	0.84	0.61
13.00	0.72	0.76	0.68	0.66	0.69	0.72	0.74	0.77	0.84	0.58
14.00	0.72	0.76	0.67	0.66	0.69	0.72	0.74	0.76	0.84	0.59
15.00	0.71	0.75	0.67	0.65	0.68	0.71	0.73	0.75	0.82	0.59
16.00	0.72	0.76	0.68	0.66	0.69	0.72	0.74	0.77	0.85	0.59
17.00	0.65	0.69	0.60	0.59	0.62	0.64	0.67	0.69	0.76	0.53
18.00	0.56	0.60	0.53	0.51	0.54	0.56	0.58	0.60	0.67	0.46
19.00	0.55	0.58	0.51	0.50	0.53	0.55	0.57	0.59	0.64	0.45
20.00	0.54	0.58	0.50	0.49	0.51	0.54	0.57	0.59	0.66	0.43
21.00	0.52	0.56	0.48	0.45	0.49	0.52	0.55	0.57	0.62	0.41
22.00	0.48	0.53	0.44	0.42	0.45	0.49	0.52	0.54	0.61	0.36
23.00	0.45	0.50	0.40	0.38	0.41	0.45	0.49	0.51	0.58	0.32
24.00	0.42	0.46	0.37	0.36	0.38	0.42	0.45	0.47	0.56	0.30
Daily Values	12.93	13.54	12.32	12.20	12.56	12.93	13.27	13.68	14.83	11.34
Daily Sum from Hourly	12.94	13.98	11.90	11.62	12.23	12.92	13.59	14.22	16.08	10.26

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1std	Mean-1StD	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.36	0.41	0.31	0.30	0.32	0.36	0.40	0.42	0.50	0.28
2.00	0.35	0.40	0.31	0.29	0.31	0.36	0.39	0.41	0.47	0.27
3.00	0.35	0.40	0.31	0.29	0.31	0.36	0.39	0.41	0.49	0.26
4.00	0.36	0.40	0.32	0.30	0.33	0.37	0.38	0.42	0.47	0.28
5.00	0.34	0.38	0.30	0.29	0.31	0.34	0.36	0.39	0.45	0.27
6.00	0.33	0.37	0.30	0.28	0.30	0.34	0.36	0.38	0.42	0.26
7.00	0.33	0.37	0.30	0.28	0.31	0.33	0.35	0.38	0.40	0.24
8.00	0.33	0.37	0.30	0.28	0.31	0.34	0.36	0.38	0.42	0.25
9.00	0.34	0.38	0.30	0.29	0.32	0.34	0.37	0.40	0.48	0.26
10.00	0.37	0.41	0.32	0.31	0.33	0.36	0.39	0.42	0.49	0.27
11.00	0.36	0.41	0.31	0.30	0.33	0.36	0.38	0.42	0.50	0.27
12.00	0.35	0.40	0.31	0.30	0.32	0.35	0.38	0.41	0.50	0.27
13.00	0.35	0.39	0.30	0.29	0.31	0.34	0.37	0.41	0.51	0.25
14.00	0.35	0.39	0.30	0.29	0.31	0.34	0.37	0.41	0.52	0.25
15.00	0.35	0.40	0.30	0.30	0.32	0.34	0.37	0.41	0.55	0.25
16.00	0.37	0.42	0.32	0.30	0.34	0.37	0.40	0.43	0.55	0.27
17.00	0.37	0.41	0.32	0.32	0.34	0.36	0.39	0.41	0.52	0.30
18.00	0.35	0.39	0.30	0.30	0.31	0.35	0.37	0.39	0.50	0.26
19.00	0.34	0.38	0.30	0.29	0.30	0.34	0.36	0.38	0.48	0.25
20.00	0.34	0.38	0.30	0.29	0.30	0.34	0.36	0.38	0.48	0.25
21.00	0.34	0.38	0.30	0.29	0.31	0.34	0.36	0.38	0.48	0.25
22.00	0.34	0.38	0.30	0.29	0.31	0.34	0.36	0.39	0.48	0.25
23.00	0.34	0.38	0.30	0.29	0.31	0.34	0.36	0.38	0.48	0.27
24.00	0.34	0.38	0.30	0.29	0.31	0.34	0.36	0.38	0.48	0.27
Daily Values	8.34	9.24	7.43	7.18	7.75	8.34	8.86	9.47	11.22	6.71
Daily Sum from Hourly	8.34	9.37	7.31	7.03	7.56	8.36	8.92	9.59	11.62	6.30

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Dallas Government Center Bldg., Dallas, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.37)  (2) (0.34)  (3) (0.35)  (4) (0.34)  (5) (0.32)  (6) (0.34)
(7) (0.39)  (8) (0.53)  (9) (0.69) (10) (0.75) (11) (0.74) (12) (0.73)
(13) (0.72) (14) (0.72) (15) (0.71) (16) (0.72) (17) (0.64) (18) (0.56)
(19) (0.55) (20) (0.54) (21) (0.52) (22) (0.49) (23) (0.45) (24) (0.42) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.36)  (2) (0.36)  (3) (0.36)  (4) (0.37)  (5) (0.34)  (6) (0.34)
(7) (0.33)  (8) (0.34)  (9) (0.34) (10) (0.36) (11) (0.36) (12) (0.35)
(13) (0.34) (14) (0.34) (15) (0.34) (16) (0.37) (17) (0.36) (18) (0.35)
(19) (0.34) (20) (0.34) (21) (0.34) (22) (0.34) (23) (0.34) (24) (0.34) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.51  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31 1995.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Dallas Government Center Bldg., Dallas, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.37, 0.34, 0.35, 0.34, 0.32, 0.34,
      0.39, 0.53, 0.69, 0.75, 0.74, 0.73,
      0.72, 0.72, 0.71, 0.72, 0.64, 0.56,
      0.55, 0.54, 0.52, 0.49, 0.45, 0.42),
    SATURDAY THRU SUNDAY =
     (0.36, 0.36, 0.36, 0.37, 0.34, 0.34,
      0.33, 0.34, 0.34, 0.36, 0.36, 0.35,
      0.34, 0.34, 0.34, 0.37, 0.36, 0.35,
      0.34, 0.34, 0.34, 0.34, 0.34, 0.34),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.40, 0.39, 0.39, 0.38, 0.36, 0.36,
      0.35, 0.36, 0.37, 0.39, 0.38, 0.38,
      0.37, 0.37, 0.37, 0.40, 0.39, 0.37,
      0.36, 0.36, 0.36, 0.36, 0.36, 0.36),
    SATURDAY THRU SUNDAY =
     (0.40, 0.39, 0.39, 0.38, 0.36, 0.36,
      0.35, 0.36, 0.37, 0.39, 0.38, 0.38,
      0.37, 0.37, 0.37, 0.40, 0.39, 0.37,
      0.36, 0.36, 0.36, 0.36, 0.36, 0.36),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.51 W/sqft, Area=473800 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 1189 kW (Metric units)
      LIGHTS= 4058,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 4058,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 4058,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 4058,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 4058,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 4058,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 4058,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 4058,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 4058,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Dallas Government Center Bldg., Dallas, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.37, 0.34, 0.35, 0.34, 0.32, 0.34,
   0.39, 0.53, 0.69, 0.75, 0.74, 0.73,
   0.72, 0.72, 0.71, 0.72, 0.64, 0.56,
   0.55, 0.54, 0.52, 0.49, 0.45, 0.42;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.36, 0.36, 0.36, 0.37, 0.34, 0.34,
   0.33, 0.34, 0.34, 0.36, 0.36, 0.35,
   0.34, 0.34, 0.34, 0.37, 0.36, 0.35,
   0.34, 0.34, 0.34, 0.34, 0.34, 0.34;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.51 W/sqft, Area=473800 sqft
```

```
1188998,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 19 - TXL002

Category	:	Large
Building ID	:	203
Building	:	John H. Reagan Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	169,746
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	4.36
Source	:	ESL
EUI (kWh/ft^2-yr)	:	24.73
Start Date	:	1/1/97
End date	:	12/31/97

(Page 1) Building Descriptions: (TXL002)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: John H. Reagan Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Five story, 169,746 ft^2 .

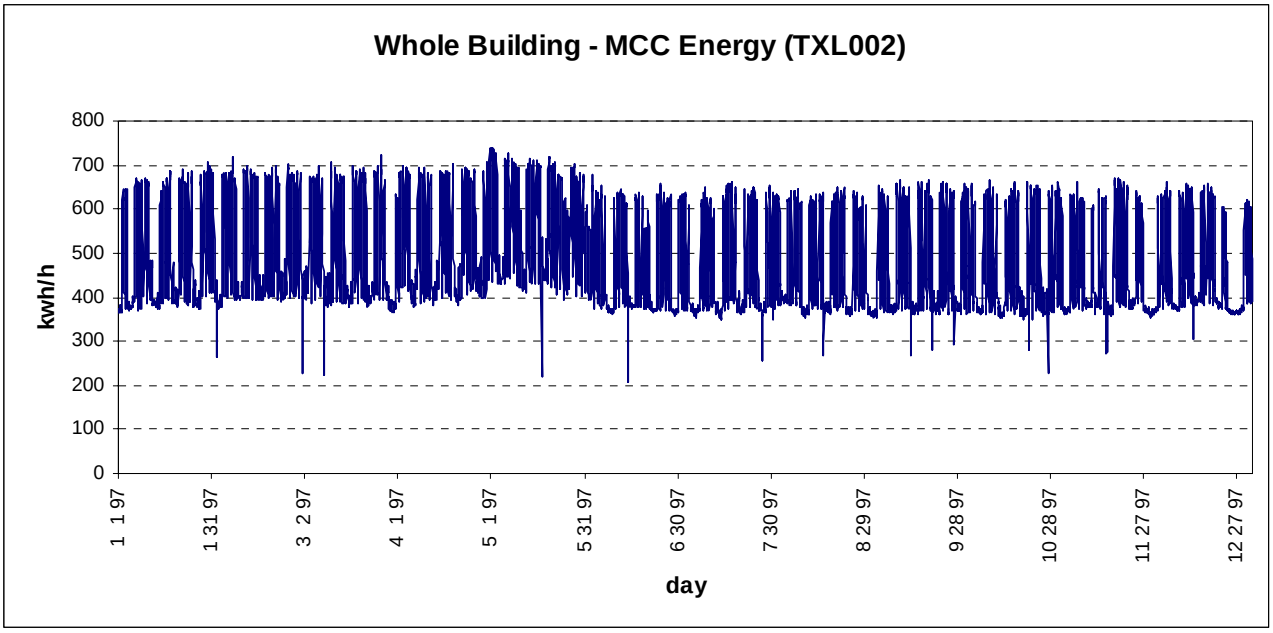
Lighting EUI: [(16.68 x 5) + (12.79 x 3)] x 52 x 4.36 = 24.73 kWh/ft^2.year

Lighting Type: 100 % Fluorescent (34-W)

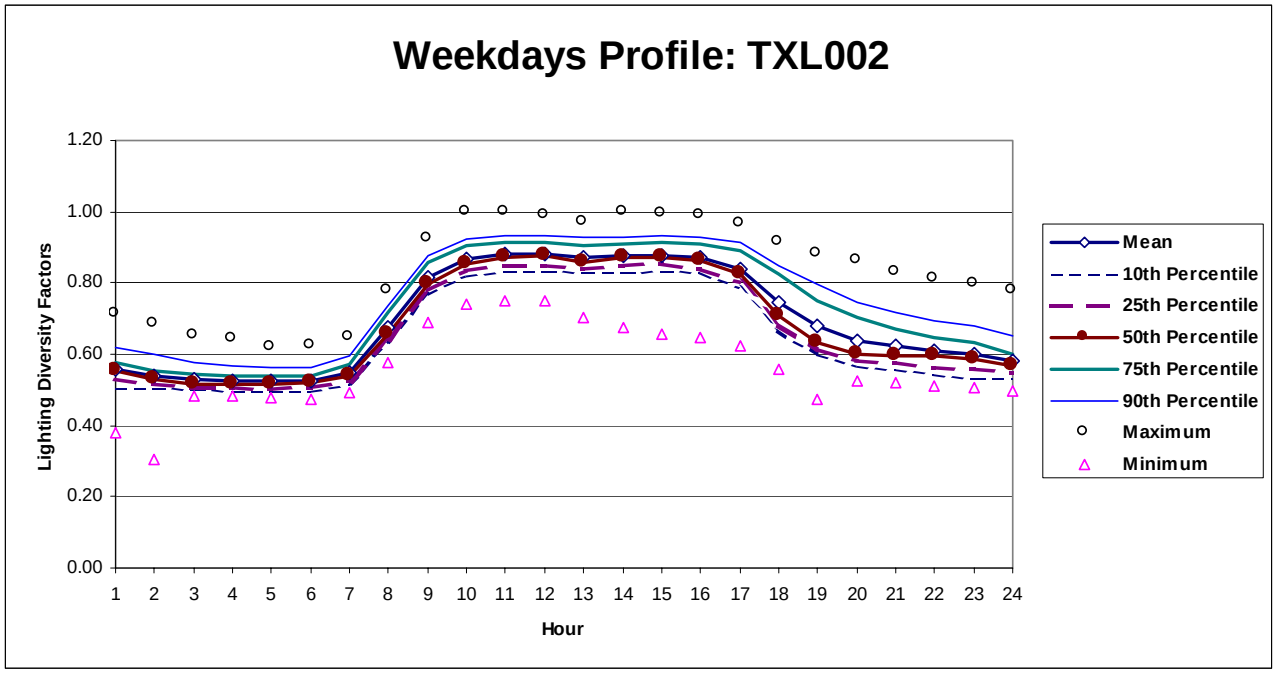
Dates: 1/1/97 - 12/31/97

Data Type: Lighting + Receptacles = WBE - MCC = ch0211 - (ch0199 + ch0200 + ch0201 + ch0202)

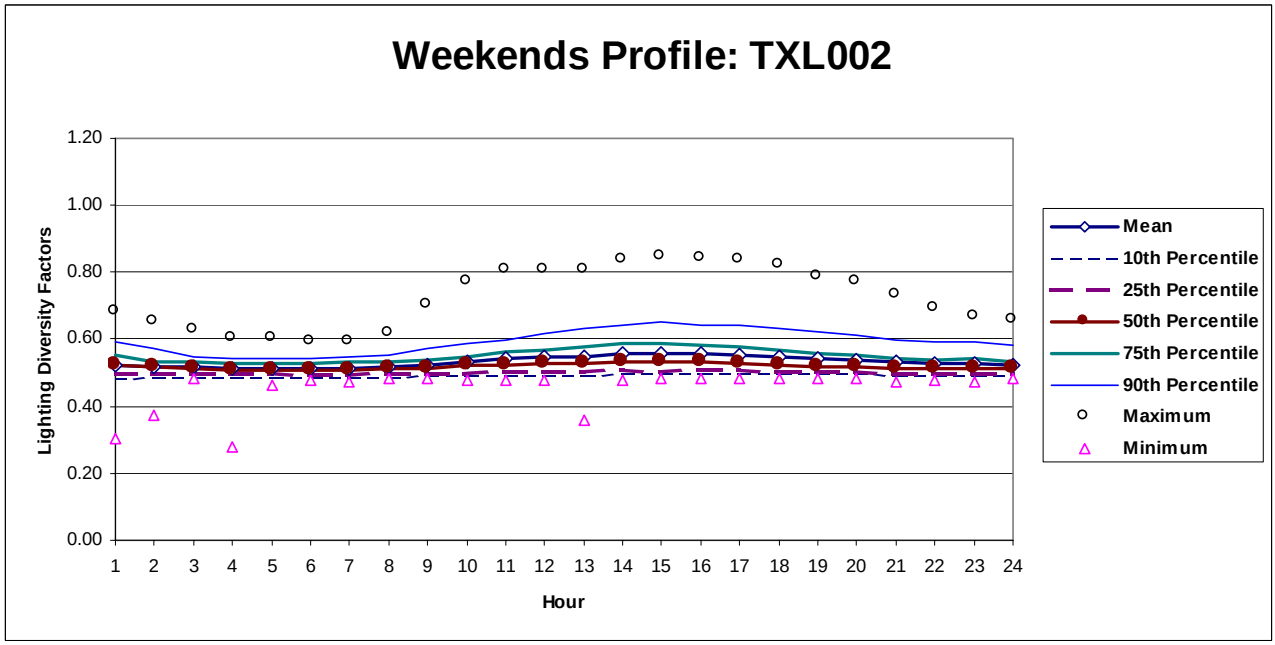
Maximum kW: 741 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 01/01/97, 01/13/97, 03/28/97, 07/04/97, 09/01/97, 11/11/97, 11/27/97, 11/28/97, and 12/24 - 26/97.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.56	0.60	0.51	0.51	0.53	0.55	0.58	0.62	0.71	0.38
2.00	0.54	0.58	0.50	0.50	0.52	0.53	0.55	0.60	0.68	0.31
3.00	0.53	0.56	0.50	0.50	0.51	0.52	0.54	0.58	0.65	0.48
4.00	0.53	0.56	0.50	0.50	0.50	0.52	0.54	0.57	0.64	0.48
5.00	0.52	0.55	0.50	0.50	0.50	0.52	0.54	0.56	0.62	0.48
6.00	0.53	0.55	0.50	0.50	0.51	0.52	0.54	0.56	0.63	0.47
7.00	0.55	0.58	0.52	0.52	0.53	0.54	0.57	0.59	0.65	0.49
8.00	0.68	0.72	0.63	0.63	0.64	0.66	0.72	0.74	0.78	0.58
9.00	0.81	0.86	0.77	0.77	0.78	0.80	0.86	0.88	0.92	0.69
10.00	0.87	0.91	0.82	0.82	0.83	0.85	0.91	0.92	1.00	0.74
11.00	0.88	0.92	0.84	0.83	0.85	0.87	0.91	0.93	1.00	0.75
12.00	0.88	0.92	0.84	0.84	0.85	0.88	0.91	0.93	0.99	0.75
13.00	0.87	0.91	0.83	0.83	0.84	0.86	0.91	0.93	0.97	0.70
14.00	0.88	0.92	0.83	0.83	0.85	0.87	0.91	0.93	1.00	0.67
15.00	0.88	0.92	0.83	0.83	0.85	0.87	0.91	0.93	0.99	0.66
16.00	0.87	0.92	0.82	0.83	0.84	0.86	0.91	0.93	0.99	0.65
17.00	0.84	0.90	0.78	0.79	0.80	0.82	0.89	0.91	0.97	0.62
18.00	0.75	0.82	0.67	0.67	0.68	0.71	0.82	0.85	0.91	0.56
19.00	0.68	0.76	0.60	0.60	0.62	0.63	0.75	0.80	0.88	0.47
20.00	0.64	0.72	0.56	0.57	0.58	0.60	0.70	0.75	0.86	0.52
21.00	0.62	0.69	0.56	0.56	0.57	0.59	0.67	0.72	0.83	0.52
22.00	0.61	0.67	0.55	0.54	0.56	0.59	0.65	0.69	0.81	0.51
23.00	0.60	0.65	0.54	0.54	0.56	0.59	0.63	0.68	0.80	0.50
24.00	0.58	0.63	0.53	0.53	0.55	0.57	0.60	0.65	0.78	0.50
Daily Values	16.68	17.75	15.62	15.65	15.89	16.17	17.54	18.13	19.45	14.50
Daily Sum from Hourly	16.68	17.84	15.53	15.52	15.85	16.33	17.53	18.26	20.06	13.48

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.52	0.58	0.46	0.48	0.50	0.52	0.55	0.59	0.68	0.30
2.00	0.52	0.56	0.47	0.49	0.50	0.52	0.53	0.57	0.65	0.37
3.00	0.52	0.55	0.49	0.49	0.50	0.51	0.53	0.55	0.63	0.48
4.00	0.51	0.55	0.47	0.49	0.50	0.51	0.53	0.54	0.60	0.28
5.00	0.51	0.54	0.49	0.49	0.50	0.51	0.53	0.54	0.60	0.46
6.00	0.51	0.54	0.49	0.49	0.49	0.51	0.53	0.54	0.59	0.48
7.00	0.51	0.54	0.49	0.49	0.49	0.51	0.53	0.55	0.59	0.47
8.00	0.52	0.55	0.49	0.49	0.50	0.51	0.53	0.55	0.62	0.48
9.00	0.52	0.56	0.49	0.49	0.50	0.51	0.54	0.57	0.70	0.48
10.00	0.53	0.59	0.48	0.49	0.50	0.52	0.55	0.59	0.77	0.48
11.00	0.54	0.60	0.48	0.49	0.50	0.52	0.56	0.60	0.81	0.48
12.00	0.55	0.61	0.48	0.50	0.50	0.53	0.57	0.62	0.81	0.48
13.00	0.55	0.62	0.48	0.50	0.51	0.53	0.58	0.63	0.81	0.36
14.00	0.56	0.63	0.48	0.50	0.51	0.53	0.59	0.64	0.83	0.48
15.00	0.56	0.63	0.48	0.50	0.50	0.53	0.59	0.65	0.84	0.48
16.00	0.56	0.63	0.48	0.50	0.51	0.53	0.58	0.64	0.84	0.48
17.00	0.55	0.62	0.48	0.50	0.51	0.53	0.58	0.64	0.83	0.48
18.00	0.55	0.61	0.48	0.50	0.50	0.52	0.57	0.63	0.82	0.49
19.00	0.54	0.60	0.48	0.50	0.50	0.52	0.56	0.62	0.78	0.48
20.00	0.54	0.60	0.48	0.50	0.50	0.52	0.55	0.61	0.77	0.48
21.00	0.53	0.58	0.48	0.49	0.50	0.52	0.54	0.60	0.73	0.47
22.00	0.53	0.57	0.48	0.49	0.50	0.51	0.54	0.59	0.69	0.48
23.00	0.53	0.57	0.49	0.49	0.50	0.51	0.54	0.59	0.67	0.47
24.00	0.52	0.56	0.49	0.49	0.50	0.51	0.54	0.58	0.66	0.48
Daily Values	12.79	13.87	11.71	11.87	12.04	12.37	13.28	14.26	16.56	11.67
Daily Sum from Hourly	12.79	14.00	11.57	11.83	12.01	12.45	13.24	14.26	17.35	10.89

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (John H. Reagan Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.55)  (2) (0.53)  (3) (0.52)  (4) (0.52)  (5) (0.52)  (6) (0.52)
(7) (0.54)  (8) (0.66)  (9) (0.80) (10) (0.85) (11) (0.87) (12) (0.88)
(13) (0.86) (14) (0.87) (15) (0.87) (16) (0.86) (17) (0.82) (18) (0.71)
(19) (0.63) (20) (0.60) (21) (0.59) (22) (0.59) (23) (0.59) (24) (0.57) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.52)  (2) (0.52)  (3) (0.51)  (4) (0.51)  (5) (0.51)  (6) (0.51)
(7) (0.51)  (8) (0.51)  (9) (0.51) (10) (0.52) (11) (0.52) (12) (0.53)
(13) (0.53) (14) (0.53) (15) (0.53) (16) (0.53) (17) (0.53) (18) (0.52)
(19) (0.52) (20) (0.52) (21) (0.52) (22) (0.51) (23) (0.51) (24) (0.51) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 4.36  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1997.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

3. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (John H. Reagan Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.55, 0.53, 0.52, 0.52, 0.52, 0.52,
       0.54, 0.66, 0.80, 0.85, 0.87, 0.88,
       0.86, 0.87, 0.87, 0.86, 0.82, 0.71,
       0.63, 0.60, 0.59, 0.59, 0.59, 0.57),
    SATURDAY THRU SUNDAY =
      (0.52, 0.52, 0.51, 0.51, 0.51, 0.51,
       0.51, 0.51, 0.51, 0.52, 0.52, 0.53,
       0.53, 0.53, 0.53, 0.53, 0.53, 0.52,
       0.52, 0.52, 0.52, 0.51, 0.51, 0.51),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.55, 0.53, 0.53, 0.53, 0.53, 0.53,
       0.53, 0.53, 0.54, 0.55, 0.56, 0.57,
       0.58, 0.59, 0.59, 0.58, 0.58, 0.57,
       0.56, 0.55, 0.54, 0.54, 0.54, 0.54),
    SATURDAY THRU SUNDAY =
      (0.55, 0.53, 0.53, 0.53, 0.53, 0.53,
       0.53, 0.53, 0.54, 0.55, 0.56, 0.57,
       0.58, 0.59, 0.59, 0.58, 0.58, 0.57,
       0.56, 0.55, 0.54, 0.54, 0.54, 0.54),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=4.36 W/sqft, Area=169746 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 741 kW (Metric units)
      LIGHTS= 2528,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 2528,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 2528,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 2528,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 2528,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 2528,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 2528,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 2528,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 2528,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (John H. Reagan Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.55, 0.53, 0.52, 0.52, 0.52, 0.52,
   0.54, 0.66, 0.80, 0.85, 0.87, 0.88,
   0.86, 0.87, 0.87, 0.86, 0.82, 0.71,
   0.63, 0.60, 0.59, 0.59, 0.59, 0.57;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.52, 0.52, 0.51, 0.51, 0.51, 0.51,
   0.51, 0.51, 0.51, 0.52, 0.52, 0.53,
   0.53, 0.53, 0.53, 0.53, 0.53, 0.52,
   0.52, 0.52, 0.52, 0.51, 0.51, 0.51;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=4.36 W/sqft, Area=169746 sqft
```

```
740774,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 20 - TXL003

Category	:	Large
Building ID	:	206
Building	:	Insurance Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	102,000
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	3.54
Source	:	ESL
EUI (kWh/ft^2-yr)	:	20.05
Start Date	:	1/1/96
End date	:	12/31/96

(Page 1) Building Descriptions: (TXL003)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Insurance Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Four story, 102,000 ft^2 .

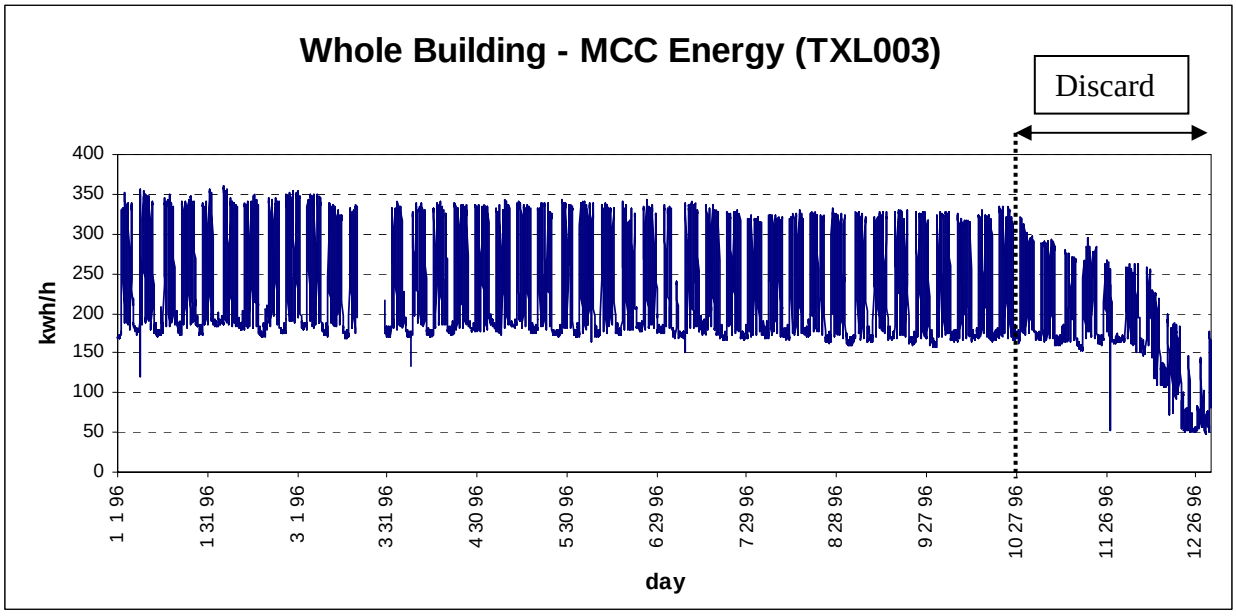
Lighting EUI: [(17.09 x 5) + (11.80 x 2)] x 52 x 3.54 = 20.05 kWh/ft^2.year

Lighting Type: 100% fluorescent

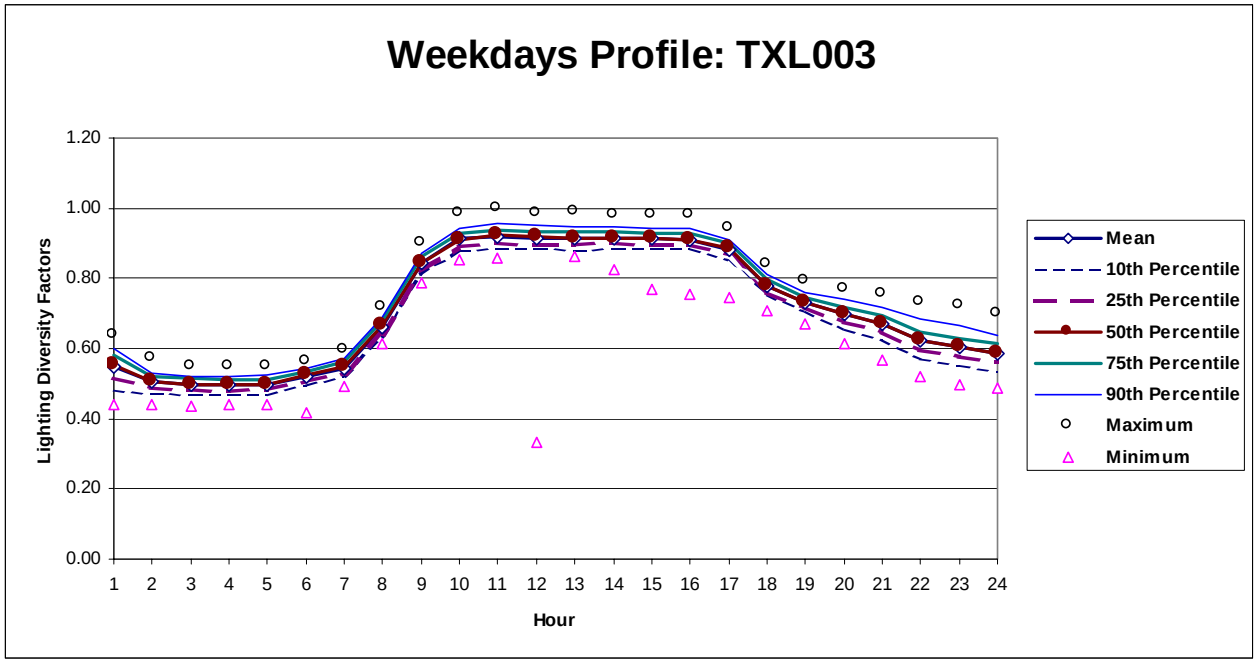
Dates: 1/1/96 - 12/31/96

Data Type: Light + Equipment = WBE - MCC = ch0215 - ch0214

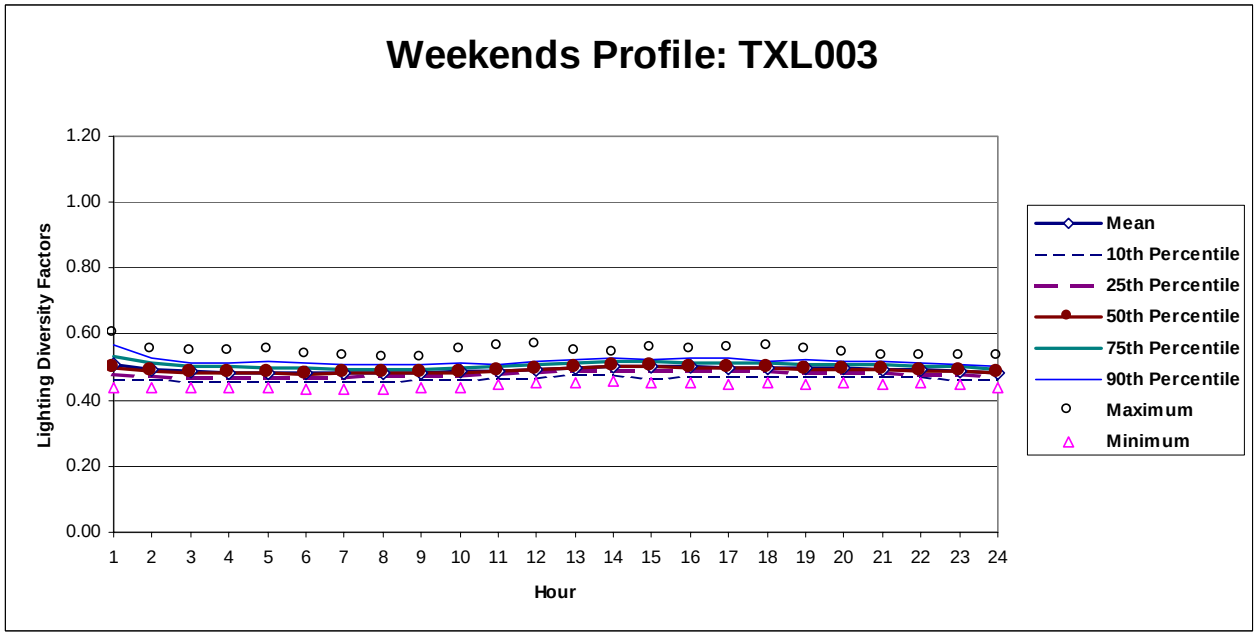
Maximum kW: 361 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/96, 1/15/96, 2/2/96, 2/19/96, 5/27/96, 7/4/96, 7/5/96, 9/2/96, 11/11/96, and 11/27 - 12/31/96.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.55	0.59	0.50	0.48	0.52	0.55	0.58	0.60	0.64	0.44
2.00	0.51	0.53	0.48	0.48	0.49	0.51	0.52	0.53	0.57	0.44
3.00	0.50	0.52	0.48	0.47	0.48	0.50	0.51	0.52	0.55	0.44
4.00	0.50	0.52	0.48	0.47	0.48	0.50	0.51	0.52	0.55	0.44
5.00	0.50	0.52	0.48	0.47	0.48	0.50	0.51	0.52	0.55	0.44
6.00	0.52	0.54	0.50	0.49	0.51	0.52	0.53	0.54	0.56	0.42
7.00	0.55	0.57	0.53	0.52	0.53	0.55	0.56	0.57	0.59	0.49
8.00	0.66	0.68	0.64	0.63	0.64	0.67	0.68	0.69	0.72	0.61
9.00	0.84	0.87	0.82	0.81	0.82	0.85	0.86	0.87	0.90	0.79
10.00	0.91	0.94	0.89	0.88	0.89	0.91	0.93	0.94	0.99	0.85
11.00	0.92	0.95	0.89	0.89	0.90	0.92	0.94	0.96	1.00	0.86
12.00	0.91	0.96	0.87	0.89	0.90	0.92	0.94	0.95	0.99	0.33
13.00	0.91	0.94	0.89	0.88	0.90	0.91	0.93	0.95	0.99	0.86
14.00	0.92	0.94	0.89	0.88	0.90	0.91	0.93	0.94	0.98	0.82
15.00	0.91	0.94	0.89	0.88	0.90	0.92	0.93	0.94	0.98	0.77
16.00	0.91	0.94	0.89	0.88	0.89	0.91	0.93	0.94	0.98	0.75
17.00	0.88	0.91	0.86	0.85	0.87	0.88	0.90	0.91	0.94	0.74
18.00	0.78	0.80	0.75	0.75	0.76	0.78	0.80	0.81	0.84	0.71
19.00	0.73	0.76	0.71	0.71	0.72	0.73	0.75	0.76	0.79	0.67
20.00	0.70	0.73	0.67	0.66	0.67	0.70	0.72	0.74	0.77	0.61
21.00	0.67	0.71	0.64	0.63	0.65	0.67	0.70	0.72	0.75	0.57
22.00	0.62	0.67	0.58	0.57	0.59	0.62	0.65	0.68	0.73	0.52
23.00	0.61	0.65	0.56	0.55	0.58	0.60	0.63	0.66	0.72	0.50
24.00	0.59	0.63	0.55	0.54	0.56	0.59	0.61	0.64	0.70	0.49
Daily Values	17.09	17.59	16.60	16.45	16.70	17.14	17.43	17.70	18.34	15.90
Daily Sum from Hourly	17.09	17.77	16.41	16.27	16.62	17.11	17.54	17.92	18.78	14.58

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.51	0.55	0.47	0.47	0.48	0.50	0.53	0.57	0.60	0.44
2.00	0.49	0.52	0.47	0.46	0.47	0.49	0.51	0.53	0.55	0.44
3.00	0.49	0.51	0.46	0.46	0.47	0.48	0.50	0.51	0.55	0.44
4.00	0.49	0.51	0.46	0.46	0.47	0.48	0.50	0.51	0.55	0.44
5.00	0.48	0.51	0.46	0.46	0.47	0.48	0.50	0.52	0.55	0.44
6.00	0.48	0.50	0.46	0.46	0.47	0.48	0.50	0.51	0.54	0.43
7.00	0.48	0.50	0.46	0.46	0.47	0.48	0.49	0.51	0.53	0.43
8.00	0.48	0.50	0.46	0.46	0.47	0.48	0.50	0.51	0.53	0.44
9.00	0.48	0.50	0.46	0.46	0.47	0.48	0.49	0.51	0.53	0.44
10.00	0.49	0.51	0.47	0.46	0.47	0.48	0.50	0.51	0.55	0.44
11.00	0.49	0.51	0.47	0.47	0.48	0.49	0.50	0.51	0.56	0.45
12.00	0.49	0.51	0.47	0.47	0.48	0.50	0.51	0.52	0.57	0.46
13.00	0.50	0.52	0.48	0.48	0.49	0.50	0.51	0.52	0.55	0.46
14.00	0.50	0.52	0.48	0.48	0.49	0.50	0.52	0.53	0.54	0.46
15.00	0.50	0.52	0.48	0.47	0.49	0.50	0.52	0.52	0.56	0.45
16.00	0.50	0.52	0.48	0.47	0.49	0.50	0.52	0.53	0.55	0.45
17.00	0.50	0.52	0.48	0.47	0.49	0.50	0.51	0.53	0.56	0.45
18.00	0.50	0.52	0.48	0.47	0.49	0.50	0.51	0.52	0.56	0.45
19.00	0.50	0.52	0.48	0.47	0.48	0.50	0.51	0.52	0.55	0.45
20.00	0.50	0.51	0.48	0.47	0.48	0.49	0.51	0.52	0.54	0.45
21.00	0.49	0.51	0.48	0.47	0.48	0.49	0.51	0.52	0.54	0.45
22.00	0.49	0.51	0.47	0.47	0.48	0.49	0.50	0.51	0.53	0.45
23.00	0.49	0.51	0.47	0.47	0.48	0.49	0.50	0.51	0.53	0.45
24.00	0.48	0.50	0.46	0.46	0.47	0.48	0.49	0.50	0.53	0.44
Daily Values	11.80	12.24	11.37	11.26	11.49	11.82	12.03	12.39	12.76	10.72
Daily Sum from Hourly	11.80	12.31	11.30	11.21	11.47	11.75	12.15	12.45	13.16	10.68

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.55)  (2) (0.51)  (3) (0.50)  (4) (0.50)  (5) (0.50)  (6) (0.52)
 (7) (0.55)  (8) (0.67)  (9) (0.85)  (10) (0.91)  (11) (0.92)  (12) (0.92)
(13) (0.91)  (14) (0.91)  (15) (0.92)  (16) (0.91)  (17) (0.88)  (18) (0.78)
(19) (0.73)  (20) (0.70)  (21) (0.67)  (22) (0.62)  (23) (0.60)  (24) (0.59) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.50)  (2) (0.49)  (3) (0.48)  (4) (0.48)  (5) (0.48)  (6) (0.48)
 (7) (0.48)  (8) (0.48)  (9) (0.48)  (10) (0.48)  (11) (0.49)  (12) (0.50)
(13) (0.50)  (14) (0.50)  (15) (0.50)  (16) (0.50)  (17) (0.50)  (18) (0.50)
(19) (0.50)  (20) (0.49)  (21) (0.49)  (22) (0.49)  (23) (0.49)  (24) (0.48) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.54  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1996.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

4. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.55, 0.51, 0.50, 0.50, 0.50, 0.52,
       0.55, 0.67, 0.85, 0.91, 0.92, 0.92,
       0.91, 0.91, 0.92, 0.91, 0.88, 0.78,
       0.73, 0.70, 0.67, 0.62, 0.60, 0.59),
    SATURDAY THRU SUNDAY =
      (0.50, 0.49, 0.48, 0.48, 0.48, 0.48,
       0.48, 0.48, 0.48, 0.48, 0.49, 0.50,
       0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.50, 0.49, 0.49, 0.49, 0.49, 0.48),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.50, 0.49, 0.48, 0.48, 0.48, 0.48,
       0.48, 0.48, 0.48, 0.48, 0.49, 0.50,
       0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.50, 0.49, 0.49, 0.49, 0.49, 0.48),
    SATURDAY THRU SUNDAY =
      (0.50, 0.49, 0.48, 0.48, 0.48, 0.48,
       0.48, 0.48, 0.48, 0.48, 0.49, 0.50,
       0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.50, 0.49, 0.49, 0.49, 0.49, 0.48),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.54 W/sqft, Area=102000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 361 kW (Metric units)
      LIGHTS= 1231,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1231,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 1231,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1231,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1231,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1231,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1231,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1231,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1231,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

4. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.55, 0.51, 0.50, 0.50, 0.50, 0.52,
   0.55, 0.67, 0.85, 0.91, 0.92, 0.92,
   0.91, 0.91, 0.92, 0.91, 0.88, 0.78,
   0.73, 0.70, 0.67, 0.62, 0.60, 0.59;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.50, 0.49, 0.48, 0.48, 0.48, 0.48,
   0.48, 0.48, 0.48, 0.48, 0.49, 0.50,
   0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
   0.50, 0.49, 0.49, 0.49, 0.49, 0.48;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.54 W/sqft, Area=102000 sqft
```

```
360720,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 21 - TXL004

Category	:	Large
Building ID	:	208
Building	:	Archives Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	120,000
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	1.83
Source	:	ESL
EUI (kWh/ft^2-yr)	:	7.59
Start Date	:	1/1/97
End date	:	12/31/97

(Page 1) Building Descriptions: (TXL004)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Lorenzo De Zavala Archives & Library Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Five story, 120,000 ft^2 .

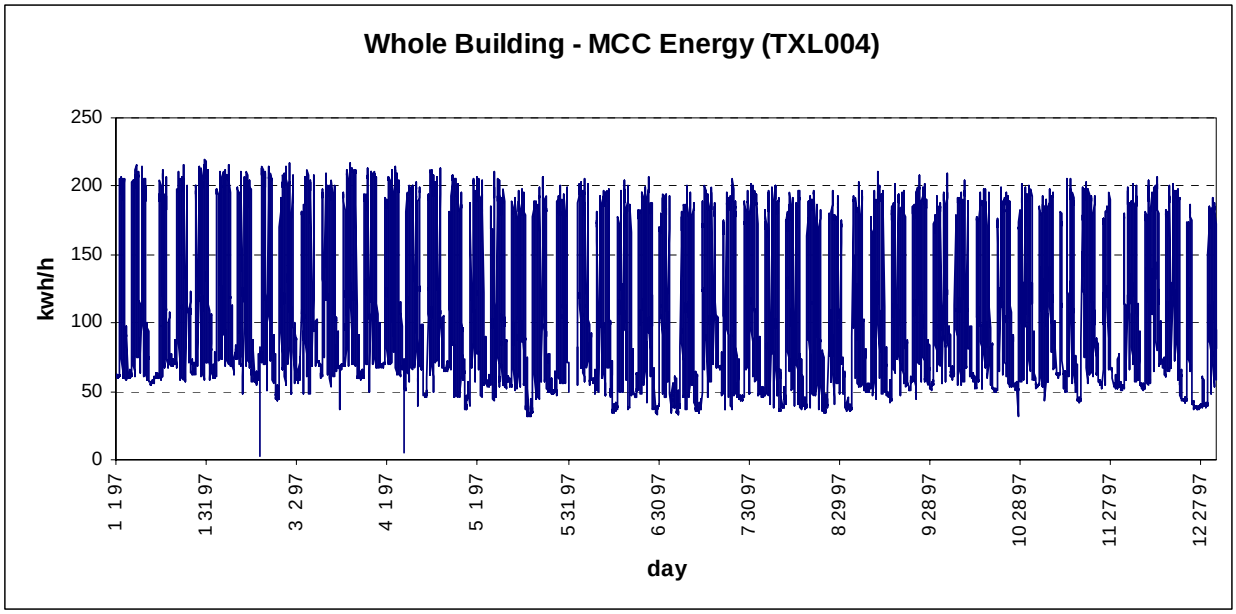
Lighting EUI: [(13.39 x 5) + (6.53 x 2)] x 52 x 1.83 = 7.59 kWh/ft^2.year

Lighting Type: 100% fluorescent (34-W)

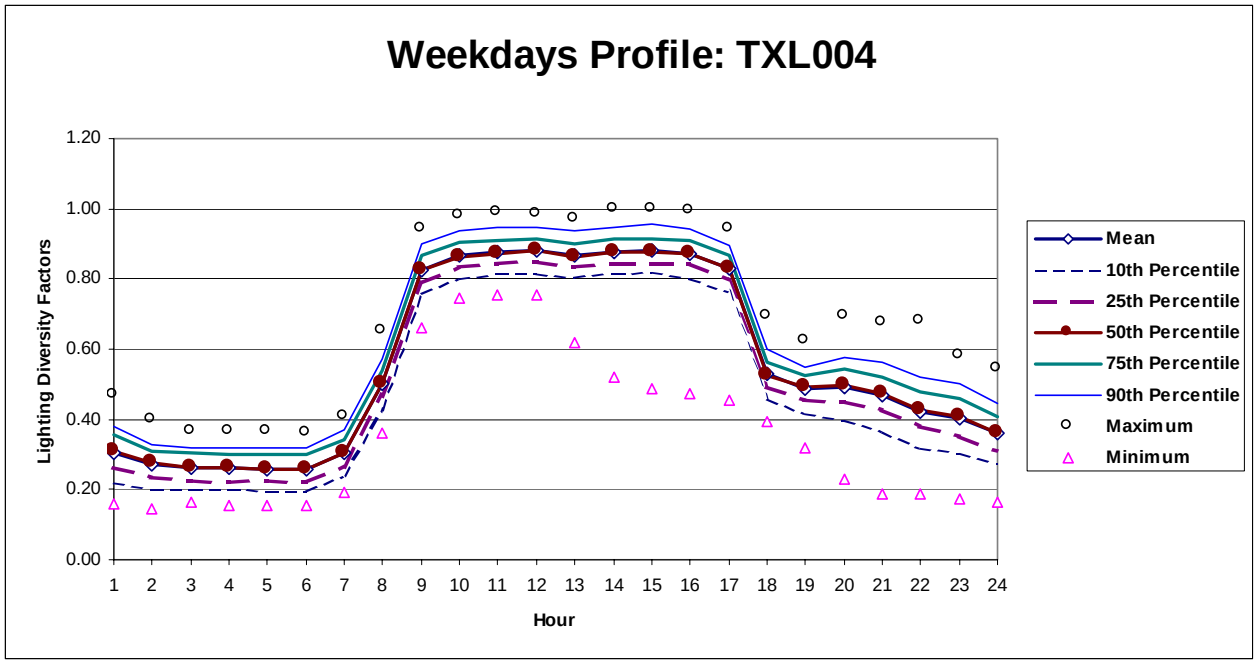
Dates: 1/1/97 - 12/31/97

Data Type: Light + Equipment = WBE - MCC = (ch0221 + ch0222) - ch0220

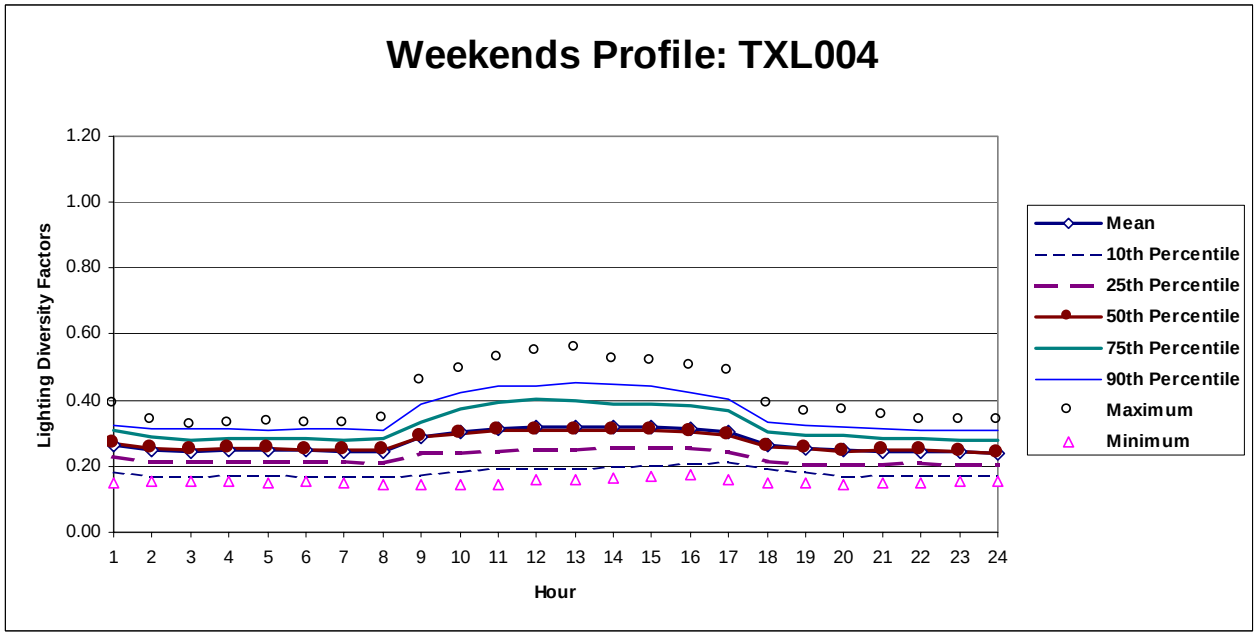
Maximum kW: 219 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/97, 1/13/97,1/14/97, 1/20/97, 5/26/97, 7/4/97, 9/1/97, 11/11/97, 11/27/97, 11/28/97, and 12/24 - 12/26/97.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.31	0.37	0.24	0.22	0.26	0.31	0.36	0.38	0.47	0.16
2.00	0.27	0.32	0.22	0.20	0.23	0.28	0.31	0.33	0.40	0.14
3.00	0.26	0.31	0.21	0.20	0.23	0.26	0.30	0.32	0.37	0.16
4.00	0.26	0.31	0.21	0.20	0.22	0.26	0.30	0.32	0.36	0.15
5.00	0.26	0.31	0.21	0.20	0.22	0.26	0.30	0.32	0.36	0.16
6.00	0.26	0.31	0.21	0.20	0.22	0.26	0.30	0.32	0.36	0.16
7.00	0.31	0.36	0.26	0.24	0.27	0.31	0.34	0.37	0.41	0.19
8.00	0.50	0.56	0.44	0.43	0.46	0.50	0.54	0.57	0.65	0.36
9.00	0.83	0.88	0.77	0.76	0.79	0.83	0.87	0.90	0.94	0.66
10.00	0.87	0.92	0.82	0.80	0.83	0.86	0.91	0.94	0.98	0.75
11.00	0.88	0.93	0.83	0.81	0.84	0.87	0.91	0.95	0.99	0.75
12.00	0.88	0.93	0.83	0.82	0.85	0.88	0.91	0.95	0.99	0.76
13.00	0.87	0.92	0.82	0.81	0.83	0.86	0.90	0.94	0.97	0.62
14.00	0.88	0.93	0.82	0.82	0.84	0.88	0.91	0.95	1.00	0.52
15.00	0.88	0.94	0.82	0.82	0.84	0.88	0.91	0.95	1.00	0.49
16.00	0.87	0.93	0.82	0.80	0.84	0.87	0.91	0.94	0.99	0.47
17.00	0.83	0.88	0.77	0.76	0.79	0.83	0.87	0.90	0.94	0.45
18.00	0.53	0.58	0.48	0.46	0.49	0.53	0.56	0.60	0.70	0.40
19.00	0.49	0.54	0.43	0.42	0.45	0.49	0.52	0.55	0.62	0.32
20.00	0.49	0.56	0.42	0.40	0.45	0.50	0.55	0.57	0.69	0.23
21.00	0.47	0.54	0.39	0.36	0.43	0.47	0.52	0.56	0.68	0.19
22.00	0.42	0.50	0.35	0.32	0.38	0.43	0.48	0.52	0.68	0.19
23.00	0.40	0.48	0.33	0.31	0.35	0.41	0.46	0.50	0.58	0.17
24.00	0.36	0.43	0.29	0.28	0.31	0.36	0.41	0.45	0.55	0.16
Daily Values	13.36	14.25	12.48	12.27	12.71	13.36	14.01	14.51	15.39	11.13
Daily Sum from Hourly	13.36	14.72	12.01	11.63	12.45	13.38	14.34	15.08	16.68	8.62

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.26	0.32	0.21	0.18	0.23	0.27	0.31	0.33	0.39	0.15
2.00	0.25	0.30	0.20	0.17	0.22	0.26	0.29	0.31	0.34	0.16
3.00	0.25	0.30	0.20	0.17	0.21	0.25	0.28	0.31	0.33	0.16
4.00	0.25	0.30	0.20	0.17	0.22	0.25	0.28	0.31	0.33	0.15
5.00	0.25	0.30	0.20	0.17	0.22	0.25	0.28	0.31	0.33	0.15
6.00	0.25	0.30	0.20	0.17	0.21	0.25	0.28	0.31	0.33	0.15
7.00	0.25	0.30	0.20	0.17	0.21	0.25	0.28	0.31	0.33	0.15
8.00	0.24	0.30	0.19	0.17	0.21	0.25	0.28	0.31	0.35	0.14
9.00	0.29	0.36	0.21	0.18	0.24	0.29	0.34	0.39	0.46	0.15
10.00	0.30	0.39	0.22	0.19	0.24	0.30	0.37	0.43	0.49	0.15
11.00	0.32	0.41	0.22	0.20	0.24	0.31	0.40	0.44	0.53	0.15
12.00	0.32	0.41	0.23	0.20	0.25	0.31	0.41	0.44	0.55	0.16
13.00	0.32	0.42	0.23	0.19	0.25	0.31	0.40	0.45	0.56	0.16
14.00	0.32	0.41	0.23	0.20	0.26	0.31	0.39	0.45	0.52	0.16
15.00	0.32	0.40	0.23	0.20	0.25	0.31	0.39	0.44	0.52	0.17
16.00	0.31	0.39	0.23	0.21	0.25	0.30	0.38	0.42	0.50	0.17
17.00	0.31	0.38	0.23	0.21	0.25	0.30	0.37	0.40	0.49	0.16
18.00	0.26	0.32	0.21	0.19	0.22	0.26	0.30	0.33	0.39	0.15
19.00	0.25	0.31	0.20	0.18	0.20	0.25	0.29	0.33	0.37	0.15
20.00	0.25	0.30	0.19	0.17	0.20	0.25	0.29	0.32	0.37	0.15
21.00	0.25	0.30	0.19	0.18	0.21	0.25	0.29	0.31	0.35	0.15
22.00	0.24	0.29	0.20	0.17	0.21	0.25	0.28	0.31	0.34	0.15
23.00	0.24	0.29	0.19	0.17	0.21	0.25	0.28	0.31	0.34	0.15
24.00	0.24	0.29	0.19	0.17	0.20	0.24	0.28	0.31	0.34	0.15
Daily Values	6.53	7.91	5.15	4.76	5.52	6.51	7.51	8.47	9.51	3.93
Daily Sum from Hourly	6.53	8.07	5.00	4.39	5.40	6.50	7.74	8.59	9.83	3.69

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Archives Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.31)  (2) (0.28)  (3) (0.26)  (4) (0.26)  (5) (0.26)  (6) (0.26)
(7) (0.31)  (8) (0.50)  (9) (0.83) (10) (0.86) (11) (0.87) (12) (0.88)
(13) (0.86) (14) (0.88) (15) (0.88) (16) (0.87) (17) (0.83) (18) (0.53)
(19) (0.49) (20) (0.50) (21) (0.47) (22) (0.43) (23) (0.41) (24) (0.36) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.27)  (2) (0.26)  (3) (0.25)  (4) (0.25)  (5) (0.25)  (6) (0.25)
(7) (0.25)  (8) (0.25)  (9) (0.29) (10) (0.30) (11) (0.31) (12) (0.31)
(13) (0.31) (14) (0.31) (15) (0.31) (16) (0.30) (17) (0.30) (18) (0.26)
(19) (0.25) (20) (0.25) (21) (0.25) (22) (0.25) (23) (0.25) (24) (0.24) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.83  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1997.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

5. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Archives Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.31, 0.28, 0.26, 0.26, 0.26, 0.26,
       0.31, 0.50, 0.83, 0.86, 0.87, 0.88,
       0.86, 0.88, 0.88, 0.87, 0.83, 0.53,
       0.49, 0.50, 0.47, 0.43, 0.41, 0.36),
    SATURDAY THRU SUNDAY =
      (0.27, 0.26, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.29, 0.30, 0.31, 0.31,
       0.31, 0.31, 0.31, 0.30, 0.30, 0.26,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.24),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.27, 0.26, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.29, 0.30, 0.31, 0.31,
       0.31, 0.31, 0.31, 0.30, 0.30, 0.26,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.24),
    SATURDAY THRU SUNDAY =
      (0.27, 0.26, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.29, 0.30, 0.31, 0.31,
       0.31, 0.31, 0.31, 0.30, 0.30, 0.26,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.24),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.83 W/sqft, Area=120000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 219 kW (Metric units)
      LIGHTS= 749,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 749,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 749,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 749,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 749,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 749,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 749,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 749,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 749,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

5. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Archives Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.31, 0.28, 0.26, 0.26, 0.26, 0.26,
   0.31, 0.50, 0.83, 0.86, 0.87, 0.88,
   0.86, 0.88, 0.88, 0.87, 0.83, 0.53,
   0.49, 0.50, 0.47, 0.43, 0.41, 0.36;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.27, 0.26, 0.25, 0.25, 0.25, 0.25,
   0.25, 0.25, 0.29, 0.30, 0.31, 0.31,
   0.31, 0.31, 0.31, 0.30, 0.30, 0.26,
   0.25, 0.25, 0.25, 0.25, 0.25, 0.24;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.83 W/sqft, Area=120000 sqft
```

```
219440,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 22 - TXL005

Category	:	Large
Building ID	:	209
Building	:	W. B. Travis Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	491,000
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	3.13
Source	:	ESL
EUI (kWh/ft^2-yr)	:	16.46
Start Date	:	1/1/97
End date	:	12/31/97

(Page 1) Building Descriptions: (TXL005)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: William B. Travis Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Twelve story, 491,000 ft^2 .

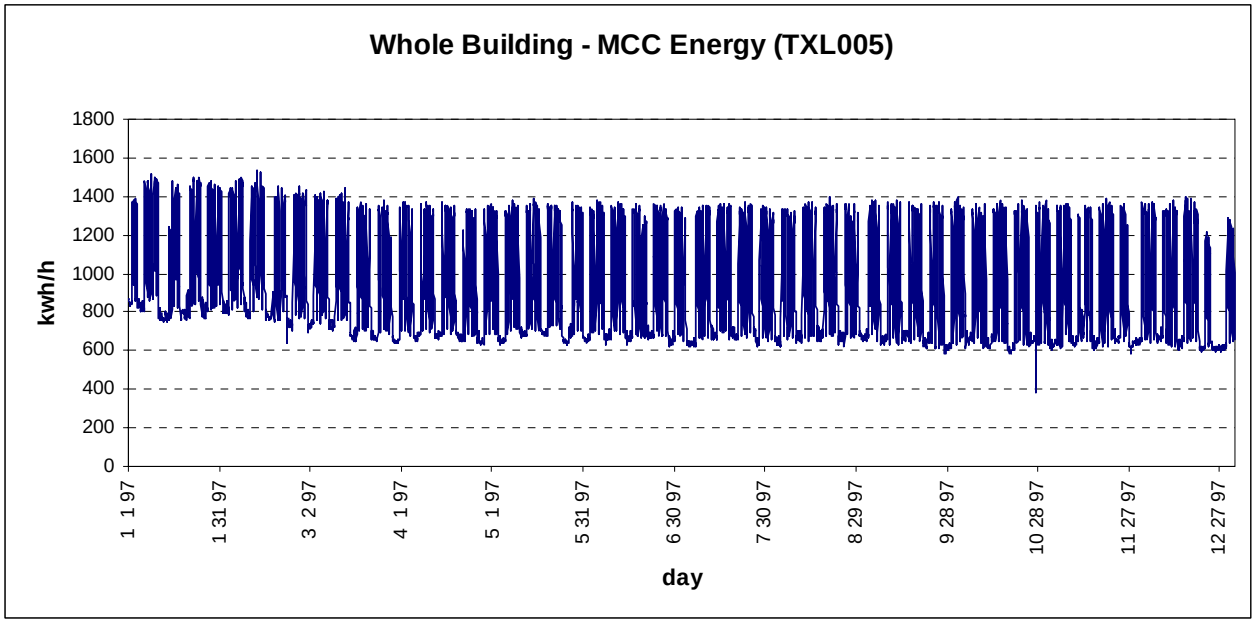
Lighting EUI: [(15.95 x 5) + (10.67 x 2)] x 52 x 3.13 = 16.46 kWh/ft^2.year

Lighting Type: 100% fluorescent (34-W)

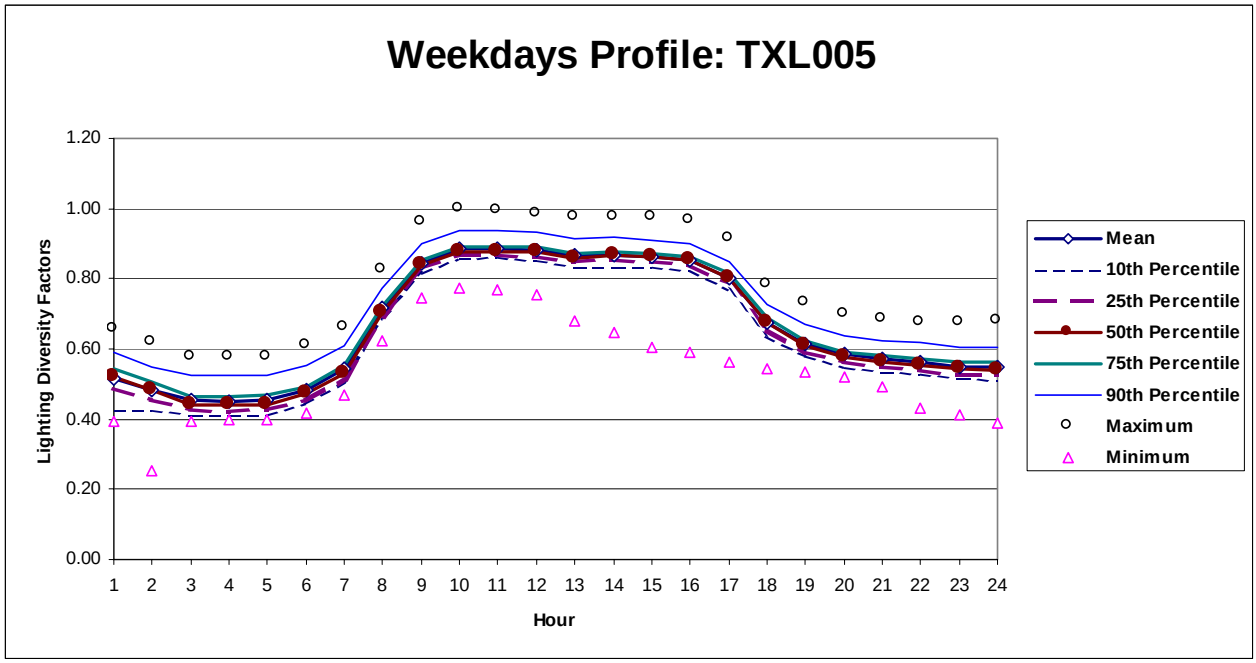
Dates: 1/1/97 - 12/31/97

Data Type: Light + Equipment = WBE - MCC = ch0224 - ch0225

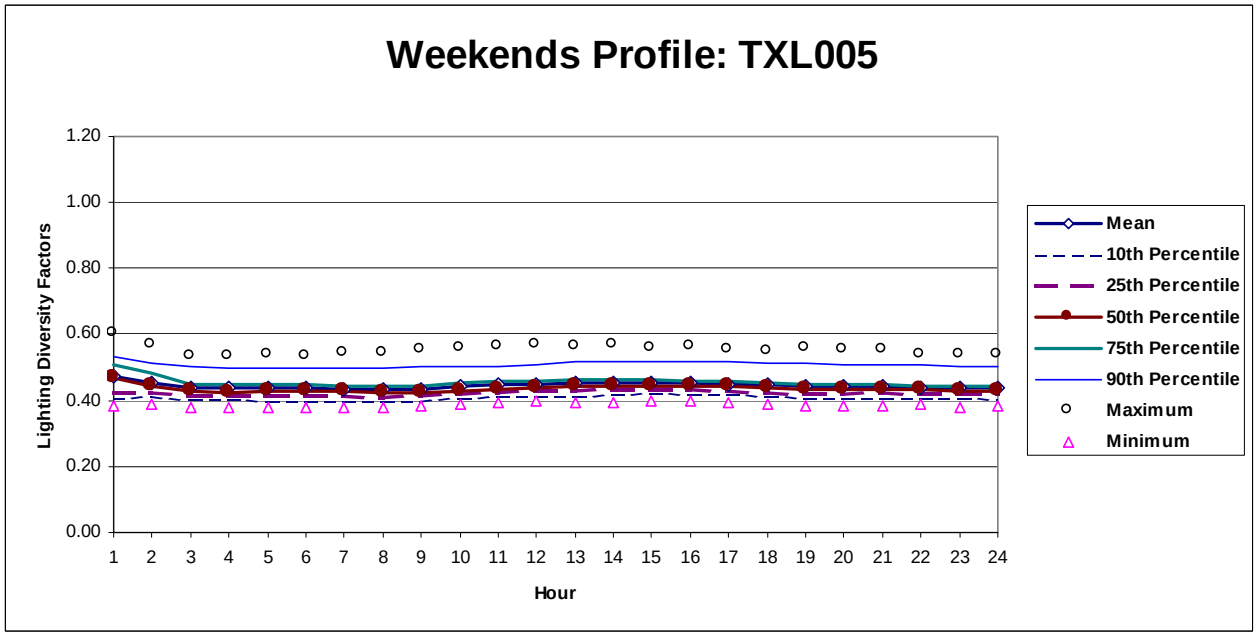
Maximum kW: 1,538 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/97, 1/13/97,1/14/97, 1/20/97, 2/17/97, 5/26/97, 7/4/97, 9/1/97, 11/11/97, 11/27/97, 11/28/97, and 12/22 - 12/26/97.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.52	0.57	0.46	0.43	0.49	0.52	0.54	0.59	0.66	0.39
2.00	0.48	0.53	0.43	0.43	0.45	0.48	0.51	0.55	0.62	0.25
3.00	0.45	0.49	0.41	0.41	0.42	0.44	0.46	0.53	0.58	0.40
4.00	0.45	0.49	0.41	0.41	0.42	0.44	0.46	0.52	0.58	0.40
5.00	0.45	0.50	0.41	0.41	0.42	0.44	0.47	0.53	0.58	0.40
6.00	0.48	0.52	0.44	0.44	0.45	0.47	0.49	0.55	0.61	0.42
7.00	0.54	0.58	0.50	0.51	0.52	0.53	0.55	0.61	0.66	0.47
8.00	0.72	0.75	0.68	0.69	0.70	0.71	0.72	0.77	0.83	0.63
9.00	0.85	0.88	0.81	0.82	0.83	0.84	0.85	0.90	0.96	0.75
10.00	0.88	0.92	0.85	0.86	0.87	0.88	0.89	0.94	1.00	0.77
11.00	0.89	0.92	0.85	0.86	0.87	0.88	0.89	0.94	0.99	0.77
12.00	0.88	0.91	0.85	0.85	0.86	0.88	0.89	0.93	0.98	0.75
13.00	0.87	0.90	0.83	0.84	0.85	0.86	0.87	0.92	0.97	0.68
14.00	0.87	0.91	0.83	0.84	0.85	0.86	0.88	0.92	0.97	0.65
15.00	0.86	0.90	0.82	0.83	0.85	0.86	0.87	0.91	0.97	0.61
16.00	0.85	0.89	0.81	0.83	0.84	0.85	0.86	0.90	0.97	0.59
17.00	0.80	0.84	0.76	0.77	0.79	0.80	0.81	0.85	0.91	0.56
18.00	0.68	0.71	0.64	0.64	0.65	0.67	0.69	0.73	0.78	0.54
19.00	0.61	0.65	0.58	0.58	0.59	0.61	0.62	0.67	0.73	0.53
20.00	0.58	0.62	0.55	0.55	0.56	0.58	0.59	0.64	0.70	0.52
21.00	0.57	0.61	0.54	0.54	0.55	0.56	0.58	0.63	0.68	0.49
22.00	0.56	0.60	0.52	0.53	0.54	0.55	0.57	0.62	0.67	0.43
23.00	0.55	0.59	0.51	0.52	0.53	0.54	0.56	0.61	0.67	0.41
24.00	0.55	0.59	0.50	0.51	0.52	0.54	0.56	0.61	0.68	0.39
Daily Values	15.95	16.79	15.11	15.26	15.50	15.73	16.07	17.23	18.63	13.64
Daily Sum from Hourly	15.95	16.89	15.01	15.07	15.44	15.80	16.22	17.35	18.77	12.80

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.47	0.52	0.42	0.41	0.42	0.47	0.51	0.53	0.60	0.38
2.00	0.45	0.49	0.41	0.41	0.42	0.44	0.48	0.51	0.57	0.39
3.00	0.44	0.47	0.40	0.40	0.41	0.43	0.45	0.50	0.53	0.38
4.00	0.44	0.47	0.40	0.40	0.42	0.43	0.45	0.50	0.53	0.38
5.00	0.44	0.47	0.40	0.40	0.41	0.43	0.45	0.50	0.54	0.38
6.00	0.44	0.47	0.40	0.40	0.41	0.43	0.45	0.50	0.54	0.38
7.00	0.44	0.47	0.40	0.40	0.41	0.43	0.44	0.50	0.54	0.38
8.00	0.43	0.47	0.40	0.40	0.41	0.42	0.45	0.50	0.54	0.38
9.00	0.44	0.47	0.40	0.40	0.41	0.42	0.44	0.50	0.55	0.38
10.00	0.44	0.48	0.40	0.41	0.42	0.43	0.45	0.50	0.56	0.39
11.00	0.45	0.48	0.41	0.41	0.42	0.43	0.46	0.50	0.56	0.39
12.00	0.45	0.49	0.41	0.42	0.43	0.44	0.46	0.51	0.57	0.40
13.00	0.45	0.49	0.41	0.42	0.43	0.44	0.46	0.52	0.56	0.39
14.00	0.45	0.49	0.42	0.42	0.43	0.44	0.46	0.52	0.57	0.39
15.00	0.45	0.49	0.42	0.42	0.43	0.44	0.46	0.52	0.56	0.40
16.00	0.45	0.49	0.42	0.42	0.43	0.44	0.46	0.52	0.56	0.40
17.00	0.45	0.49	0.41	0.42	0.43	0.44	0.46	0.52	0.55	0.39
18.00	0.45	0.48	0.41	0.41	0.42	0.44	0.45	0.51	0.55	0.39
19.00	0.45	0.48	0.41	0.41	0.42	0.44	0.45	0.51	0.56	0.38
20.00	0.44	0.48	0.41	0.41	0.42	0.43	0.45	0.51	0.55	0.38
21.00	0.44	0.48	0.41	0.41	0.42	0.43	0.45	0.51	0.55	0.39
22.00	0.44	0.48	0.41	0.41	0.42	0.43	0.44	0.51	0.54	0.39
23.00	0.44	0.47	0.40	0.41	0.42	0.43	0.44	0.50	0.54	0.38
24.00	0.44	0.47	0.40	0.41	0.42	0.43	0.44	0.50	0.54	0.39
Daily Values	10.66	11.53	9.80	9.92	10.12	10.43	10.76	12.32	13.12	9.48
Daily Sum from Hourly	10.67	11.57	9.77	9.81	10.10	10.44	10.90	12.20	13.28	9.27

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (William B. Travis Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.52)  (2) (0.48)  (3) (0.44)  (4) (0.44)  (5) (0.44)  (6) (0.47)
(7) (0.53)  (8) (0.71)  (9) (0.84) (10) (0.88) (11) (0.88) (12) (0.88)
(13) (0.86) (14) (0.86) (15) (0.86) (16) (0.85) (17) (0.80) (18) (0.67)
(19) (0.61) (20) (0.58) (21) (0.56) (22) (0.55) (23) (0.54) (24) (0.54) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.47)  (2) (0.44)  (3) (0.43)  (4) (0.43)  (5) (0.43)  (6) (0.43)
(7) (0.43)  (8) (0.42)  (9) (0.42) (10) (0.43) (11) (0.43) (12) (0.44)
(13) (0.44) (14) (0.44) (15) (0.44) (16) (0.44) (17) (0.44) (18) (0.44)
(19) (0.44) (20) (0.33) (21) (0.43) (22) (0.43) (23) (0.43) (24) (0.43) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.13  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1997.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

6. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (William B. Travis Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.52, 0.48, 0.44, 0.44, 0.44, 0.47,
       0.53, 0.71, 0.84, 0.88, 0.88, 0.88,
       0.86, 0.86, 0.86, 0.85, 0.80, 0.67,
       0.61, 0.58, 0.56, 0.55, 0.54, 0.54),
    SATURDAY THRU SUNDAY =
      (0.47, 0.44, 0.43, 0.43, 0.43, 0.43,
       0.43, 0.42, 0.42, 0.43, 0.43, 0.44,
       0.44, 0.44, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.43, 0.43, 0.43, 0.43, 0.43),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.47, 0.44, 0.43, 0.43, 0.43, 0.43,
       0.43, 0.42, 0.42, 0.43, 0.43, 0.44,
       0.44, 0.44, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.43, 0.43, 0.43, 0.43, 0.43),
    SATURDAY THRU SUNDAY =
      (0.47, 0.44, 0.43, 0.43, 0.43, 0.43,
       0.43, 0.42, 0.42, 0.43, 0.43, 0.44,
       0.44, 0.44, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.43, 0.43, 0.43, 0.43, 0.43),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.13 W/sqft, Area=491000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 1538 kW (Metric units)
      LIGHTS= 5247,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 5247,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 5247,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 5247,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 5247,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 5247,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 5247,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 5247,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 5247,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

6. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (William B. Travis Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.52, 0.48, 0.44, 0.44, 0.44, 0.47,
   0.53, 0.71, 0.84, 0.88, 0.88, 0.88,
   0.86, 0.86, 0.86, 0.85, 0.80, 0.67,
   0.61, 0.58, 0.56, 0.55, 0.54, 0.54;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.47, 0.44, 0.43, 0.43, 0.43, 0.43,
   0.43, 0.42, 0.42, 0.43, 0.43, 0.44,
   0.44, 0.44, 0.44, 0.44, 0.44, 0.44,
   0.44, 0.43, 0.43, 0.43, 0.43, 0.43;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.13 W/sqft, Area=491000 sqft
```

```
1537500,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 23 - TXL006

Category	:	Large
Building ID	:	210
Building	:	L. B. Johnson Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	308,080
Data Type	:	WBE - MCC - AHU
Max Load (W/ft^2)	:	5.17
Source	:	ESL
EUI (kWh/ft^2-yr)	:	33.79
Start Date	:	1/1/97
End date	:	12/31/97

(Page 1) Building Descriptions: (TXL006)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Lyndon B. Johnson Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Twelve story, 308,080 ft^2 .

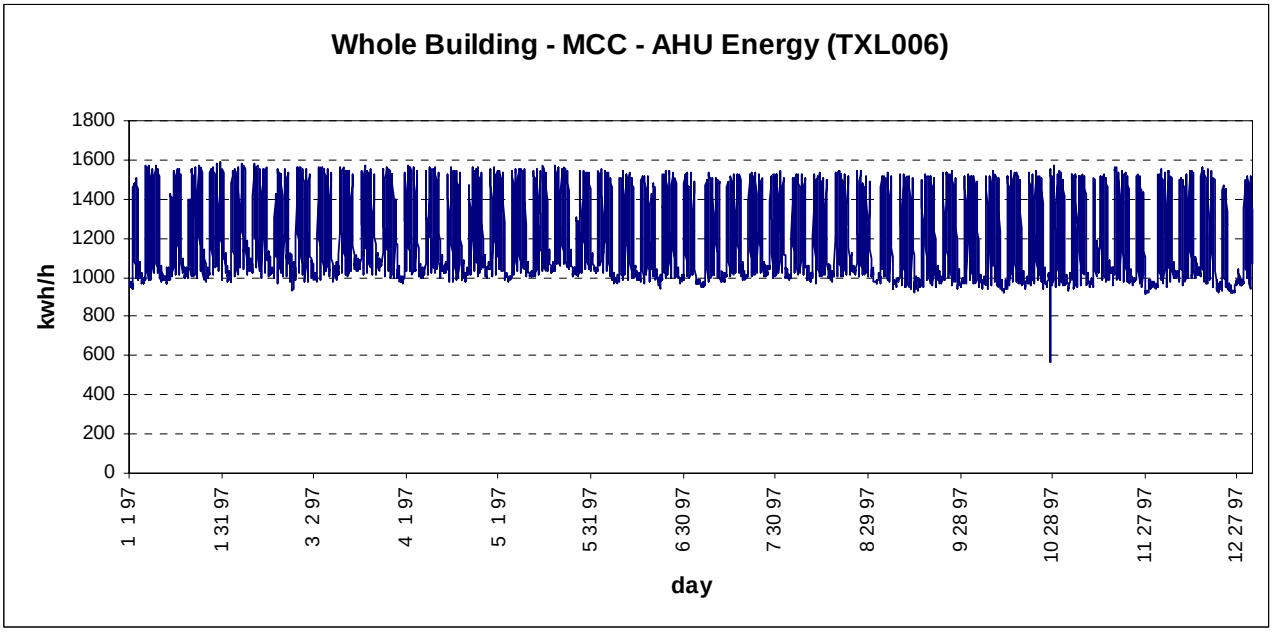
Lighting EUI: [(19.04 x 5) + (15.26 x 2)] x 52 x 5.17 = 33.79 kWh/ft^2.year

Lighting Type: Mixture of fluorescent and incandescent

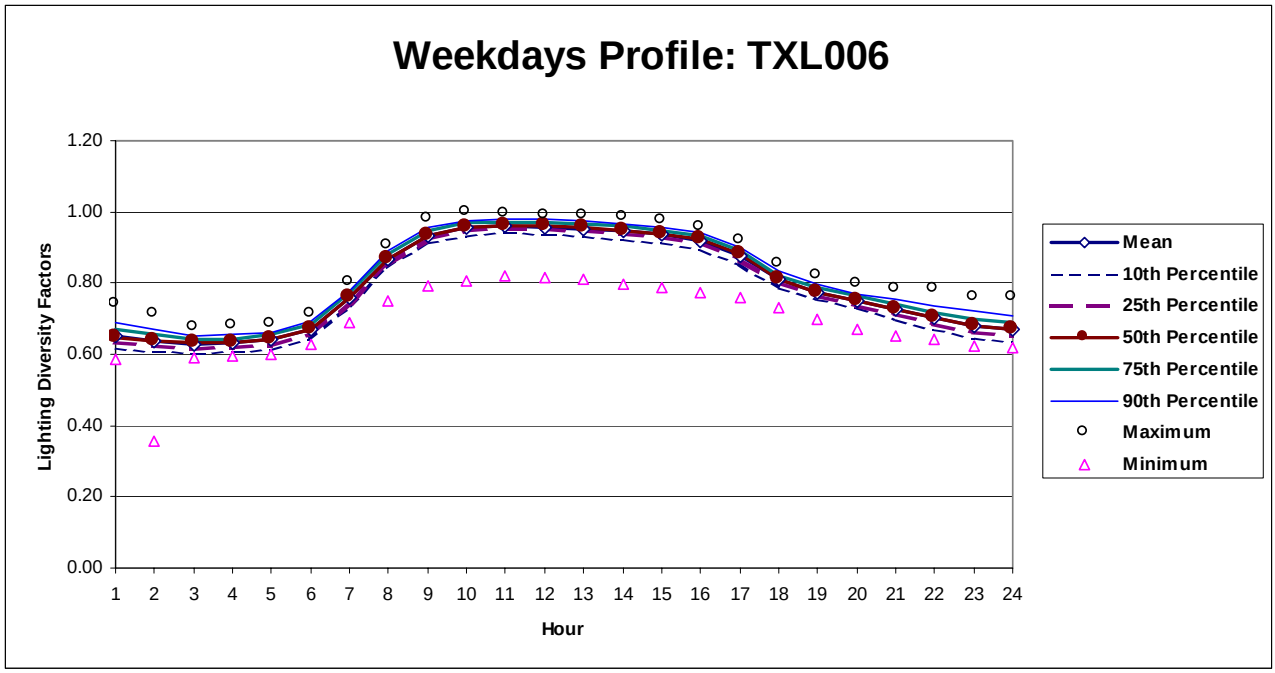
Dates: 1/1/97 - 12/31/97

Data Type: Light + Equipment = WBE - MCC - AHU = ch0227 - ch0230 - ch0231

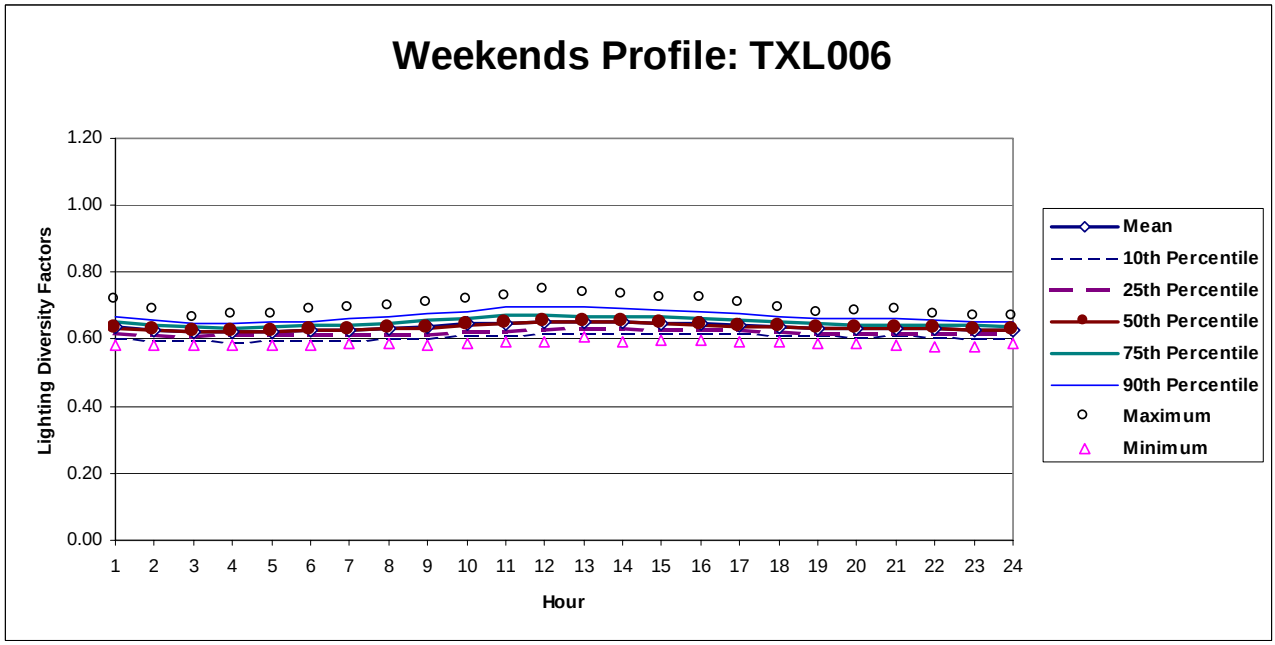
Maximum kW: 1,592 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/97, 1/13/97,1/14/97, 7/4/97, 9/1/97, 11/11/97, 11/27/97, 11/28/97, and 12/24 - 12/26/97.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.69	0.74	0.58
2.00	0.64	0.67	0.61	0.61	0.62	0.64	0.65	0.67	0.71	0.36
3.00	0.63	0.65	0.61	0.60	0.62	0.63	0.64	0.65	0.67	0.59
4.00	0.63	0.65	0.61	0.61	0.62	0.63	0.64	0.65	0.68	0.59
5.00	0.64	0.66	0.62	0.62	0.63	0.64	0.66	0.66	0.68	0.60
6.00	0.67	0.69	0.65	0.64	0.66	0.67	0.69	0.69	0.71	0.63
7.00	0.76	0.78	0.74	0.74	0.75	0.76	0.77	0.78	0.80	0.69
8.00	0.87	0.89	0.85	0.85	0.85	0.87	0.88	0.89	0.91	0.75
9.00	0.93	0.95	0.91	0.91	0.92	0.93	0.95	0.96	0.98	0.79
10.00	0.95	0.97	0.93	0.93	0.95	0.96	0.97	0.98	1.00	0.81
11.00	0.96	0.98	0.94	0.94	0.95	0.96	0.97	0.98	0.99	0.82
12.00	0.96	0.98	0.94	0.94	0.95	0.96	0.97	0.98	0.99	0.82
13.00	0.95	0.98	0.93	0.93	0.95	0.96	0.97	0.97	0.99	0.81
14.00	0.95	0.97	0.92	0.92	0.94	0.95	0.96	0.97	0.98	0.80
15.00	0.94	0.96	0.91	0.91	0.93	0.94	0.95	0.96	0.97	0.79
16.00	0.92	0.94	0.90	0.90	0.91	0.92	0.93	0.94	0.96	0.77
17.00	0.88	0.90	0.85	0.85	0.87	0.88	0.89	0.90	0.92	0.76
18.00	0.81	0.83	0.79	0.79	0.80	0.81	0.82	0.83	0.85	0.73
19.00	0.77	0.79	0.76	0.75	0.76	0.77	0.79	0.79	0.82	0.70
20.00	0.75	0.77	0.73	0.73	0.74	0.75	0.76	0.77	0.80	0.67
21.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.78	0.65
22.00	0.70	0.73	0.68	0.67	0.68	0.70	0.72	0.74	0.78	0.64
23.00	0.68	0.71	0.65	0.65	0.66	0.68	0.70	0.72	0.76	0.62
24.00	0.67	0.70	0.64	0.64	0.65	0.67	0.69	0.71	0.76	0.62
Daily Values	19.04	19.45	18.63	18.57	18.76	19.06	19.35	19.53	19.97	17.21
Daily Sum from Hourly	19.04	19.56	18.52	18.46	18.75	19.06	19.38	19.64	20.25	16.60

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.64	0.66	0.61	0.60	0.62	0.63	0.65	0.67	0.72	0.58
2.00	0.63	0.65	0.61	0.60	0.61	0.63	0.64	0.65	0.69	0.58
3.00	0.62	0.64	0.60	0.60	0.61	0.62	0.64	0.65	0.66	0.58
4.00	0.62	0.64	0.60	0.59	0.61	0.62	0.63	0.65	0.67	0.58
5.00	0.62	0.64	0.60	0.60	0.61	0.62	0.64	0.65	0.67	0.58
6.00	0.63	0.65	0.60	0.60	0.61	0.63	0.64	0.65	0.69	0.58
7.00	0.63	0.65	0.61	0.60	0.61	0.63	0.64	0.66	0.69	0.59
8.00	0.63	0.66	0.61	0.60	0.61	0.63	0.65	0.67	0.70	0.59
9.00	0.64	0.67	0.61	0.60	0.61	0.63	0.66	0.68	0.71	0.58
10.00	0.64	0.67	0.62	0.61	0.62	0.64	0.66	0.68	0.72	0.59
11.00	0.65	0.68	0.62	0.61	0.62	0.65	0.67	0.70	0.73	0.59
12.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.70	0.75	0.59
13.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.70	0.74	0.61
14.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.69	0.73	0.59
15.00	0.65	0.67	0.62	0.62	0.63	0.65	0.67	0.69	0.72	0.60
16.00	0.65	0.67	0.62	0.62	0.63	0.64	0.66	0.68	0.72	0.60
17.00	0.64	0.67	0.62	0.62	0.63	0.64	0.66	0.68	0.71	0.59
18.00	0.64	0.66	0.62	0.61	0.62	0.64	0.65	0.67	0.69	0.59
19.00	0.63	0.65	0.61	0.61	0.62	0.63	0.65	0.66	0.68	0.59
20.00	0.63	0.65	0.61	0.61	0.62	0.63	0.64	0.66	0.68	0.59
21.00	0.63	0.65	0.61	0.61	0.62	0.63	0.64	0.66	0.69	0.58
22.00	0.63	0.65	0.61	0.61	0.62	0.63	0.64	0.66	0.67	0.58
23.00	0.63	0.65	0.61	0.60	0.62	0.63	0.64	0.65	0.67	0.58
24.00	0.63	0.64	0.61	0.60	0.62	0.63	0.64	0.65	0.67	0.59
Daily Values	15.26	15.78	14.74	14.60	14.88	15.21	15.66	15.99	16.49	14.16
Daily Sum from Hourly	15.27	15.83	14.71	14.57	14.86	15.25	15.63	16.05	16.76	14.10

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Lyndon B. Johnson Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.65)  (2) (0.64)  (3) (0.63)  (4) (0.64)  (5) (0.64)  (6) (0.67)
(7) (0.76)  (8) (0.87)  (9) (0.93) (10) (0.96) (11) (0.96) (12) (0.96)
(13) (0.96) (14) (0.95) (15) (0.94) (16) (0.92) (17) (0.88) (18) (0.81)
(19) (0.77) (20) (0.75) (21) (0.73) (22) (0.70) (23) (0.68) (24) (0.67) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.63)  (2) (0.63)  (3) (0.62)  (4) (0.62)  (5) (0.62)  (6) (0.63)
(7) (0.63)  (8) (0.63)  (9) (0.64) (10) (0.64) (11) (0.65) (12) (0.65)
(13) (0.65) (14) (0.65) (15) (0.65) (16) (0.64) (17) (0.64) (18) (0.64)
(19) (0.63) (20) (0.63) (21) (0.63) (22) (0.63) (23) (0.63) (24) (0.63) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 5.17  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1997.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

7. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Lyndon B. Johnson Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.65, 0.64, 0.63, 0.63, 0.64, 0.67,
       0.76, 0.87, 0.93, 0.96, 0.96, 0.96,
       0.96, 0.95, 0.94, 0.92, 0.88, 0.81,
       0.77, 0.75, 0.73, 0.70, 0.68, 0.67),
    SATURDAY THRU SUNDAY =
      (0.63, 0.63, 0.62, 0.62, 0.62, 0.63,
       0.63, 0.63, 0.63, 0.64, 0.65, 0.65,
       0.65, 0.65, 0.65, 0.64, 0.64, 0.64,
       0.63, 0.63, 0.63, 0.63, 0.63, 0.63),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.63, 0.63, 0.62, 0.62, 0.62, 0.63,
       0.63, 0.63, 0.63, 0.64, 0.65, 0.65,
       0.65, 0.65, 0.65, 0.64, 0.64, 0.64,
       0.63, 0.63, 0.63, 0.63, 0.63, 0.63),
    SATURDAY THRU SUNDAY =
      (0.63, 0.63, 0.62, 0.62, 0.62, 0.63,
       0.63, 0.63, 0.63, 0.64, 0.65, 0.65,
       0.65, 0.65, 0.65, 0.64, 0.64, 0.64,
       0.63, 0.63, 0.63, 0.63, 0.63, 0.63),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=5.17 W/sqft, Area=308080 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 1592 kW (Metric units)
      LIGHTS= 5434,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 5434,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 5434,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 5434,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 5434,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 5434,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 5434,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 5434,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 5434,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

7. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Lyndon B. Johnson Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.65, 0.64, 0.63, 0.63, 0.64, 0.67,
   0.76, 0.87, 0.93, 0.96, 0.96, 0.96,
   0.96, 0.95, 0.94, 0.92, 0.88, 0.81,
   0.77, 0.75, 0.73, 0.70, 0.68, 0.67;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.63, 0.63, 0.62, 0.62, 0.62, 0.63,
   0.63, 0.63, 0.63, 0.64, 0.65, 0.65,
   0.65, 0.65, 0.65, 0.64, 0.64, 0.64,
   0.63, 0.63, 0.63, 0.63, 0.63, 0.63;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=5.17 W/sqft, Area=308080 sqft
```

```
1592160,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 24 - TXL007

Category	:	Large
Building ID	:	228
Building	:	Price Daniels Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	151,620
Data Type	:	WBE
Max Load (W/ft^2)	:	2.76
Source	:	ESL
EUI (kWh/ft^2-yr)	:	15.95
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (TXL007)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Price Daniels, Sr. Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Eight story, 151,620 ft^2 .

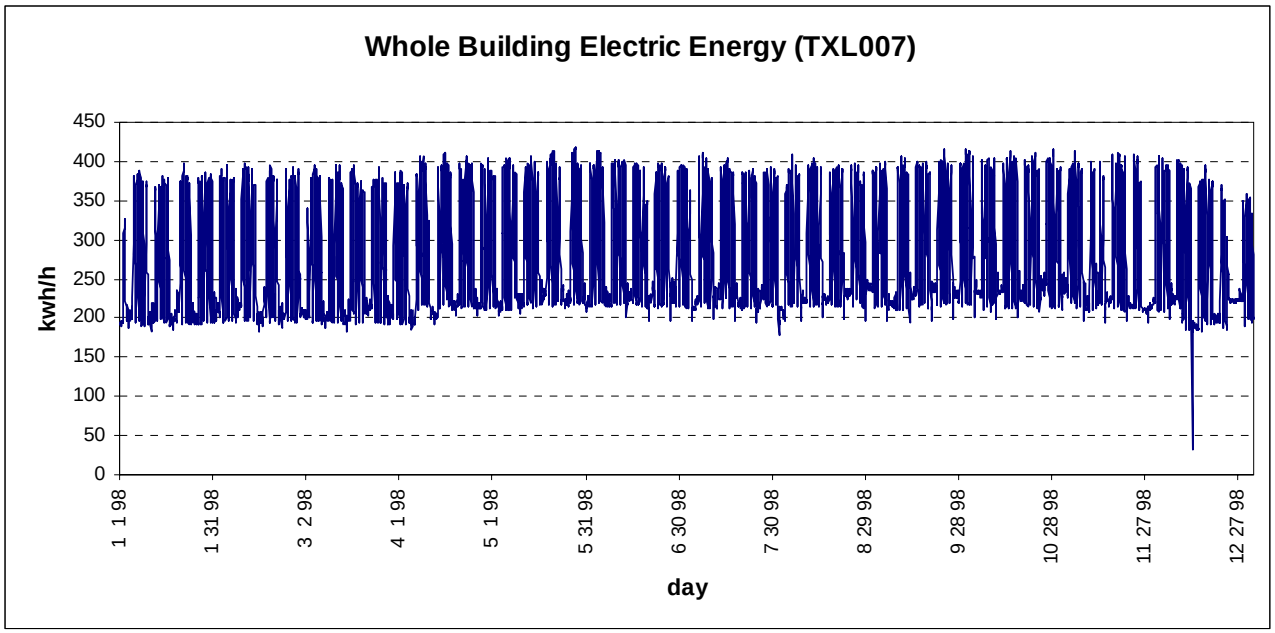
Lighting EUI: [(17.20 x 5) + (12.48 x 2)] x 52 x 2.76 = 15.95 kWh/ft^2.year

Lighting Type: Mixture of fluorescent and incandescent

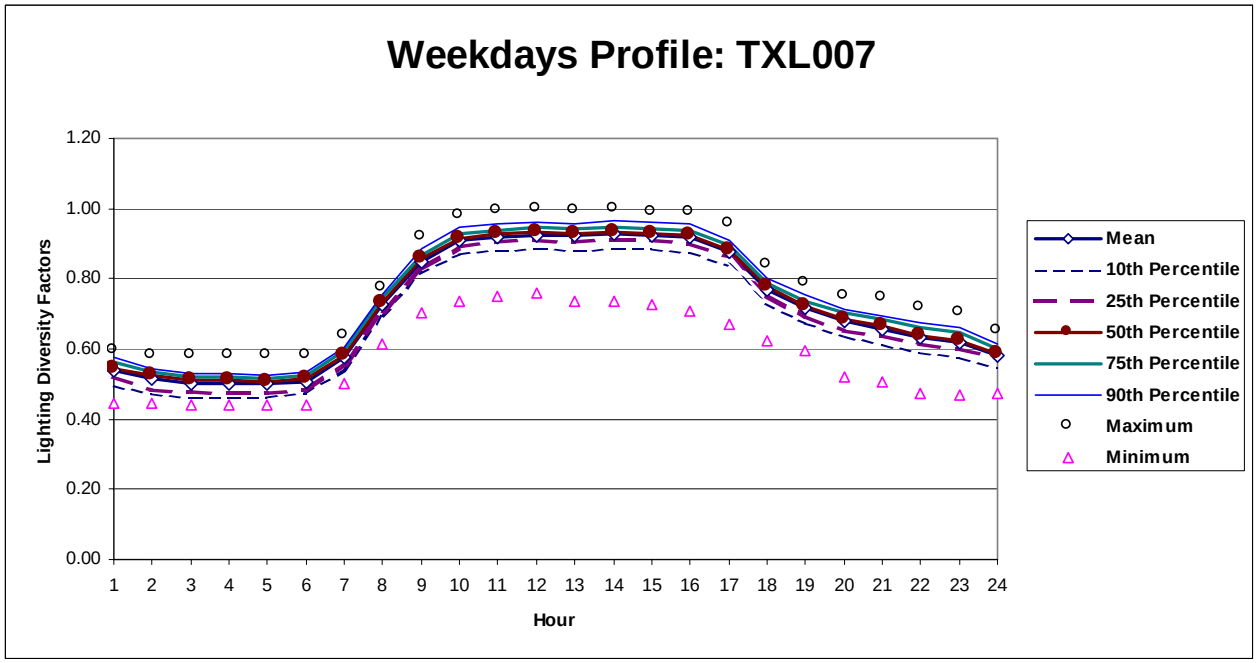
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2255

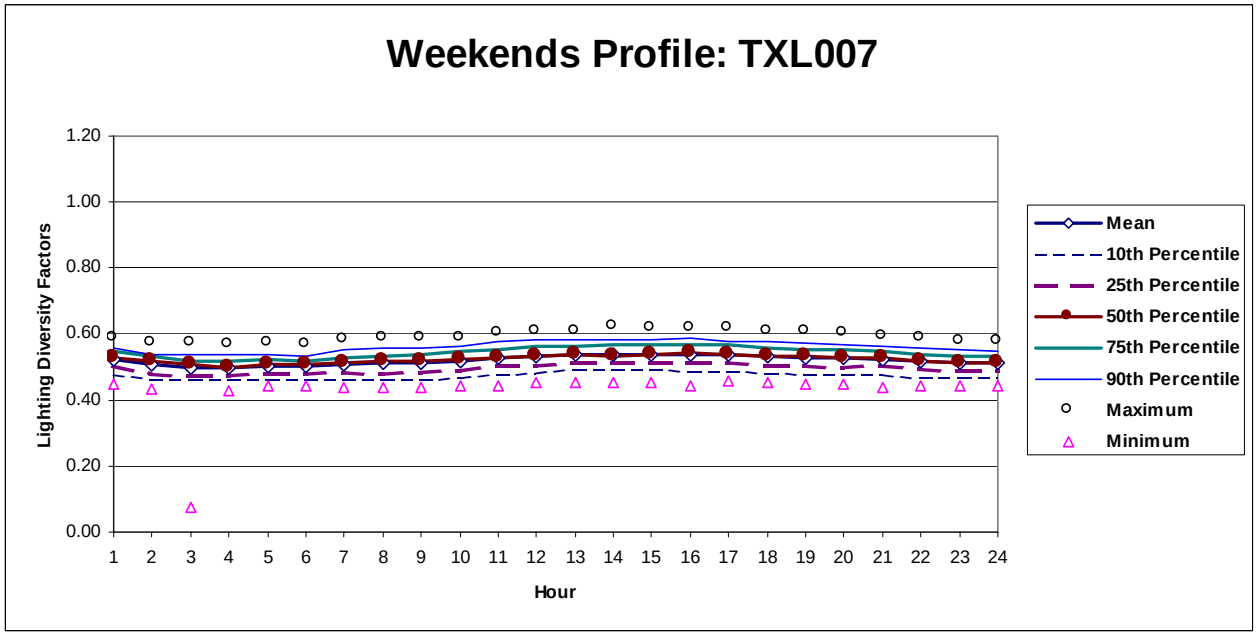
Maximum kW: 419 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98, 1/19/98,2/16/98, 5/25/98, 9/07/98, 11/11/98, 11/26/98, 11/27/98, and 12/23 - 12/25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.54	0.57	0.51	0.49	0.52	0.55	0.56	0.58	0.60	0.45
2.00	0.51	0.54	0.49	0.48	0.48	0.52	0.53	0.54	0.58	0.44
3.00	0.50	0.53	0.48	0.47	0.48	0.51	0.52	0.53	0.58	0.44
4.00	0.50	0.53	0.48	0.46	0.47	0.51	0.52	0.53	0.58	0.44
5.00	0.50	0.53	0.47	0.46	0.47	0.51	0.52	0.53	0.58	0.44
6.00	0.51	0.53	0.48	0.47	0.48	0.52	0.52	0.53	0.58	0.44
7.00	0.58	0.60	0.55	0.54	0.56	0.58	0.59	0.60	0.64	0.50
8.00	0.73	0.75	0.70	0.69	0.71	0.73	0.74	0.75	0.77	0.62
9.00	0.85	0.88	0.82	0.81	0.83	0.86	0.87	0.89	0.92	0.70
10.00	0.91	0.94	0.87	0.87	0.89	0.91	0.93	0.95	0.98	0.73
11.00	0.92	0.96	0.89	0.88	0.90	0.93	0.94	0.96	0.99	0.75
12.00	0.93	0.96	0.89	0.89	0.91	0.93	0.95	0.96	1.00	0.76
13.00	0.92	0.96	0.89	0.88	0.90	0.93	0.94	0.96	0.99	0.73
14.00	0.93	0.96	0.89	0.89	0.91	0.93	0.95	0.97	1.00	0.73
15.00	0.92	0.96	0.89	0.89	0.91	0.93	0.94	0.96	0.99	0.73
16.00	0.92	0.95	0.88	0.88	0.90	0.92	0.94	0.95	0.99	0.71
17.00	0.88	0.91	0.84	0.84	0.86	0.88	0.90	0.91	0.96	0.67
18.00	0.77	0.80	0.74	0.73	0.75	0.78	0.79	0.80	0.84	0.62
19.00	0.72	0.75	0.68	0.67	0.69	0.72	0.73	0.75	0.79	0.59
20.00	0.68	0.71	0.65	0.64	0.65	0.68	0.70	0.71	0.75	0.52
21.00	0.66	0.69	0.62	0.62	0.64	0.67	0.68	0.69	0.74	0.51
22.00	0.63	0.67	0.60	0.59	0.61	0.64	0.66	0.67	0.72	0.47
23.00	0.62	0.66	0.58	0.58	0.60	0.62	0.64	0.66	0.70	0.47
24.00	0.58	0.61	0.55	0.55	0.57	0.58	0.60	0.62	0.65	0.47
Daily Values	17.20	17.84	16.55	16.37	16.70	17.40	17.64	17.86	18.39	14.51
Daily Sum from Hourly	17.20	17.97	16.42	16.27	16.71	17.35	17.67	18.01	18.92	13.95

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.52	0.56	0.49	0.48	0.50	0.53	0.55	0.56	0.59	0.45
2.00	0.51	0.54	0.47	0.46	0.48	0.52	0.53	0.54	0.57	0.44
3.00	0.50	0.55	0.45	0.46	0.47	0.51	0.52	0.54	0.57	0.07
4.00	0.50	0.53	0.47	0.46	0.47	0.50	0.52	0.54	0.57	0.43
5.00	0.50	0.53	0.48	0.46	0.48	0.51	0.52	0.54	0.57	0.44
6.00	0.50	0.53	0.48	0.46	0.48	0.51	0.52	0.54	0.57	0.44
7.00	0.51	0.54	0.48	0.46	0.48	0.51	0.53	0.55	0.58	0.44
8.00	0.51	0.55	0.48	0.46	0.48	0.52	0.54	0.56	0.59	0.44
9.00	0.51	0.55	0.48	0.46	0.48	0.52	0.54	0.56	0.59	0.44
10.00	0.52	0.55	0.48	0.47	0.49	0.52	0.55	0.56	0.59	0.44
11.00	0.53	0.56	0.49	0.48	0.50	0.53	0.55	0.58	0.60	0.44
12.00	0.53	0.57	0.50	0.48	0.50	0.53	0.56	0.58	0.61	0.45
13.00	0.54	0.57	0.50	0.49	0.51	0.54	0.56	0.58	0.61	0.45
14.00	0.54	0.58	0.50	0.49	0.51	0.53	0.57	0.58	0.62	0.45
15.00	0.54	0.58	0.50	0.49	0.51	0.54	0.57	0.58	0.62	0.45
16.00	0.54	0.58	0.50	0.49	0.51	0.54	0.57	0.59	0.62	0.45
17.00	0.54	0.57	0.50	0.49	0.51	0.54	0.57	0.58	0.62	0.46
18.00	0.53	0.57	0.50	0.48	0.50	0.53	0.56	0.58	0.61	0.45
19.00	0.53	0.56	0.49	0.48	0.50	0.53	0.55	0.57	0.61	0.45
20.00	0.53	0.56	0.49	0.48	0.50	0.53	0.55	0.57	0.60	0.45
21.00	0.52	0.56	0.49	0.48	0.50	0.53	0.55	0.56	0.59	0.44
22.00	0.52	0.55	0.49	0.47	0.49	0.52	0.54	0.56	0.59	0.44
23.00	0.51	0.54	0.48	0.47	0.49	0.51	0.53	0.55	0.58	0.44
24.00	0.51	0.54	0.48	0.47	0.49	0.51	0.53	0.55	0.58	0.44
Daily Values	12.48	13.26	11.70	11.45	11.79	12.60	13.09	13.36	14.01	10.10
Daily Sum from Hourly	12.49	13.32	11.66	11.38	11.86	12.54	13.07	13.49	14.24	10.31

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Price Daniels Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.55)  (2) (0.52)  (3) (0.51)  (4) (0.51)  (5) (0.51)  (6) (0.52)
(7) (0.58)  (8) (0.73)  (9) (0.86) (10) (0.91) (11) (0.93) (12) (0.93)
(13) (0.93) (14) (0.93) (15) (0.93) (16) (0.92) (17) (0.88) (18) (0.78)
(19) (0.72) (20) (0.68) (21) (0.67) (22) (0.64) (23) (0.62) (24) (0.58) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.53)  (2) (0.52)  (3) (0.51)  (4) (0.50)  (5) (0.51)  (6) (0.51)
(7) (0.52)  (8) (0.52)  (9) (0.52) (10) (0.52) (11) (0.53) (12) (0.53)
(13) (0.54) (14) (0.53) (15) (0.54) (16) (0.54) (17) (0.54) (18) (0.53)
(19) (0.53) (20) (0.53) (21) (0.53) (22) (0.52) (23) (0.51) (24) (0.51) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.76  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

8. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Price Daniels Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.55, 0.52, 0.51, 0.51, 0.51, 0.52,
      0.58, 0.73, 0.86, 0.91, 0.93, 0.93,
      0.93, 0.93, 0.93, 0.92, 0.88, 0.78,
      0.72, 0.68, 0.67, 0.64, 0.62, 0.58),
    SATURDAY THRU SUNDAY =
     (0.53, 0.52, 0.51, 0.50, 0.51, 0.51,
      0.51, 0.52, 0.52, 0.52, 0.53, 0.53,
      0.54, 0.53, 0.54, 0.54, 0.54, 0.53,
      0.53, 0.53, 0.53, 0.52, 0.51, 0.51),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.53, 0.52, 0.51, 0.50, 0.51, 0.51,
      0.51, 0.52, 0.52, 0.52, 0.53, 0.53,
      0.54, 0.53, 0.54, 0.54, 0.54, 0.53,
      0.53, 0.53, 0.53, 0.52, 0.51, 0.51),
    SATURDAY THRU SUNDAY =
     (0.53, 0.52, 0.51, 0.50, 0.51, 0.51,
      0.51, 0.52, 0.52, 0.52, 0.53, 0.53,
      0.54, 0.53, 0.54, 0.54, 0.54, 0.53,
      0.53, 0.53, 0.53, 0.52, 0.51, 0.51),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.76 W/sqft, Area=151620 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 419 kW (Metric units)
      LIGHTS= 1430,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1430,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 1430,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1430,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1430,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1430,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1430,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1430,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1430,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

8. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Price Daniels Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.55, 0.52, 0.51, 0.51, 0.51, 0.52,
   0.58, 0.73, 0.86, 0.91, 0.93, 0.93,
   0.93, 0.93, 0.93, 0.92, 0.88, 0.78,
   0.72, 0.68, 0.67, 0.64, 0.62, 0.58;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.53, 0.52, 0.51, 0.50, 0.51, 0.51,
   0.51, 0.52, 0.52, 0.52, 0.53, 0.53,
   0.54, 0.53, 0.54, 0.54, 0.54, 0.53,
   0.53, 0.53, 0.53, 0.52, 0.51, 0.51;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.76 W/sqft, Area=151620 sqft
```

```
419040,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 25 - TXL008

Category	:	Large
Building ID	:	229
Building	:	Tom C. Clark Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	121,654
Data Type	:	WBE
Max Load (W/ft^2)	:	1.75
Source	:	ESL
EUI (kWh/ft^2-yr)	:	12.32
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (TXL008)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Tom C. Clark Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Seven story, 121,654 ft^2 .

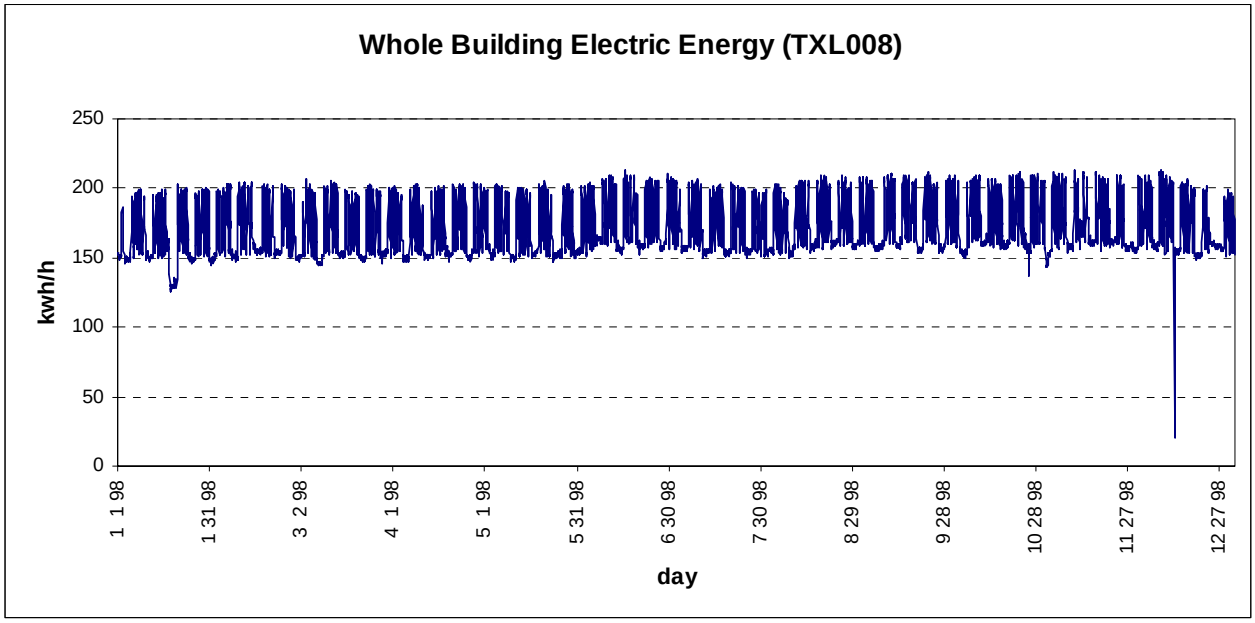
Lighting EUI: [(20.09 x 5) + (17.37 x 2)] x 52 x 1.75 = 12.32 kWh/ft^2.year

Lighting Type: Mixture of fluorescent, incandescent, and PL lamps

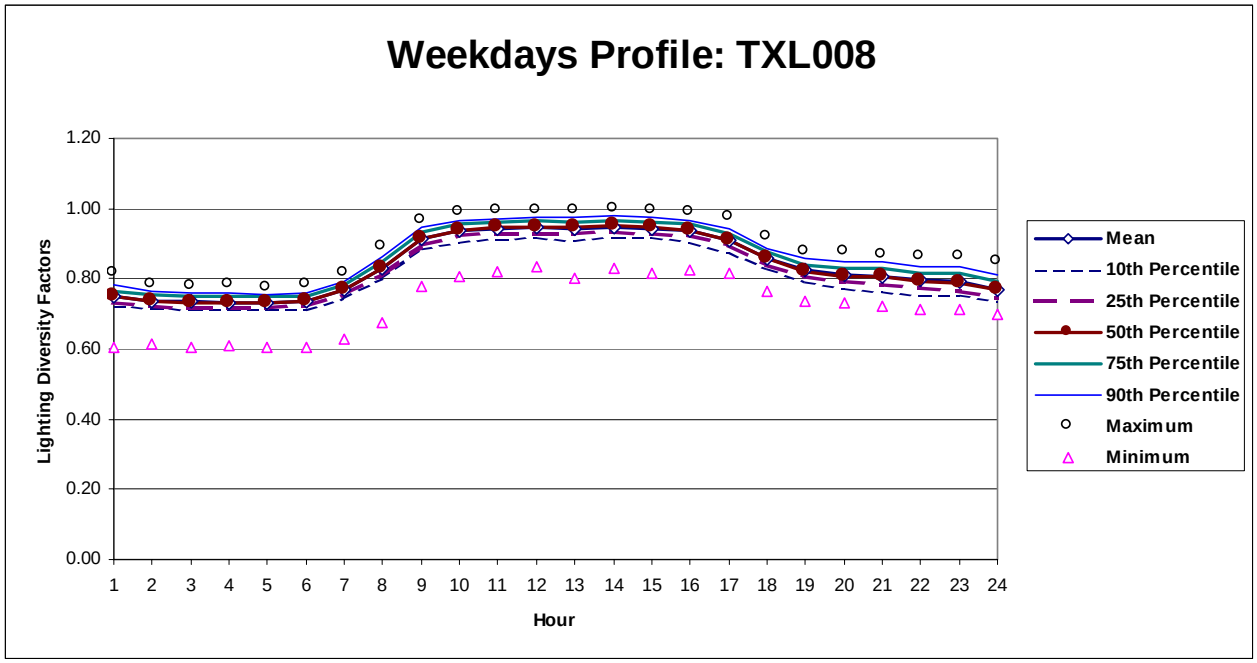
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2256

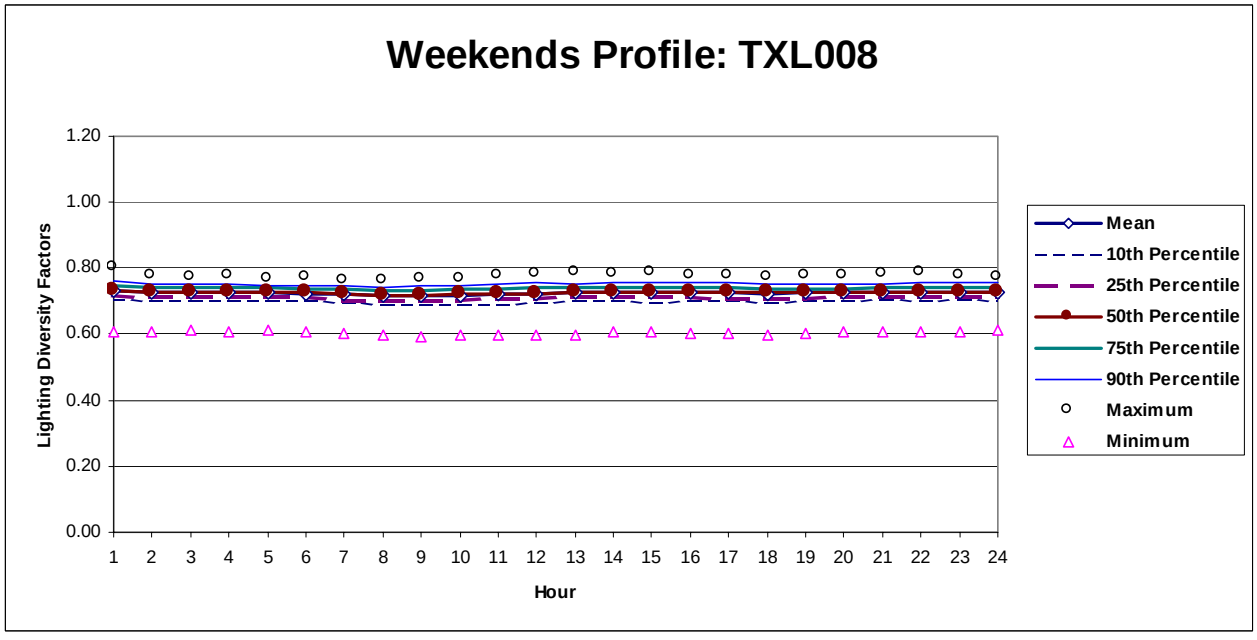
Maximum kW: 213 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98, 1/19/98, 2/16/98, 5/25/98, 9/07/98, 11/11/98, 11/26/98, 11/27/98, and 12/23 - 12/25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.75	0.77	0.72	0.72	0.73	0.75	0.77	0.78	0.81	0.61
2.00	0.74	0.76	0.72	0.72	0.72	0.74	0.75	0.76	0.78	0.61
3.00	0.73	0.75	0.71	0.71	0.72	0.73	0.75	0.76	0.78	0.61
4.00	0.73	0.75	0.71	0.71	0.72	0.73	0.75	0.76	0.78	0.61
5.00	0.73	0.75	0.71	0.71	0.72	0.73	0.75	0.76	0.77	0.61
6.00	0.73	0.75	0.72	0.71	0.72	0.73	0.75	0.76	0.78	0.60
7.00	0.77	0.79	0.75	0.74	0.75	0.77	0.78	0.79	0.82	0.63
8.00	0.83	0.86	0.81	0.80	0.81	0.83	0.85	0.86	0.89	0.68
9.00	0.91	0.94	0.89	0.88	0.90	0.91	0.93	0.95	0.96	0.78
10.00	0.94	0.96	0.91	0.91	0.92	0.94	0.96	0.97	0.99	0.80
11.00	0.94	0.97	0.92	0.92	0.93	0.94	0.96	0.97	0.99	0.82
12.00	0.95	0.97	0.92	0.92	0.93	0.95	0.96	0.98	0.99	0.83
13.00	0.94	0.97	0.92	0.91	0.93	0.94	0.96	0.97	0.99	0.80
14.00	0.95	0.97	0.92	0.92	0.93	0.95	0.97	0.98	1.00	0.83
15.00	0.94	0.97	0.92	0.92	0.93	0.94	0.96	0.97	0.99	0.82
16.00	0.94	0.96	0.91	0.91	0.92	0.94	0.96	0.97	0.99	0.83
17.00	0.91	0.94	0.88	0.88	0.90	0.91	0.93	0.94	0.97	0.81
18.00	0.86	0.88	0.83	0.83	0.84	0.86	0.88	0.89	0.92	0.77
19.00	0.82	0.85	0.80	0.79	0.80	0.82	0.84	0.86	0.88	0.74
20.00	0.81	0.84	0.78	0.78	0.79	0.81	0.83	0.85	0.88	0.73
21.00	0.80	0.84	0.77	0.77	0.78	0.80	0.83	0.85	0.87	0.72
22.00	0.79	0.83	0.76	0.76	0.77	0.79	0.82	0.84	0.86	0.71
23.00	0.79	0.82	0.76	0.75	0.77	0.79	0.81	0.83	0.86	0.71
24.00	0.77	0.80	0.74	0.73	0.75	0.77	0.79	0.81	0.85	0.70
Daily Values	20.09	20.59	19.59	19.53	19.72	20.03	20.53	20.77	21.20	18.60
Daily Sum from Hourly	20.09	20.69	19.49	19.39	19.68	20.08	20.54	20.86	21.43	17.35

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.73	0.76	0.71	0.71	0.72	0.73	0.75	0.76	0.80	0.61
2.00	0.73	0.75	0.71	0.70	0.71	0.73	0.74	0.75	0.78	0.61
3.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.77	0.61
4.00	0.72	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.77	0.61
5.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.77	0.61
6.00	0.72	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.77	0.61
7.00	0.72	0.74	0.70	0.70	0.70	0.72	0.74	0.75	0.76	0.60
8.00	0.72	0.74	0.69	0.69	0.70	0.72	0.73	0.74	0.76	0.60
9.00	0.72	0.74	0.69	0.69	0.70	0.72	0.73	0.75	0.77	0.59
10.00	0.72	0.74	0.70	0.69	0.70	0.72	0.74	0.75	0.77	0.60
11.00	0.72	0.75	0.70	0.69	0.71	0.72	0.74	0.75	0.78	0.60
12.00	0.72	0.75	0.70	0.70	0.71	0.72	0.74	0.76	0.78	0.60
13.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.79	0.60
14.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.76	0.78	0.61
15.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.76	0.79	0.61
16.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.76	0.78	0.60
17.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.76	0.78	0.60
18.00	0.72	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.77	0.60
19.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.78	0.60
20.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.75	0.78	0.61
21.00	0.73	0.75	0.70	0.71	0.71	0.73	0.74	0.75	0.78	0.61
22.00	0.73	0.75	0.71	0.70	0.71	0.73	0.74	0.76	0.79	0.61
23.00	0.73	0.75	0.70	0.71	0.71	0.73	0.74	0.75	0.78	0.61
24.00	0.73	0.75	0.70	0.70	0.71	0.73	0.74	0.76	0.77	0.61
Daily Values	17.37	17.94	16.80	16.85	17.02	17.39	17.77	18.00	18.35	14.50
Daily Sum from Hourly	17.39	17.96	16.83	16.81	17.03	17.41	17.76	18.05	18.63	14.50

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Tom C. Clark Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.75)  (2) (0.74)  (3) (0.73)  (4) (0.73)  (5) (0.73)  (6) (0.73)
(7) (0.77)  (8) (0.83)  (9) (0.91) (10) (0.94) (11) (0.94) (12) (0.95)
(13) (0.94) (14) (0.95) (15) (0.94) (16) (0.94) (17) (0.91) (18) (0.86)
(19) (0.82) (20) (0.81) (21) (0.80) (22) (0.79) (23) (0.79) (24) (0.77) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.73)  (2) (0.73)  (3) (0.73)  (4) (0.73)  (5) (0.73)  (6) (0.73)
(7) (0.72)  (8) (0.72)  (9) (0.72) (10) (0.72) (11) (0.72) (12) (0.72)
(13) (0.73) (14) (0.73) (15) (0.73) (16) (0.73) (17) (0.73) (18) (0.73)
(19) (0.73) (20) (0.73) (21) (0.73) (22) (0.73) (23) (0.73) (24) (0.73) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.75  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan. 1 - Dec. 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Tom C. Clark Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.75, 0.74, 0.73, 0.73, 0.73, 0.73,
      0.77, 0.83, 0.91, 0.94, 0.94, 0.95,
      0.94, 0.95, 0.94, 0.94, 0.91, 0.86,
      0.82, 0.81, 0.80, 0.79, 0.79, 0.77),
    SATURDAY THRU SUNDAY =
     (0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.72, 0.72, 0.72, 0.72, 0.72, 0.72,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.72, 0.72, 0.72, 0.72, 0.72, 0.72,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73),
    SATURDAY THRU SUNDAY =
     (0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.72, 0.72, 0.72, 0.72, 0.72, 0.72,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
      0.73, 0.73, 0.73, 0.73, 0.73, 0.73),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.75 W/sqft, Area=121654 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 213 kW (Metric units)
      LIGHTS= 727,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 727,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 727,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 727,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 727,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 727,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 727,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 727,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 727,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Tom C. Clark Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.75, 0.74, 0.73, 0.73, 0.73, 0.73,
   0.77, 0.83, 0.91, 0.94, 0.94, 0.95,
   0.94, 0.95, 0.94, 0.94, 0.91, 0.86,
   0.82, 0.81, 0.80, 0.79, 0.79, 0.77;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
   0.72, 0.72, 0.72, 0.72, 0.72, 0.72,
   0.73, 0.73, 0.73, 0.73, 0.73, 0.73,
   0.73, 0.73, 0.73, 0.73, 0.73, 0.73;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.75 W/sqft, Area=121654 sqft
   213120,  ! Design Level [W]
   ! Return-vented fluorescent lights
```

```
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 26 - TXL010

Category	:	Large
Building ID	:	975
Building	:	Brazos County Courthouse
Location	:	Bryan, TX
Building Area (ft^2)	:	100,000
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	3.59
Source	:	ESL
EUI (kWh/ft^2-yr)	:	19.70
Start Date	:	7/1/98
End date	:	7/1/99

(Page 1) Building Descriptions: (TXL010)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Brazos County Courthouse Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Bryan, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Five story, 100,000 ft^2 .

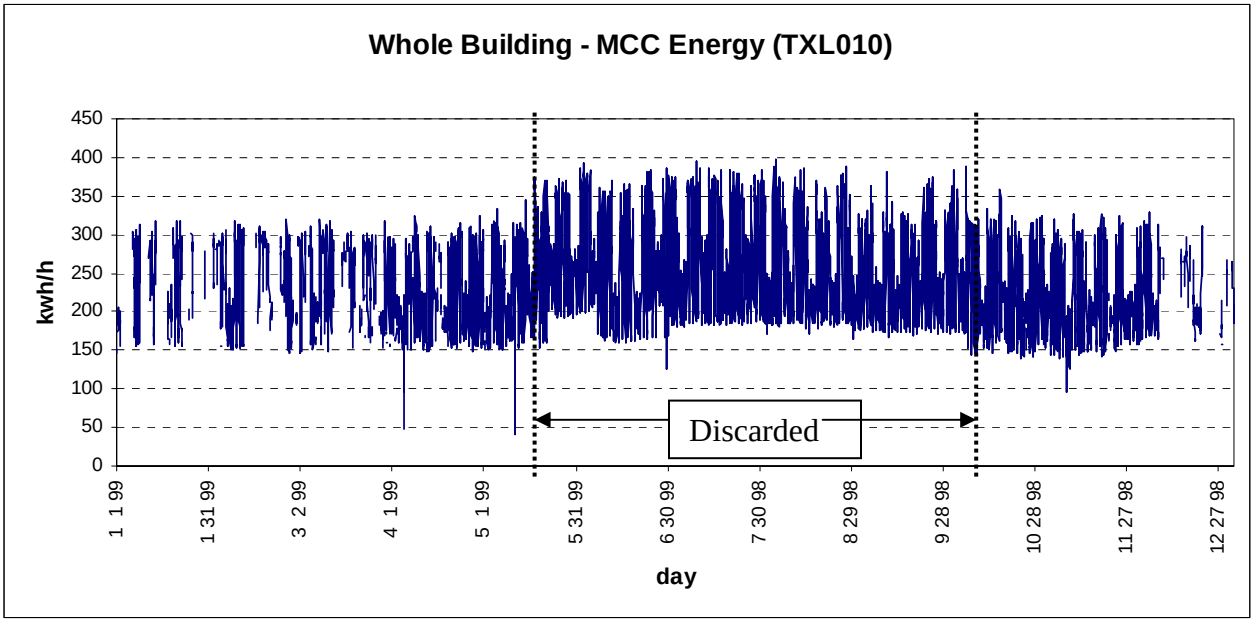
Lighting EUI: [(15.25 x 5) + (14.64 x 2)] x 52 x 3.59 = 19.70 kWh/ft^2.year

Lighting Type: Mixture of fluorescent and incandescent

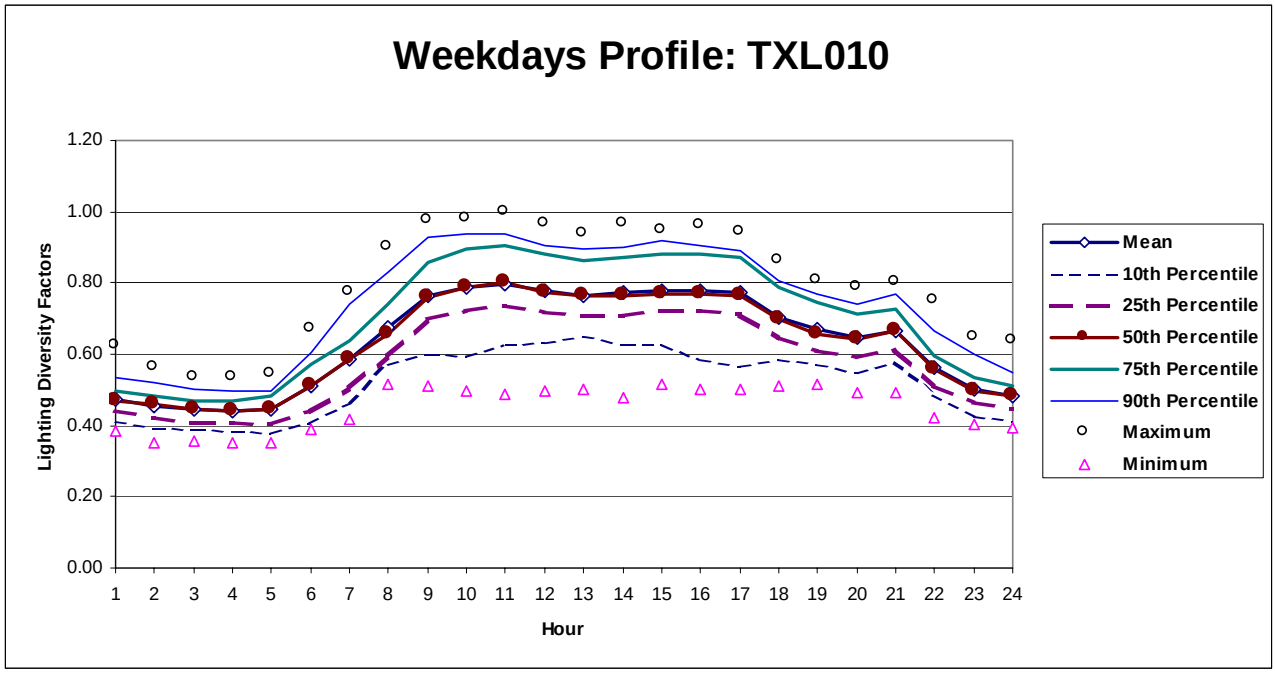
Dates: 7/1/98 - 7/1/99

Data Type: Lighting + receptacles = WBE - MCC - Chillers = ch3496 - (ch3840 + ch3841 + ch3846 + ch3847) - (ch3842 + ch3843 + ch3844 + ch3845)

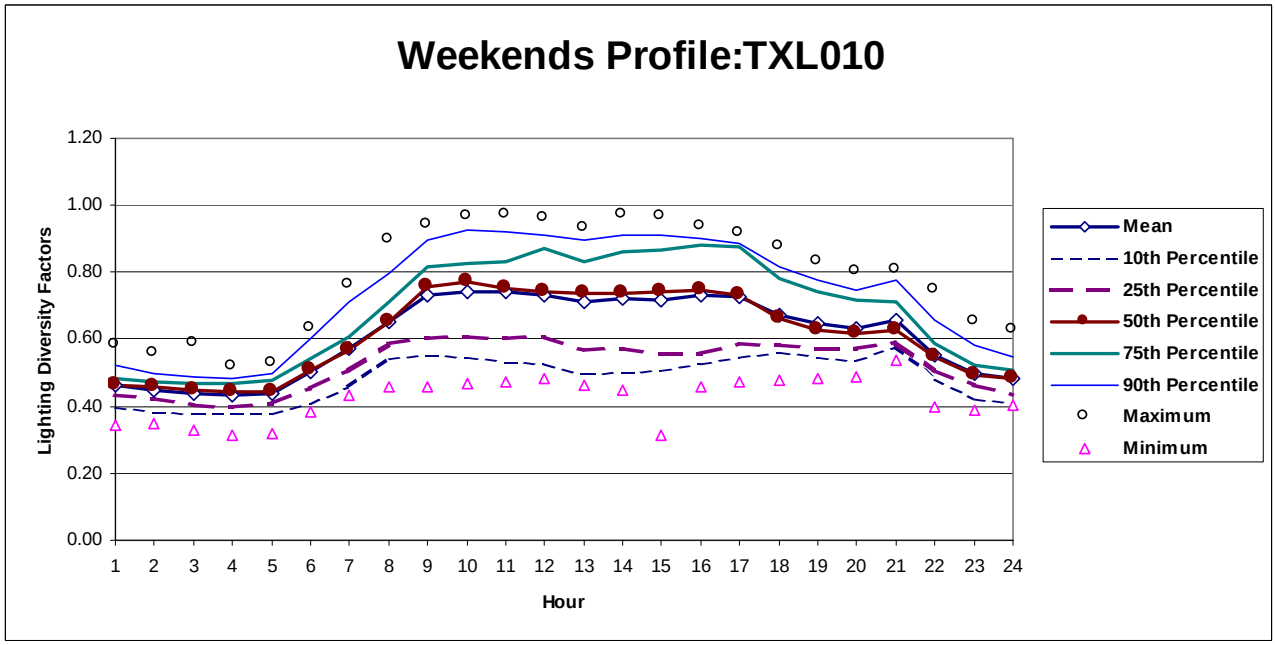
Maximum kW: 359 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98, 1/19/98, 2/16/98, 5/25/98, 9/07/98, 11/11/98, 11/26/98, 11/27/98, and 12/23 - 12/25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.47	0.52	0.43	0.41	0.44	0.47	0.50	0.54	0.62	0.39
2.00	0.45	0.50	0.41	0.39	0.42	0.46	0.48	0.52	0.56	0.35
3.00	0.44	0.49	0.40	0.39	0.41	0.45	0.47	0.50	0.54	0.35
4.00	0.44	0.48	0.40	0.38	0.41	0.44	0.47	0.50	0.53	0.35
5.00	0.44	0.49	0.40	0.38	0.40	0.45	0.48	0.50	0.54	0.35
6.00	0.51	0.58	0.44	0.41	0.44	0.51	0.57	0.60	0.67	0.39
7.00	0.59	0.68	0.49	0.46	0.51	0.58	0.64	0.74	0.77	0.42
8.00	0.67	0.77	0.58	0.57	0.59	0.66	0.74	0.83	0.90	0.51
9.00	0.77	0.88	0.65	0.60	0.70	0.76	0.86	0.93	0.98	0.51
10.00	0.79	0.91	0.67	0.59	0.72	0.79	0.90	0.94	0.98	0.50
11.00	0.80	0.92	0.67	0.63	0.74	0.80	0.91	0.94	1.00	0.49
12.00	0.78	0.89	0.67	0.63	0.72	0.78	0.88	0.90	0.97	0.49
13.00	0.76	0.87	0.66	0.65	0.71	0.76	0.86	0.90	0.94	0.50
14.00	0.77	0.88	0.66	0.63	0.71	0.77	0.87	0.90	0.96	0.48
15.00	0.78	0.89	0.67	0.63	0.72	0.77	0.88	0.92	0.95	0.52
16.00	0.78	0.89	0.66	0.58	0.72	0.77	0.88	0.91	0.96	0.50
17.00	0.77	0.88	0.66	0.57	0.71	0.77	0.87	0.89	0.94	0.50
18.00	0.70	0.79	0.62	0.59	0.65	0.70	0.79	0.81	0.86	0.51
19.00	0.67	0.74	0.59	0.57	0.61	0.66	0.75	0.77	0.81	0.52
20.00	0.65	0.72	0.57	0.55	0.59	0.64	0.71	0.74	0.79	0.49
21.00	0.67	0.74	0.60	0.58	0.61	0.66	0.73	0.77	0.80	0.49
22.00	0.56	0.63	0.49	0.49	0.51	0.56	0.60	0.66	0.75	0.42
23.00	0.50	0.56	0.44	0.43	0.47	0.50	0.53	0.60	0.65	0.40
24.00	0.48	0.53	0.43	0.41	0.45	0.48	0.51	0.55	0.64	0.39
Daily Values	15.24	16.86	13.62	13.09	14.14	15.21	16.78	17.28	18.07	11.59
Daily Sum from Hourly	15.25	17.25	13.25	12.52	13.95	15.17	16.89	17.85	19.11	10.83

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.46	0.51	0.41	0.40	0.43	0.46	0.48	0.52	0.58	0.35
2.00	0.45	0.49	0.40	0.38	0.42	0.46	0.47	0.50	0.56	0.35
3.00	0.44	0.48	0.39	0.38	0.40	0.45	0.47	0.49	0.59	0.33
4.00	0.43	0.48	0.39	0.38	0.40	0.44	0.47	0.49	0.52	0.31
5.00	0.44	0.49	0.39	0.38	0.41	0.44	0.48	0.50	0.53	0.32
6.00	0.50	0.57	0.43	0.41	0.45	0.51	0.54	0.60	0.63	0.38
7.00	0.57	0.66	0.48	0.46	0.51	0.57	0.61	0.71	0.76	0.43
8.00	0.65	0.75	0.56	0.54	0.59	0.65	0.71	0.80	0.89	0.46
9.00	0.73	0.86	0.60	0.55	0.60	0.76	0.82	0.90	0.94	0.46
10.00	0.74	0.88	0.60	0.55	0.61	0.77	0.83	0.93	0.96	0.47
11.00	0.74	0.88	0.60	0.53	0.60	0.75	0.83	0.92	0.97	0.47
12.00	0.73	0.87	0.59	0.53	0.61	0.74	0.87	0.91	0.96	0.48
13.00	0.71	0.86	0.57	0.50	0.57	0.74	0.83	0.90	0.93	0.47
14.00	0.72	0.88	0.57	0.50	0.57	0.74	0.86	0.91	0.97	0.45
15.00	0.72	0.88	0.56	0.51	0.56	0.74	0.87	0.91	0.97	0.31
16.00	0.73	0.88	0.58	0.53	0.56	0.75	0.88	0.90	0.94	0.46
17.00	0.73	0.86	0.59	0.55	0.59	0.73	0.88	0.89	0.92	0.47
18.00	0.67	0.78	0.57	0.56	0.58	0.66	0.78	0.82	0.88	0.48
19.00	0.65	0.74	0.55	0.55	0.57	0.63	0.74	0.78	0.83	0.48
20.00	0.63	0.71	0.55	0.54	0.57	0.62	0.71	0.75	0.80	0.49
21.00	0.66	0.73	0.58	0.58	0.59	0.63	0.71	0.78	0.80	0.54
22.00	0.55	0.62	0.48	0.49	0.51	0.55	0.59	0.66	0.75	0.40
23.00	0.50	0.55	0.44	0.42	0.46	0.49	0.52	0.58	0.65	0.39
24.00	0.48	0.53	0.43	0.41	0.43	0.48	0.51	0.55	0.63	0.40
Daily Values	14.59	16.55	12.63	12.41	13.13	14.35	16.13	17.12	18.11	9.86
Daily Sum from Hourly	14.64	16.96	12.33	11.62	12.60	14.76	16.48	17.67	18.97	10.15

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Brazos County Courthouse Bldg., Bryan, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.47)  (2) (0.46)  (3) (0.45)  (4) (0.44)  (5) (0.45)  (6) (0.51)
(7) (0.58)  (8) (0.66)  (9) (0.76) (10) (0.79) (11) (0.80) (12) (0.78)
(13) (0.76) (14) (0.77) (15) (0.77) (16) (0.77) (17) (0.77) (18) (0.70)
(19) (0.66) (20) (0.64) (21) (0.66) (22) (0.56) (23) (0.50) (24) (0.48) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.46)  (2) (0.46)  (3) (0.45)  (4) (0.44)  (5) (0.44)  (6) (0.51)
(7) (0.57)  (8) (0.65)  (9) (0.76) (10) (0.77) (11) (0.75) (12) (0.74)
(13) (0.74) (14) (0.74) (15) (0.74) (16) (0.75) (17) (0.73) (18) (0.66)
(19) (0.63) (20) (0.62) (21) (0.63) (22) (0.55) (23) (0.49) (24) (0.48) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.59  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jul 1, 1998 - Jul 1, 1999.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Brazos County Courthouse Bldg., Bryan, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.47, 0.46, 0.45, 0.44, 0.45, 0.51,
      0.58, 0.66, 0.76, 0.79, 0.80, 0.78,
      0.76, 0.77, 0.77, 0.77, 0.77, 0.70,
      0.66, 0.64, 0.66, 0.56, 0.50, 0.48),
    SATURDAY THRU SUNDAY =
     (0.46, 0.46, 0.45, 0.44, 0.44, 0.51,
      0.57, 0.65, 0.76, 0.77, 0.75, 0.74,
      0.74, 0.74, 0.74, 0.75, 0.73, 0.66,
      0.63, 0.62, 0.63, 0.55, 0.49, 0.48),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.46, 0.46, 0.45, 0.44, 0.44, 0.51,
      0.57, 0.65, 0.76, 0.77, 0.75, 0.74,
      0.74, 0.74, 0.74, 0.75, 0.73, 0.66,
      0.63, 0.62, 0.63, 0.55, 0.49, 0.48),
    SATURDAY THRU SUNDAY =
     (0.46, 0.46, 0.45, 0.44, 0.44, 0.51,
      0.57, 0.65, 0.76, 0.77, 0.75, 0.74,
      0.74, 0.74, 0.74, 0.75, 0.73, 0.66,
      0.63, 0.62, 0.63, 0.55, 0.49, 0.48),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.59 W/sqft, Area=100000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 359 kW (Metric units)
      LIGHTS= 1225,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1225,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 1225,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1225,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1225,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1225,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1225,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1225,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1225,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Brazos County Courthouse Bldg., Bryan, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.47, 0.46, 0.45, 0.44, 0.45, 0.51,
   0.58, 0.66, 0.76, 0.79, 0.80, 0.78,
   0.76, 0.77, 0.77, 0.77, 0.77, 0.70,
   0.66, 0.64, 0.66, 0.56, 0.50, 0.48;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.46, 0.46, 0.45, 0.44, 0.44, 0.51,
   0.57, 0.65, 0.76, 0.77, 0.75, 0.74,
   0.74, 0.74, 0.74, 0.75, 0.73, 0.66,
   0.63, 0.62, 0.63, 0.55, 0.49, 0.48;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.59 W/sqft, Area=100000 sqft
   359000,  ! Design Level [W]
   ! Return-vented fluorescent lights
```

```
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 27 - TXL011

Category	:	Large
Building ID	:	200
Building	:	Capitol Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	282,499
Data Type	:	WBE
Max Load (W/ft^2)	:	3.39
Source	:	ESL
EUI (kWh/ft^2-yr)	:	21.17
Start Date	:	7/1/97
End date	:	7/1/98

(Page 1) Building Descriptions: (TXL011)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Capitol Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, TX.

Category: Large Office Building, based on the CBECS classification.

Square footage: 282,499 ft^2 .

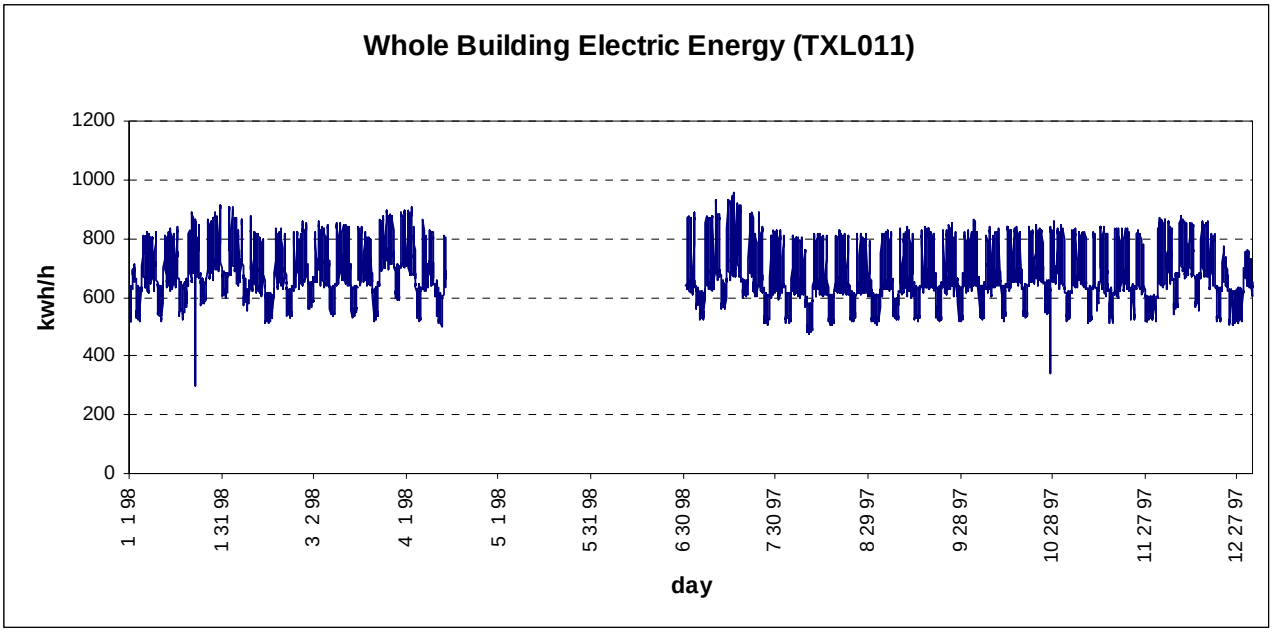
Lighting EUI: [(18.06 x 5) + (14.80 x 2)] x 52 x 3.39 = 21.17 kWh/ft^2.year

Lighting Type: N/A

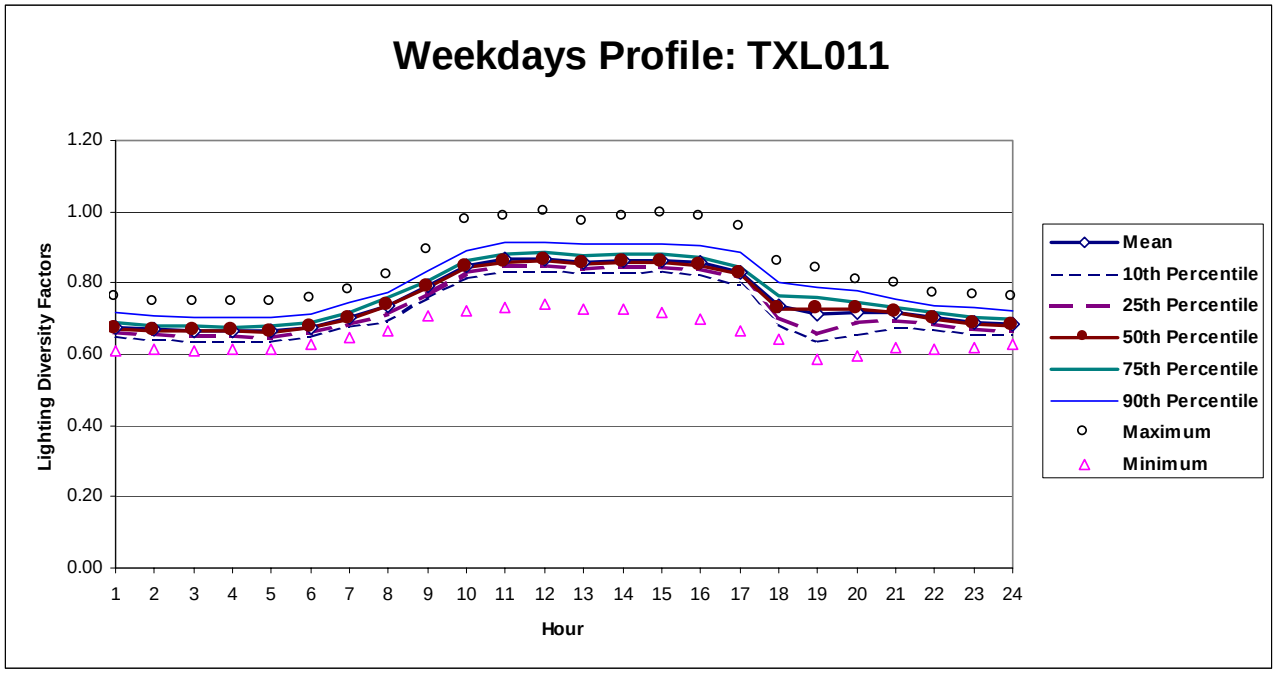
Dates: 7/1/97 - 7/1/98

Data Type: WBE = ch1492

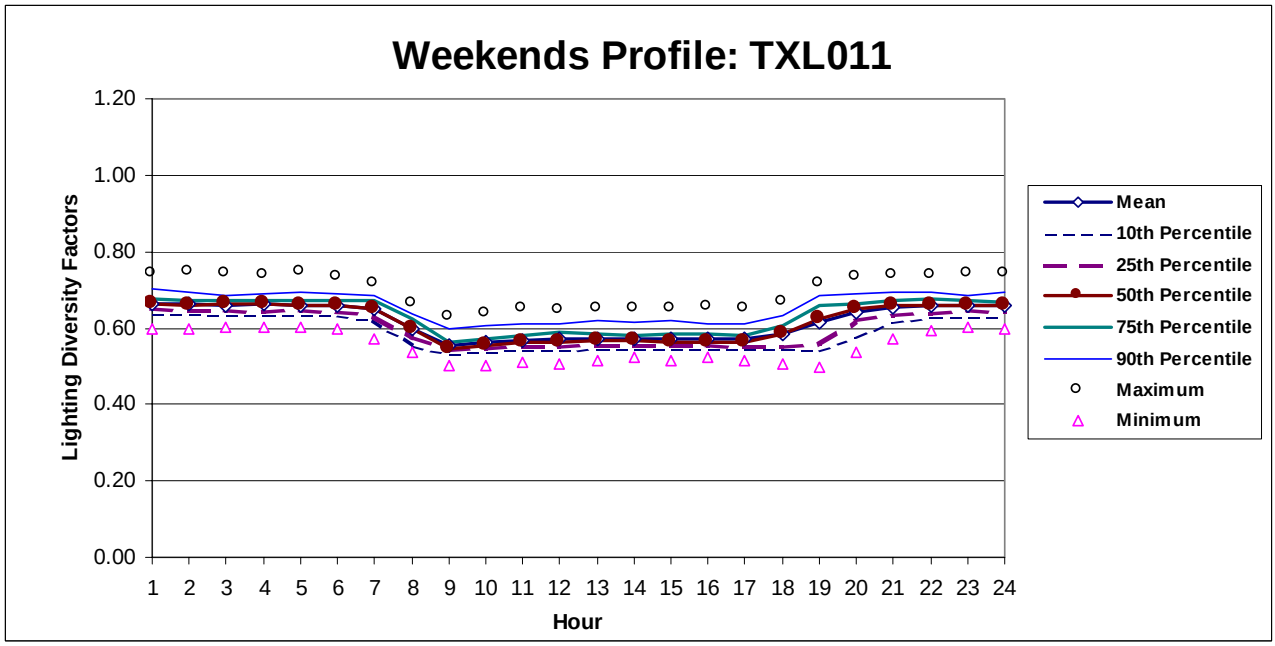
Maximum kW: 959 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 7/4/97, 9/1/97, 11/11/97, 11/27/97, 11/28/97, 12/24 -12/26/97, 12/31/97, 1/1/98, 1/19/98, 2/16/98, 4/10/98, and 4/14/98 - 6/30/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.68	0.70	0.65	0.65	0.66	0.67	0.69	0.72	0.76	0.61
2.00	0.67	0.70	0.65	0.64	0.65	0.67	0.68	0.71	0.75	0.61
3.00	0.67	0.69	0.64	0.64	0.65	0.66	0.68	0.70	0.74	0.61
4.00	0.67	0.69	0.64	0.64	0.65	0.67	0.68	0.70	0.74	0.61
5.00	0.67	0.69	0.64	0.64	0.65	0.66	0.68	0.70	0.75	0.61
6.00	0.68	0.70	0.65	0.65	0.66	0.67	0.69	0.71	0.75	0.63
7.00	0.70	0.73	0.68	0.68	0.69	0.70	0.72	0.74	0.78	0.65
8.00	0.73	0.77	0.70	0.69	0.71	0.73	0.76	0.77	0.82	0.67
9.00	0.79	0.82	0.76	0.76	0.77	0.79	0.81	0.83	0.89	0.71
10.00	0.85	0.88	0.81	0.81	0.83	0.84	0.86	0.89	0.97	0.72
11.00	0.87	0.90	0.83	0.84	0.85	0.86	0.88	0.91	0.98	0.73
12.00	0.87	0.90	0.83	0.84	0.85	0.86	0.89	0.91	1.00	0.74
13.00	0.86	0.90	0.82	0.83	0.84	0.86	0.88	0.91	0.97	0.73
14.00	0.86	0.90	0.83	0.83	0.84	0.86	0.88	0.91	0.99	0.72
15.00	0.86	0.90	0.83	0.84	0.84	0.86	0.88	0.91	0.99	0.72
16.00	0.86	0.90	0.82	0.82	0.84	0.85	0.87	0.91	0.98	0.70
17.00	0.83	0.87	0.79	0.80	0.81	0.82	0.84	0.89	0.96	0.67
18.00	0.74	0.78	0.69	0.69	0.71	0.73	0.76	0.80	0.86	0.64
19.00	0.71	0.77	0.66	0.64	0.66	0.73	0.76	0.79	0.84	0.59
20.00	0.72	0.76	0.68	0.66	0.69	0.73	0.75	0.78	0.81	0.59
21.00	0.71	0.75	0.68	0.67	0.69	0.72	0.73	0.75	0.80	0.62
22.00	0.70	0.73	0.67	0.67	0.68	0.70	0.72	0.74	0.77	0.62
23.00	0.69	0.72	0.66	0.66	0.67	0.69	0.71	0.73	0.76	0.62
24.00	0.68	0.71	0.66	0.65	0.66	0.68	0.70	0.72	0.76	0.63
Daily Values	18.06	18.72	17.40	17.36	17.64	17.94	18.33	19.03	19.93	16.51
Daily Sum from Hourly	18.07	18.86	17.28	17.23	17.56	17.99	18.47	19.15	20.42	15.75

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.66	0.69	0.64	0.64	0.65	0.66	0.68	0.70	0.74	0.60
2.00	0.66	0.69	0.64	0.64	0.65	0.66	0.67	0.69	0.74	0.60
3.00	0.66	0.69	0.64	0.63	0.65	0.66	0.67	0.69	0.74	0.60
4.00	0.66	0.69	0.64	0.63	0.64	0.66	0.67	0.69	0.74	0.60
5.00	0.66	0.69	0.64	0.63	0.64	0.66	0.67	0.69	0.74	0.60
6.00	0.66	0.68	0.63	0.63	0.64	0.66	0.67	0.69	0.73	0.60
7.00	0.65	0.68	0.63	0.62	0.63	0.65	0.67	0.68	0.72	0.57
8.00	0.60	0.63	0.57	0.55	0.58	0.60	0.62	0.64	0.66	0.54
9.00	0.56	0.58	0.53	0.53	0.54	0.55	0.56	0.60	0.63	0.50
10.00	0.56	0.59	0.53	0.54	0.54	0.55	0.57	0.61	0.64	0.50
11.00	0.57	0.60	0.54	0.54	0.55	0.56	0.58	0.61	0.65	0.51
12.00	0.57	0.60	0.54	0.54	0.55	0.56	0.59	0.61	0.65	0.51
13.00	0.57	0.60	0.54	0.55	0.55	0.57	0.58	0.62	0.65	0.52
14.00	0.57	0.60	0.54	0.55	0.56	0.57	0.58	0.62	0.65	0.52
15.00	0.57	0.60	0.54	0.55	0.55	0.56	0.58	0.62	0.65	0.52
16.00	0.57	0.60	0.54	0.55	0.55	0.56	0.58	0.61	0.65	0.52
17.00	0.57	0.60	0.54	0.54	0.55	0.56	0.58	0.61	0.65	0.51
18.00	0.58	0.62	0.55	0.54	0.55	0.58	0.60	0.63	0.67	0.50
19.00	0.61	0.67	0.56	0.54	0.56	0.63	0.66	0.69	0.72	0.50
20.00	0.64	0.68	0.60	0.58	0.62	0.65	0.66	0.69	0.73	0.53
21.00	0.66	0.69	0.62	0.61	0.63	0.66	0.67	0.69	0.74	0.57
22.00	0.66	0.69	0.63	0.63	0.64	0.66	0.68	0.69	0.74	0.59
23.00	0.66	0.69	0.63	0.63	0.64	0.66	0.67	0.69	0.74	0.60
24.00	0.66	0.69	0.63	0.63	0.64	0.66	0.67	0.69	0.74	0.60
Daily Values	14.80	15.44	14.15	14.08	14.37	14.74	15.09	15.73	16.53	13.35
Daily Sum from Hourly	14.81	15.52	14.10	14.02	14.32	14.75	15.17	15.74	16.71	13.22

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Capitol Building, Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.67)  (2) (0.67)  (3) (0.66)  (4) (0.67)  (5) (0.66)  (6) (0.67)
(7) (0.70)  (8) (0.73)  (9) (0.79) (10) (0.84) (11) (0.86) (12) (0.86)
(13) (0.86) (14) (0.86) (15) (0.86) (16) (0.85) (17) (0.82) (18) (0.73)
(19) (0.73) (20) (0.73) (21) (0.72) (22) (0.70) (23) (0.69) (24) (0.68) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.66)  (2) (0.66)  (3) (0.66)  (4) (0.66)  (5) (0.66)  (6) (0.66)
(7) (0.65)  (8) (0.60)  (9) (0.55) (10) (0.55) (11) (0.56) (12) (0.56)
(13) (0.57) (14) (0.57) (15) (0.56) (16) (0.56) (17) (0.56) (18) (0.58)
(19) (0.63) (20) (0.65) (21) (0.66) (22) (0.66) (23) (0.66) (24) (0.66) ..

WORK = WEEK-SCHEDULE        (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE         (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE          THRU JAN 1  VAC        THRU JUL 3 WORK
                            THRU JUL 4 VAC         THRU NOV 22 WORK
                            THRU NOV 24 VAC        THRU DEC 24 WORK
                            THRU DEC 25 VAC        THRU DEC 30 WORK
                            THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.39  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of July 1, 1997 - June 30, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Capitol Building, Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.67, 0.67, 0.66, 0.67, 0.66, 0.67,
      0.70, 0.73, 0.79, 0.84, 0.86, 0.86,
      0.86, 0.86, 0.86, 0.85, 0.82, 0.73,
      0.73, 0.73, 0.72, 0.70, 0.69, 0.68),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.65, 0.60, 0.55, 0.55, 0.56, 0.56,
      0.57, 0.57, 0.56, 0.56, 0.56, 0.58,
      0.63, 0.65, 0.66, 0.66, 0.66, 0.66),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.65, 0.60, 0.55, 0.55, 0.56, 0.56,
      0.57, 0.57, 0.56, 0.56, 0.56, 0.58,
      0.63, 0.65, 0.66, 0.66, 0.66, 0.66),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.65, 0.60, 0.55, 0.55, 0.56, 0.56,
      0.57, 0.57, 0.56, 0.56, 0.56, 0.58,
      0.63, 0.65, 0.66, 0.66, 0.66, 0.66),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
     ** Lighting level=3.39 W/sqft, Area=282499 sqft
     ** Lighting level in kBtu/hr (English units)
     ** or 959 kW (Metric units)
     LIGHTS= 3273,
      ELE-VAC,
      ** Return-vented fluorescent lights
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
      20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
      FROM 01JAN THRU 01JAN;

     LIGHTS= 3273,
      ELE-WORK,
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
      20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 3273,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 3273,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 3273,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 3273,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 3273,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 3273,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 3273,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Capitol Building, Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.67, 0.67, 0.66, 0.67, 0.66, 0.67,
   0.70, 0.73, 0.79, 0.84, 0.86, 0.86,
   0.86, 0.86, 0.86, 0.85, 0.82, 0.73,
   0.73, 0.73, 0.72, 0.70, 0.69, 0.68;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.66, 0.66, 0.66, 0.66, 0.66, 0.66,
   0.65, 0.60, 0.55, 0.55, 0.56, 0.56,
   0.57, 0.57, 0.56, 0.56, 0.56, 0.58,
   0.63, 0.65, 0.66, 0.66, 0.66, 0.66;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.39 W/sqft, Area=282499 sqft
   959000,  ! Design Level [W]
   ! Return-vented fluorescent lights
```

```
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 28 - TXL012

Category	:	Large
Building ID	:	201
Building	:	Sam Houston Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	182,961
Data Type	:	WBE
Max Load (W/ft^2)	:	5.39
Source	:	ESL
EUI (kWh/ft^2-yr)	:	30.18
Start Date	:	1/1/93
End date	:	12/31/93

(Page 1) Building Descriptions: (TXL012)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Sam Houston Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Large Office Building, based on the CBECS classification.

Square footage: Ten story, 182,961 ft^2 .

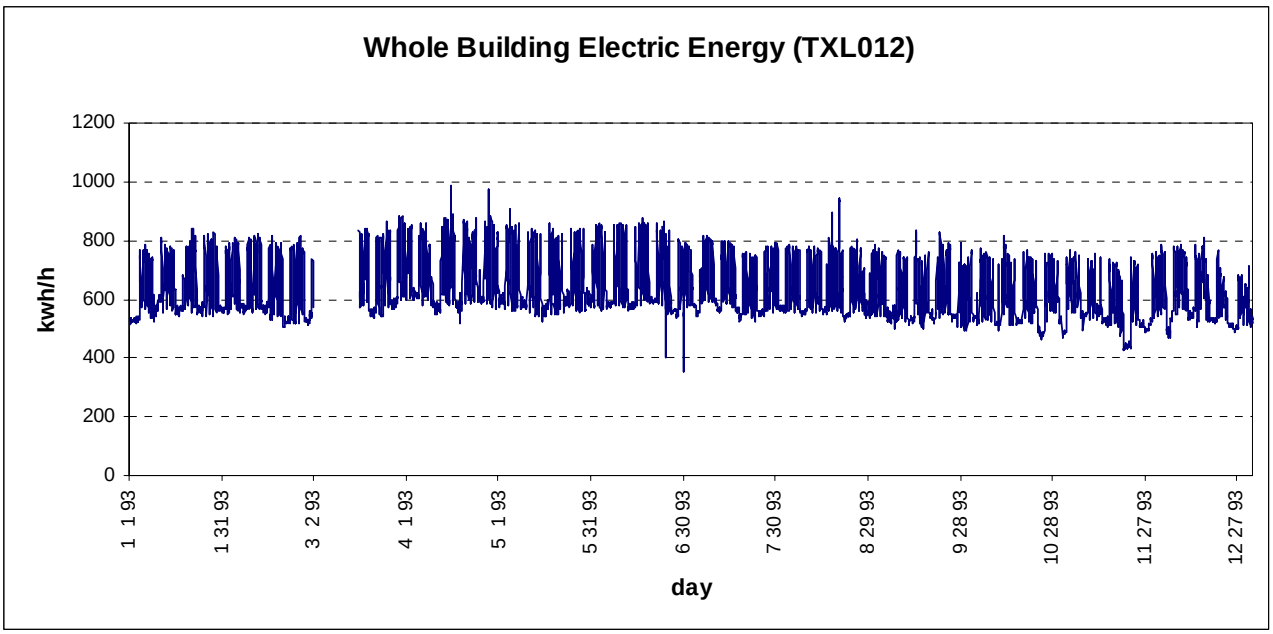
Lighting EUI: [(16.15 x 5) + (13.43 x 2)] x 52 x 5.39 = 30.18 kWh/ft^2.year

Lighting Type: Mixture of fluorescent and incandescent

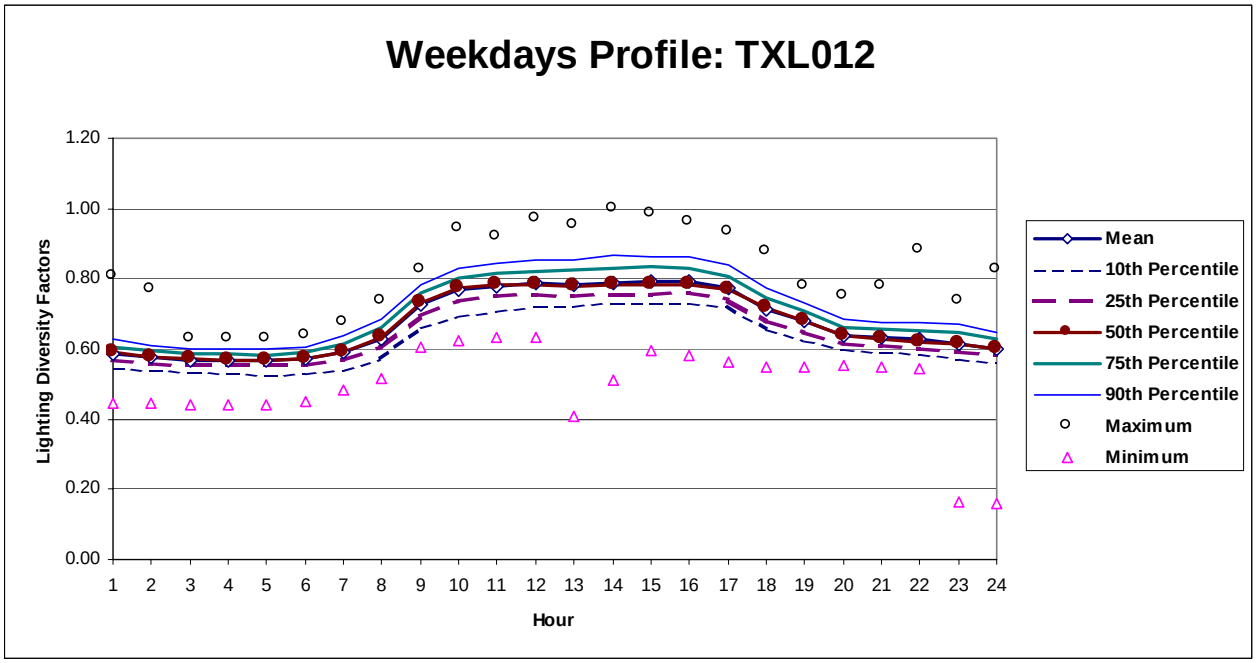
Dates: 1/1/93 - 12/31/93

Data Type: WBE = (ch0565 + ch0566 + ch0575 + ch0576 + ch0579 + ch0580) - (ch0573 + ch0574 + ch0571 + ch0572 + ch0577 + ch0578) - (ch2940 + ch2941 + ch2942 + ch2943) - (ch0567 + ch0568)

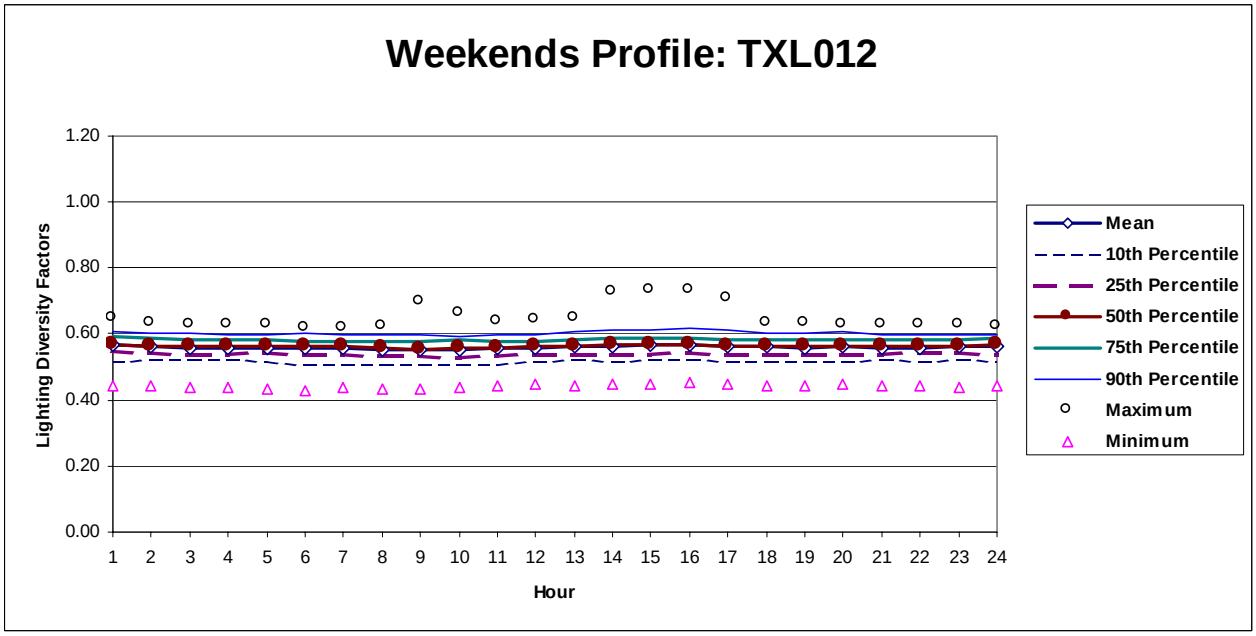
Maximum kW: 987 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/93, 1/18/93, 3/2/93 - 3/16/93, 4/9/93, 9/6/93, 11/11/93, 11/25/93, 11/26/93, 12/24/93, and 12/31/93.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.59	0.62	0.55	0.55	0.57	0.59	0.61	0.63	0.80	0.44
2.00	0.58	0.61	0.54	0.54	0.56	0.58	0.60	0.61	0.77	0.44
3.00	0.57	0.60	0.54	0.53	0.55	0.57	0.59	0.60	0.63	0.44
4.00	0.57	0.60	0.54	0.53	0.55	0.57	0.59	0.60	0.63	0.44
5.00	0.57	0.59	0.54	0.53	0.55	0.57	0.58	0.60	0.63	0.44
6.00	0.57	0.60	0.54	0.53	0.55	0.57	0.59	0.60	0.64	0.45
7.00	0.59	0.63	0.55	0.54	0.57	0.59	0.62	0.64	0.68	0.48
8.00	0.63	0.67	0.59	0.57	0.60	0.63	0.66	0.69	0.73	0.51
9.00	0.73	0.77	0.68	0.66	0.69	0.73	0.76	0.78	0.83	0.61
10.00	0.77	0.82	0.72	0.70	0.74	0.77	0.80	0.83	0.94	0.62
11.00	0.78	0.83	0.73	0.71	0.75	0.78	0.82	0.84	0.92	0.63
12.00	0.79	0.84	0.74	0.72	0.76	0.78	0.82	0.85	0.97	0.63
13.00	0.78	0.84	0.72	0.72	0.75	0.78	0.82	0.86	0.95	0.41
14.00	0.79	0.85	0.73	0.73	0.75	0.78	0.83	0.87	1.00	0.51
15.00	0.79	0.85	0.74	0.73	0.76	0.78	0.83	0.86	0.99	0.60
16.00	0.79	0.84	0.74	0.73	0.76	0.78	0.83	0.86	0.96	0.58
17.00	0.77	0.82	0.72	0.72	0.74	0.77	0.81	0.84	0.93	0.56
18.00	0.71	0.76	0.66	0.66	0.68	0.72	0.75	0.77	0.88	0.55
19.00	0.68	0.72	0.64	0.62	0.65	0.68	0.71	0.73	0.78	0.55
20.00	0.64	0.68	0.60	0.60	0.62	0.64	0.66	0.68	0.75	0.55
21.00	0.63	0.67	0.60	0.59	0.61	0.63	0.66	0.68	0.78	0.55
22.00	0.63	0.67	0.59	0.58	0.60	0.62	0.65	0.67	0.88	0.54
23.00	0.61	0.68	0.55	0.57	0.59	0.61	0.65	0.67	0.74	0.16
24.00	0.60	0.66	0.54	0.56	0.58	0.60	0.63	0.65	0.82	0.16
Daily Values	16.15	17.03	15.27	15.04	15.55	16.12	16.80	17.32	18.26	13.67
Daily Sum from Hourly	16.15	17.22	15.08	14.92	15.52	16.14	16.85	17.42	19.62	11.88

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.57	0.60	0.53	0.52	0.55	0.57	0.59	0.61	0.65	0.44
2.00	0.56	0.60	0.53	0.52	0.54	0.56	0.59	0.60	0.63	0.44
3.00	0.56	0.59	0.52	0.52	0.54	0.56	0.58	0.60	0.63	0.44
4.00	0.56	0.59	0.52	0.52	0.54	0.56	0.58	0.60	0.63	0.44
5.00	0.56	0.59	0.52	0.52	0.54	0.56	0.58	0.60	0.63	0.43
6.00	0.56	0.59	0.52	0.51	0.54	0.56	0.58	0.60	0.62	0.43
7.00	0.56	0.59	0.52	0.51	0.54	0.56	0.58	0.60	0.62	0.44
8.00	0.55	0.59	0.52	0.51	0.53	0.56	0.58	0.60	0.62	0.43
9.00	0.55	0.59	0.51	0.51	0.53	0.55	0.58	0.60	0.70	0.43
10.00	0.55	0.59	0.52	0.51	0.53	0.56	0.58	0.59	0.66	0.44
11.00	0.56	0.59	0.52	0.51	0.53	0.56	0.58	0.60	0.64	0.44
12.00	0.56	0.59	0.52	0.52	0.54	0.56	0.58	0.60	0.64	0.45
13.00	0.56	0.60	0.52	0.52	0.54	0.56	0.58	0.61	0.65	0.44
14.00	0.56	0.61	0.52	0.52	0.54	0.57	0.59	0.61	0.73	0.45
15.00	0.57	0.61	0.52	0.52	0.54	0.57	0.59	0.61	0.73	0.45
16.00	0.57	0.61	0.53	0.52	0.54	0.57	0.59	0.62	0.73	0.45
17.00	0.56	0.60	0.53	0.52	0.54	0.56	0.58	0.61	0.71	0.45
18.00	0.56	0.60	0.53	0.52	0.54	0.56	0.58	0.60	0.63	0.44
19.00	0.56	0.59	0.53	0.52	0.54	0.56	0.58	0.60	0.63	0.44
20.00	0.56	0.60	0.53	0.52	0.54	0.56	0.58	0.61	0.63	0.45
21.00	0.56	0.59	0.53	0.52	0.54	0.56	0.58	0.60	0.63	0.44
22.00	0.56	0.59	0.53	0.52	0.54	0.56	0.58	0.60	0.63	0.44
23.00	0.56	0.60	0.53	0.52	0.54	0.56	0.58	0.60	0.63	0.44
24.00	0.56	0.60	0.53	0.52	0.54	0.57	0.59	0.60	0.62	0.44
Daily Values	13.43	14.24	12.62	12.46	12.90	13.54	14.00	14.43	14.99	10.68
Daily Sum from Hourly	13.44	14.31	12.56	12.41	12.92	13.51	13.99	14.45	15.60	10.61

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Sam Houston Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.59)  (2) (0.58)  (3) (0.57)  (4) (0.57)  (5) (0.57)  (6) (0.57)
(7) (0.59)  (8) (0.63)  (9) (0.73) (10) (0.77) (11) (0.78) (12) (0.78)
(13) (0.78) (14) (0.78) (15) (0.78) (16) (0.78) (17) (0.77) (18) (0.72)
(19) (0.68) (20) (0.64) (21) (0.63) (22) (0.62) (23) (0.61) (24) (0.60) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.57)  (2) (0.56)  (3) (0.56)  (4) (0.56)  (5) (0.56)  (6) (0.56)
(7) (0.56)  (8) (0.56)  (9) (0.56) (10) (0.56) (11) (0.56) (12) (0.56)
(13) (0.56) (14) (0.57) (15) (0.57) (16) (0.57) (17) (0.56) (18) (0.56)
(19) (0.56) (20) (0.56) (21) (0.56) (22) (0.56) (23) (0.56) (24) (0.57) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 5.39  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1993 - Dec 31, 1993.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Sam Houston Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.59, 0.58, 0.57, 0.57, 0.57, 0.57,
      0.59, 0.63, 0.73, 0.77, 0.78, 0.78,
      0.78, 0.78, 0.78, 0.78, 0.77, 0.72,
      0.68, 0.64, 0.63, 0.62, 0.61, 0.60),
    SATURDAY THRU SUNDAY =
     (0.57, 0.56, 0.56, 0.56, 0.56, 0.56,
      0.56, 0.56, 0.55, 0.56, 0.56, 0.56,
      0.56, 0.57, 0.57, 0.57, 0.56, 0.56,
      0.56, 0.56, 0.56, 0.56, 0.56, 0.57),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.57, 0.56, 0.56, 0.56, 0.56, 0.56,
      0.56, 0.56, 0.55, 0.56, 0.56, 0.56,
      0.56, 0.57, 0.57, 0.57, 0.56, 0.56,
      0.56, 0.56, 0.56, 0.56, 0.56, 0.57),
    SATURDAY THRU SUNDAY =
     (0.57, 0.56, 0.56, 0.56, 0.56, 0.56,
      0.56, 0.56, 0.55, 0.56, 0.56, 0.56,
      0.56, 0.57, 0.57, 0.57, 0.56, 0.56,
      0.56, 0.56, 0.56, 0.56, 0.56, 0.57),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=5.39 W/sqft, Area=182961 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 987 kW (Metric units)
      LIGHTS= 3368,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 3368,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 3368,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 3368,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 3368,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 3368,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 3368,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 3368,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 3368,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Sam Houston Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.59, 0.58, 0.57, 0.57, 0.57, 0.57,
   0.59, 0.63, 0.73, 0.77, 0.78, 0.78,
   0.78, 0.78, 0.78, 0.78, 0.77, 0.72,
   0.68, 0.64, 0.63, 0.62, 0.61, 0.60;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.57, 0.56, 0.56, 0.56, 0.56, 0.56,
   0.56, 0.56, 0.55, 0.56, 0.56, 0.56,
   0.56, 0.57, 0.57, 0.57, 0.56, 0.56,
   0.56, 0.56, 0.56, 0.56, 0.56, 0.57;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=5.39 W/sqft, Area=182961 sqft
   986819,  ! Design Level [W]
   ! Return-vented fluorescent lights
```

```
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 29 - TXM001

Category	:	Medium
Building ID	:	205
Building	:	James E. Rudder
Location	:	Austin, TX
Building Area (ft^2)	:	80,000
Data Type	:	WBE - MCC
Max Load (W/ft^2)	:	5.22
Source	:	ESL
EUI (kWh/ft^2-yr)	:	34.42
Start Date	:	1/1/94
End date	:	12/31/94

(Page 1) Building Descriptions: (TXM001)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: James E. Rudder Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Medium Office Building, based on the CBECS classification.

Square footage: Six story, 80,000 ft^2 .

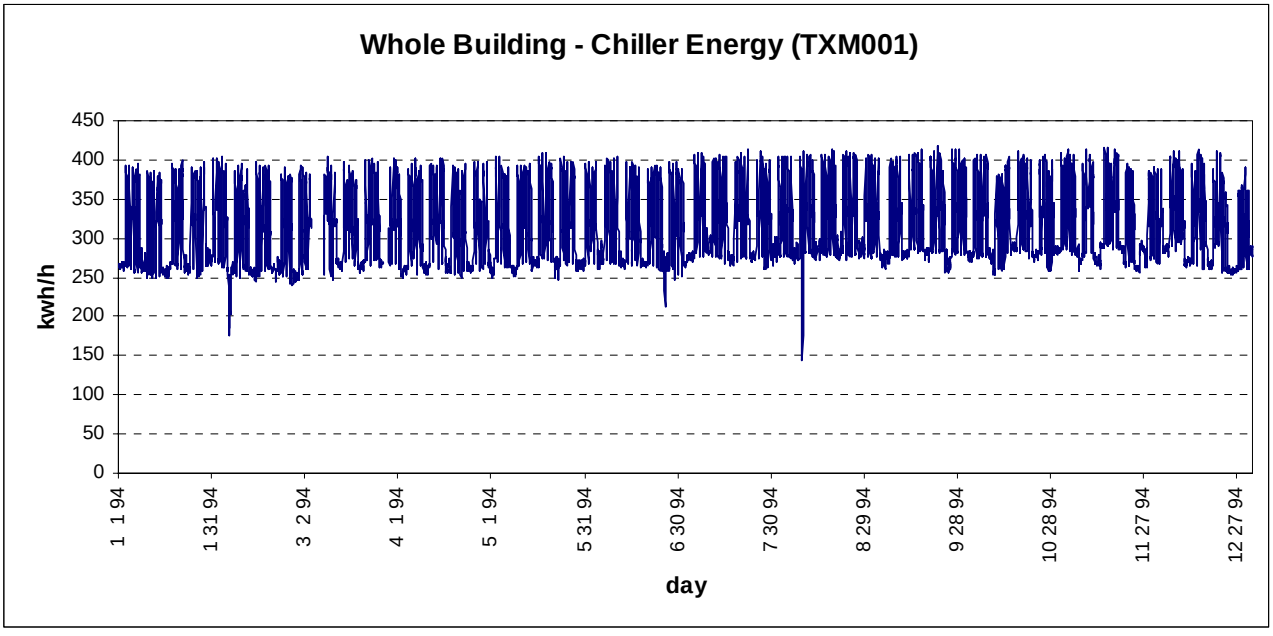
Lighting EUI: [(19.14 x 5) + (15.59 x 2)] x 52 x 5.22 = 34.42 kWh/ft^2.year

Lighting Type: 100% fluorescent (34-W)

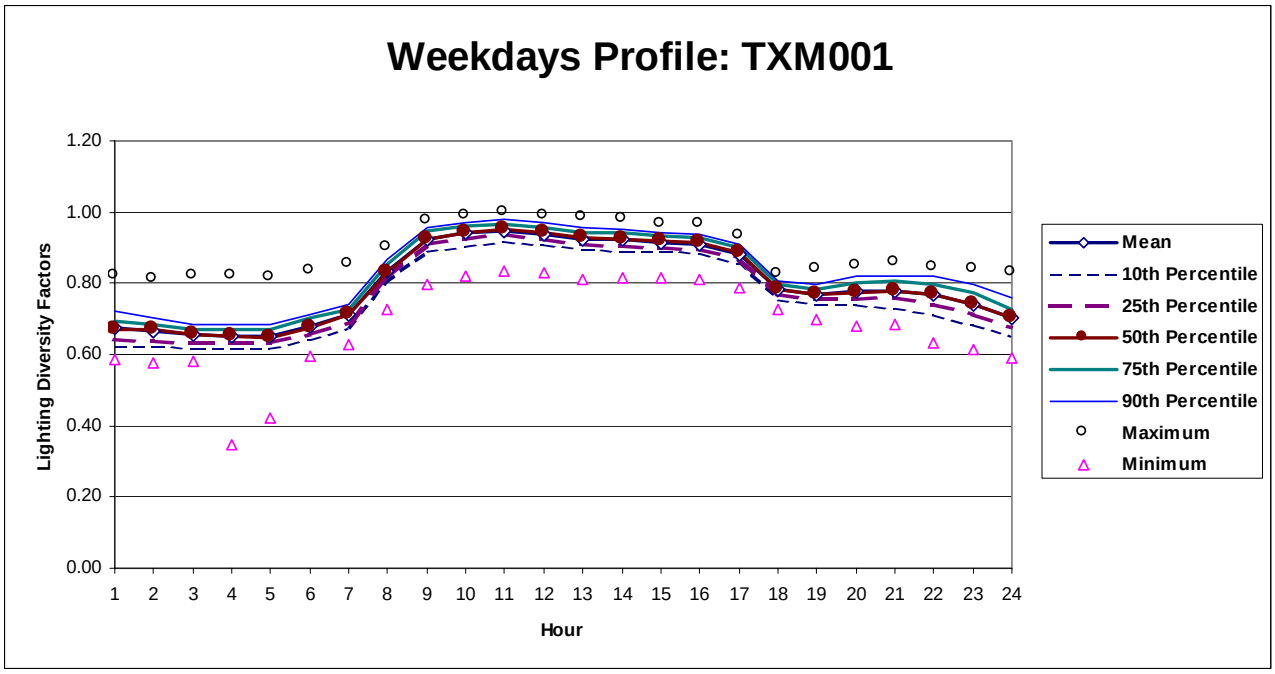
Dates: 1/1/94 - 12/31/94

Data Type: Lighting + receptacles = WBE - Chillers = ch0213 - ch0212

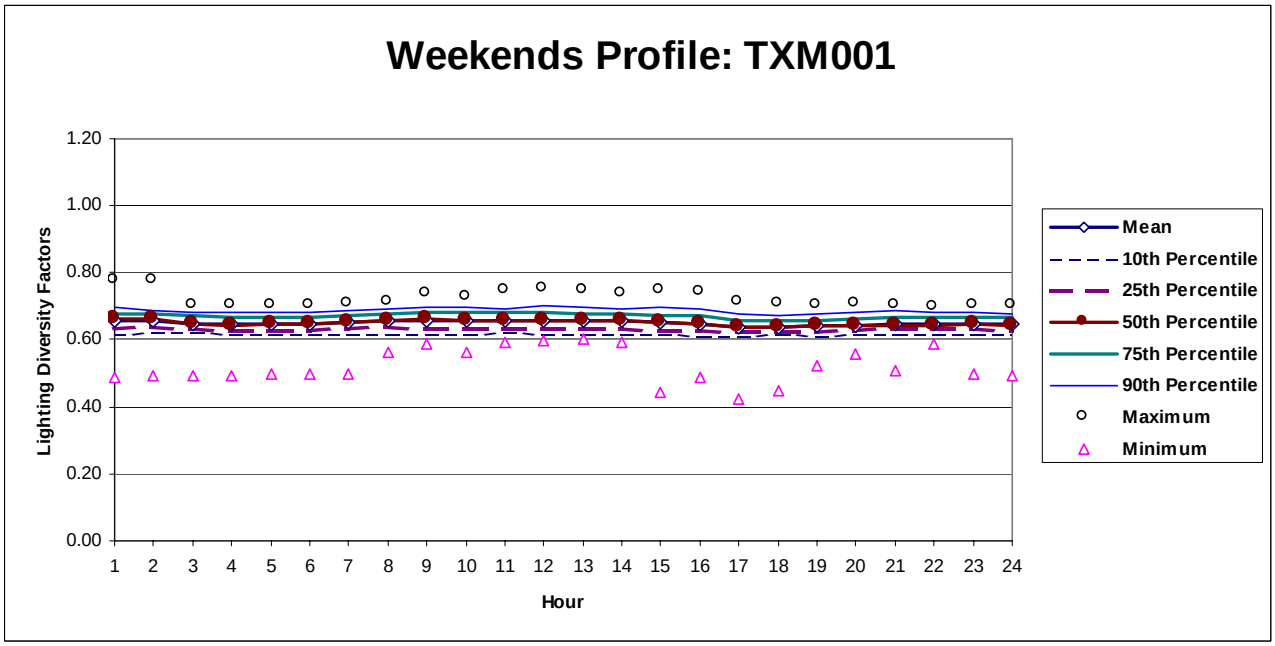
Maximum kW: 417 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/17/94, 2/21/94, 5/30/94, 7/4/94, 9/5/94, 11/11/94, 11/24/94, 11/25/94, and 12/26/94.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.67	0.72	0.63	0.62	0.64	0.67	0.69	0.72	0.82	0.59
2.00	0.67	0.70	0.63	0.62	0.64	0.67	0.68	0.70	0.81	0.58
3.00	0.65	0.68	0.62	0.62	0.63	0.66	0.67	0.69	0.82	0.58
4.00	0.65	0.69	0.61	0.62	0.63	0.65	0.67	0.68	0.82	0.35
5.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.69	0.81	0.42
6.00	0.68	0.71	0.65	0.64	0.66	0.67	0.70	0.71	0.83	0.59
7.00	0.71	0.74	0.68	0.68	0.69	0.71	0.73	0.74	0.85	0.63
8.00	0.83	0.86	0.81	0.80	0.81	0.83	0.85	0.87	0.90	0.72
9.00	0.92	0.95	0.90	0.89	0.91	0.92	0.95	0.96	0.98	0.79
10.00	0.94	0.97	0.91	0.91	0.93	0.94	0.96	0.97	0.99	0.82
11.00	0.95	0.98	0.92	0.92	0.94	0.95	0.97	0.98	1.00	0.84
12.00	0.94	0.97	0.91	0.91	0.92	0.94	0.96	0.97	0.99	0.83
13.00	0.93	0.95	0.90	0.90	0.91	0.93	0.94	0.95	0.98	0.81
14.00	0.92	0.95	0.90	0.89	0.91	0.92	0.94	0.95	0.98	0.81
15.00	0.92	0.94	0.89	0.89	0.90	0.92	0.93	0.94	0.97	0.82
16.00	0.91	0.93	0.89	0.88	0.90	0.91	0.93	0.94	0.97	0.81
17.00	0.88	0.91	0.86	0.86	0.87	0.88	0.90	0.91	0.93	0.79
18.00	0.78	0.80	0.76	0.76	0.77	0.78	0.80	0.81	0.83	0.72
19.00	0.77	0.79	0.75	0.74	0.75	0.77	0.78	0.80	0.84	0.70
20.00	0.78	0.81	0.75	0.74	0.75	0.78	0.80	0.82	0.85	0.68
21.00	0.78	0.81	0.74	0.73	0.76	0.78	0.81	0.82	0.86	0.68
22.00	0.77	0.81	0.73	0.71	0.74	0.77	0.80	0.82	0.84	0.63
23.00	0.74	0.78	0.70	0.68	0.71	0.74	0.77	0.80	0.84	0.61
24.00	0.70	0.74	0.66	0.65	0.68	0.70	0.73	0.76	0.83	0.59
Daily Values	19.14	19.66	18.62	18.48	18.79	19.15	19.50	19.76	21.04	17.39
Daily Sum from Hourly	19.14	19.87	18.42	18.27	18.68	19.15	19.63	19.99	21.33	16.41

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.66	0.70	0.62	0.62	0.63	0.66	0.68	0.70	0.78	0.49
2.00	0.66	0.69	0.62	0.62	0.64	0.66	0.68	0.69	0.78	0.49
3.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.68	0.70	0.49
4.00	0.65	0.68	0.62	0.62	0.63	0.64	0.67	0.68	0.70	0.49
5.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.68	0.70	0.50
6.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.68	0.70	0.50
7.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.69	0.71	0.50
8.00	0.66	0.68	0.63	0.62	0.64	0.66	0.68	0.69	0.71	0.56
9.00	0.66	0.69	0.63	0.62	0.63	0.66	0.68	0.70	0.74	0.59
10.00	0.66	0.69	0.63	0.62	0.63	0.66	0.68	0.70	0.73	0.56
11.00	0.66	0.69	0.63	0.62	0.63	0.66	0.68	0.69	0.75	0.59
12.00	0.66	0.69	0.63	0.62	0.63	0.66	0.68	0.70	0.75	0.60
13.00	0.66	0.69	0.63	0.62	0.63	0.66	0.68	0.70	0.75	0.60
14.00	0.66	0.69	0.62	0.62	0.63	0.66	0.68	0.69	0.74	0.59
15.00	0.65	0.69	0.61	0.62	0.63	0.65	0.67	0.70	0.75	0.44
16.00	0.65	0.68	0.62	0.61	0.63	0.65	0.67	0.69	0.74	0.49
17.00	0.64	0.67	0.61	0.61	0.62	0.64	0.66	0.68	0.71	0.42
18.00	0.64	0.67	0.61	0.61	0.62	0.64	0.66	0.67	0.71	0.45
19.00	0.64	0.67	0.61	0.61	0.62	0.64	0.66	0.68	0.70	0.52
20.00	0.64	0.67	0.62	0.62	0.63	0.64	0.66	0.68	0.70	0.56
21.00	0.65	0.67	0.62	0.62	0.63	0.64	0.67	0.69	0.70	0.51
22.00	0.65	0.67	0.62	0.62	0.63	0.64	0.67	0.68	0.70	0.59
23.00	0.65	0.68	0.62	0.62	0.63	0.65	0.67	0.68	0.70	0.50
24.00	0.65	0.68	0.62	0.62	0.63	0.64	0.67	0.68	0.70	0.49
Daily Values	15.59	16.24	14.94	14.80	15.22	15.60	16.02	16.43	16.80	13.60
Daily Sum from Hourly	15.61	16.35	14.87	14.81	15.12	15.60	16.10	16.49	17.35	12.52

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (James E. Rudder Bldg., Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.67)  (2) (0.67)  (3) (0.66)  (4) (0.65)  (5) (0.65)  (6) (0.67)
(7) (0.71)  (8) (0.83)  (9) (0.92) (10) (0.94) (11) (0.95) (12) (0.94)
(13) (0.93) (14) (0.92) (15) (0.92) (16) (0.91) (17) (0.88) (18) (0.78)
(19) (0.77) (20) (0.78) (21) (0.78) (22) (0.77) (23) (0.74) (24) (0.70) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.66)  (2) (0.66)  (3) (0.65)  (4) (0.64)  (5) (0.65)  (6) (0.65)
(7) (0.65)  (8) (0.66)  (9) (0.66) (10) (0.66) (11) (0.66) (12) (0.66)
(13) (0.66) (14) (0.66) (15) (0.65) (16) (0.65) (17) (0.64) (18) (0.64)
(19) (0.64) (20) (0.64) (21) (0.64) (22) (0.64) (23) (0.65) (24) (0.64) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 5.22  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1- Dec 31, 1994.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (James E. Rudder Bldg., Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.67, 0.67, 0.66, 0.65, 0.65, 0.67,
      0.71, 0.83, 0.92, 0.94, 0.95, 0.94,
      0.93, 0.92, 0.92, 0.91, 0.88, 0.78,
      0.77, 0.78, 0.78, 0.77, 0.74, 0.70),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.65, 0.64, 0.65, 0.65,
      0.65, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.66, 0.66, 0.65, 0.65, 0.64, 0.64,
      0.64, 0.64, 0.64, 0.64, 0.65, 0.64),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.66, 0.66, 0.65, 0.64, 0.65, 0.65,
      0.65, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.66, 0.66, 0.65, 0.65, 0.64, 0.64,
      0.64, 0.64, 0.64, 0.64, 0.65, 0.64),
    SATURDAY THRU SUNDAY =
     (0.66, 0.66, 0.65, 0.64, 0.65, 0.65,
      0.65, 0.66, 0.66, 0.66, 0.66, 0.66,
      0.66, 0.66, 0.65, 0.65, 0.64, 0.64,
      0.64, 0.64, 0.64, 0.64, 0.65, 0.64),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=5.22 W/sqft, Area=80000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 417 kW (Metric units)
      LIGHTS= 1424,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1424,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 1424,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1424,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1424,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1424,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1424,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1424,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1424,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (James E. Rudder Bldg., Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.67, 0.67, 0.66, 0.65, 0.65, 0.67,
   0.71, 0.83, 0.92, 0.94, 0.95, 0.94,
   0.93, 0.92, 0.92, 0.91, 0.88, 0.78,
   0.77, 0.78, 0.78, 0.77, 0.74, 0.70;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.66, 0.66, 0.65, 0.64, 0.65, 0.65,
   0.65, 0.66, 0.66, 0.66, 0.66, 0.66,
   0.66, 0.66, 0.65, 0.65, 0.64, 0.64,
   0.64, 0.64, 0.64, 0.64, 0.65, 0.64;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=5.22 W/sqft, Area=80000 sqft
   417360,  ! Design Level [W]
   ! Return-vented fluorescent lights
```

```
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 30 - TXM002

Category	:	Medium
Building ID	:	207
Building	:	Insurance Annex
Location	:	Austin, TX
Building Area (ft^2)	:	62,000
Data Type	:	WBE - MCC - Chillers
Max Load (W/ft^2)	:	2.21
Source	:	ESL
EUI (kWh/ft^2-yr)	:	11.63
Start Date	:	1/1/93
End date	:	12/31/93

(Page 1) Building Descriptions: (TXM002)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Insurance Annex.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Medium Office Building, based on the CBECS classification.

Square footage: Four story, 62,000 ft^2 .

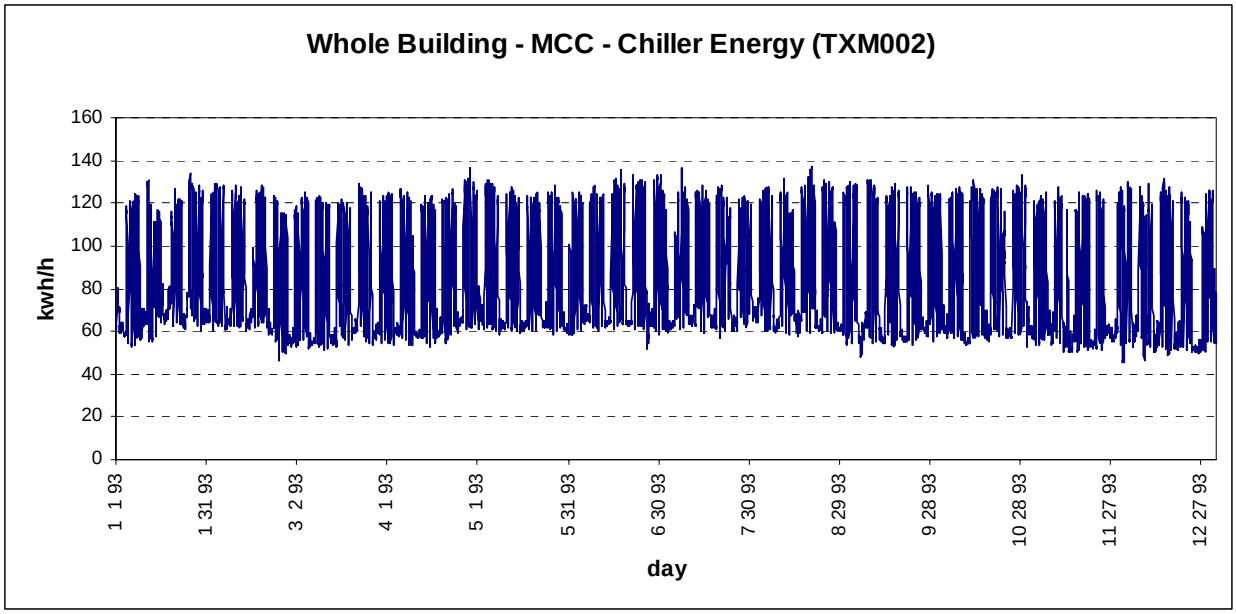
Lighting EUI: [(15.92 x 5) + (10.74 x 2)] x 52 x 2.21 = 11.63 kWh/ft^2.year

Lighting Type: 100% fluorescent.

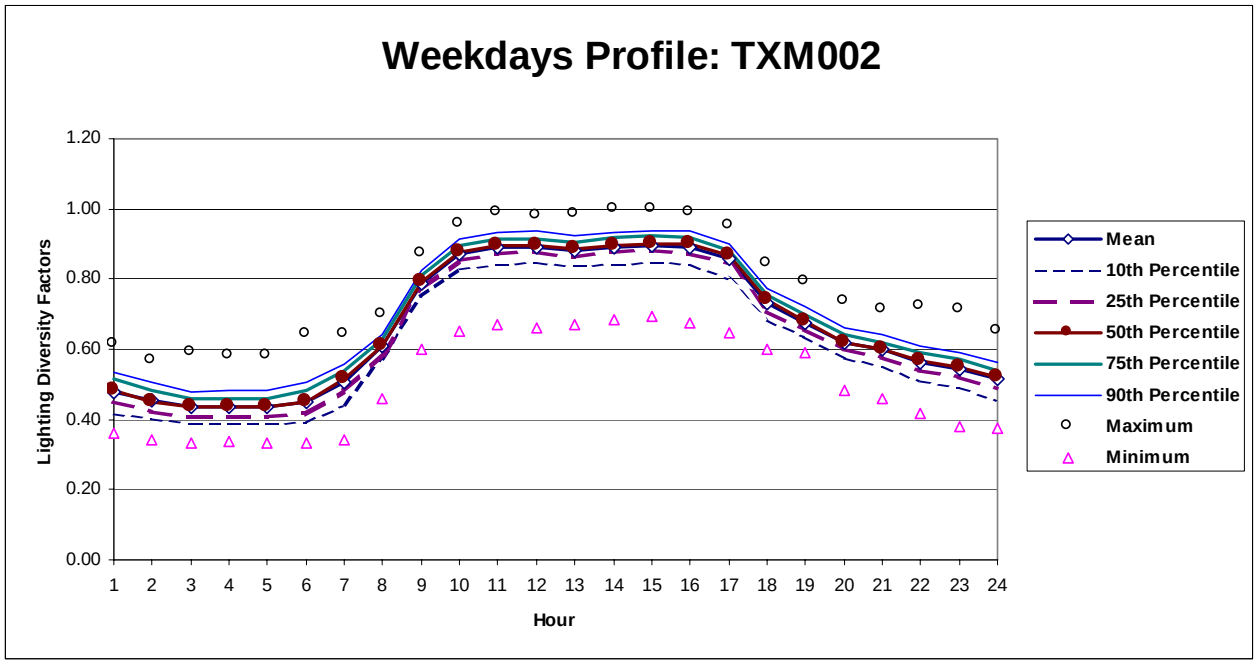
Dates: 1/1/93 - 12/31/93

Data Type: Lighting + receptacles = WBE - MCC - Chiller = ch0218 - ch0217 - ch0216

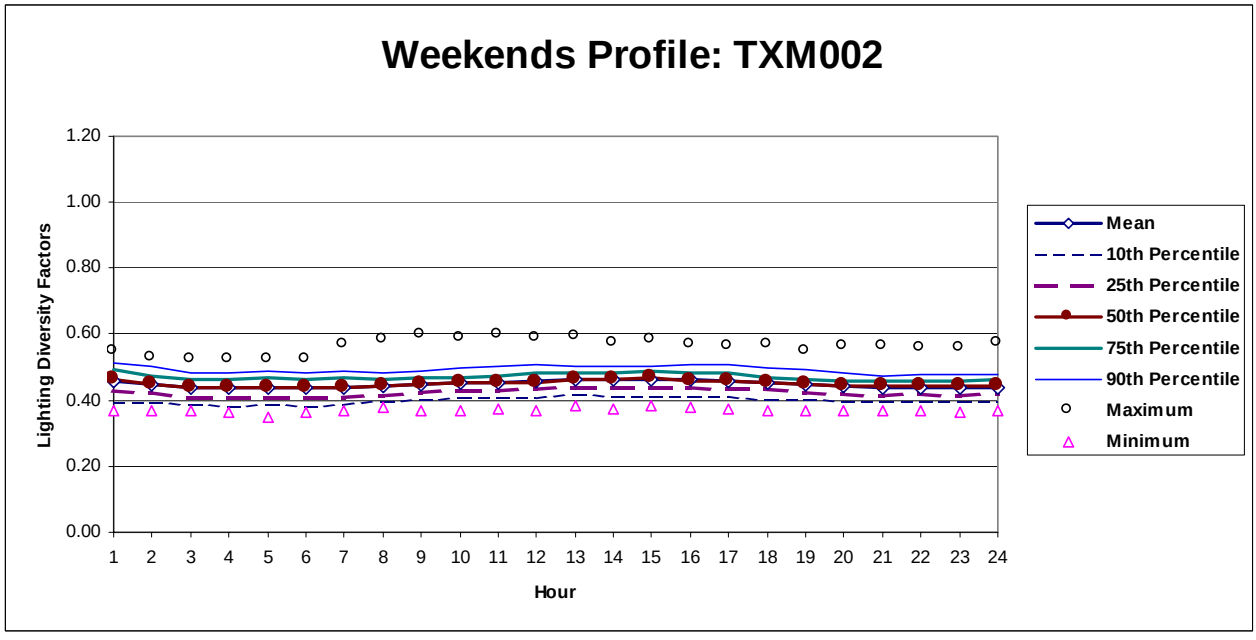
Maximum kW: 137 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/93, 1/18/93, 9/6/93, 5/31/93, 11/11/93, 11/11/93, 11/25/93, 11/26/93, 12/24/93, and 12/31/93.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.48	0.53	0.43	0.42	0.45	0.48	0.51	0.54	0.62	0.36
2.00	0.45	0.49	0.41	0.40	0.42	0.45	0.48	0.51	0.57	0.34
3.00	0.43	0.47	0.40	0.39	0.41	0.44	0.46	0.48	0.59	0.33
4.00	0.43	0.47	0.40	0.39	0.41	0.44	0.46	0.48	0.58	0.34
5.00	0.43	0.47	0.40	0.39	0.41	0.44	0.46	0.48	0.58	0.33
6.00	0.45	0.50	0.41	0.40	0.42	0.45	0.48	0.51	0.64	0.33
7.00	0.51	0.55	0.46	0.44	0.48	0.51	0.54	0.56	0.64	0.34
8.00	0.61	0.64	0.58	0.57	0.59	0.61	0.63	0.64	0.70	0.46
9.00	0.79	0.82	0.75	0.75	0.77	0.79	0.81	0.82	0.87	0.60
10.00	0.87	0.91	0.83	0.83	0.85	0.88	0.90	0.91	0.96	0.65
11.00	0.89	0.93	0.85	0.84	0.87	0.89	0.91	0.94	0.99	0.67
12.00	0.89	0.93	0.85	0.85	0.88	0.90	0.92	0.94	0.98	0.66
13.00	0.88	0.92	0.84	0.84	0.86	0.88	0.91	0.92	0.99	0.67
14.00	0.89	0.93	0.85	0.84	0.88	0.89	0.92	0.93	1.00	0.69
15.00	0.90	0.94	0.85	0.85	0.88	0.90	0.92	0.94	1.00	0.70
16.00	0.89	0.94	0.85	0.84	0.87	0.90	0.92	0.94	0.99	0.68
17.00	0.86	0.90	0.81	0.80	0.84	0.87	0.88	0.90	0.95	0.65
18.00	0.73	0.77	0.70	0.68	0.71	0.74	0.76	0.77	0.84	0.60
19.00	0.68	0.71	0.64	0.64	0.66	0.68	0.70	0.72	0.79	0.59
20.00	0.62	0.66	0.59	0.58	0.60	0.62	0.64	0.66	0.73	0.48
21.00	0.60	0.64	0.56	0.55	0.58	0.60	0.62	0.64	0.71	0.46
22.00	0.56	0.61	0.52	0.51	0.54	0.57	0.59	0.61	0.72	0.42
23.00	0.54	0.59	0.50	0.49	0.52	0.55	0.57	0.59	0.71	0.38
24.00	0.51	0.56	0.47	0.46	0.49	0.52	0.54	0.56	0.65	0.38
Daily Values	15.92	16.61	15.23	15.15	15.57	15.99	16.39	16.65	17.84	13.38
Daily Sum from Hourly	15.92	16.89	14.94	14.76	15.38	15.99	16.53	17.00	18.80	12.10

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.46	0.50	0.42	0.39	0.43	0.46	0.49	0.51	0.55	0.37
2.00	0.45	0.49	0.41	0.39	0.42	0.45	0.48	0.50	0.53	0.37
3.00	0.44	0.47	0.40	0.39	0.41	0.44	0.46	0.48	0.52	0.37
4.00	0.44	0.47	0.40	0.38	0.41	0.44	0.46	0.48	0.52	0.36
5.00	0.44	0.48	0.40	0.39	0.41	0.44	0.47	0.49	0.52	0.35
6.00	0.44	0.48	0.40	0.39	0.41	0.44	0.46	0.49	0.52	0.36
7.00	0.44	0.48	0.40	0.39	0.41	0.44	0.47	0.49	0.57	0.37
8.00	0.44	0.48	0.41	0.40	0.42	0.44	0.46	0.48	0.58	0.38
9.00	0.45	0.48	0.41	0.40	0.42	0.45	0.47	0.49	0.60	0.37
10.00	0.45	0.49	0.41	0.41	0.43	0.45	0.47	0.50	0.59	0.37
11.00	0.45	0.49	0.42	0.41	0.43	0.45	0.47	0.50	0.60	0.37
12.00	0.46	0.50	0.42	0.41	0.43	0.45	0.48	0.51	0.59	0.37
13.00	0.46	0.50	0.43	0.42	0.44	0.46	0.48	0.50	0.59	0.38
14.00	0.46	0.50	0.43	0.42	0.44	0.46	0.49	0.50	0.57	0.38
15.00	0.46	0.50	0.43	0.41	0.44	0.47	0.49	0.51	0.58	0.38
16.00	0.46	0.50	0.43	0.41	0.44	0.46	0.48	0.51	0.57	0.38
17.00	0.46	0.50	0.42	0.41	0.43	0.46	0.48	0.51	0.56	0.37
18.00	0.45	0.49	0.42	0.40	0.43	0.45	0.47	0.50	0.57	0.37
19.00	0.45	0.48	0.41	0.40	0.43	0.45	0.46	0.49	0.55	0.37
20.00	0.44	0.48	0.41	0.40	0.42	0.45	0.46	0.48	0.56	0.37
21.00	0.44	0.47	0.41	0.40	0.42	0.44	0.46	0.47	0.56	0.37
22.00	0.44	0.47	0.41	0.40	0.42	0.44	0.46	0.48	0.56	0.37
23.00	0.44	0.47	0.41	0.40	0.42	0.44	0.46	0.48	0.56	0.36
24.00	0.44	0.48	0.41	0.40	0.42	0.44	0.46	0.48	0.57	0.37
Daily Values	10.74	11.51	9.97	9.73	10.20	10.81	11.25	11.61	12.89	8.92
Daily Sum from Hourly	10.76	11.63	9.88	9.60	10.15	10.78	11.29	11.83	13.50	8.87

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Annex, Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.48)  (2) (0.45)  (3) (0.44)  (4) (0.44)  (5) (0.44)  (6) (0.45)
(7) (0.51)  (8) (0.61)  (9) (0.79) (10) (0.88) (11) (0.89) (12) (0.90)
(13) (0.88) (14) (0.89) (15) (0.90) (16) (0.90) (17) (0.87) (18) (0.74)
(19) (0.68) (20) (0.62) (21) (0.60) (22) (0.57) (23) (0.55) (24) (0.52) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.46)  (2) (0.45)  (3) (0.44)  (4) (0.44)  (5) (0.44)  (6) (0.44)
(7) (0.44)  (8) (0.44)  (9) (0.45) (10) (0.45) (11) (0.45) (12) (0.45)
(13) (0.46) (14) (0.46) (15) (0.47) (16) (0.46) (17) (0.46) (18) (0.45)
(19) (0.45) (20) (0.45) (21) (0.44) (22) (0.44) (23) (0.44) (24) (0.44) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.21  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1- Dec 31, 1993.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Annex, Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.48, 0.45, 0.44, 0.44, 0.44, 0.45,
       0.51, 0.61, 0.79, 0.88, 0.89, 0.90,
       0.88, 0.89, 0.90, 0.90, 0.87, 0.74,
       0.68, 0.62, 0.60, 0.57, 0.55, 0.52),
    SATURDAY THRU SUNDAY =
      (0.46, 0.45, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.45,
       0.46, 0.46, 0.47, 0.46, 0.46, 0.45,
       0.45, 0.45, 0.44, 0.44, 0.44, 0.44),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.46, 0.45, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.45,
       0.46, 0.46, 0.47, 0.46, 0.46, 0.45,
       0.45, 0.45, 0.44, 0.44, 0.44, 0.44),
    SATURDAY THRU SUNDAY =
      (0.46, 0.45, 0.44, 0.44, 0.44, 0.44,
       0.44, 0.44, 0.45, 0.45, 0.45, 0.45,
       0.46, 0.46, 0.47, 0.46, 0.46, 0.45,
       0.45, 0.45, 0.44, 0.44, 0.44, 0.44),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.21 W/sqft, Area=62000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 137 kW (Metric units)
      LIGHTS= 468,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 468,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 468,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 468,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 468,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 468,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 468,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 468,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 468,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Insurance Annex, Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.48, 0.45, 0.44, 0.44, 0.44, 0.45,
   0.51, 0.61, 0.79, 0.88, 0.89, 0.90,
   0.88, 0.89, 0.90, 0.90, 0.87, 0.74,
   0.68, 0.62, 0.60, 0.57, 0.55, 0.52;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.46, 0.45, 0.44, 0.44, 0.44, 0.44,
   0.44, 0.44, 0.45, 0.45, 0.45, 0.45,
   0.46, 0.46, 0.47, 0.46, 0.46, 0.45,
   0.45, 0.45, 0.44, 0.44, 0.44, 0.44;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.21 W/sqft, Area=62000 sqft
```

```
137198,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the "RunPeriod" object.

SITE # 31 - TXM003

Category	:	Medium
Building ID	:	226
Building	:	Central Services Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	97,030
Data Type	:	WBE - Chill
Max Load (W/ft^2)	:	3.76
Source	:	ESL
EUI (kWh/ft^2-yr)	:	13.49
Start Date	:	1/1/96
End date	:	12/31/96

(Page 1) Building Descriptions: (TXM003)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Central Services Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Medium Office Building, based on the CBECS classification.

Square footage: Four story, 97,030 ft^2 .

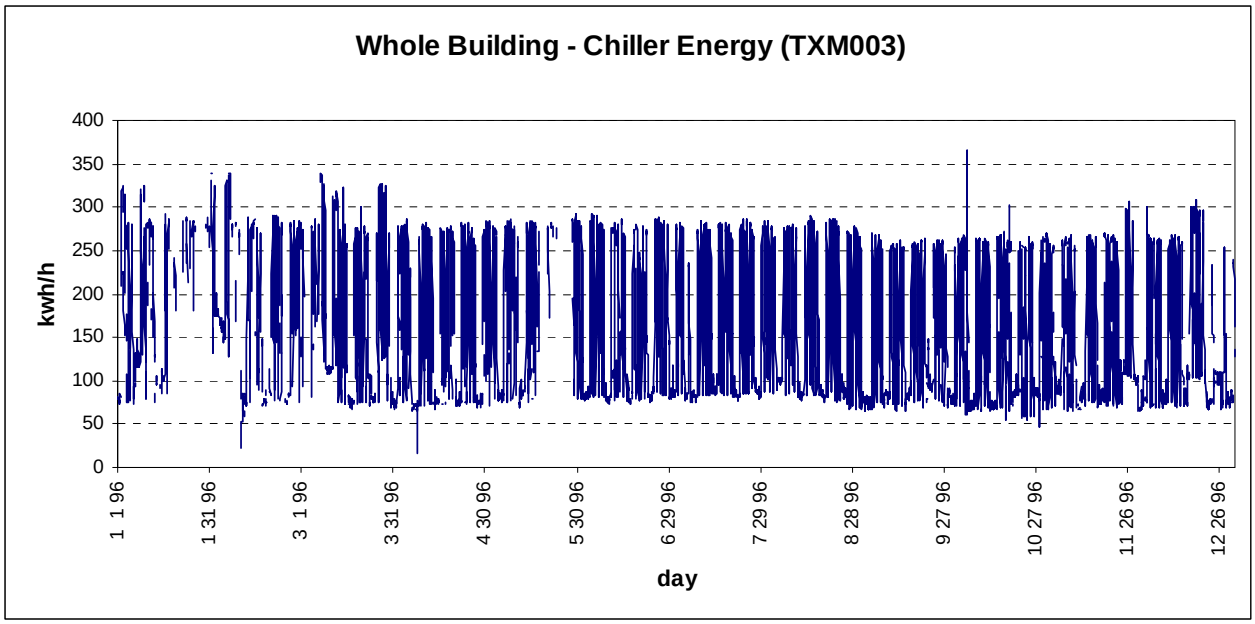
Lighting EUI: [(11.54 x 5) + (5.68 x 2)] x 52 x 3.76 = 13.49 kWh/ft^2.year

Lighting Type: 100% fluorescent.

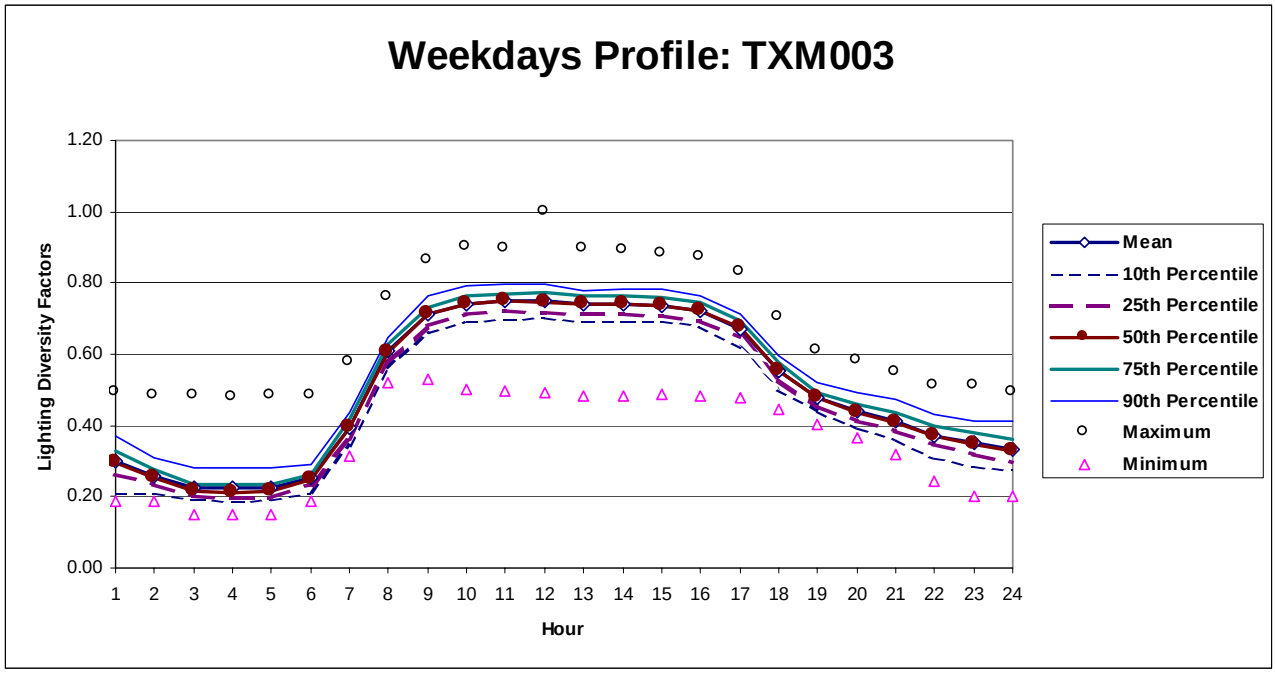
Dates: 1/1/96 - 12/31/96

Data Type: WBE - Chillers = ch2209 - (ch2205 + ch2206 + ch2207 + ch2208)

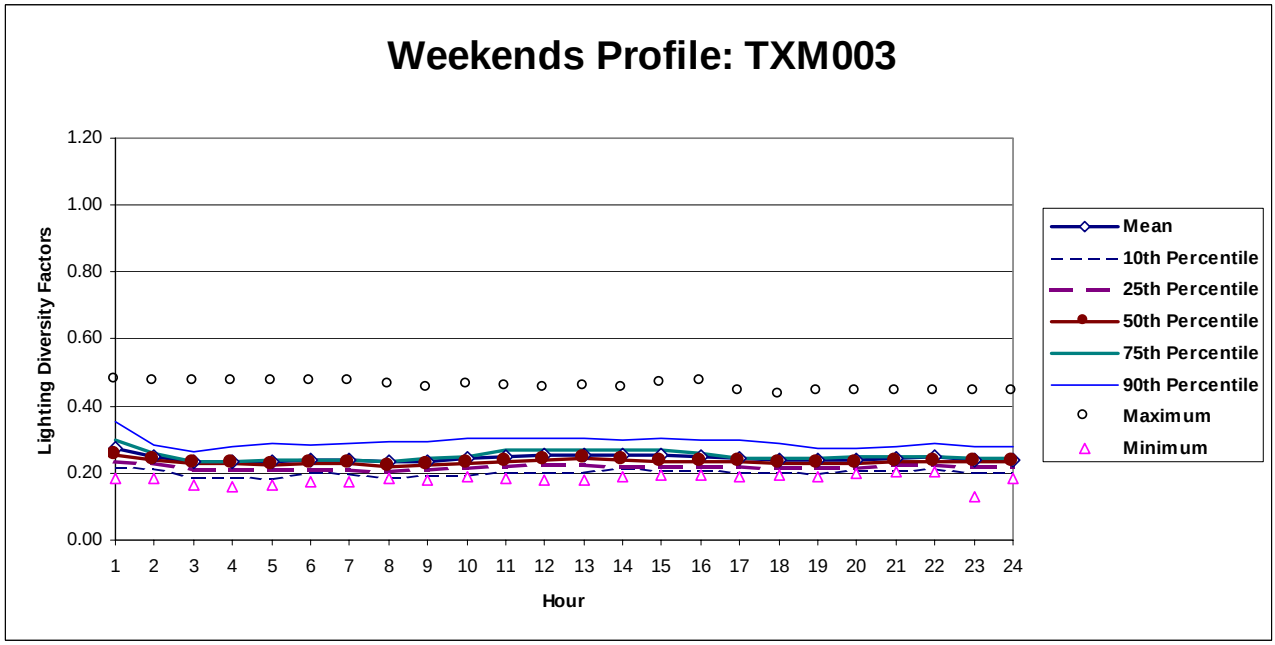
Maximum kW: 365 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/96, 1/15/96, 2/2/96, 2/2/96, 2/19/96, 5/27/96/, 7/4/96, 9/2/96, 11/28/96, 11/29/96, and 12/23 - 26/96.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.30	0.36	0.24	0.21	0.26	0.30	0.33	0.37	0.49	0.19
2.00	0.26	0.30	0.21	0.21	0.23	0.25	0.27	0.31	0.48	0.19
3.00	0.22	0.27	0.18	0.19	0.20	0.21	0.23	0.28	0.48	0.15
4.00	0.22	0.27	0.18	0.19	0.20	0.21	0.23	0.28	0.48	0.15
5.00	0.22	0.27	0.18	0.19	0.20	0.22	0.23	0.28	0.48	0.15
6.00	0.25	0.29	0.21	0.21	0.23	0.25	0.26	0.29	0.48	0.19
7.00	0.39	0.44	0.35	0.34	0.36	0.39	0.42	0.44	0.58	0.31
8.00	0.61	0.65	0.57	0.56	0.58	0.61	0.63	0.65	0.76	0.52
9.00	0.71	0.76	0.66	0.66	0.68	0.71	0.73	0.76	0.86	0.53
10.00	0.74	0.79	0.69	0.69	0.71	0.74	0.76	0.79	0.90	0.50
11.00	0.75	0.80	0.70	0.70	0.72	0.75	0.77	0.80	0.89	0.50
12.00	0.75	0.80	0.70	0.70	0.72	0.75	0.77	0.80	1.00	0.49
13.00	0.74	0.79	0.69	0.69	0.71	0.74	0.76	0.78	0.89	0.48
14.00	0.74	0.79	0.69	0.70	0.71	0.74	0.76	0.78	0.89	0.48
15.00	0.74	0.78	0.69	0.69	0.71	0.74	0.76	0.78	0.88	0.49
16.00	0.72	0.77	0.67	0.68	0.69	0.72	0.74	0.76	0.87	0.48
17.00	0.67	0.72	0.62	0.62	0.64	0.67	0.70	0.71	0.83	0.48
18.00	0.55	0.60	0.51	0.50	0.53	0.55	0.58	0.60	0.71	0.44
19.00	0.48	0.51	0.44	0.44	0.46	0.48	0.49	0.52	0.61	0.40
20.00	0.44	0.48	0.40	0.39	0.41	0.44	0.46	0.49	0.58	0.37
21.00	0.41	0.46	0.37	0.36	0.38	0.41	0.43	0.47	0.55	0.32
22.00	0.37	0.42	0.32	0.31	0.35	0.37	0.40	0.43	0.51	0.24
23.00	0.35	0.40	0.30	0.29	0.32	0.35	0.38	0.41	0.51	0.20
24.00	0.34	0.39	0.28	0.28	0.30	0.33	0.36	0.41	0.49	0.20
Daily Values	11.54	12.73	10.35	9.93	10.96	11.68	12.35	12.65	13.98	5.29
Daily Sum from Hourly	11.98	13.09	10.87	10.81	11.31	11.91	12.48	13.21	16.22	8.46

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.27	0.33	0.21	0.22	0.23	0.25	0.30	0.36	0.48	0.18
2.00	0.25	0.30	0.20	0.22	0.23	0.24	0.26	0.28	0.47	0.18
3.00	0.23	0.29	0.18	0.19	0.21	0.23	0.24	0.27	0.47	0.16
4.00	0.23	0.29	0.18	0.19	0.21	0.23	0.24	0.28	0.47	0.16
5.00	0.23	0.29	0.18	0.19	0.21	0.23	0.24	0.29	0.47	0.16
6.00	0.24	0.29	0.19	0.20	0.21	0.23	0.24	0.29	0.47	0.17
7.00	0.24	0.29	0.19	0.20	0.21	0.23	0.24	0.29	0.47	0.17
8.00	0.23	0.29	0.18	0.19	0.20	0.22	0.24	0.29	0.46	0.18
9.00	0.24	0.29	0.18	0.19	0.21	0.22	0.24	0.29	0.45	0.18
10.00	0.24	0.30	0.19	0.19	0.21	0.23	0.25	0.30	0.46	0.19
11.00	0.25	0.30	0.20	0.21	0.22	0.24	0.27	0.30	0.46	0.19
12.00	0.25	0.31	0.20	0.20	0.22	0.24	0.27	0.31	0.45	0.18
13.00	0.25	0.31	0.20	0.21	0.22	0.24	0.27	0.30	0.46	0.18
14.00	0.25	0.30	0.20	0.21	0.22	0.24	0.27	0.30	0.45	0.19
15.00	0.25	0.31	0.20	0.21	0.22	0.23	0.27	0.30	0.47	0.19
16.00	0.25	0.30	0.20	0.21	0.22	0.23	0.26	0.30	0.47	0.19
17.00	0.24	0.29	0.20	0.20	0.22	0.23	0.25	0.30	0.44	0.19
18.00	0.24	0.28	0.20	0.21	0.21	0.23	0.25	0.29	0.43	0.19
19.00	0.24	0.29	0.19	0.20	0.21	0.23	0.24	0.27	0.44	0.19
20.00	0.24	0.29	0.19	0.21	0.21	0.23	0.25	0.27	0.44	0.20
21.00	0.24	0.29	0.20	0.21	0.22	0.23	0.25	0.28	0.44	0.20
22.00	0.25	0.29	0.20	0.21	0.22	0.23	0.25	0.29	0.44	0.20
23.00	0.24	0.29	0.19	0.20	0.22	0.23	0.24	0.28	0.44	0.13
24.00	0.24	0.29	0.20	0.21	0.22	0.23	0.24	0.28	0.44	0.18
Daily Values	5.68	6.95	4.41	4.58	5.21	5.53	5.93	6.47	10.98	3.35
Daily Sum from Hourly	5.87	7.09	4.64	4.87	5.20	5.57	6.06	7.02	10.99	4.36

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Central Services Building, Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.30)  (2) (0.25)  (3) (0.21)  (4) (0.21)  (5) (0.22)  (6) (0.25)
(7) (0.39)  (8) (0.61)  (9) (0.71) (10) (0.74) (11) (0.75) (12) (0.75)
(13) (0.74) (14) (0.74) (15) (0.74) (16) (0.72) (17) (0.67) (18) (0.55)
(19) (0.48) (20) (0.44) (21) (0.41) (22) (0.37) (23) (0.35) (24) (0.33) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.25)  (2) (0.24)  (3) (0.23)  (4) (0.23)  (5) (0.23)  (6) (0.23)
(7) (0.23)  (8) (0.22)  (9) (0.22) (10) (0.23) (11) (0.24) (12) (0.24)
(13) (0.24) (14) (0.24) (15) (0.23) (16) (0.23) (17) (0.23) (18) (0.23)
(19) (0.23) (20) (0.23) (21) (0.23) (22) (0.23) (23) (0.23) (24) (0.23) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.76  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1- Dec 31, 1996.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Central Services Building, Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.30, 0.25, 0.21, 0.21, 0.22, 0.25,
      0.39, 0.61, 0.71, 0.74, 0.75, 0.75,
      0.74, 0.74, 0.74, 0.72, 0.67, 0.55,
      0.48, 0.44, 0.41, 0.37, 0.35, 0.33),
    SATURDAY THRU SUNDAY =
     (0.25, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.22, 0.22, 0.23, 0.24, 0.24,
      0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.23, 0.23, 0.23, 0.23, 0.23),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.25, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.22, 0.22, 0.23, 0.24, 0.24,
      0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.23, 0.23, 0.23, 0.23, 0.23),
    SATURDAY THRU SUNDAY =
     (0.25, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.22, 0.22, 0.23, 0.24, 0.24,
      0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
      0.23, 0.23, 0.23, 0.23, 0.23, 0.23),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.76 W/sqft, Area=97030 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 365 kW (Metric units)
      LIGHTS= 1244,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1244,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 1244,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1244,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1244,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1244,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1244,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1244,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1244,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Central Services Building, Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.30, 0.25, 0.21, 0.21, 0.22, 0.25,
   0.39, 0.61, 0.71, 0.74, 0.75, 0.75,
   0.74, 0.74, 0.74, 0.72, 0.67, 0.55,
   0.48, 0.44, 0.41, 0.37, 0.35, 0.33;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.25, 0.24, 0.23, 0.23, 0.23, 0.23,
   0.23, 0.22, 0.22, 0.23, 0.24, 0.24,
   0.24, 0.24, 0.23, 0.23, 0.23, 0.23,
   0.23, 0.23, 0.23, 0.23, 0.23, 0.23;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.76 W/sqft, Area=97030 sqft
```

```
364542,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 32 - TXM004

Category	:	Medium
Building ID	:	227
Building	:	Supreme Court Bldg.
Location	:	Austin, TX
Building Area (ft^2)	:	72,737
Data Type	:	WBE
Max Load (W/ft^2)	:	2.22
Source	:	ESL
EUI (kWh/ft^2-yr)	:	11.64
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (TXM004)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Supreme Court Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Austin, Texas.

Category: Medium Office Building, based on the CBECS classification.

Square footage: Five story, 72,737 ft^2 .

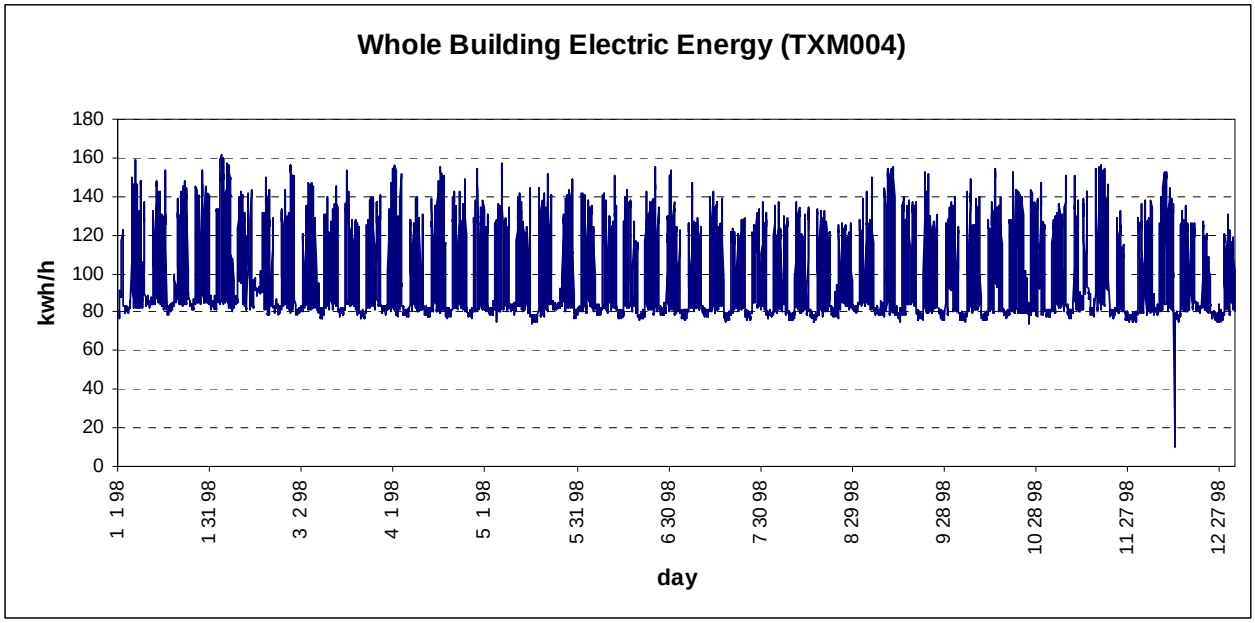
Lighting EUI: [(15.35 x 5) + (11.96 x 2)] x 52 x 2.22 = 11.64 kWh/ft^2.year

Lighting Type: Mixture of fluorescent and incandescent

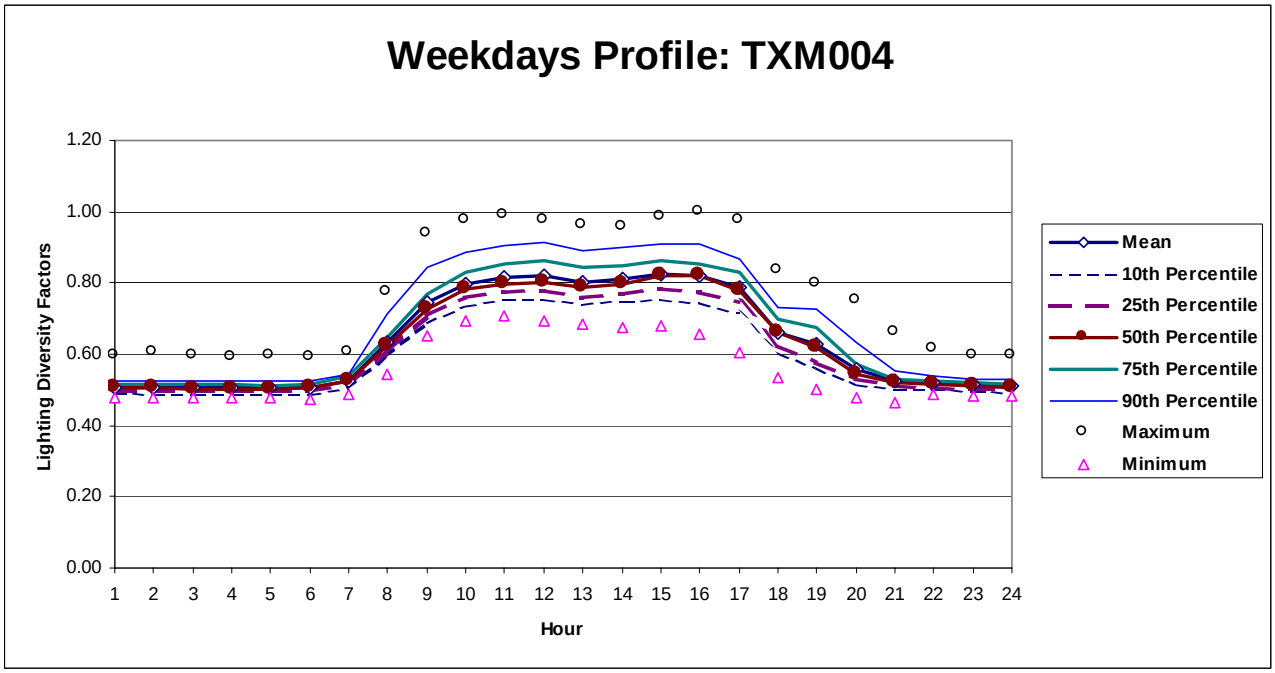
Dates: 1/1/98 - 12/31/98

Data Type: WBE = ch2257

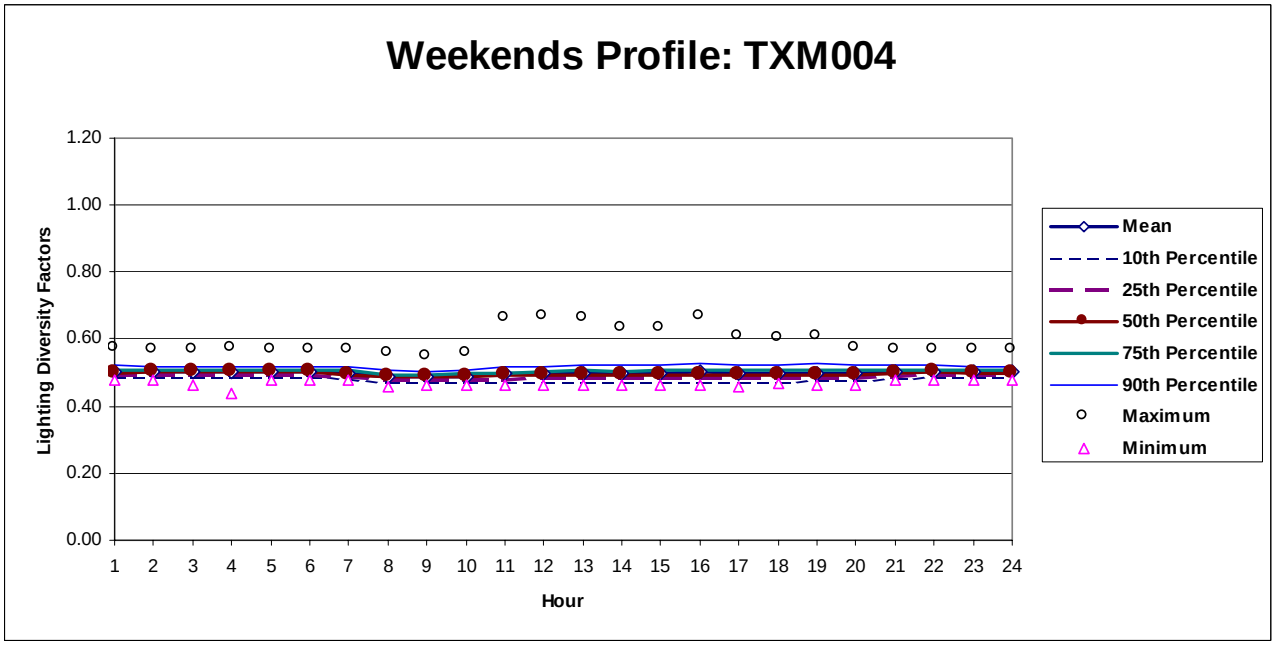
Maximum kW: 162 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/98, 1/19/98, 2/16/98, 5/25/98, 9/7/98, 11/11/98, 11/26/98, 11/27/98, and 12/23 - 25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.51	0.52	0.49	0.49	0.50	0.51	0.52	0.53	0.59	0.48
2.00	0.51	0.52	0.49	0.49	0.50	0.51	0.52	0.52	0.60	0.48
3.00	0.51	0.52	0.49	0.49	0.50	0.50	0.51	0.52	0.60	0.48
4.00	0.51	0.52	0.49	0.49	0.50	0.50	0.51	0.52	0.59	0.48
5.00	0.51	0.52	0.49	0.49	0.50	0.50	0.51	0.52	0.59	0.48
6.00	0.51	0.52	0.49	0.49	0.50	0.51	0.51	0.52	0.59	0.47
7.00	0.53	0.55	0.51	0.51	0.51	0.53	0.54	0.55	0.61	0.49
8.00	0.63	0.68	0.59	0.59	0.61	0.62	0.65	0.71	0.77	0.55
9.00	0.75	0.80	0.69	0.69	0.71	0.73	0.77	0.84	0.94	0.65
10.00	0.80	0.86	0.74	0.74	0.76	0.78	0.83	0.89	0.98	0.69
11.00	0.82	0.88	0.76	0.75	0.77	0.80	0.85	0.91	0.99	0.71
12.00	0.82	0.88	0.76	0.75	0.78	0.80	0.86	0.91	0.97	0.69
13.00	0.80	0.86	0.74	0.74	0.76	0.79	0.84	0.89	0.96	0.68
14.00	0.81	0.87	0.75	0.75	0.77	0.80	0.85	0.90	0.96	0.67
15.00	0.83	0.89	0.77	0.76	0.78	0.82	0.86	0.91	0.99	0.68
16.00	0.82	0.88	0.76	0.75	0.77	0.82	0.85	0.91	1.00	0.66
17.00	0.79	0.85	0.73	0.72	0.74	0.78	0.83	0.87	0.98	0.60
18.00	0.66	0.72	0.61	0.60	0.62	0.66	0.70	0.73	0.84	0.53
19.00	0.63	0.69	0.57	0.56	0.58	0.62	0.68	0.73	0.80	0.50
20.00	0.56	0.60	0.51	0.51	0.53	0.55	0.57	0.63	0.75	0.48
21.00	0.52	0.55	0.50	0.50	0.51	0.52	0.53	0.55	0.66	0.47
22.00	0.52	0.54	0.50	0.50	0.51	0.52	0.52	0.54	0.62	0.49
23.00	0.51	0.53	0.50	0.50	0.50	0.51	0.52	0.53	0.59	0.48
24.00	0.51	0.53	0.49	0.49	0.50	0.51	0.52	0.53	0.59	0.48
Daily Values	15.35	16.02	14.67	14.53	14.85	15.23	15.71	16.36	17.43	13.64
Daily Sum from Hourly	15.35	16.29	14.40	14.35	14.70	15.16	15.86	16.67	18.55	13.38

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
2.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
3.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.46
4.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.44
5.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
6.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
7.00	0.50	0.52	0.48	0.48	0.49	0.49	0.51	0.52	0.57	0.48
8.00	0.49	0.51	0.47	0.47	0.48	0.49	0.50	0.51	0.56	0.46
9.00	0.49	0.50	0.47	0.47	0.48	0.49	0.49	0.51	0.55	0.46
10.00	0.49	0.51	0.47	0.47	0.48	0.49	0.50	0.51	0.56	0.46
11.00	0.50	0.52	0.47	0.47	0.48	0.49	0.50	0.52	0.66	0.46
12.00	0.50	0.53	0.47	0.47	0.48	0.49	0.50	0.52	0.67	0.46
13.00	0.50	0.53	0.47	0.47	0.48	0.49	0.51	0.52	0.66	0.46
14.00	0.50	0.53	0.47	0.47	0.48	0.49	0.51	0.52	0.63	0.46
15.00	0.50	0.53	0.47	0.47	0.48	0.49	0.51	0.52	0.63	0.46
16.00	0.50	0.53	0.47	0.47	0.48	0.49	0.51	0.53	0.67	0.46
17.00	0.50	0.52	0.47	0.47	0.48	0.49	0.51	0.52	0.61	0.46
18.00	0.50	0.52	0.47	0.47	0.48	0.49	0.51	0.52	0.60	0.47
19.00	0.50	0.52	0.47	0.48	0.48	0.49	0.51	0.53	0.61	0.46
20.00	0.50	0.52	0.48	0.48	0.48	0.49	0.51	0.52	0.57	0.46
21.00	0.50	0.52	0.48	0.48	0.49	0.50	0.51	0.52	0.57	0.48
22.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
23.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
24.00	0.50	0.52	0.49	0.49	0.49	0.50	0.51	0.52	0.57	0.48
Daily Values	11.96	12.40	11.51	11.55	11.69	11.90	12.13	12.43	13.51	10.29
Daily Sum from Hourly	11.97	12.46	11.49	11.51	11.67	11.88	12.15	12.47	14.23	11.22

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Supreme Court Building, Austin, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.51)  (2) (0.51)  (3) (0.50)  (4) (0.50)  (5) (0.50)  (6) (0.51)
(7) (0.53)  (8) (0.62)  (9) (0.73) (10) (0.78) (11) (0.80) (12) (0.80)
(13) (0.79) (14) (0.80) (15) (0.82) (16) (0.82) (17) (0.78) (18) (0.66)
(19) (0.62) (20) (0.55) (21) (0.52) (22) (0.52) (23) (0.51) (24) (0.51) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.50)  (2) (0.50)  (3) (0.50)  (4) (0.50)  (5) (0.50)  (6) (0.50)
(7) (0.49)  (8) (0.49)  (9) (0.49) (10) (0.49) (11) (0.49) (12) (0.49)
(13) (0.49) (14) (0.49) (15) (0.49) (16) (0.49) (17) (0.49) (18) (0.49)
(19) (0.49) (20) (0.49) (21) (0.50) (22) (0.50) (23) (0.50) (24) (0.50) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.22  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1- Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Supreme Court Building, Austin, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.51, 0.51, 0.50, 0.50, 0.50, 0.51,
       0.53, 0.62, 0.73, 0.78, 0.80, 0.80,
       0.79, 0.80, 0.82, 0.82, 0.78, 0.66,
       0.62, 0.55, 0.52, 0.52, 0.51, 0.51),
    SATURDAY THRU SUNDAY =
      (0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.50, 0.50, 0.50, 0.50),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.50, 0.50, 0.50, 0.50),
    SATURDAY THRU SUNDAY =
      (0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
       0.49, 0.49, 0.50, 0.50, 0.50, 0.50),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.22 W/sqft, Area=72737 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 162 kW (Metric units)
      LIGHTS= 552,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 552,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
```

```
  FROM 02JAN THRU 03JUL;

LIGHTS= 552,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 552,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 552,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 552,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 552,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 552,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 552,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Supreme Court Building, Austin, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.51, 0.51, 0.50, 0.50, 0.50, 0.51,
   0.53, 0.62, 0.73, 0.78, 0.80, 0.80,
   0.79, 0.80, 0.82, 0.82, 0.78, 0.66,
   0.62, 0.55, 0.52, 0.52, 0.51, 0.51;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.50, 0.50, 0.50, 0.50, 0.50, 0.50,
   0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
   0.49, 0.49, 0.49, 0.49, 0.49, 0.49,
   0.49, 0.49, 0.50, 0.50, 0.50, 0.50;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.22 W/sqft, Area=72737 sqft
```

```
161736,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 33 - TXM005

Category	:	Medium
Building ID	:	951
Building	:	Administration Bldg.
Location	:	Dallas, TX
Building Area (ft^2)	:	42,385
Data Type	:	WBE
Max Load (W/ft^2)	:	3.5
Source	:	ESL
EUI (kWh/ft^2-yr)	:	14.94
Start Date	:	1/1/98
End date	:	12/31/98

(Page 1) Building Descriptions: (TXM005)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Administration Building.

Source of Data: The Energy Systems Laboratory, Texas A&M University.

Location: Dallas, Texas.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 42,385 ft^2 .

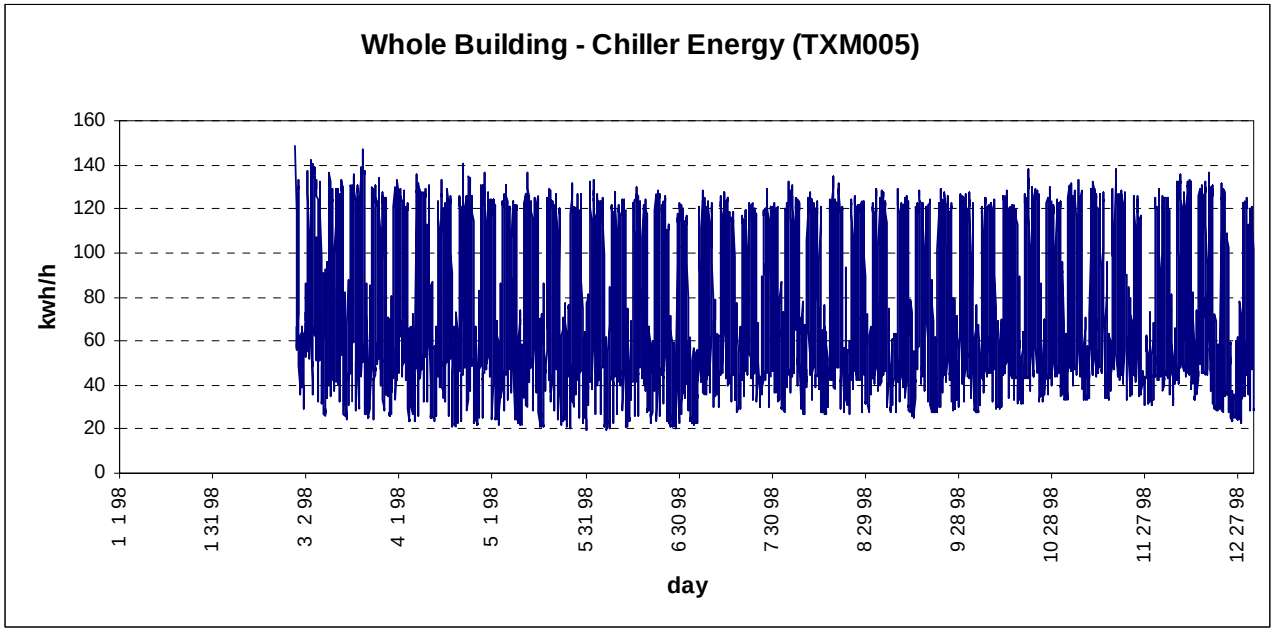
Lighting EUI: [(13.41 x 5) + (7.56 x 2)] x 52 x 3.5 = 14.94 kWh/ft^2.year

Lighting Type: Fluorescent

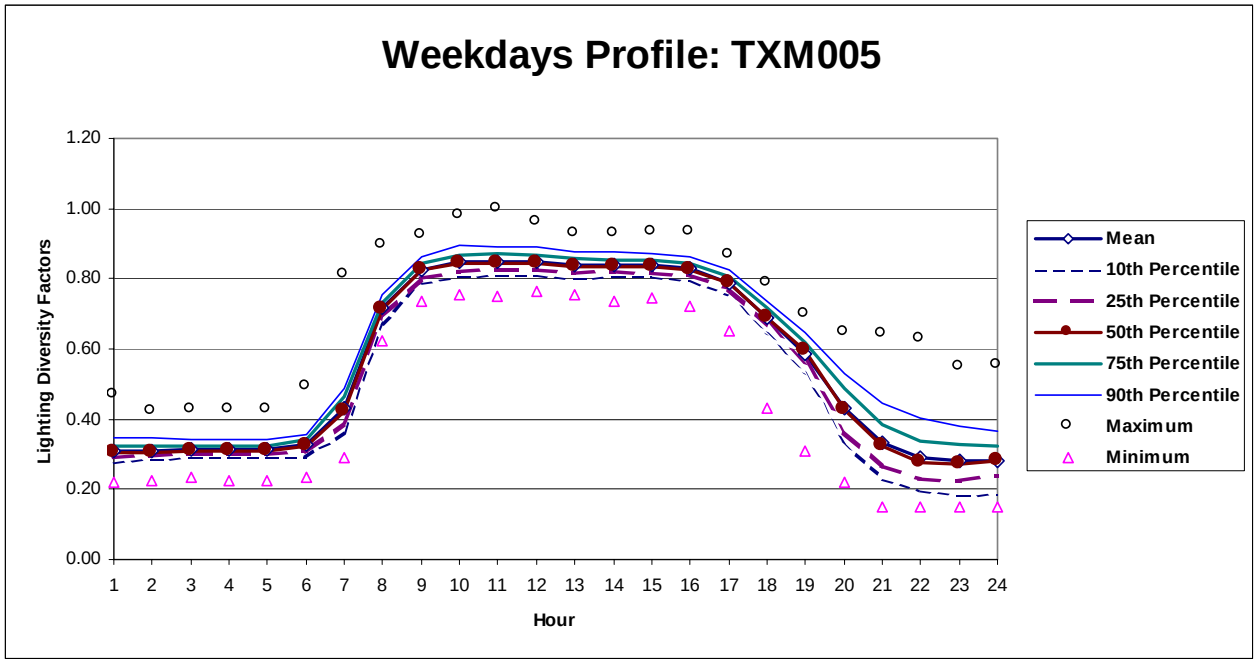
Dates: 1/1/98 - 12/31/98

Data Type: WBE - Chillers = ch3592 - (ch3586+ch3587+ch3588) - (ch3589+ch3590+ch3591)

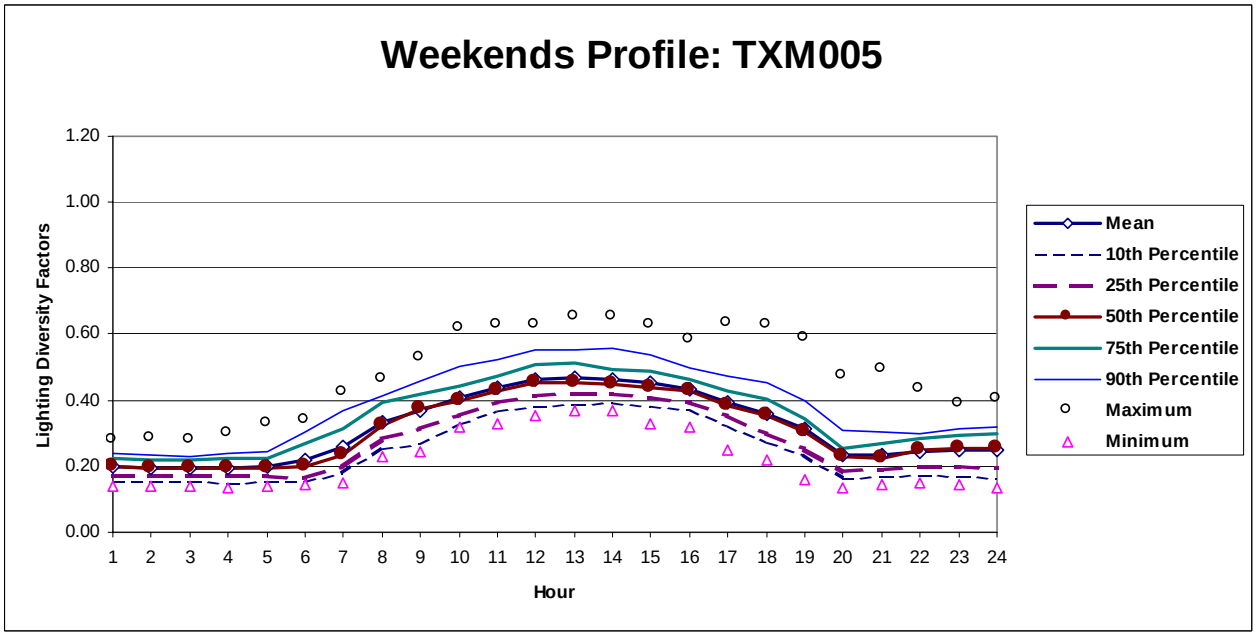
Maximum kW: 148 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 3/10/98, 7/3/98, 9/7/98, 11/26/98, 11/27/98, and 12/23/98 - 12/25/98.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.31	0.34	0.27	0.28	0.29	0.30	0.32	0.34	0.47	0.22
2.00	0.31	0.34	0.28	0.29	0.29	0.31	0.32	0.35	0.42	0.23
3.00	0.31	0.34	0.29	0.29	0.30	0.31	0.33	0.34	0.43	0.23
4.00	0.31	0.34	0.29	0.29	0.30	0.31	0.33	0.34	0.43	0.23
5.00	0.31	0.34	0.29	0.29	0.30	0.31	0.32	0.34	0.43	0.23
6.00	0.33	0.36	0.29	0.29	0.31	0.32	0.34	0.36	0.49	0.24
7.00	0.43	0.50	0.36	0.36	0.39	0.42	0.47	0.49	0.81	0.29
8.00	0.72	0.76	0.67	0.67	0.69	0.71	0.73	0.76	0.89	0.62
9.00	0.82	0.86	0.79	0.79	0.80	0.82	0.84	0.86	0.93	0.74
10.00	0.85	0.88	0.81	0.81	0.82	0.85	0.87	0.89	0.98	0.75
11.00	0.85	0.88	0.81	0.81	0.82	0.84	0.87	0.89	1.00	0.75
12.00	0.85	0.88	0.81	0.81	0.83	0.85	0.87	0.89	0.96	0.76
13.00	0.84	0.87	0.81	0.80	0.82	0.84	0.86	0.88	0.93	0.75
14.00	0.84	0.87	0.81	0.81	0.82	0.83	0.85	0.88	0.93	0.74
15.00	0.84	0.87	0.81	0.81	0.82	0.83	0.85	0.87	0.93	0.75
16.00	0.83	0.86	0.80	0.80	0.81	0.83	0.84	0.86	0.93	0.72
17.00	0.79	0.82	0.76	0.76	0.77	0.79	0.81	0.83	0.87	0.65
18.00	0.69	0.73	0.65	0.64	0.67	0.69	0.72	0.74	0.79	0.43
19.00	0.59	0.64	0.53	0.53	0.56	0.60	0.62	0.65	0.70	0.31
20.00	0.43	0.51	0.35	0.33	0.37	0.43	0.49	0.53	0.65	0.22
21.00	0.33	0.42	0.25	0.23	0.27	0.32	0.38	0.45	0.64	0.15
22.00	0.29	0.37	0.21	0.20	0.23	0.27	0.34	0.40	0.63	0.15
23.00	0.28	0.36	0.20	0.18	0.22	0.27	0.33	0.38	0.55	0.15
24.00	0.28	0.35	0.21	0.19	0.24	0.28	0.32	0.36	0.55	0.15
Daily Values	13.41	13.96	12.86	12.77	13.05	13.40	13.73	14.07	15.14	11.98
Daily Sum from Hourly	13.42	14.49	12.35	12.24	12.74	13.35	14.01	14.68	17.33	10.46

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.20	0.23	0.17	0.15	0.17	0.20	0.23	0.24	0.28	0.14
2.00	0.20	0.23	0.16	0.16	0.17	0.20	0.22	0.24	0.28	0.14
3.00	0.19	0.23	0.16	0.15	0.17	0.19	0.22	0.23	0.28	0.14
4.00	0.20	0.23	0.16	0.15	0.17	0.19	0.22	0.24	0.30	0.14
5.00	0.20	0.24	0.16	0.15	0.17	0.20	0.23	0.24	0.33	0.14
6.00	0.22	0.27	0.16	0.15	0.17	0.20	0.27	0.30	0.34	0.14
7.00	0.26	0.33	0.18	0.18	0.20	0.23	0.32	0.37	0.42	0.15
8.00	0.33	0.40	0.27	0.25	0.28	0.32	0.40	0.41	0.46	0.23
9.00	0.37	0.44	0.30	0.27	0.31	0.38	0.42	0.46	0.53	0.24
10.00	0.41	0.48	0.34	0.33	0.35	0.40	0.44	0.50	0.62	0.32
11.00	0.44	0.50	0.37	0.37	0.39	0.43	0.47	0.52	0.63	0.33
12.00	0.46	0.53	0.40	0.38	0.41	0.45	0.51	0.55	0.63	0.35
13.00	0.47	0.53	0.40	0.39	0.42	0.45	0.52	0.55	0.65	0.37
14.00	0.46	0.53	0.40	0.39	0.42	0.45	0.49	0.56	0.65	0.37
15.00	0.45	0.52	0.39	0.38	0.41	0.44	0.49	0.54	0.63	0.33
16.00	0.43	0.49	0.38	0.37	0.39	0.43	0.47	0.50	0.58	0.32
17.00	0.39	0.46	0.33	0.32	0.35	0.38	0.43	0.47	0.63	0.25
18.00	0.36	0.43	0.28	0.27	0.30	0.35	0.40	0.45	0.63	0.22
19.00	0.31	0.39	0.24	0.23	0.25	0.30	0.34	0.40	0.59	0.16
20.00	0.23	0.30	0.17	0.16	0.18	0.23	0.25	0.31	0.47	0.13
21.00	0.23	0.29	0.17	0.17	0.19	0.23	0.27	0.30	0.49	0.14
22.00	0.24	0.30	0.19	0.17	0.20	0.25	0.28	0.30	0.43	0.15
23.00	0.25	0.30	0.19	0.17	0.20	0.26	0.29	0.31	0.39	0.15
24.00	0.25	0.31	0.19	0.16	0.20	0.25	0.30	0.32	0.40	0.13
Daily Values	7.56	8.37	6.75	6.64	6.96	7.60	8.07	8.58	9.58	5.81
Daily Sum from Hourly	7.56	8.96	6.16	5.91	6.47	7.41	8.47	9.33	11.63	5.17

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Administration Bldg., Dallas, TX) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
(1) (0.30)  (2) (0.31)  (3) (0.31)  (4) (0.31)  (5) (0.31)  (6) (0.32)
(7) (0.42)  (8) (0.71)  (9) (0.82) (10) (0.85) (11) (0.84) (12) (0.85)
(13) (0.84) (14) (0.83) (15) (0.83) (16) (0.83) (17) (0.79) (18) (0.69)
(19) (0.60) (20) (0.43) (21) (0.32) (22) (0.27) (23) (0.27) (24) (0.28) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
(1) (0.20)  (2) (0.20)  (3) (0.19)  (4) (0.19)  (5) (0.20)  (6) (0.20)
(7) (0.23)  (8) (0.32)  (9) (0.38) (10) (0.40) (11) (0.43) (12) (0.45)
(13) (0.45) (14) (0.45) (15) (0.44) (16) (0.43) (17) (0.38) (18) (0.35)
(19) (0.30) (20) (0.23) (21) (0.23) (22) (0.25) (23) (0.26) (24) (0.25) ..

WORK = WEEK-SCHEDULE      (WD) WKDAY    (WE) WKEND    (HOL) WKEND ..
VAC = WEEK-SCHEDULE       (WD) WKEND    (WE) WKEND    (HOL) WKEND ..

ELE-SCH = SCHEDULE        THRU JAN 1  VAC       THRU JUL 3 WORK
                          THRU JUL 4 VAC        THRU NOV 22 WORK
                          THRU NOV 24 VAC       THRU DEC 24 WORK
                          THRU DEC 25 VAC       THRU DEC 30 WORK
                          THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.5  ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building for the period of Jan 1, 1998 - Dec 31, 1998.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. **BLAST Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Administration Bldg., Dallas, TX) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.30, 0.31, 0.31, 0.31, 0.31, 0.32,
       0.42, 0.71, 0.82, 0.85, 0.84, 0.85,
       0.84, 0.83, 0.83, 0.83, 0.79, 0.69,
       0.60, 0.43, 0.32, 0.27, 0.27, 0.28),
    SATURDAY THRU SUNDAY =
      (0.20, 0.20, 0.19, 0.19, 0.20, 0.20,
       0.23, 0.32, 0.38, 0.40, 0.43, 0.45,
       0.45, 0.45, 0.44, 0.43, 0.38, 0.35,
       0.30, 0.23, 0.23, 0.25, 0.26, 0.25),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.20, 0.20, 0.19, 0.19, 0.20, 0.20,
       0.23, 0.32, 0.38, 0.40, 0.43, 0.45,
       0.45, 0.45, 0.44, 0.43, 0.38, 0.35,
       0.30, 0.23, 0.23, 0.25, 0.26, 0.25),
    SATURDAY THRU SUNDAY =
      (0.20, 0.20, 0.19, 0.19, 0.20, 0.20,
       0.23, 0.32, 0.38, 0.40, 0.43, 0.45,
       0.45, 0.45, 0.44, 0.43, 0.38, 0.35,
       0.30, 0.23, 0.23, 0.25, 0.26, 0.25),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.50 W/sqft, Area=42385 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 148 kW (Metric units)
      LIGHTS= 506,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 506,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 506,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 506,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 506,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 506,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 506,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 506,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 506,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file.

3. **EnergyPlus Input Sample**

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Administration Bldg., Dallas, TX) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.30, 0.31, 0.31, 0.31, 0.31, 0.32,
   0.42, 0.71, 0.82, 0.85, 0.84, 0.85,
   0.84, 0.83, 0.83, 0.83, 0.79, 0.69,
   0.60, 0.43, 0.32, 0.27, 0.27, 0.28;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.20, 0.20, 0.19, 0.19, 0.20, 0.20,
   0.23, 0.32, 0.38, 0.40, 0.43, 0.45,
   0.45, 0.45, 0.44, 0.43, 0.38, 0.35,
   0.30, 0.23, 0.23, 0.25, 0.26, 0.25;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.50 W/sqft, Area=42385 sqft
```

```
148247,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 34 - WAL001a

Category	:	Large
Building ID	:	N/A
Building	:	Bellevue Place
Location	:	Bellevue, WA
Building Area (ft^2)	:	389,000
Data Type	:	Light
Max Load (W/ft^2)	:	1.34
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	6.05
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAL001a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Bellevue Place Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Large Office Building, based on the CBECS classification.

Square footage: 389,000 ft^2 .

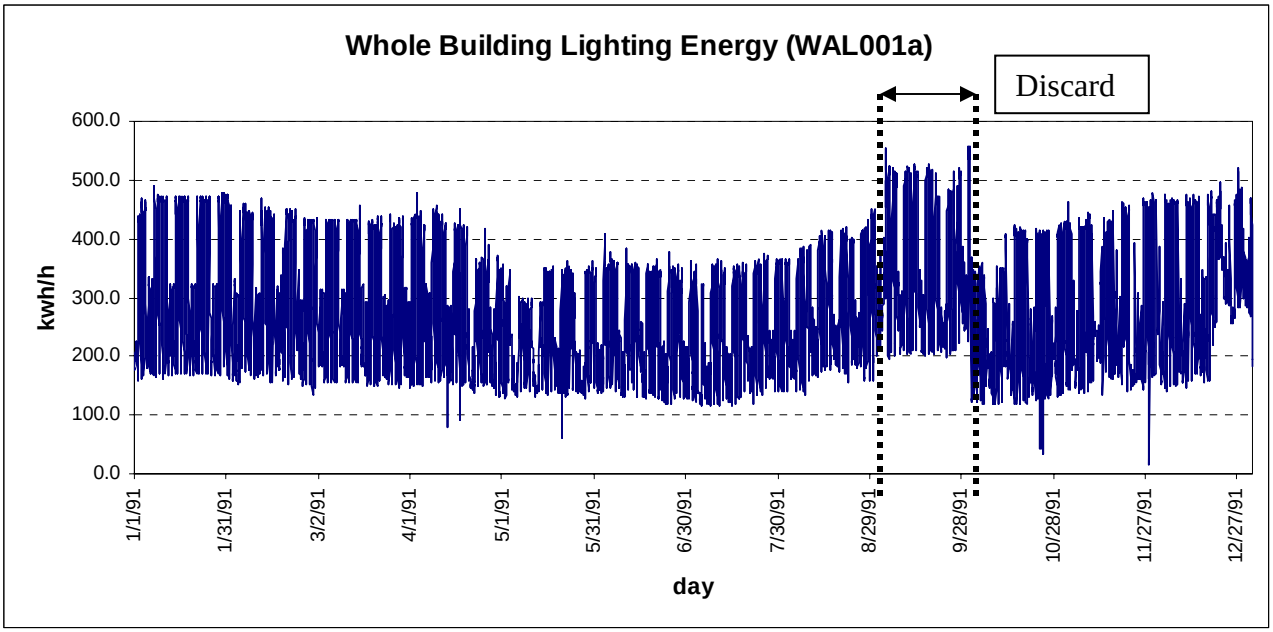
Lighting EUI: [(13.55 x 5) + (9.68 x 2)] x 52 x 1.34 = 6.05 kWh/ft^2.year

Lighting Type: N/A

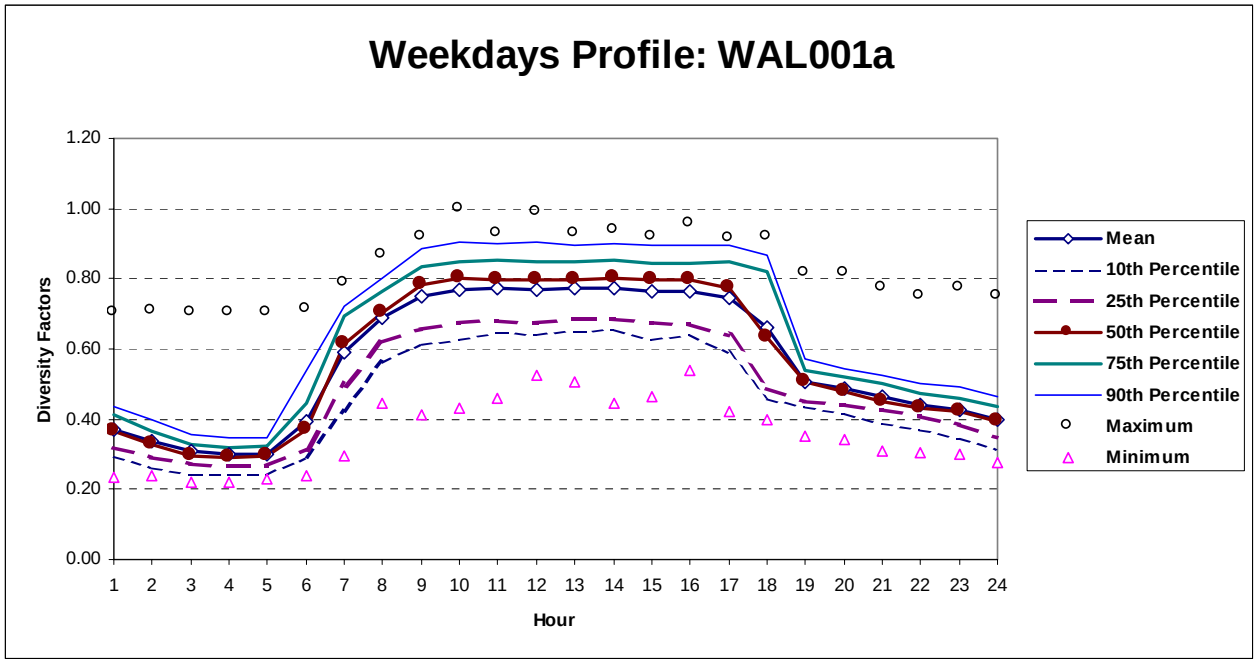
Dates: 1/1/91 - 12/31/91

Data Type: Lights

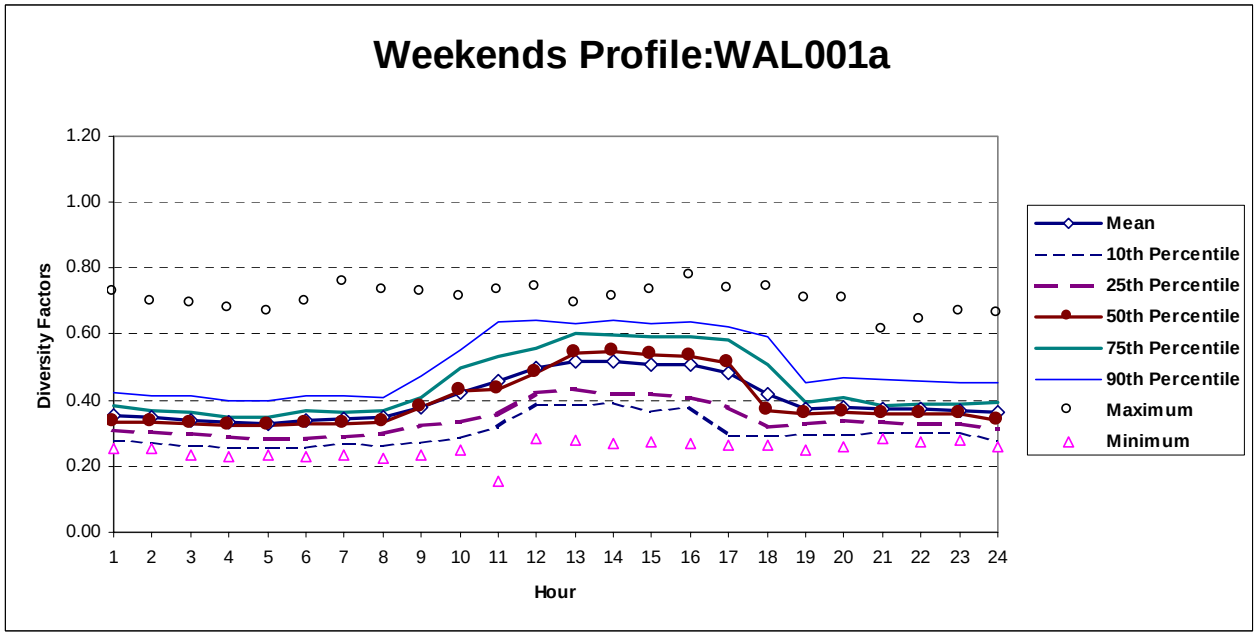
Maximum kW: 519.50 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 9/3-30/91, 11/22/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.37	0.44	0.30	0.29	0.32	0.37	0.41	0.44	0.70	0.23
2.00	0.34	0.40	0.27	0.26	0.29	0.33	0.37	0.40	0.71	0.24
3.00	0.31	0.37	0.24	0.24	0.27	0.30	0.33	0.36	0.70	0.22
4.00	0.30	0.36	0.24	0.24	0.27	0.29	0.32	0.35	0.70	0.22
5.00	0.30	0.36	0.24	0.24	0.27	0.29	0.32	0.35	0.70	0.23
6.00	0.39	0.49	0.29	0.29	0.31	0.37	0.45	0.54	0.71	0.24
7.00	0.59	0.71	0.47	0.42	0.50	0.61	0.69	0.72	0.79	0.30
8.00	0.69	0.78	0.59	0.56	0.62	0.70	0.76	0.80	0.87	0.44
9.00	0.75	0.86	0.64	0.61	0.66	0.78	0.84	0.89	0.92	0.41
10.00	0.77	0.88	0.66	0.63	0.68	0.80	0.85	0.90	1.00	0.43
11.00	0.77	0.87	0.67	0.65	0.68	0.79	0.85	0.90	0.93	0.46
12.00	0.77	0.87	0.67	0.64	0.67	0.79	0.85	0.91	0.99	0.53
13.00	0.77	0.87	0.68	0.65	0.68	0.80	0.85	0.89	0.93	0.51
14.00	0.77	0.87	0.68	0.65	0.69	0.80	0.85	0.90	0.94	0.45
15.00	0.77	0.87	0.66	0.63	0.68	0.80	0.84	0.89	0.92	0.47
16.00	0.77	0.87	0.66	0.64	0.67	0.80	0.84	0.90	0.96	0.54
17.00	0.74	0.87	0.62	0.59	0.64	0.77	0.85	0.89	0.92	0.42
18.00	0.66	0.83	0.49	0.46	0.49	0.63	0.82	0.87	0.92	0.40
19.00	0.51	0.58	0.44	0.44	0.45	0.51	0.54	0.57	0.82	0.35
20.00	0.49	0.55	0.42	0.42	0.44	0.48	0.52	0.54	0.82	0.34
21.00	0.46	0.53	0.40	0.39	0.43	0.45	0.50	0.53	0.77	0.31
22.00	0.44	0.51	0.38	0.37	0.41	0.43	0.48	0.50	0.75	0.31
23.00	0.43	0.49	0.36	0.35	0.39	0.42	0.46	0.49	0.78	0.30
24.00	0.40	0.47	0.33	0.32	0.35	0.40	0.44	0.47	0.75	0.27
Daily Values	13.52	15.28	11.76	11.24	11.95	13.82	14.76	15.71	19.58	9.27
Daily Sum from Hourly	13.55	15.72	11.39	11.00	11.83	13.72	15.03	15.99	19.97	8.62

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.35	0.43	0.28	0.28	0.31	0.33	0.38	0.42	0.72	0.25
2.00	0.35	0.42	0.27	0.27	0.30	0.33	0.37	0.41	0.69	0.25
3.00	0.34	0.41	0.27	0.27	0.30	0.33	0.36	0.41	0.69	0.23
4.00	0.33	0.40	0.26	0.26	0.29	0.32	0.35	0.40	0.68	0.23
5.00	0.33	0.40	0.26	0.26	0.29	0.32	0.35	0.40	0.67	0.23
6.00	0.34	0.42	0.26	0.26	0.29	0.33	0.37	0.41	0.70	0.23
7.00	0.34	0.44	0.25	0.27	0.29	0.33	0.36	0.42	0.76	0.23
8.00	0.35	0.44	0.26	0.27	0.30	0.34	0.37	0.41	0.73	0.23
9.00	0.38	0.48	0.28	0.27	0.32	0.38	0.41	0.47	0.73	0.24
10.00	0.42	0.54	0.31	0.29	0.34	0.43	0.50	0.55	0.71	0.25
11.00	0.46	0.58	0.33	0.32	0.36	0.43	0.53	0.64	0.73	0.15
12.00	0.50	0.60	0.40	0.39	0.42	0.48	0.56	0.64	0.74	0.28
13.00	0.52	0.62	0.42	0.39	0.43	0.54	0.60	0.63	0.69	0.28
14.00	0.52	0.62	0.41	0.39	0.42	0.55	0.60	0.64	0.71	0.27
15.00	0.51	0.62	0.40	0.37	0.42	0.54	0.60	0.63	0.73	0.28
16.00	0.51	0.62	0.40	0.38	0.41	0.53	0.59	0.64	0.78	0.27
17.00	0.48	0.61	0.35	0.29	0.38	0.52	0.58	0.62	0.74	0.26
18.00	0.42	0.54	0.29	0.29	0.32	0.37	0.51	0.59	0.74	0.26
19.00	0.37	0.46	0.29	0.30	0.33	0.36	0.40	0.45	0.71	0.25
20.00	0.38	0.46	0.30	0.30	0.34	0.36	0.41	0.47	0.71	0.26
21.00	0.37	0.44	0.31	0.30	0.33	0.36	0.39	0.46	0.61	0.28
22.00	0.37	0.44	0.30	0.30	0.33	0.36	0.39	0.46	0.64	0.27
23.00	0.37	0.44	0.30	0.30	0.33	0.36	0.39	0.45	0.67	0.28
24.00	0.36	0.44	0.29	0.28	0.31	0.34	0.39	0.46	0.66	0.26
Daily Values	9.68	11.51	7.85	7.49	8.21	9.65	10.58	11.22	16.20	6.94
Daily Sum from Hourly	9.68	11.87	7.49	7.29	8.13	9.53	10.74	12.10	16.94	6.04

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.37)  (2) (0.33)  (3) (0.30)  (4) (0.29)  (5) (0.29)  (6) (0.37)
 (7) (0.61)  (8) (0.70)  (9) (0.78) (10) (0.80) (11) (0.79) (12) (0.79)
(13) (0.80) (14) (0.80) (15) (0.80) (16) (0.80) (17) (0.77) (18) (0.63)
(19) (0.51) (20) (0.48) (21) (0.45) (22) (0.43) (23) (0.42) (24) (0.40) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.33)  (2) (0.33)  (3) (0.33)  (4) (0.32)  (5) (0.32)  (6) (0.33)
 (7) (0.33)  (8) (0.34)  (9) (0.38) (10) (0.43) (11) (0.43) (12) (0.48)
(13) (0.54) (14) (0.55) (15) (0.54) (16) (0.53) (17) (0.52) (18) (0.37)
(19) (0.36) (20) (0.36) (21) (0.36) (22) (0.36) (23) (0.36) (24) (0.34) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.34 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.37, 0.33, 0.30, 0.29, 0.29, 0.37,
       0.61, 0.70, 0.78, 0.80, 0.79, 0.79,
       0.80, 0.80, 0.80, 0.80, 0.77, 0.63,
       0.51, 0.48, 0.45, 0.43, 0.42, 0.40),
    SATURDAY THRU SUNDAY =
      (0.33, 0.33, 0.33, 0.32, 0.32, 0.33,
       0.33, 0.34, 0.38, 0.43, 0.43, 0.48,
       0.54, 0.55, 0.54, 0.53, 0.52, 0.37,
       0.36, 0.36, 0.36, 0.36, 0.36, 0.34),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.33, 0.33, 0.33, 0.32, 0.32, 0.33,
       0.33, 0.34, 0.38, 0.43, 0.43, 0.48,
       0.54, 0.55, 0.54, 0.53, 0.52, 0.37,
       0.36, 0.36, 0.36, 0.36, 0.36, 0.34),
    SATURDAY THRU SUNDAY =
      (0.33, 0.33, 0.33, 0.32, 0.32, 0.33,
       0.33, 0.34, 0.38, 0.43, 0.43, 0.48,
       0.54, 0.55, 0.54, 0.53, 0.52, 0.37,
       0.36, 0.36, 0.36, 0.36, 0.36, 0.34),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.34 W/sqft, Area=389000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 520 kW (Metric units)
      LIGHTS= 1773,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 1773,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 1773,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 1773,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 1773,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 1773,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 1773,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 1773,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 1773,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.37, 0.33, 0.30, 0.29, 0.29, 0.37,
   0.61, 0.70, 0.78, 0.80, 0.79, 0.79,
   0.80, 0.80, 0.80, 0.80, 0.77, 0.63,
   0.51, 0.48, 0.45, 0.43, 0.42, 0.40;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.33, 0.33, 0.33, 0.32, 0.32, 0.33,
   0.33, 0.34, 0.38, 0.43, 0.43, 0.48,
   0.54, 0.55, 0.54, 0.53, 0.52, 0.37,
   0.36, 0.36, 0.36, 0.36, 0.36, 0.34;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.34 W/sqft, Area=389000 sqft
```

```
519500,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 35 - WAL001b

Category	:	Large
Building ID	:	N/A
Building	:	Bellevue Place
Location	:	Bellevue, WA
Building Area (ft^2)	:	389,000
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.40
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	2.41
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAL001b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Bellevue Place Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Large Office Building, based on the CBECS classification.

Square footage: 389,000 ft^2 .

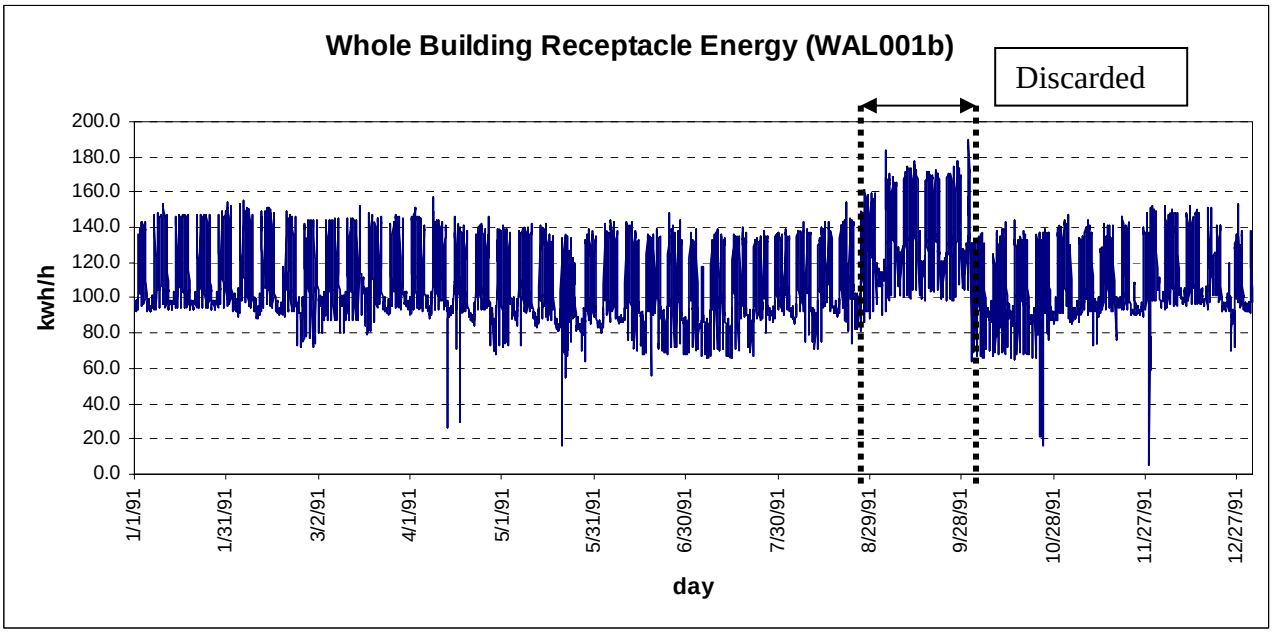
Lighting EUI: [(17.35 x 5) + (14.03 x 2)] x 52 x 0.40 = 2.41 kWh/ft^2.year

Lighting Type: N/A

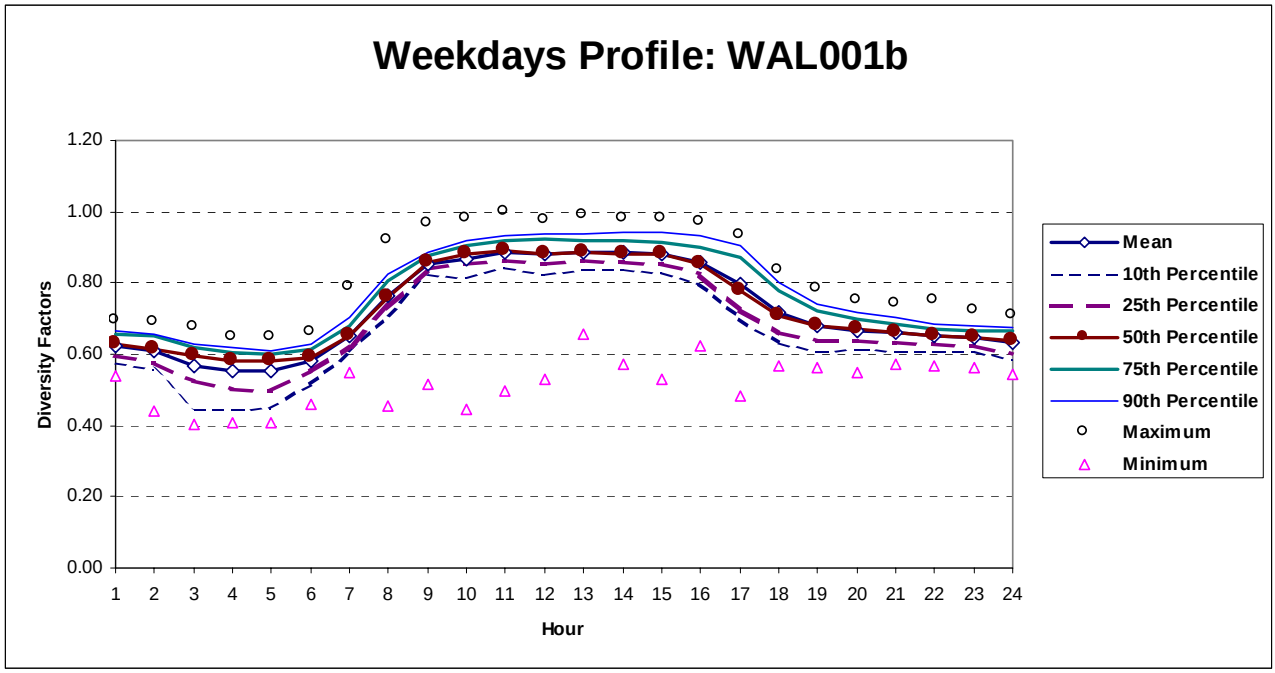
Dates: 1/1/91 - 12/31/91

Data Type: Receptacles

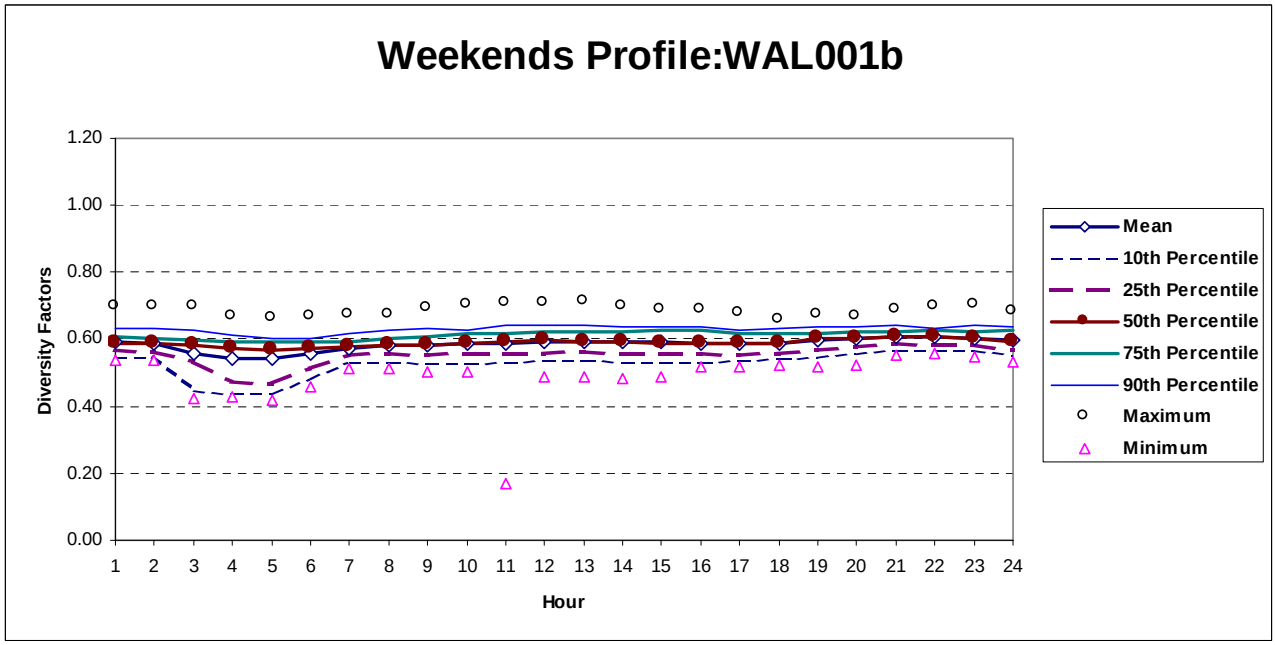
Maximum kW: 157.12 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 8/26 - 9/30/91, 11/22/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.63	0.66	0.59	0.58	0.60	0.63	0.66	0.66	0.69	0.54
2.00	0.61	0.65	0.57	0.56	0.58	0.61	0.65	0.66	0.69	0.44
3.00	0.57	0.64	0.50	0.45	0.52	0.60	0.62	0.63	0.67	0.40
4.00	0.55	0.62	0.49	0.44	0.50	0.58	0.61	0.62	0.65	0.41
5.00	0.55	0.62	0.49	0.45	0.50	0.58	0.60	0.61	0.65	0.41
6.00	0.58	0.62	0.54	0.51	0.55	0.59	0.61	0.63	0.66	0.46
7.00	0.65	0.69	0.61	0.61	0.63	0.65	0.68	0.70	0.79	0.55
8.00	0.76	0.82	0.71	0.71	0.73	0.76	0.80	0.82	0.92	0.45
9.00	0.85	0.90	0.81	0.82	0.84	0.86	0.88	0.89	0.97	0.52
10.00	0.87	0.94	0.80	0.82	0.85	0.88	0.90	0.92	0.98	0.44
11.00	0.89	0.94	0.83	0.84	0.86	0.89	0.92	0.93	1.00	0.50
12.00	0.88	0.94	0.83	0.83	0.85	0.88	0.92	0.94	0.98	0.53
13.00	0.89	0.93	0.84	0.84	0.86	0.89	0.92	0.94	0.99	0.66
14.00	0.89	0.94	0.84	0.84	0.86	0.88	0.92	0.94	0.98	0.57
15.00	0.88	0.94	0.82	0.83	0.85	0.88	0.91	0.94	0.98	0.53
16.00	0.86	0.92	0.80	0.80	0.82	0.85	0.90	0.93	0.97	0.62
17.00	0.80	0.88	0.71	0.70	0.73	0.78	0.87	0.90	0.93	0.48
18.00	0.72	0.78	0.65	0.63	0.66	0.71	0.78	0.80	0.83	0.57
19.00	0.68	0.73	0.63	0.61	0.64	0.68	0.72	0.74	0.78	0.56
20.00	0.67	0.71	0.62	0.61	0.64	0.67	0.70	0.72	0.75	0.55
21.00	0.66	0.69	0.62	0.61	0.63	0.66	0.68	0.70	0.74	0.57
22.00	0.65	0.68	0.62	0.61	0.63	0.65	0.67	0.68	0.75	0.57
23.00	0.65	0.68	0.62	0.61	0.62	0.65	0.66	0.68	0.72	0.56
24.00	0.63	0.67	0.60	0.58	0.60	0.64	0.66	0.67	0.71	0.54
Daily Values	17.31	18.25	16.37	16.15	16.68	17.41	18.06	18.42	19.04	13.11
Daily Sum from Hourly	17.35	18.57	16.14	15.89	16.55	17.44	18.26	18.67	19.78	12.44

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.59	0.62	0.56	0.55	0.57	0.59	0.61	0.63	0.70	0.54
2.00	0.59	0.62	0.56	0.55	0.56	0.59	0.60	0.63	0.70	0.54
3.00	0.56	0.63	0.49	0.45	0.53	0.58	0.60	0.63	0.70	0.42
4.00	0.54	0.61	0.48	0.44	0.47	0.57	0.59	0.61	0.67	0.43
5.00	0.54	0.61	0.48	0.44	0.47	0.57	0.59	0.60	0.66	0.42
6.00	0.56	0.60	0.51	0.48	0.51	0.57	0.59	0.60	0.67	0.46
7.00	0.57	0.61	0.54	0.53	0.55	0.58	0.59	0.62	0.67	0.51
8.00	0.58	0.62	0.55	0.53	0.56	0.58	0.60	0.63	0.67	0.51
9.00	0.58	0.62	0.54	0.53	0.55	0.58	0.61	0.63	0.69	0.50
10.00	0.59	0.63	0.55	0.53	0.56	0.59	0.62	0.63	0.70	0.50
11.00	0.59	0.65	0.53	0.53	0.56	0.59	0.62	0.64	0.71	0.17
12.00	0.59	0.63	0.55	0.54	0.56	0.60	0.62	0.64	0.71	0.49
13.00	0.59	0.64	0.55	0.54	0.56	0.59	0.62	0.64	0.71	0.49
14.00	0.59	0.63	0.55	0.53	0.56	0.59	0.62	0.64	0.70	0.49
15.00	0.59	0.63	0.55	0.53	0.56	0.59	0.62	0.64	0.69	0.49
16.00	0.59	0.63	0.55	0.53	0.56	0.59	0.63	0.64	0.69	0.52
17.00	0.59	0.62	0.55	0.54	0.55	0.59	0.62	0.63	0.68	0.52
18.00	0.59	0.62	0.55	0.54	0.56	0.59	0.62	0.63	0.66	0.52
19.00	0.60	0.63	0.56	0.55	0.57	0.60	0.62	0.64	0.67	0.52
20.00	0.60	0.63	0.57	0.56	0.58	0.60	0.62	0.64	0.67	0.52
21.00	0.61	0.63	0.58	0.57	0.59	0.61	0.62	0.64	0.69	0.55
22.00	0.61	0.63	0.58	0.57	0.58	0.61	0.63	0.63	0.70	0.56
23.00	0.60	0.63	0.58	0.57	0.58	0.60	0.62	0.64	0.70	0.55
24.00	0.60	0.63	0.56	0.55	0.57	0.59	0.63	0.64	0.68	0.53
Daily Values	14.03	14.84	13.21	12.87	13.43	14.07	14.68	14.96	16.03	12.48
Daily Sum from Hourly	14.03	15.01	13.04	12.68	13.28	14.15	14.72	15.14	16.47	11.74

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.63)  (2) (0.61)  (3) (0.60)  (4) (0.58)  (5) (0.58)  (6) (0.59)
 (7) (0.65)  (8) (0.76)  (9) (0.86) (10) (0.88) (11) (0.89) (12) (0.88)
(13) (0.89) (14) (0.88) (15) (0.88) (16) (0.85) (17) (0.78) (18) (0.71)
(19) (0.68) (20) (0.67) (21) (0.66) (22) (0.65) (23) (0.65) (24) (0.64) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.59)  (2) (0.59)  (3) (0.58)  (4) (0.57)  (5) (0.57)  (6) (0.57)
 (7) (0.58)  (8) (0.58)  (9) (0.58) (10) (0.59) (11) (0.59) (12) (0.60)
(13) (0.59) (14) (0.59) (15) (0.59) (16) (0.59) (17) (0.59) (18) (0.59)
(19) (0.60) (20) (0.60) (21) (0.61) (22) (0.61) (23) (0.60) (24) (0.59) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.40 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.63, 0.61, 0.60, 0.58, 0.58, 0.59,
      0.65, 0.76, 0.86, 0.88, 0.89, 0.88,
      0.89, 0.88, 0.88, 0.85, 0.78, 0.71,
      0.68, 0.67, 0.66, 0.65, 0.65, 0.64),
    SATURDAY THRU SUNDAY =
     (0.59, 0.59, 0.58, 0.57, 0.57, 0.57,
      0.58, 0.58, 0.58, 0.59, 0.59, 0.60,
      0.59, 0.59, 0.59, 0.59, 0.59, 0.59,
      0.60, 0.60, 0.61, 0.61, 0.60, 0.59),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.59, 0.59, 0.58, 0.57, 0.57, 0.57,
      0.58, 0.58, 0.58, 0.59, 0.59, 0.60,
      0.59, 0.59, 0.59, 0.59, 0.59, 0.59,
      0.60, 0.60, 0.61, 0.61, 0.60, 0.59),
    SATURDAY THRU SUNDAY =
     (0.59, 0.59, 0.58, 0.57, 0.57, 0.57,
      0.58, 0.58, 0.58, 0.59, 0.59, 0.60,
      0.59, 0.59, 0.59, 0.59, 0.59, 0.59,
      0.60, 0.60, 0.61, 0.61, 0.60, 0.59),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.40 W/sqft, Area=389000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 157 kW (Metric units)
      LIGHTS= 536,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 536,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 536,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 536,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 536,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 536,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 536,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 536,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 536,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.63, 0.61, 0.60, 0.58, 0.58, 0.59,
   0.65, 0.76, 0.86, 0.88, 0.89, 0.88,
   0.89, 0.88, 0.88, 0.85, 0.78, 0.71,
   0.68, 0.67, 0.66, 0.65, 0.65, 0.64;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.59, 0.59, 0.58, 0.57, 0.57, 0.57,
   0.58, 0.58, 0.58, 0.59, 0.59, 0.60,
   0.59, 0.59, 0.59, 0.59, 0.59, 0.59,
   0.60, 0.60, 0.61, 0.61, 0.60, 0.59;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.40 W/sqft, Area=389000 sqft
```

```
157120,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 36 - WAL001c

Category	:	Large
Building ID	:	N/A
Building	:	Bellevue Place
Location	:	Bellevue, WA
Building Area (ft^2)	:	389,000
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	1.71
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	8.44
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAL001c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Bellevue Place Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Large Office Building, based on the CBECS classification.

Square footage: 389,000 ft^2 .

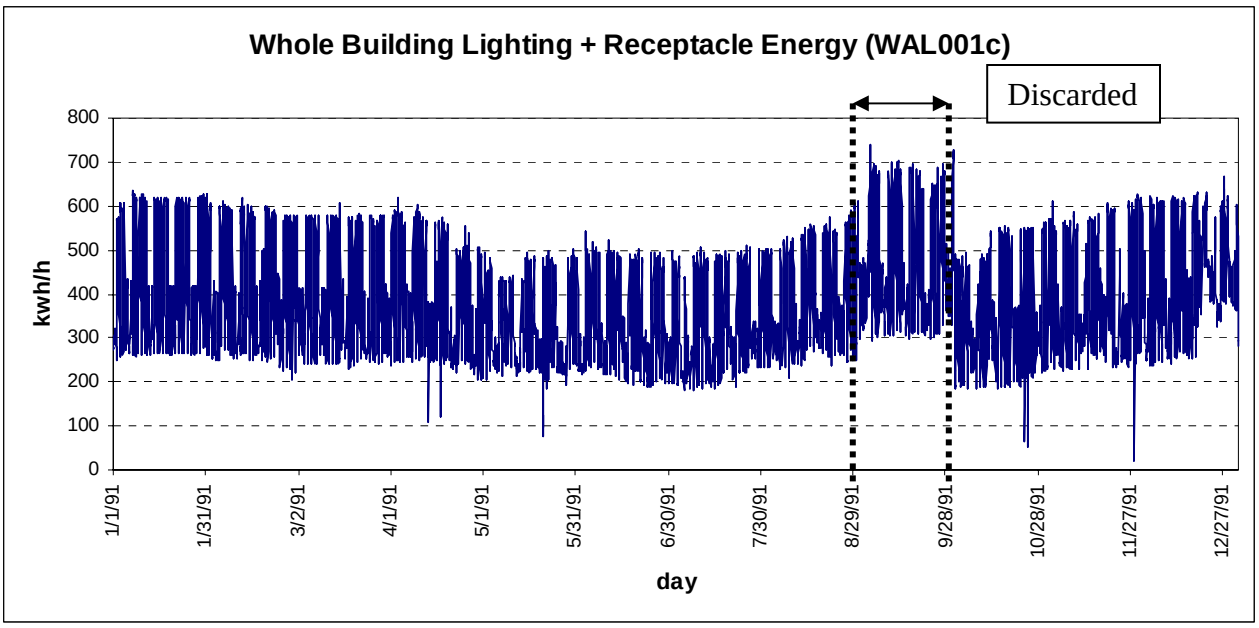
Lighting EUI: [(14.63 x 5) + (10.79 x 2)] x 52 x 1.71 = 8.44 kWh/ft^2.year

Lighting Type: N/A

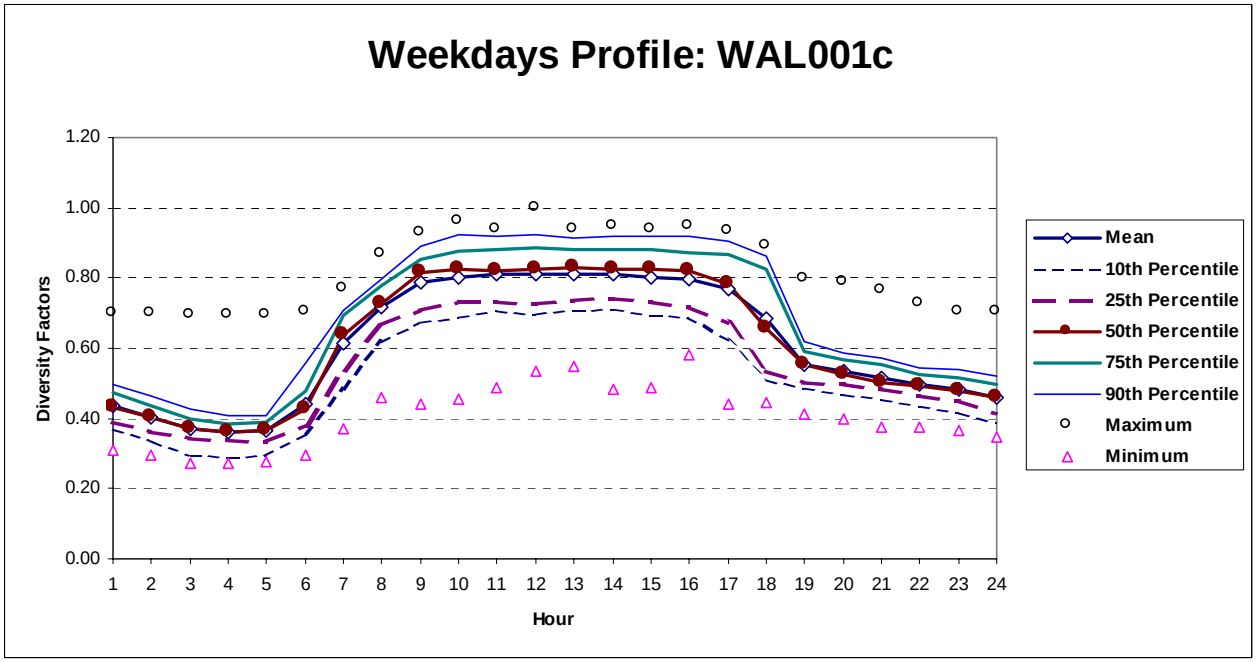
Dates: 1/1/91 - 12/31/91

Data Type: Light + Receptacles

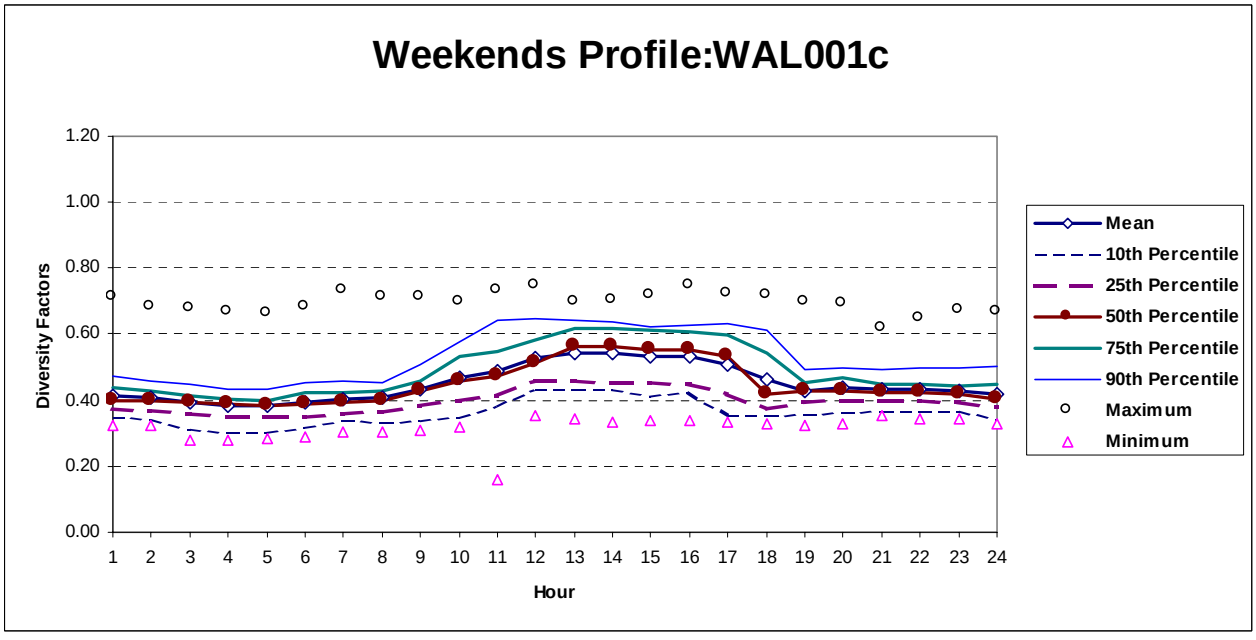
Maximum kW: 666.68 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 8/26-9/30/91, 11/22/91, and 12/25/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.44	0.49	0.38	0.37	0.39	0.43	0.47	0.50	0.70	0.31
2.00	0.41	0.46	0.35	0.34	0.36	0.40	0.44	0.46	0.70	0.30
3.00	0.37	0.43	0.31	0.30	0.34	0.37	0.40	0.42	0.69	0.27
4.00	0.36	0.42	0.31	0.29	0.34	0.36	0.39	0.41	0.69	0.27
5.00	0.36	0.42	0.31	0.29	0.34	0.36	0.39	0.41	0.69	0.28
6.00	0.44	0.52	0.36	0.36	0.38	0.43	0.48	0.56	0.70	0.30
7.00	0.61	0.71	0.52	0.49	0.54	0.64	0.69	0.71	0.77	0.37
8.00	0.72	0.79	0.65	0.62	0.67	0.73	0.78	0.80	0.87	0.46
9.00	0.79	0.87	0.70	0.68	0.71	0.81	0.85	0.89	0.93	0.44
10.00	0.80	0.90	0.71	0.69	0.73	0.83	0.88	0.92	0.96	0.45
11.00	0.81	0.90	0.72	0.71	0.73	0.82	0.88	0.92	0.94	0.49
12.00	0.81	0.90	0.72	0.70	0.73	0.82	0.89	0.93	1.00	0.54
13.00	0.81	0.90	0.73	0.71	0.74	0.83	0.88	0.92	0.94	0.55
14.00	0.81	0.90	0.73	0.71	0.74	0.83	0.88	0.92	0.95	0.48
15.00	0.80	0.90	0.71	0.69	0.73	0.83	0.88	0.92	0.94	0.49
16.00	0.80	0.89	0.71	0.69	0.72	0.82	0.87	0.92	0.95	0.58
17.00	0.77	0.88	0.65	0.62	0.67	0.78	0.87	0.91	0.93	0.44
18.00	0.68	0.83	0.54	0.51	0.54	0.65	0.83	0.86	0.89	0.45
19.00	0.55	0.62	0.49	0.49	0.50	0.55	0.59	0.62	0.80	0.41
20.00	0.53	0.59	0.48	0.47	0.50	0.53	0.57	0.59	0.79	0.40
21.00	0.51	0.57	0.46	0.45	0.48	0.50	0.55	0.57	0.76	0.38
22.00	0.49	0.55	0.44	0.43	0.47	0.49	0.53	0.55	0.73	0.37
23.00	0.48	0.53	0.43	0.42	0.45	0.48	0.51	0.54	0.70	0.37
24.00	0.46	0.52	0.40	0.39	0.41	0.46	0.50	0.52	0.70	0.35
Daily Values	14.59	16.14	13.04	12.62	13.23	14.80	15.73	16.55	19.39	10.32
Daily Sum from Hourly	14.63	16.47	12.79	12.41	13.19	14.76	15.99	16.75	19.71	9.74

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.41	0.48	0.35	0.35	0.38	0.40	0.44	0.47	0.71	0.33
2.00	0.41	0.47	0.35	0.34	0.37	0.40	0.43	0.46	0.68	0.32
3.00	0.39	0.46	0.33	0.32	0.36	0.39	0.41	0.45	0.68	0.28
4.00	0.39	0.45	0.32	0.31	0.35	0.39	0.40	0.43	0.67	0.28
5.00	0.38	0.45	0.32	0.30	0.35	0.38	0.40	0.43	0.66	0.28
6.00	0.39	0.46	0.32	0.32	0.35	0.39	0.42	0.45	0.68	0.29
7.00	0.40	0.48	0.33	0.34	0.36	0.39	0.42	0.46	0.73	0.30
8.00	0.41	0.48	0.33	0.33	0.36	0.40	0.43	0.45	0.71	0.30
9.00	0.43	0.51	0.35	0.34	0.39	0.43	0.46	0.51	0.71	0.31
10.00	0.47	0.56	0.38	0.35	0.40	0.46	0.53	0.58	0.70	0.32
11.00	0.49	0.59	0.39	0.39	0.42	0.47	0.55	0.64	0.73	0.16
12.00	0.53	0.61	0.44	0.43	0.46	0.51	0.58	0.65	0.75	0.35
13.00	0.54	0.63	0.46	0.43	0.46	0.56	0.62	0.64	0.70	0.34
14.00	0.54	0.63	0.45	0.43	0.45	0.56	0.62	0.64	0.70	0.33
15.00	0.53	0.62	0.44	0.41	0.45	0.55	0.61	0.62	0.71	0.34
16.00	0.53	0.62	0.44	0.42	0.45	0.55	0.61	0.63	0.75	0.34
17.00	0.51	0.62	0.40	0.36	0.42	0.53	0.60	0.63	0.72	0.33
18.00	0.46	0.56	0.36	0.35	0.38	0.42	0.54	0.61	0.72	0.33
19.00	0.43	0.50	0.36	0.36	0.39	0.43	0.45	0.49	0.70	0.32
20.00	0.44	0.50	0.37	0.37	0.40	0.43	0.47	0.50	0.69	0.33
21.00	0.43	0.48	0.38	0.37	0.40	0.43	0.45	0.49	0.62	0.35
22.00	0.43	0.49	0.38	0.37	0.40	0.42	0.45	0.50	0.65	0.34
23.00	0.43	0.49	0.37	0.37	0.39	0.42	0.45	0.50	0.67	0.34
24.00	0.42	0.48	0.36	0.34	0.38	0.41	0.45	0.50	0.67	0.33
Daily Values	10.79	12.32	9.27	8.92	9.49	10.85	11.65	12.23	16.03	8.58
Daily Sum from Hourly	10.79	12.61	8.98	8.70	9.49	10.73	11.78	12.74	16.71	7.56

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.43)  (2) (0.40)  (3) (0.37)  (4) (0.36)  (5) (0.36)  (6) (0.43)
 (7) (0.64)  (8) (0.73)  (9) (0.81)  (10) (0.83)  (11) (0.82)  (12) (0.82)
(13) (0.83)  (14) (0.83)  (15) (0.83)  (16) (0.82)  (17) (0.78)  (18) (0.65)
(19) (0.55)  (20) (0.53)  (21) (0.50)  (22) (0.49)  (23) (0.48)  (24) (0.46) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.40)  (2) (0.40)  (3) (0.39)  (4) (0.39)  (5) (0.38)  (6) (0.39)
 (7) (0.39)  (8) (0.40)  (9) (0.43)  (10) (0.46)  (11) (0.47)  (12) (0.51)
(13) (0.56)  (14) (0.56)  (15) (0.55)  (16) (0.55)  (17) (0.53)  (18) (0.42)
(19) (0.43)  (20) (0.43)  (21) (0.43)  (22) (0.42)  (23) (0.42)  (24) (0.41) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.71 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.43, 0.40, 0.37, 0.36, 0.36, 0.43,
      0.64, 0.73, 0.81, 0.83, 0.82, 0.82,
      0.83, 0.83, 0.83, 0.82, 0.78, 0.65,
      0.55, 0.53, 0.50, 0.49, 0.48, 0.46),
    SATURDAY THRU SUNDAY =
     (0.40, 0.40, 0.39, 0.39, 0.38, 0.39,
      0.39, 0.40, 0.43, 0.46, 0.47, 0.51,
      0.56, 0.56, 0.55, 0.55, 0.53, 0.42,
      0.43, 0.43, 0.43, 0.42, 0.42, 0.41),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.40, 0.40, 0.39, 0.39, 0.38, 0.39,
      0.39, 0.40, 0.43, 0.46, 0.47, 0.51,
      0.56, 0.56, 0.55, 0.55, 0.53, 0.42,
      0.43, 0.43, 0.43, 0.42, 0.42, 0.41),
    SATURDAY THRU SUNDAY =
     (0.40, 0.40, 0.39, 0.39, 0.38, 0.39,
      0.39, 0.40, 0.43, 0.46, 0.47, 0.51,
      0.56, 0.56, 0.55, 0.55, 0.53, 0.42,
      0.43, 0.43, 0.43, 0.42, 0.42, 0.41),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.71 W/sqft, Area=389000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 667 kW (Metric units)
      LIGHTS= 2275,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 2275,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 2275,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 2275,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 2275,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 2275,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 2275,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 2275,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 2275,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Large Office Building (Bellevue Place, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.43, 0.40, 0.37, 0.36, 0.36, 0.43,
   0.64, 0.73, 0.81, 0.83, 0.82, 0.82,
   0.83, 0.83, 0.83, 0.82, 0.78, 0.65,
   0.55, 0.53, 0.50, 0.49, 0.48, 0.46;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.40, 0.40, 0.39, 0.39, 0.38, 0.39,
   0.39, 0.40, 0.43, 0.46, 0.47, 0.51,
   0.56, 0.56, 0.55, 0.55, 0.53, 0.42,
   0.43, 0.43, 0.43, 0.42, 0.42, 0.41;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.71 W/sqft, Area=389000 sqft
```

```
666680,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 37 - WAM001a

Category	:	Medium
Building ID	:	N/A
Building	:	Eastgate Bldg.
Location	:	Bellevue, WA
Building Area (ft^2)	:	25,100
Data Type	:	Light
Max Load (W/ft^2)	:	0.77
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	2.58
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAM001a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Eastgate Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 25,100 ft^2 .

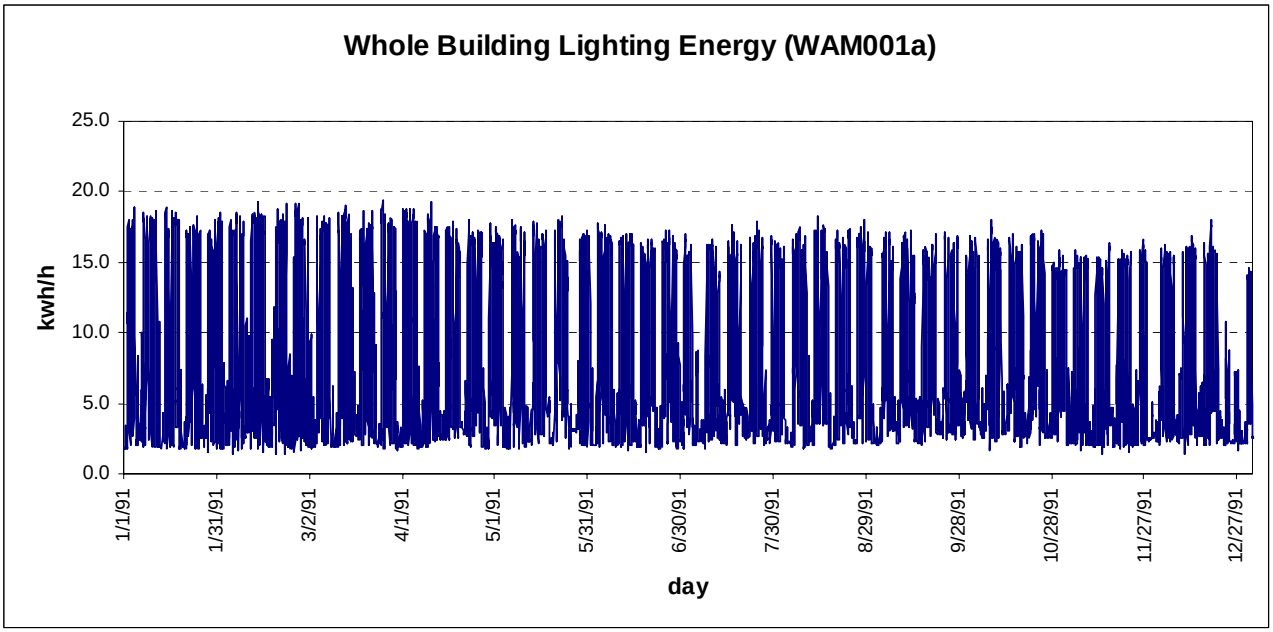
Lighting EUI: [(11.23 x 5) + (3.91 x 2)] x 52 x 0.77 = 2.58 kWh/ft^2.year

Lighting Type: N/A

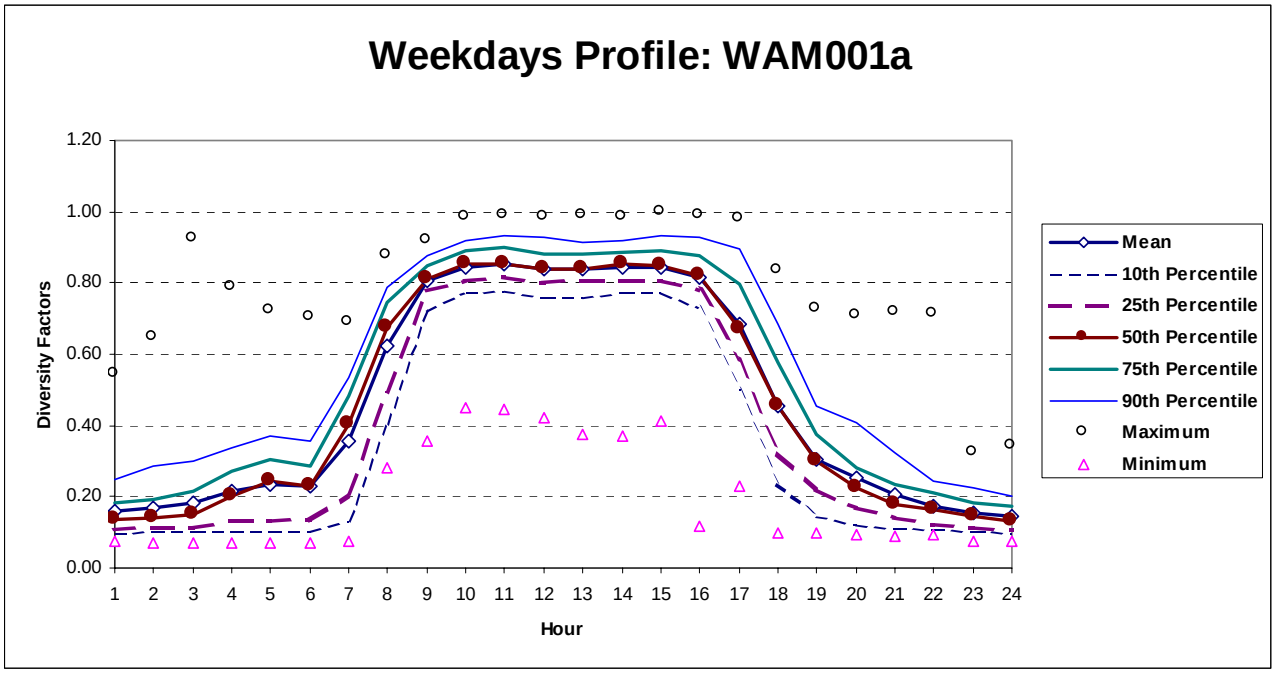
Dates: 1/1/91 - 12/31/91

Data Type: Lights

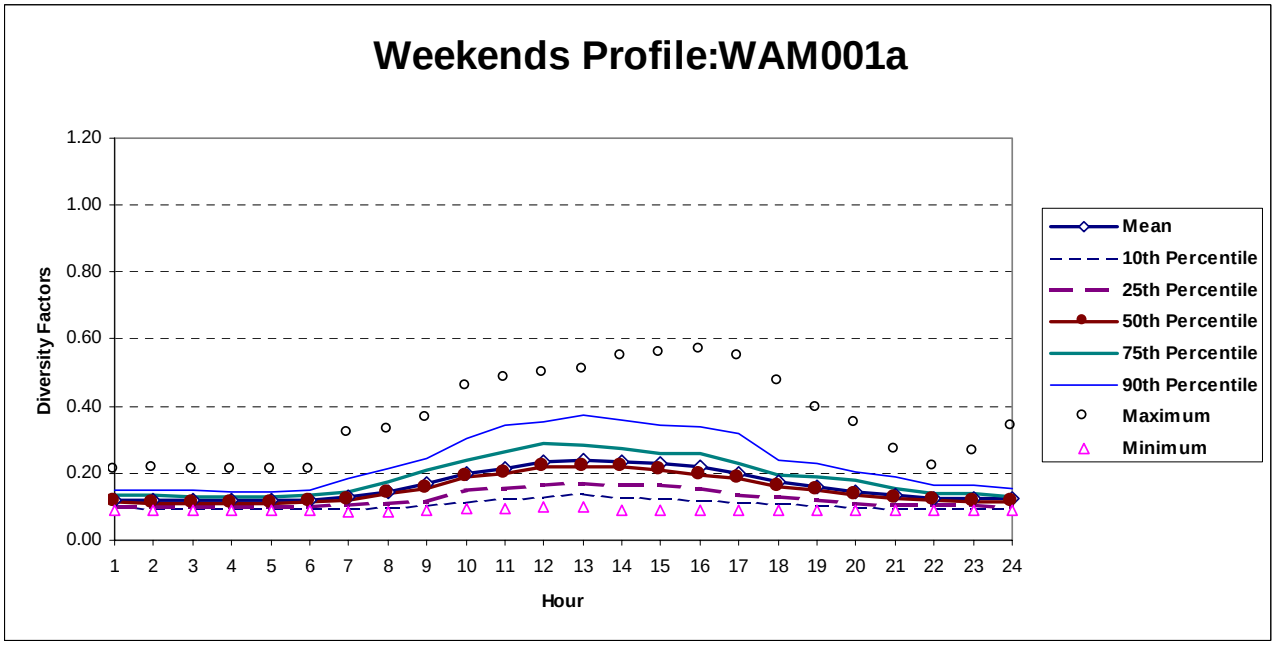
Maximum kW: 19.45 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 9/2/91, 11/28-29/91, and 12/24-27/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.16	0.23	0.08	0.10	0.11	0.14	0.18	0.25	0.54	0.07
2.00	0.17	0.26	0.08	0.10	0.11	0.14	0.19	0.29	0.65	0.07
3.00	0.18	0.30	0.07	0.10	0.11	0.15	0.22	0.30	0.92	0.07
4.00	0.22	0.33	0.11	0.11	0.13	0.20	0.27	0.34	0.79	0.07
5.00	0.23	0.34	0.13	0.10	0.13	0.24	0.31	0.37	0.72	0.07
6.00	0.23	0.33	0.13	0.10	0.13	0.23	0.29	0.36	0.70	0.07
7.00	0.35	0.51	0.20	0.13	0.20	0.40	0.48	0.53	0.69	0.07
8.00	0.62	0.77	0.48	0.40	0.49	0.68	0.75	0.79	0.88	0.28
9.00	0.80	0.87	0.74	0.72	0.78	0.81	0.85	0.88	0.92	0.36
10.00	0.84	0.92	0.77	0.77	0.81	0.85	0.89	0.92	0.98	0.45
11.00	0.85	0.92	0.78	0.78	0.81	0.86	0.90	0.93	0.99	0.45
12.00	0.84	0.91	0.77	0.76	0.80	0.84	0.88	0.93	0.99	0.42
13.00	0.84	0.90	0.77	0.76	0.80	0.84	0.88	0.92	0.99	0.38
14.00	0.85	0.92	0.77	0.77	0.81	0.85	0.89	0.92	0.99	0.37
15.00	0.85	0.92	0.77	0.77	0.81	0.85	0.89	0.93	1.00	0.41
16.00	0.82	0.92	0.72	0.73	0.78	0.82	0.88	0.93	0.99	0.12
17.00	0.68	0.84	0.53	0.50	0.59	0.67	0.80	0.90	0.98	0.23
18.00	0.46	0.62	0.29	0.24	0.32	0.46	0.58	0.69	0.83	0.10
19.00	0.30	0.42	0.19	0.14	0.22	0.30	0.38	0.46	0.73	0.10
20.00	0.25	0.38	0.13	0.12	0.17	0.23	0.28	0.41	0.71	0.10
21.00	0.21	0.31	0.11	0.11	0.14	0.18	0.23	0.32	0.72	0.09
22.00	0.17	0.24	0.11	0.11	0.12	0.16	0.21	0.25	0.71	0.09
23.00	0.15	0.21	0.10	0.10	0.11	0.15	0.18	0.22	0.32	0.08
24.00	0.14	0.19	0.10	0.10	0.11	0.13	0.17	0.20	0.34	0.07
Daily Values	11.24	12.20	10.27	10.18	10.77	11.26	11.76	12.26	14.65	6.18
Daily Sum from Hourly	11.23	13.55	8.92	8.65	9.60	11.18	12.57	14.01	19.07	4.59

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.12	0.14	0.10	0.10	0.10	0.11	0.13	0.15	0.21	0.09
2.00	0.12	0.14	0.10	0.10	0.10	0.11	0.13	0.15	0.21	0.09
3.00	0.12	0.14	0.10	0.09	0.10	0.11	0.13	0.15	0.21	0.09
4.00	0.12	0.14	0.09	0.09	0.10	0.11	0.13	0.15	0.21	0.09
5.00	0.12	0.14	0.09	0.10	0.10	0.11	0.13	0.15	0.21	0.09
6.00	0.12	0.14	0.09	0.10	0.10	0.11	0.13	0.15	0.21	0.09
7.00	0.13	0.17	0.09	0.10	0.10	0.12	0.14	0.18	0.32	0.09
8.00	0.15	0.19	0.10	0.10	0.11	0.14	0.17	0.21	0.33	0.09
9.00	0.17	0.23	0.11	0.10	0.12	0.16	0.21	0.24	0.36	0.09
10.00	0.20	0.27	0.12	0.11	0.15	0.19	0.24	0.30	0.46	0.09
11.00	0.22	0.30	0.13	0.12	0.15	0.20	0.26	0.34	0.48	0.09
12.00	0.23	0.32	0.14	0.13	0.17	0.22	0.29	0.36	0.50	0.10
13.00	0.24	0.33	0.15	0.14	0.17	0.22	0.29	0.37	0.51	0.10
14.00	0.23	0.33	0.14	0.13	0.17	0.22	0.27	0.36	0.55	0.09
15.00	0.23	0.32	0.13	0.13	0.17	0.21	0.26	0.34	0.56	0.09
16.00	0.22	0.31	0.12	0.12	0.16	0.19	0.26	0.34	0.57	0.09
17.00	0.20	0.28	0.11	0.11	0.14	0.19	0.23	0.32	0.55	0.09
18.00	0.17	0.24	0.10	0.11	0.13	0.16	0.19	0.24	0.47	0.09
19.00	0.16	0.22	0.11	0.10	0.12	0.15	0.19	0.23	0.39	0.09
20.00	0.14	0.19	0.10	0.10	0.11	0.13	0.18	0.20	0.35	0.09
21.00	0.13	0.18	0.09	0.10	0.10	0.12	0.16	0.19	0.27	0.09
22.00	0.13	0.15	0.10	0.10	0.10	0.12	0.14	0.16	0.22	0.09
23.00	0.13	0.16	0.09	0.10	0.10	0.11	0.14	0.16	0.26	0.09
24.00	0.13	0.17	0.08	0.10	0.10	0.11	0.13	0.16	0.34	0.09
Daily Values	3.91	4.70	3.12	2.91	3.30	3.82	4.40	4.92	6.55	2.58
Daily Sum from Hourly	3.91	5.21	2.61	2.56	2.96	3.62	4.54	5.60	8.75	2.17

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.14)  (2) (0.14)  (3) (0.15)  (4) (0.20)  (5) (0.24)  (6) (0.23)
 (7) (0.40)  (8) (0.68)  (9) (0.81)  (10) (0.85)  (11) (0.86)  (12) (0.84)
(13) (0.84)  (14) (0.85)  (15) (0.85)  (16) (0.82)  (17) (0.67)  (18) (0.46)
(19) (0.30)  (20) (0.23)  (21) (0.18)  (22) (0.16)  (23) (0.15)  (24) (0.13) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.11)  (2) (0.11)  (3) (0.11)  (4) (0.11)  (5) (0.11)  (6) (0.11)
 (7) (0.12)  (8) (0.14)  (9) (0.16)  (10) (0.19)  (11) (0.20)  (12) (0.22)
(13) (0.22)  (14) (0.22)  (15) (0.21)  (16) (0.19)  (17) (0.19)  (18) (0.16)
(19) (0.15)  (20) (0.13)  (21) (0.12)  (22) (0.12)  (23) (0.11)  (24) (0.11) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.77 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.14, 0.14, 0.15, 0.20, 0.24, 0.23,
      0.40, 0.68, 0.81, 0.85, 0.86, 0.84,
      0.84, 0.85, 0.85, 0.82, 0.67, 0.46,
      0.30, 0.23, 0.18, 0.16, 0.15, 0.13),
    SATURDAY THRU SUNDAY =
     (0.11, 0.11, 0.11, 0.11, 0.11, 0.11,
      0.12, 0.14, 0.16, 0.19, 0.20, 0.22,
      0.22, 0.22, 0.21, 0.19, 0.19, 0.16,
      0.15, 0.13, 0.12, 0.12, 0.11, 0.11),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.11, 0.11, 0.11, 0.11, 0.11, 0.11,
      0.12, 0.14, 0.16, 0.19, 0.20, 0.22,
      0.22, 0.22, 0.21, 0.19, 0.19, 0.16,
      0.15, 0.13, 0.12, 0.12, 0.11, 0.11),
    SATURDAY THRU SUNDAY =
     (0.11, 0.11, 0.11, 0.11, 0.11, 0.11,
      0.12, 0.14, 0.16, 0.19, 0.20, 0.22,
      0.22, 0.22, 0.21, 0.19, 0.19, 0.16,
      0.15, 0.13, 0.12, 0.12, 0.11, 0.11),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
     ** Lighting level=0.77 W/sqft, Area=25100 sqft
     ** Lighting level in kBtu/hr (English units)
     ** or 19 kW (Metric units)
     LIGHTS= 66,
      ELE-VAC,
      ** Return-vented fluorescent lights
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
      20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
      FROM 01JAN THRU 01JAN;

     LIGHTS= 66,
      ELE-WORK,
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 66,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 66,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 66,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 66,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 66,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 66,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 66,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Eastgate, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.14, 0.14, 0.15, 0.20, 0.24, 0.23,
   0.40, 0.68, 0.81, 0.85, 0.86, 0.84,
   0.84, 0.85, 0.85, 0.82, 0.67, 0.46,
   0.30, 0.23, 0.18, 0.16, 0.15, 0.13;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.11, 0.11, 0.11, 0.11, 0.11, 0.11,
   0.12, 0.14, 0.16, 0.19, 0.20, 0.22,
   0.22, 0.22, 0.21, 0.19, 0.19, 0.16,
   0.15, 0.13, 0.12, 0.12, 0.11, 0.11;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.77 W/sqft, Area=25100 sqft
```

```
19451,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 38 - WAM001b

Category	:	Medium
Building ID	:	N/A
Building	:	Eastgate Bldg.
Location	:	Bellevue, WA
Building Area (ft^2)	:	25,100
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.65
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	2.36
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAM001b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Eastgate Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 25,100 ft^2 .

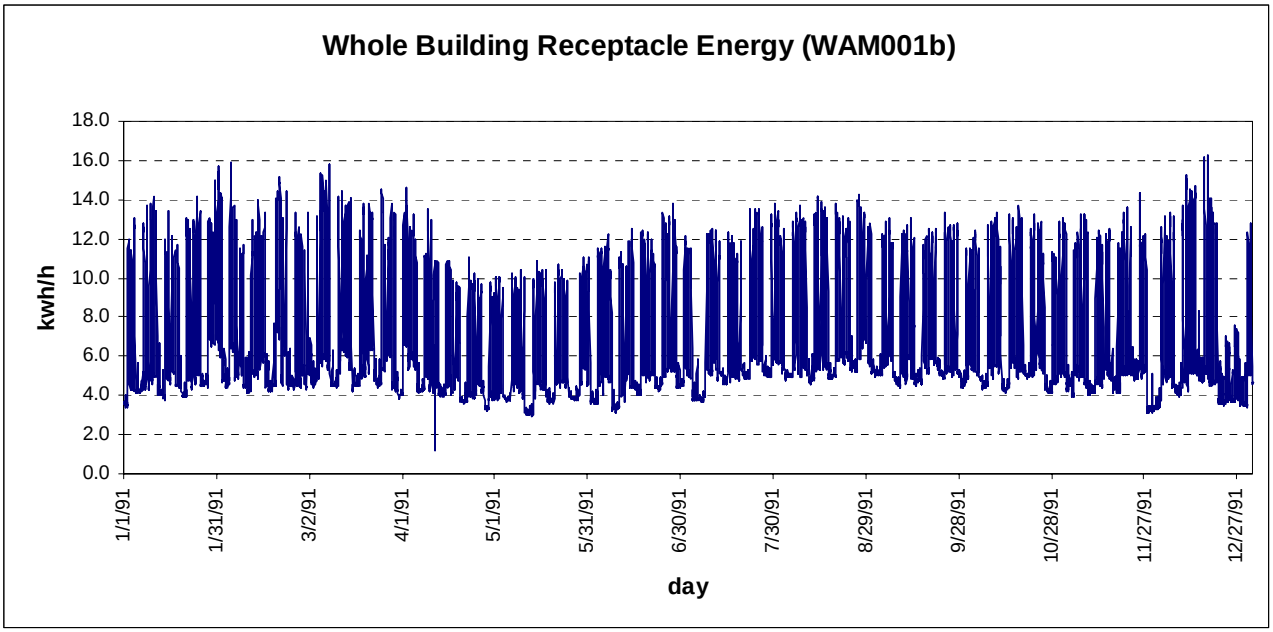
Lighting EUI: [(11.32 x 5) + (6.73 x 2)] x 52 x 0.65 = 2.36 kWh/ft^2.year

Lighting Type: N/A

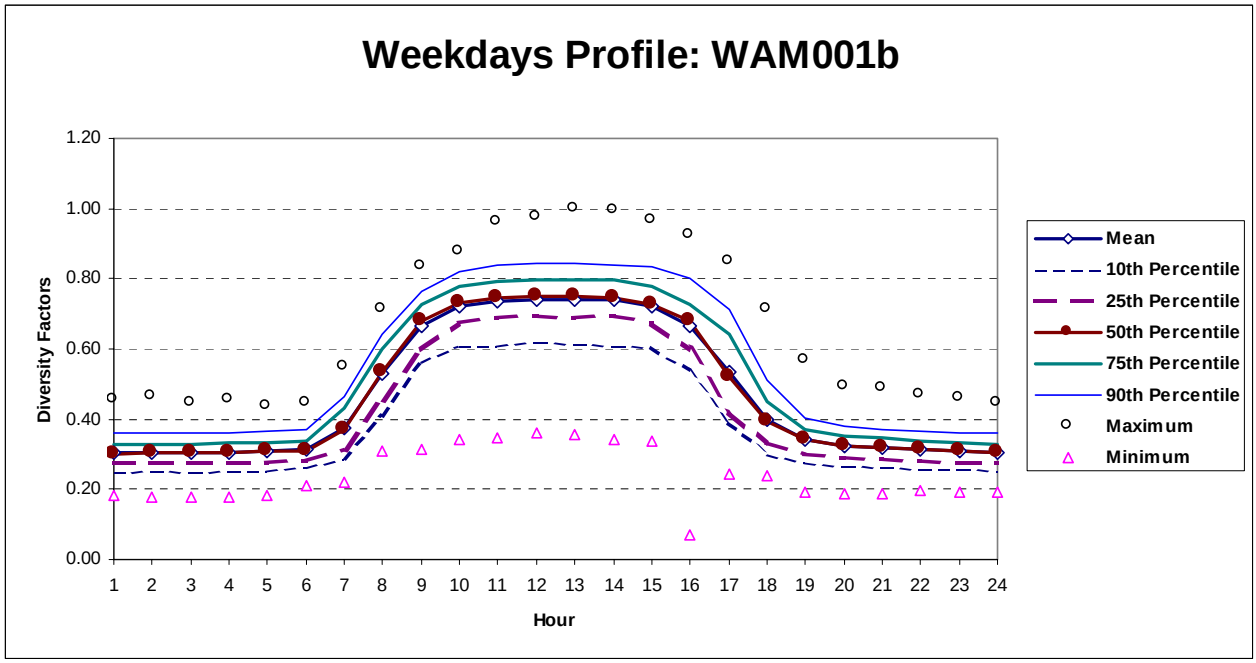
Dates: 1/1/91 - 12/31/91

Data Type: Receptacles

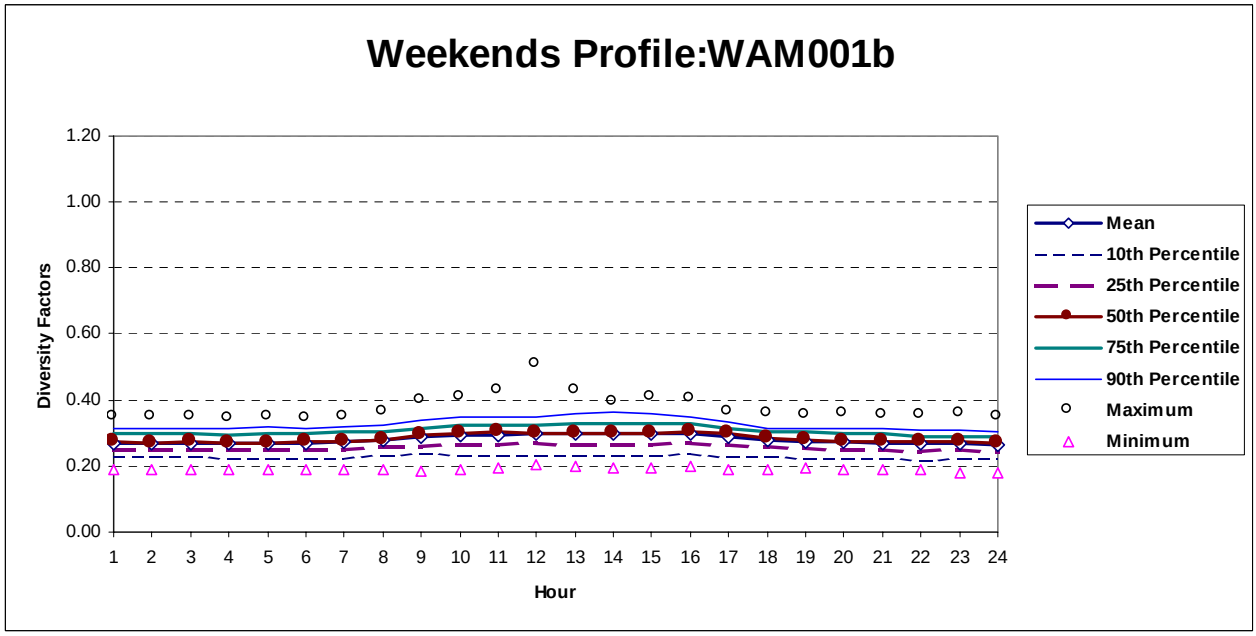
Maximum kW: 16.25 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 9/2/91, 11/28-29/91, and 12/24-27/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.30	0.35	0.26	0.25	0.27	0.30	0.33	0.36	0.46	0.18
2.00	0.30	0.35	0.26	0.25	0.28	0.30	0.33	0.36	0.46	0.18
3.00	0.30	0.35	0.26	0.25	0.28	0.31	0.33	0.36	0.45	0.18
4.00	0.31	0.35	0.26	0.25	0.28	0.30	0.33	0.36	0.46	0.18
5.00	0.31	0.35	0.26	0.25	0.28	0.31	0.33	0.36	0.44	0.18
6.00	0.31	0.35	0.27	0.26	0.28	0.31	0.34	0.37	0.44	0.21
7.00	0.37	0.44	0.31	0.29	0.32	0.37	0.43	0.47	0.55	0.22
8.00	0.53	0.62	0.44	0.41	0.46	0.54	0.60	0.64	0.71	0.31
9.00	0.67	0.75	0.59	0.56	0.60	0.68	0.73	0.76	0.83	0.31
10.00	0.72	0.80	0.64	0.61	0.68	0.73	0.78	0.82	0.87	0.34
11.00	0.74	0.82	0.65	0.61	0.69	0.75	0.79	0.84	0.96	0.35
12.00	0.74	0.83	0.65	0.62	0.69	0.75	0.80	0.85	0.98	0.36
13.00	0.74	0.83	0.65	0.61	0.69	0.75	0.80	0.84	1.00	0.35
14.00	0.74	0.83	0.65	0.61	0.69	0.75	0.80	0.84	0.99	0.34
15.00	0.72	0.81	0.63	0.61	0.68	0.73	0.78	0.83	0.96	0.34
16.00	0.67	0.78	0.56	0.54	0.60	0.68	0.73	0.80	0.92	0.07
17.00	0.54	0.67	0.41	0.39	0.42	0.52	0.64	0.71	0.85	0.24
18.00	0.40	0.49	0.32	0.30	0.33	0.39	0.45	0.51	0.71	0.24
19.00	0.34	0.39	0.29	0.27	0.30	0.34	0.37	0.40	0.57	0.19
20.00	0.32	0.37	0.28	0.27	0.29	0.32	0.35	0.38	0.49	0.19
21.00	0.32	0.36	0.27	0.26	0.29	0.32	0.35	0.37	0.49	0.19
22.00	0.31	0.36	0.27	0.26	0.28	0.31	0.34	0.37	0.47	0.19
23.00	0.31	0.35	0.26	0.26	0.28	0.31	0.33	0.36	0.46	0.19
24.00	0.31	0.35	0.26	0.25	0.28	0.31	0.33	0.36	0.44	0.19
Daily Values	11.31	12.52	10.10	9.59	10.65	11.46	12.07	12.72	14.88	6.59
Daily Sum from Hourly	11.32	12.96	9.68	9.24	10.23	11.37	12.37	13.33	15.96	5.74

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.27	0.31	0.23	0.23	0.25	0.27	0.30	0.32	0.35	0.19
2.00	0.27	0.31	0.24	0.23	0.25	0.27	0.30	0.31	0.35	0.19
3.00	0.27	0.31	0.24	0.23	0.25	0.27	0.30	0.31	0.35	0.19
4.00	0.27	0.31	0.23	0.23	0.25	0.27	0.29	0.31	0.34	0.19
5.00	0.27	0.31	0.23	0.22	0.25	0.27	0.30	0.32	0.35	0.19
6.00	0.27	0.31	0.23	0.23	0.25	0.27	0.30	0.32	0.34	0.19
7.00	0.27	0.31	0.23	0.23	0.25	0.27	0.30	0.32	0.35	0.19
8.00	0.28	0.31	0.24	0.23	0.26	0.28	0.30	0.32	0.37	0.19
9.00	0.29	0.33	0.25	0.24	0.26	0.29	0.31	0.34	0.40	0.19
10.00	0.29	0.34	0.25	0.23	0.27	0.30	0.32	0.35	0.41	0.19
11.00	0.30	0.34	0.25	0.23	0.26	0.30	0.32	0.35	0.43	0.19
12.00	0.30	0.35	0.25	0.24	0.27	0.30	0.32	0.35	0.51	0.20
13.00	0.30	0.35	0.25	0.24	0.26	0.30	0.33	0.36	0.43	0.20
14.00	0.30	0.35	0.25	0.23	0.26	0.30	0.33	0.36	0.40	0.20
15.00	0.30	0.35	0.25	0.23	0.26	0.30	0.33	0.36	0.41	0.20
16.00	0.30	0.34	0.25	0.24	0.27	0.30	0.33	0.35	0.40	0.20
17.00	0.29	0.33	0.25	0.23	0.26	0.30	0.31	0.33	0.36	0.19
18.00	0.28	0.31	0.24	0.23	0.26	0.29	0.30	0.31	0.36	0.19
19.00	0.27	0.31	0.24	0.23	0.25	0.28	0.30	0.32	0.35	0.19
20.00	0.27	0.31	0.24	0.22	0.25	0.28	0.30	0.32	0.36	0.19
21.00	0.27	0.31	0.24	0.22	0.25	0.28	0.30	0.31	0.35	0.19
22.00	0.27	0.30	0.23	0.22	0.25	0.28	0.29	0.31	0.35	0.19
23.00	0.27	0.30	0.23	0.23	0.25	0.27	0.29	0.31	0.36	0.18
24.00	0.27	0.30	0.23	0.23	0.25	0.27	0.29	0.31	0.35	0.18
Daily Values	6.73	7.57	5.89	5.63	6.15	6.84	7.41	7.66	8.44	4.65
Daily Sum from Hourly	6.73	7.67	5.80	5.50	6.12	6.80	7.37	7.87	9.02	4.57

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.30)  (2) (0.30)  (3) (0.31)  (4) (0.30)  (5) (0.31)  (6) (0.31)
 (7) (0.37)  (8) (0.54)  (9) (0.68) (10) (0.73) (11) (0.75) (12) (0.75)
(13) (0.75) (14) (0.75) (15) (0.73) (16) (0.68) (17) (0.52) (18) (0.39)
(19) (0.34) (20) (0.32) (21) (0.32) (22) (0.31) (23) (0.31) (24) (0.31) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.27)  (2) (0.27)  (3) (0.27)  (4) (0.27)  (5) (0.27)  (6) (0.27)
 (7) (0.27)  (8) (0.28)  (9) (0.29) (10) (0.30) (11) (0.30) (12) (0.30)
(13) (0.30) (14) (0.30) (15) (0.30) (16) (0.30) (17) (0.30) (18) (0.29)
(19) (0.28) (20) (0.28) (21) (0.28) (22) (0.28) (23) (0.27) (24) (0.27) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.65 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.30, 0.30, 0.31, 0.30, 0.31, 0.31,
      0.37, 0.54, 0.68, 0.73, 0.75, 0.75,
      0.75, 0.75, 0.73, 0.68, 0.52, 0.39,
      0.34, 0.32, 0.32, 0.31, 0.31, 0.31),
    SATURDAY THRU SUNDAY =
     (0.27, 0.27, 0.27, 0.27, 0.27, 0.27,
      0.27, 0.28, 0.29, 0.30, 0.30, 0.30,
      0.30, 0.30, 0.30, 0.30, 0.30, 0.29,
      0.28, 0.28, 0.28, 0.28, 0.27, 0.27),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.27, 0.27, 0.27, 0.27, 0.27, 0.27,
      0.27, 0.28, 0.29, 0.30, 0.30, 0.30,
      0.30, 0.30, 0.30, 0.30, 0.30, 0.29,
      0.28, 0.28, 0.28, 0.28, 0.27, 0.27),
    SATURDAY THRU SUNDAY =
     (0.27, 0.27, 0.27, 0.27, 0.27, 0.27,
      0.27, 0.28, 0.29, 0.30, 0.30, 0.30,
      0.30, 0.30, 0.30, 0.30, 0.30, 0.29,
      0.28, 0.28, 0.28, 0.28, 0.27, 0.27),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
     ** Lighting level=0.65 W/sqft, Area=25100 sqft
     ** Lighting level in kBtu/hr (English units)
     ** or 16 kW (Metric units)
     LIGHTS= 55,
      ELE-VAC,
      ** Return-vented fluorescent lights
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
      20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
      FROM 01JAN THRU 01JAN;

     LIGHTS= 55,
      ELE-WORK,
      20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 55,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 55,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 55,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 55,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 55,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 55,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 55,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Receptacle diversity factors** for a Medium Office Building (Eastgate, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.30, 0.30, 0.31, 0.30, 0.31, 0.31,
   0.37, 0.54, 0.68, 0.73, 0.75, 0.75,
   0.75, 0.75, 0.73, 0.68, 0.52, 0.39,
   0.34, 0.32, 0.32, 0.31, 0.31, 0.31;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.27, 0.27, 0.27, 0.27, 0.27, 0.27,
   0.27, 0.28, 0.29, 0.30, 0.30, 0.30,
   0.30, 0.30, 0.30, 0.30, 0.30, 0.29,
   0.28, 0.28, 0.28, 0.28, 0.27, 0.27;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.65 W/sqft, Area=25100 sqft
```

```
16254,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 39 - WAM001c

Category	:	Medium
Building ID	:	N/A
Building	:	Eastgate Bldg.
Location	:	Bellevue, WA
Building Area (ft^2)	:	25,100
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	1.35
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	4.94
Start Date	:	1/1/91
End date	:	12/31/91

(Page 1) Building Descriptions: (WAM001c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Eastgate Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Bellevue, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 25,100 ft^2 .

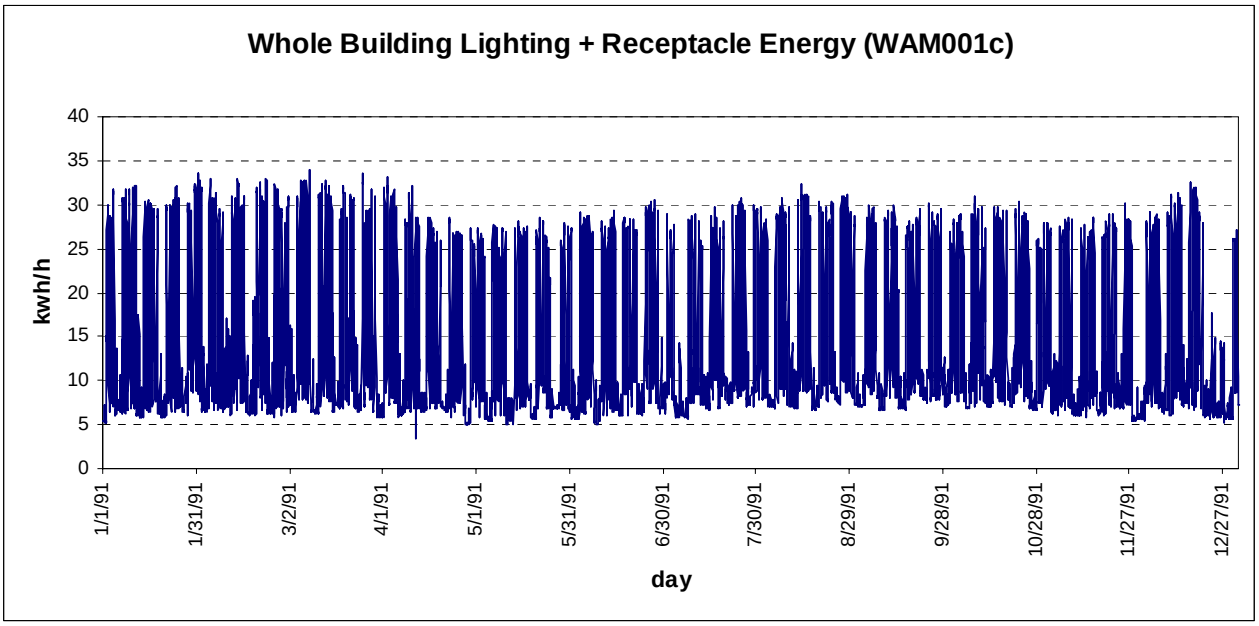
Lighting EUI: [(11.84 x 5) + (5.46 x 2)] x 52 x 1.35 = 4.94 kWh/ft^2.year

Lighting Type: N/A

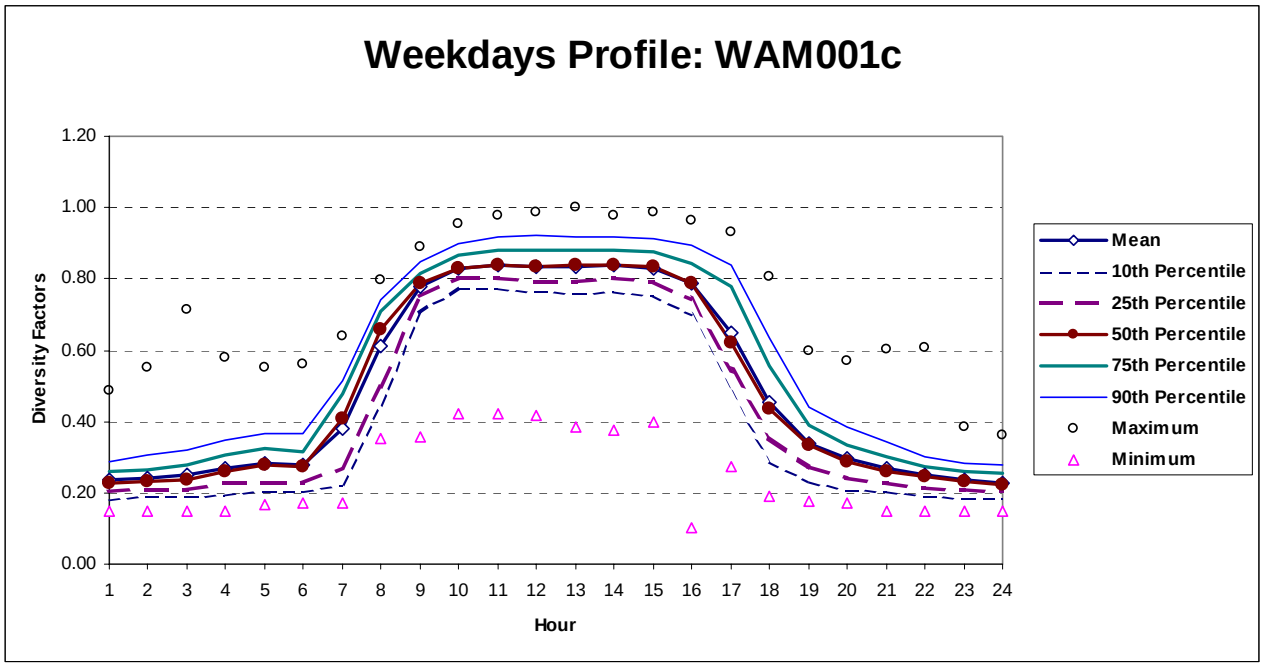
Dates: 1/1/91 - 12/31/91

Data Type: Light + Receptacles

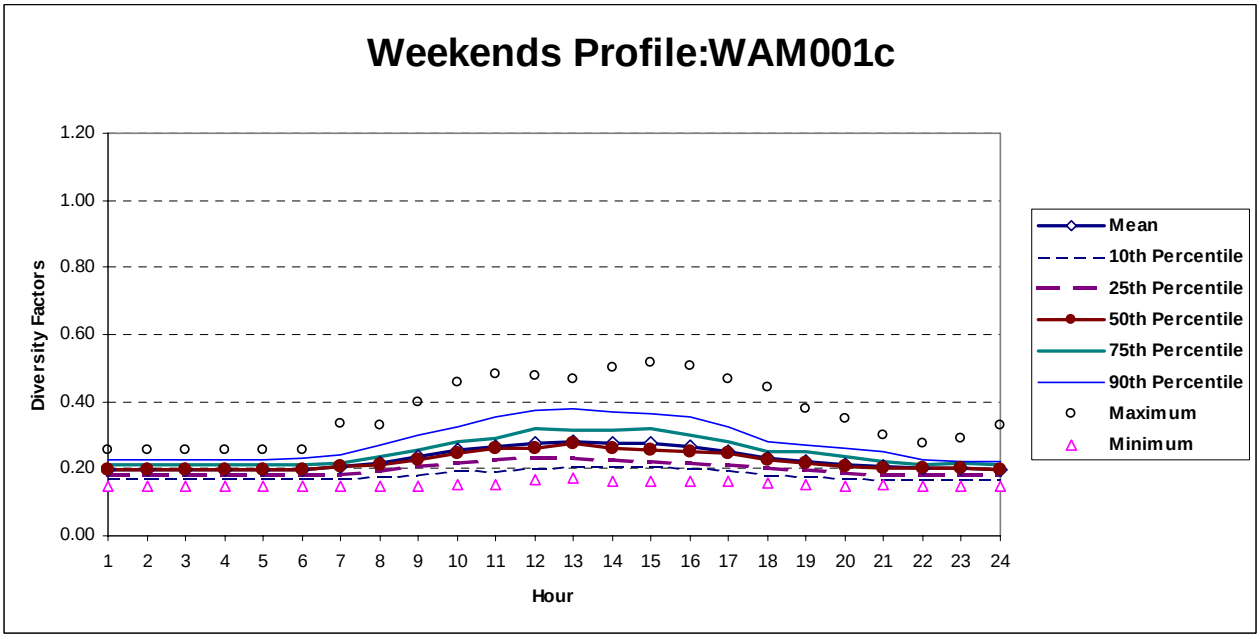
Maximum kW: 34 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/91, 2/18/91, 5/27/91, 7/4/91, 9/2/91, 11/28-29/91, and 12/24-27/91.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.24	0.29	0.18	0.18	0.20	0.23	0.26	0.29	0.49	0.15
2.00	0.24	0.30	0.18	0.19	0.21	0.23	0.26	0.30	0.55	0.15
3.00	0.25	0.32	0.18	0.19	0.21	0.24	0.28	0.32	0.71	0.15
4.00	0.27	0.34	0.20	0.20	0.23	0.26	0.31	0.35	0.58	0.15
5.00	0.28	0.35	0.22	0.20	0.23	0.28	0.32	0.37	0.55	0.16
6.00	0.28	0.34	0.22	0.20	0.23	0.27	0.32	0.36	0.56	0.17
7.00	0.38	0.50	0.27	0.22	0.27	0.41	0.48	0.52	0.64	0.17
8.00	0.61	0.73	0.49	0.44	0.50	0.66	0.71	0.74	0.80	0.35
9.00	0.78	0.84	0.72	0.70	0.75	0.79	0.81	0.85	0.89	0.35
10.00	0.83	0.89	0.77	0.77	0.80	0.83	0.87	0.90	0.95	0.42
11.00	0.84	0.91	0.77	0.77	0.80	0.84	0.88	0.92	0.98	0.42
12.00	0.84	0.90	0.77	0.76	0.79	0.83	0.88	0.92	0.99	0.41
13.00	0.83	0.90	0.76	0.76	0.79	0.84	0.88	0.92	1.00	0.38
14.00	0.84	0.91	0.77	0.77	0.80	0.84	0.88	0.92	0.98	0.38
15.00	0.83	0.90	0.76	0.75	0.79	0.83	0.87	0.91	0.99	0.40
16.00	0.79	0.89	0.69	0.70	0.74	0.79	0.84	0.90	0.96	0.10
17.00	0.65	0.79	0.50	0.48	0.54	0.62	0.78	0.84	0.93	0.27
18.00	0.45	0.58	0.32	0.29	0.36	0.44	0.55	0.64	0.81	0.19
19.00	0.34	0.42	0.25	0.23	0.27	0.34	0.39	0.44	0.60	0.17
20.00	0.30	0.38	0.22	0.21	0.24	0.29	0.33	0.39	0.57	0.17
21.00	0.27	0.34	0.20	0.20	0.23	0.26	0.30	0.35	0.60	0.15
22.00	0.25	0.30	0.20	0.19	0.22	0.24	0.28	0.30	0.61	0.15
23.00	0.24	0.28	0.20	0.19	0.21	0.23	0.26	0.28	0.38	0.15
24.00	0.23	0.26	0.19	0.19	0.20	0.22	0.25	0.28	0.36	0.15
Daily Values	11.84	12.76	10.93	10.82	11.27	11.86	12.39	12.96	13.87	6.69
Daily Sum from Hourly	11.84	13.65	10.03	9.80	10.62	11.79	12.99	13.99	17.47	5.73

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.20	0.22	0.18	0.17	0.18	0.20	0.21	0.23	0.26	0.15
2.00	0.20	0.22	0.17	0.17	0.18	0.20	0.21	0.22	0.26	0.15
3.00	0.20	0.22	0.17	0.17	0.18	0.20	0.21	0.22	0.26	0.15
4.00	0.20	0.22	0.17	0.17	0.18	0.19	0.21	0.22	0.26	0.15
5.00	0.20	0.22	0.17	0.17	0.18	0.19	0.21	0.23	0.25	0.15
6.00	0.20	0.22	0.17	0.17	0.18	0.20	0.21	0.23	0.26	0.15
7.00	0.20	0.23	0.17	0.17	0.18	0.20	0.22	0.24	0.34	0.15
8.00	0.22	0.25	0.18	0.18	0.19	0.21	0.24	0.27	0.33	0.15
9.00	0.23	0.28	0.19	0.18	0.21	0.23	0.26	0.30	0.40	0.15
10.00	0.25	0.31	0.20	0.19	0.22	0.25	0.28	0.33	0.46	0.15
11.00	0.27	0.33	0.20	0.19	0.23	0.26	0.29	0.35	0.48	0.15
12.00	0.28	0.34	0.21	0.20	0.23	0.26	0.32	0.37	0.48	0.17
13.00	0.28	0.35	0.21	0.21	0.23	0.27	0.31	0.38	0.47	0.17
14.00	0.28	0.35	0.21	0.21	0.23	0.26	0.31	0.37	0.50	0.16
15.00	0.27	0.34	0.21	0.21	0.22	0.26	0.32	0.36	0.51	0.16
16.00	0.27	0.33	0.20	0.20	0.22	0.25	0.30	0.35	0.51	0.16
17.00	0.25	0.31	0.19	0.19	0.21	0.24	0.28	0.32	0.47	0.16
18.00	0.23	0.28	0.19	0.18	0.20	0.23	0.25	0.28	0.44	0.16
19.00	0.22	0.26	0.18	0.18	0.20	0.22	0.25	0.27	0.38	0.15
20.00	0.21	0.25	0.18	0.17	0.19	0.21	0.24	0.26	0.35	0.15
21.00	0.21	0.24	0.17	0.17	0.18	0.20	0.22	0.25	0.30	0.15
22.00	0.20	0.23	0.17	0.17	0.18	0.20	0.21	0.22	0.27	0.15
23.00	0.20	0.23	0.17	0.17	0.18	0.20	0.21	0.22	0.29	0.15
24.00	0.20	0.23	0.17	0.17	0.18	0.20	0.21	0.22	0.33	0.15
Daily Values	5.46	6.15	4.77	4.49	4.99	5.43	5.90	6.36	7.18	3.89
Daily Sum from Hourly	5.46	6.45	4.46	4.36	4.77	5.33	5.98	6.74	8.85	3.67

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.23)  (2) (0.23)  (3) (0.24)  (4) (0.26)  (5) (0.28)  (6) (0.27)
 (7) (0.41)  (8) (0.66)  (9) (0.79)  (10) (0.83)  (11) (0.84)  (12) (0.83)
(13) (0.84)  (14) (0.84)  (15) (0.83)  (16) (0.79)  (17) (0.62)  (18) (0.44)
(19) (0.34)  (20) (0.29)  (21) (0.26)  (22) (0.24)  (23) (0.23)  (24) (0.22) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.20)  (2) (0.20)  (3) (0.20)  (4) (0.19)  (5) (0.19)  (6) (0.20)
 (7) (0.20)  (8) (0.21)  (9) (0.23)  (10) (0.25)  (11) (0.26)  (12) (0.26)
(13) (0.27)  (14) (0.26)  (15) (0.26)  (16) (0.25)  (17) (0.24)  (18) (0.23)
(19) (0.22)  (20) (0.21)  (21) (0.20)  (22) (0.20)  (23) (0.20)  (24) (0.20) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 1.35 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W/ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1991.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Eastgate Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.23, 0.23, 0.24, 0.26, 0.28, 0.27,
       0.41, 0.66, 0.79, 0.83, 0.84, 0.83,
       0.84, 0.84, 0.83, 0.79, 0.62, 0.44,
       0.34, 0.29, 0.26, 0.24, 0.23, 0.22),
    SATURDAY THRU SUNDAY =
      (0.20, 0.20, 0.20, 0.19, 0.19, 0.20,
       0.20, 0.21, 0.23, 0.25, 0.26, 0.26,
       0.27, 0.26, 0.26, 0.25, 0.24, 0.23,
       0.22, 0.21, 0.20, 0.20, 0.20, 0.20),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.20, 0.20, 0.20, 0.19, 0.19, 0.20,
       0.20, 0.21, 0.23, 0.25, 0.26, 0.26,
       0.27, 0.26, 0.26, 0.25, 0.24, 0.23,
       0.22, 0.21, 0.20, 0.20, 0.20, 0.20),
    SATURDAY THRU SUNDAY =
      (0.20, 0.20, 0.20, 0.19, 0.19, 0.20,
       0.20, 0.21, 0.23, 0.25, 0.26, 0.26,
       0.27, 0.26, 0.26, 0.25, 0.24, 0.23,
       0.22, 0.21, 0.20, 0.20, 0.20, 0.20),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=1.35 W/sqft, Area=25100 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 34 kW (Metric units)
      LIGHTS= 116,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 116,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 116,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 116,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 116,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 116,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 116,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 116,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 116,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Eastgate, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.23, 0.23, 0.24, 0.26, 0.28, 0.27,
   0.41, 0.66, 0.79, 0.83, 0.84, 0.83,
   0.84, 0.84, 0.83, 0.79, 0.62, 0.44,
   0.34, 0.29, 0.26, 0.24, 0.23, 0.22;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.20, 0.20, 0.20, 0.19, 0.19, 0.20,
   0.20, 0.21, 0.23, 0.25, 0.26, 0.26,
   0.27, 0.26, 0.26, 0.25, 0.24, 0.23,
   0.22, 0.21, 0.20, 0.20, 0.20, 0.20;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=1.35 W/sqft, Area=25100 sqft
```

```
33982,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 40 - WAM002

Category	:	Medium
Building ID	:	N/A
Building	:	West Yakima Bldg.
Location	:	Yakima, WA
Building Area (ft^2)	:	16,200
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.47
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	1.10
Start Date	:	1/1/89
End date	:	12/31/89

(Page 1) Building Descriptions: (WAM002)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: West Yakima Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Yakima, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 16,200 ft^2 .

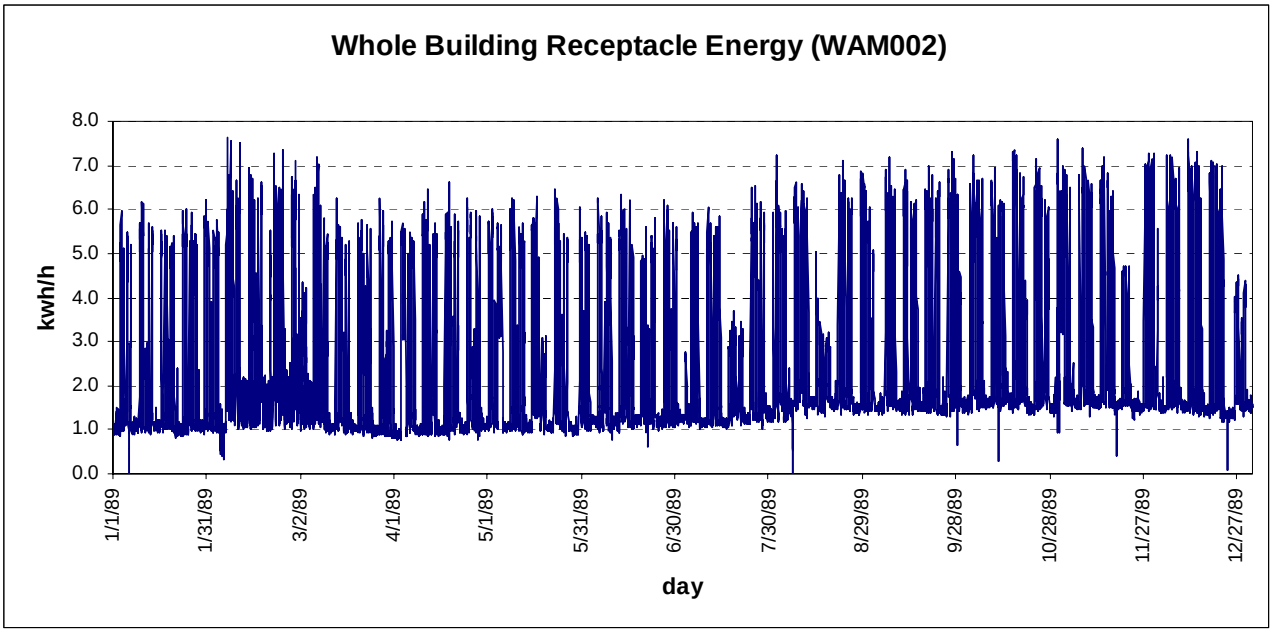
Lighting EUI: [(7.65 x 5) + (3.46 x 2)] x 52 x 0.47 = 1.10 kWh/ft^2.year

Lighting Type: N/A

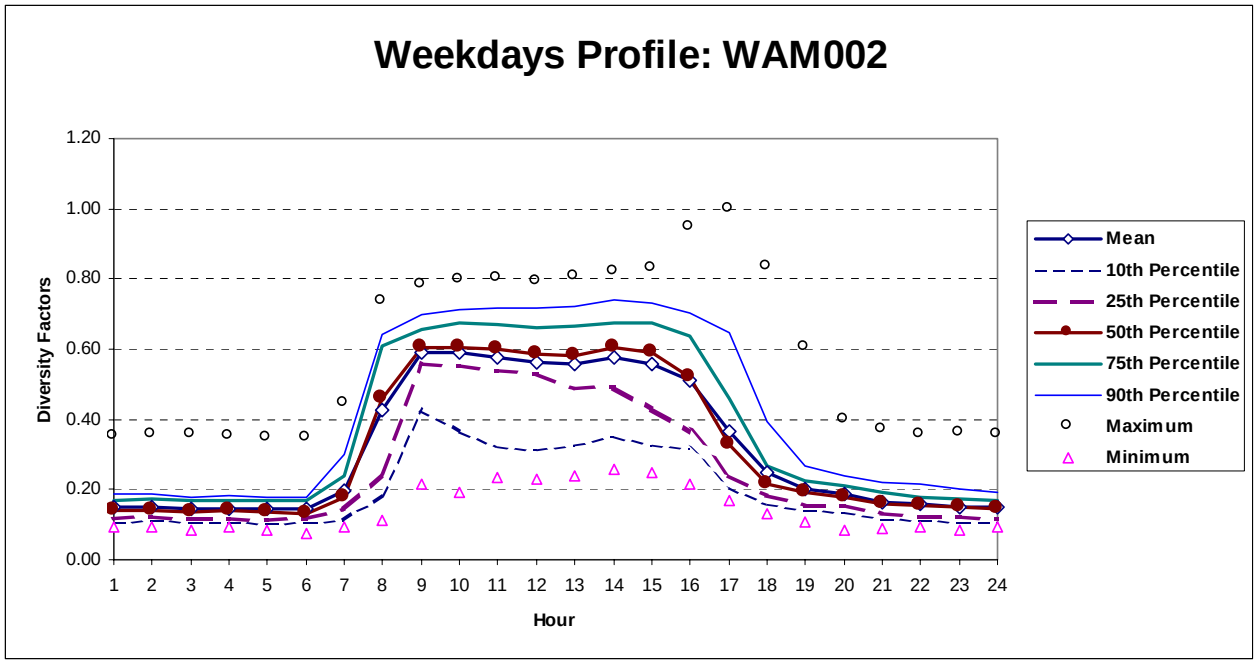
Dates: 1/1/89 - 12/31/89

Data Type: Receptacles

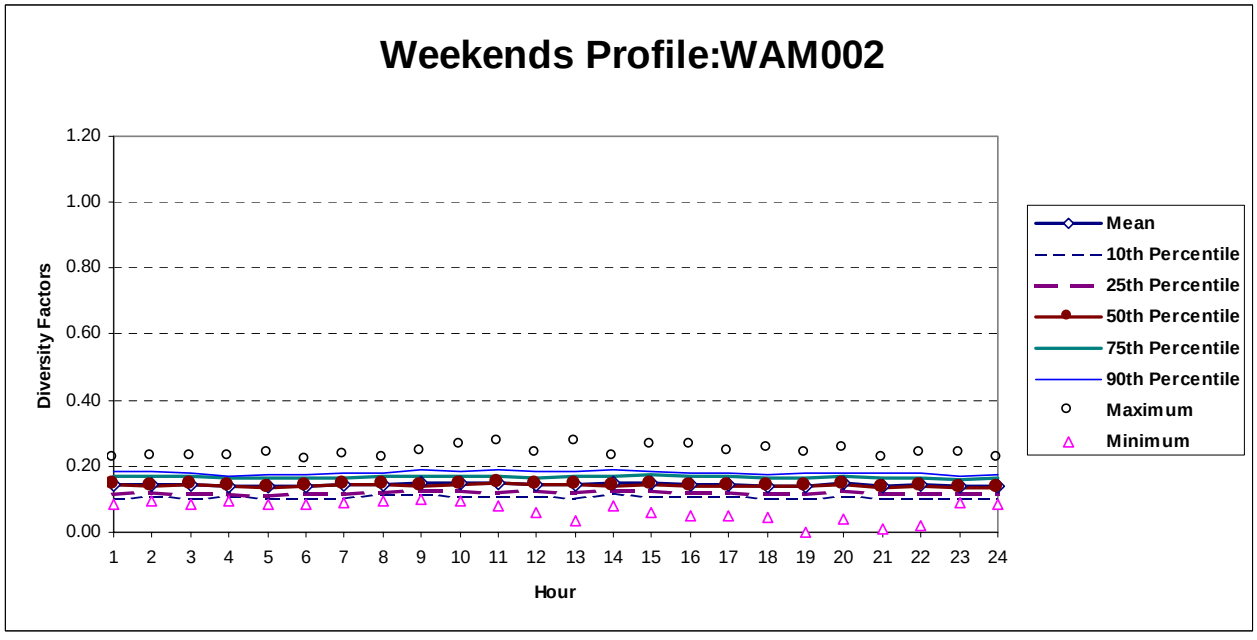
Maximum kW: 7.62 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/89, 1/2/89, 5/29/89, 7/4/89, 9/4/89, 11/23-24/89, and 12/25-29/89.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.15	0.19	0.11	0.11	0.12	0.14	0.17	0.19	0.35	0.09
2.00	0.15	0.19	0.11	0.11	0.12	0.14	0.17	0.19	0.36	0.09
3.00	0.15	0.18	0.11	0.11	0.11	0.14	0.17	0.18	0.36	0.08
4.00	0.15	0.19	0.11	0.11	0.12	0.14	0.17	0.18	0.35	0.09
5.00	0.14	0.18	0.10	0.10	0.11	0.14	0.17	0.18	0.35	0.09
6.00	0.14	0.18	0.11	0.11	0.12	0.13	0.17	0.18	0.35	0.07
7.00	0.20	0.27	0.12	0.11	0.15	0.18	0.24	0.30	0.44	0.09
8.00	0.43	0.62	0.24	0.18	0.24	0.46	0.61	0.64	0.74	0.11
9.00	0.59	0.70	0.48	0.43	0.56	0.60	0.66	0.70	0.78	0.21
10.00	0.59	0.71	0.47	0.37	0.55	0.60	0.68	0.71	0.80	0.19
11.00	0.58	0.71	0.45	0.33	0.54	0.60	0.67	0.72	0.80	0.24
12.00	0.56	0.70	0.43	0.31	0.53	0.59	0.66	0.72	0.79	0.23
13.00	0.56	0.70	0.42	0.33	0.49	0.58	0.66	0.72	0.81	0.24
14.00	0.58	0.72	0.43	0.35	0.49	0.61	0.68	0.74	0.82	0.26
15.00	0.56	0.71	0.41	0.33	0.43	0.59	0.67	0.73	0.83	0.25
16.00	0.51	0.66	0.36	0.32	0.37	0.52	0.64	0.70	0.95	0.22
17.00	0.37	0.52	0.21	0.21	0.24	0.33	0.46	0.65	1.00	0.17
18.00	0.25	0.35	0.14	0.16	0.18	0.21	0.27	0.39	0.83	0.13
19.00	0.20	0.27	0.14	0.14	0.16	0.19	0.22	0.27	0.61	0.11
20.00	0.19	0.23	0.14	0.14	0.15	0.18	0.21	0.24	0.40	0.08
21.00	0.17	0.21	0.12	0.12	0.13	0.16	0.19	0.22	0.37	0.09
22.00	0.16	0.20	0.11	0.11	0.12	0.15	0.18	0.22	0.35	0.09
23.00	0.15	0.19	0.11	0.11	0.12	0.15	0.17	0.20	0.36	0.09
24.00	0.15	0.19	0.11	0.11	0.12	0.15	0.17	0.19	0.36	0.09
Daily Values	7.64	9.05	6.23	5.49	6.80	7.55	8.83	9.44	11.00	4.38
Daily Sum from Hourly	7.65	9.78	5.53	4.78	6.27	7.69	9.06	10.16	14.15	3.42

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.14	0.18	0.11	0.11	0.11	0.14	0.17	0.18	0.23	0.09
2.00	0.15	0.18	0.11	0.11	0.12	0.14	0.17	0.19	0.23	0.09
3.00	0.14	0.18	0.11	0.10	0.11	0.15	0.17	0.18	0.23	0.08
4.00	0.14	0.17	0.11	0.11	0.12	0.14	0.16	0.17	0.23	0.09
5.00	0.14	0.17	0.11	0.10	0.11	0.13	0.16	0.18	0.24	0.09
6.00	0.14	0.17	0.11	0.10	0.11	0.14	0.16	0.18	0.22	0.08
7.00	0.14	0.17	0.11	0.11	0.11	0.14	0.17	0.18	0.23	0.09
8.00	0.15	0.18	0.12	0.12	0.12	0.14	0.17	0.18	0.23	0.10
9.00	0.15	0.18	0.12	0.11	0.12	0.14	0.17	0.19	0.24	0.10
10.00	0.15	0.18	0.12	0.11	0.12	0.15	0.17	0.19	0.26	0.10
11.00	0.15	0.19	0.11	0.11	0.12	0.15	0.17	0.19	0.27	0.08
12.00	0.15	0.18	0.11	0.11	0.12	0.14	0.17	0.18	0.24	0.06
13.00	0.15	0.18	0.11	0.10	0.12	0.15	0.17	0.19	0.27	0.04
14.00	0.15	0.18	0.12	0.12	0.13	0.14	0.17	0.19	0.23	0.08
15.00	0.15	0.18	0.11	0.11	0.12	0.15	0.17	0.18	0.26	0.06
16.00	0.14	0.18	0.11	0.11	0.12	0.14	0.17	0.18	0.26	0.05
17.00	0.14	0.18	0.11	0.11	0.12	0.14	0.17	0.18	0.25	0.05
18.00	0.14	0.17	0.11	0.11	0.11	0.14	0.17	0.18	0.26	0.05
19.00	0.14	0.18	0.11	0.10	0.12	0.14	0.17	0.18	0.24	0.00
20.00	0.15	0.18	0.11	0.11	0.12	0.14	0.17	0.18	0.25	0.04
21.00	0.14	0.17	0.11	0.10	0.12	0.14	0.17	0.18	0.22	0.01
22.00	0.14	0.18	0.11	0.11	0.11	0.14	0.17	0.18	0.24	0.02
23.00	0.14	0.17	0.11	0.10	0.11	0.14	0.16	0.17	0.24	0.09
24.00	0.14	0.17	0.11	0.10	0.11	0.13	0.17	0.18	0.22	0.08
Daily Values	3.46	4.12	2.81	2.62	2.83	3.42	4.05	4.25	4.58	2.31
Daily Sum from Hourly	3.46	4.25	2.68	2.59	2.82	3.38	4.02	4.34	5.79	1.61

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (West Yakima Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.14)  (2) (0.14)  (3) (0.14)  (4) (0.14)  (5) (0.14)  (6) (0.13)
 (7) (0.18)  (8) (0.46)  (9) (0.60)  (10) (0.60)  (11) (0.60)  (12) (0.59)
(13) (0.58)  (14) (0.61)  (15) (0.59)  (16) (0.52)  (17) (0.33)  (18) (0.21)
(19) (0.19)  (20) (0.18)  (21) (0.16)  (22) (0.15)  (23) (0.15)  (24) (0.15) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.14)  (2) (0.14)  (3) (0.15)  (4) (0.14)  (5) (0.13)  (6) (0.14)
 (7) (0.14)  (8) (0.14)  (9) (0.14)  (10) (0.15)  (11) (0.15)  (12) (0.14)
(13) (0.15)  (14) (0.14)  (15) (0.15)  (16) (0.14)  (17) (0.14)  (18) (0.14)
(19) (0.14)  (20) (0.14)  (21) (0.14)  (22) (0.14)  (23) (0.14)  (24) (0.13) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.47 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1989.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (West Yakima Bldg., WA, Energy Edge, LBNL.) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.14, 0.14, 0.14, 0.14, 0.14, 0.13,
      0.18, 0.46, 0.60, 0.60, 0.60, 0.59,
      0.58, 0.61, 0.59, 0.52, 0.33, 0.21,
      0.19, 0.18, 0.16, 0.15, 0.15, 0.15),
    SATURDAY THRU SUNDAY =
     (0.14, 0.14, 0.15, 0.14, 0.13, 0.14,
      0.14, 0.14, 0.14, 0.15, 0.15, 0.14,
      0.15, 0.14, 0.15, 0.14, 0.14, 0.14,
      0.14, 0.14, 0.14, 0.14, 0.14, 0.13),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.14, 0.14, 0.15, 0.14, 0.13, 0.14,
      0.14, 0.14, 0.14, 0.15, 0.15, 0.14,
      0.15, 0.14, 0.15, 0.14, 0.14, 0.14,
      0.14, 0.14, 0.14, 0.14, 0.14, 0.13),
    SATURDAY THRU SUNDAY =
     (0.14, 0.14, 0.15, 0.14, 0.13, 0.14,
      0.14, 0.14, 0.14, 0.15, 0.15, 0.14,
      0.15, 0.14, 0.15, 0.14, 0.14, 0.14,
      0.14, 0.14, 0.14, 0.14, 0.14, 0.13),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.47 W/sqft, Area=16200 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 8 kW (Metric units)
      LIGHTS= 26,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 26,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 26,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 26,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (West Yakima, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.14, 0.14, 0.14, 0.14, 0.14, 0.13,
   0.18, 0.46, 0.60, 0.60, 0.60, 0.59,
   0.58, 0.61, 0.59, 0.52, 0.33, 0.21,
   0.19, 0.18, 0.16, 0.15, 0.15, 0.15;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.14, 0.14, 0.15, 0.14, 0.13, 0.14,
   0.14, 0.14, 0.14, 0.15, 0.15, 0.14,
   0.15, 0.14, 0.15, 0.14, 0.14, 0.14,
   0.14, 0.14, 0.14, 0.14, 0.14, 0.13;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.47 W/sqft, Area=16200 sqft
```

```
  7616,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 41 - WAM003a

Category	:	Medium
Building ID	:	N/A
Building	:	Evergreen Bldg.
Location	:	Tacoma, WA
Building Area (ft^2)	:	21,100
Data Type	:	Light
Max Load (W/ft^2)	:	2.31
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	11.76
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAM003a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Evergreen Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Tacoma, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 21,100 ft^2 .

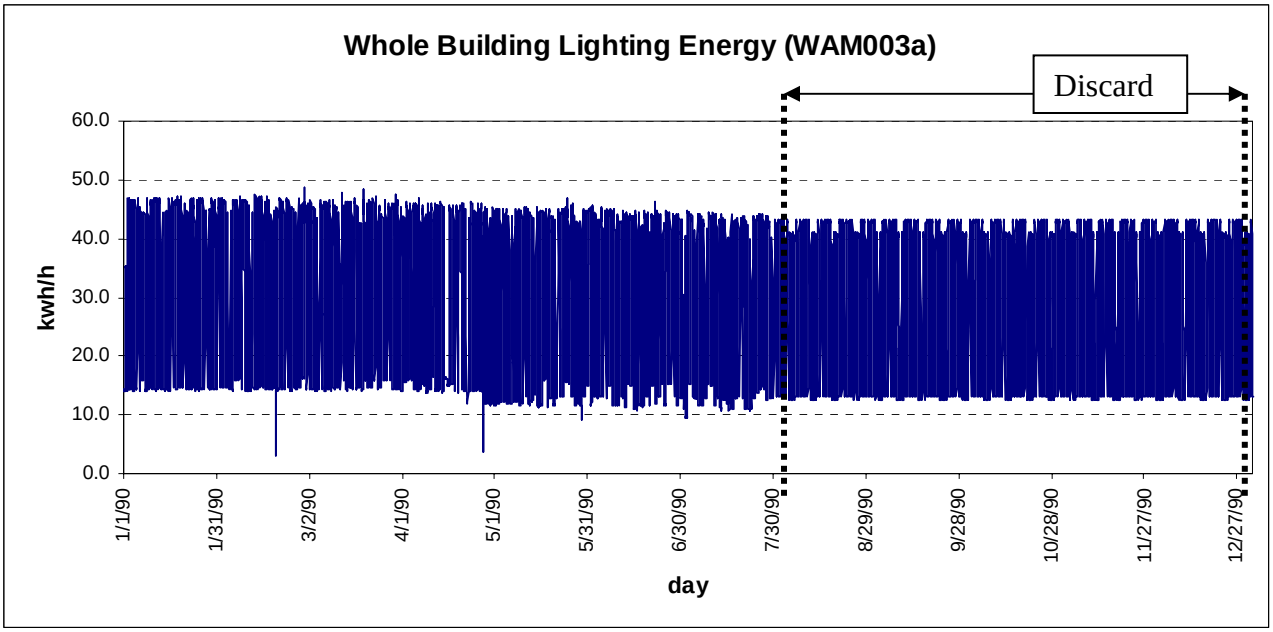
Lighting EUI: [(14.99 x 5) + (12.46 x 2)] x 52 x 2.31 = 12.0 kWh/ft^2.year

Lighting Type: N/A

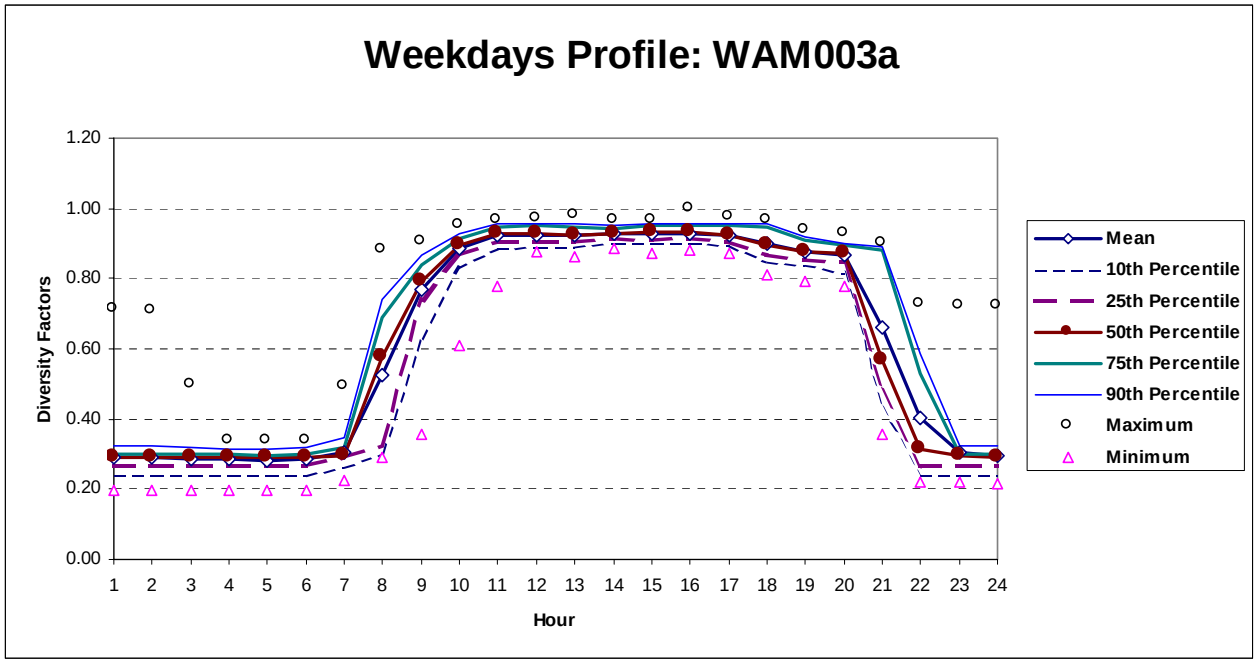
Dates: 1/1/90 - 12/31/90

Data Type: Lights

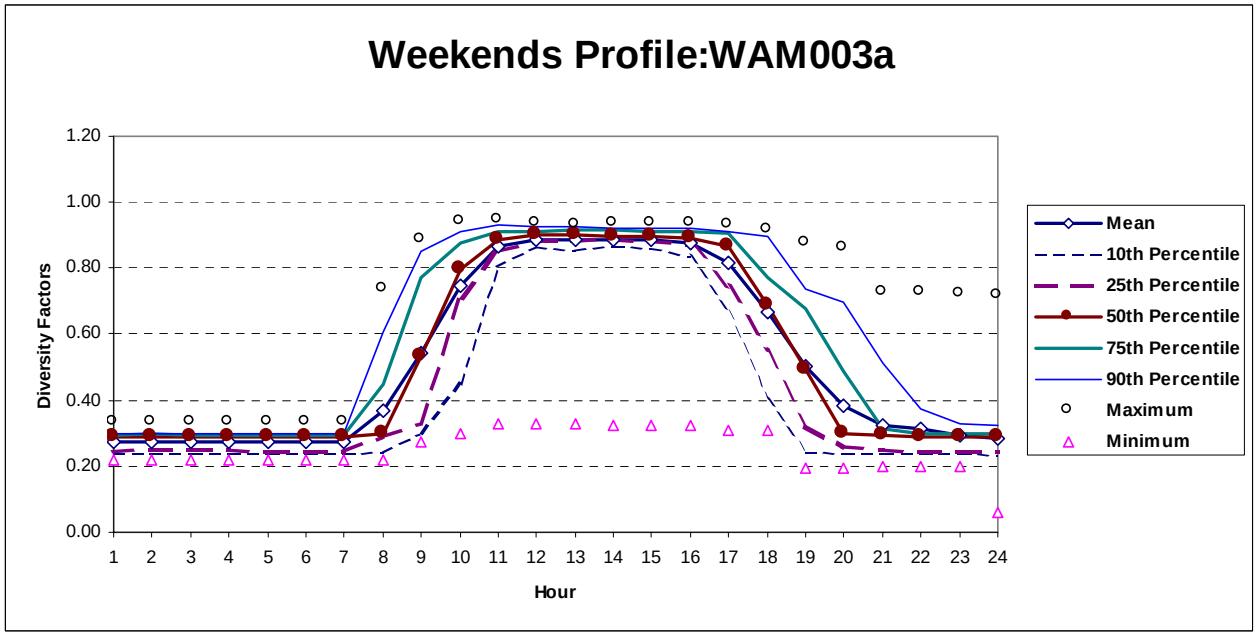
Maximum kW: 48.75 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 7/31/90 -12/31/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.29	0.35	0.23	0.24	0.27	0.29	0.30	0.32	0.71	0.20
2.00	0.29	0.35	0.23	0.24	0.27	0.29	0.30	0.32	0.71	0.20
3.00	0.29	0.32	0.25	0.24	0.27	0.29	0.30	0.32	0.50	0.20
4.00	0.28	0.31	0.26	0.24	0.27	0.29	0.30	0.32	0.34	0.20
5.00	0.28	0.31	0.26	0.24	0.27	0.29	0.30	0.32	0.34	0.20
6.00	0.28	0.31	0.26	0.24	0.27	0.29	0.30	0.32	0.34	0.20
7.00	0.30	0.35	0.26	0.26	0.29	0.30	0.32	0.35	0.49	0.22
8.00	0.53	0.71	0.34	0.30	0.32	0.58	0.69	0.74	0.88	0.29
9.00	0.77	0.87	0.67	0.63	0.74	0.79	0.84	0.87	0.91	0.36
10.00	0.89	0.93	0.84	0.83	0.87	0.90	0.91	0.93	0.95	0.61
11.00	0.92	0.96	0.88	0.89	0.91	0.93	0.95	0.96	0.97	0.78
12.00	0.93	0.95	0.90	0.89	0.90	0.93	0.95	0.96	0.97	0.88
13.00	0.92	0.95	0.90	0.89	0.90	0.92	0.95	0.96	0.98	0.86
14.00	0.93	0.95	0.91	0.90	0.91	0.93	0.94	0.95	0.97	0.88
15.00	0.93	0.95	0.91	0.90	0.91	0.93	0.95	0.96	0.96	0.87
16.00	0.93	0.95	0.91	0.90	0.91	0.93	0.95	0.96	1.00	0.88
17.00	0.93	0.95	0.90	0.89	0.91	0.92	0.95	0.96	0.98	0.87
18.00	0.90	0.94	0.86	0.85	0.87	0.89	0.95	0.96	0.96	0.81
19.00	0.88	0.91	0.84	0.84	0.86	0.88	0.91	0.92	0.94	0.79
20.00	0.87	0.90	0.83	0.82	0.85	0.87	0.90	0.90	0.93	0.78
21.00	0.66	0.86	0.46	0.43	0.48	0.57	0.88	0.89	0.90	0.36
22.00	0.40	0.55	0.25	0.24	0.27	0.31	0.53	0.59	0.72	0.22
23.00	0.30	0.39	0.21	0.24	0.27	0.29	0.30	0.32	0.72	0.22
24.00	0.30	0.37	0.22	0.24	0.27	0.29	0.30	0.32	0.72	0.22
Daily Values	14.98	15.63	14.33	14.11	14.44	15.14	15.39	15.63	16.80	13.56
Daily Sum from Hourly	14.99	16.41	13.58	13.36	14.02	14.93	15.94	16.39	18.88	12.09

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
2.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
3.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
4.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
5.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
6.00	0.27	0.30	0.25	0.24	0.25	0.29	0.29	0.30	0.33	0.22
7.00	0.27	0.30	0.25	0.24	0.25	0.29	0.30	0.30	0.33	0.22
8.00	0.37	0.52	0.22	0.24	0.29	0.30	0.45	0.61	0.74	0.22
9.00	0.54	0.76	0.33	0.30	0.33	0.53	0.77	0.85	0.89	0.27
10.00	0.75	0.92	0.58	0.45	0.71	0.80	0.88	0.91	0.94	0.30
11.00	0.87	0.95	0.78	0.81	0.85	0.89	0.91	0.93	0.94	0.33
12.00	0.89	0.96	0.81	0.87	0.88	0.90	0.91	0.93	0.94	0.33
13.00	0.88	0.96	0.81	0.86	0.88	0.90	0.91	0.93	0.93	0.33
14.00	0.89	0.96	0.81	0.87	0.88	0.90	0.91	0.92	0.93	0.33
15.00	0.88	0.96	0.81	0.86	0.88	0.90	0.91	0.92	0.94	0.33
16.00	0.88	0.96	0.80	0.84	0.87	0.89	0.91	0.92	0.93	0.32
17.00	0.82	0.94	0.70	0.67	0.74	0.87	0.91	0.91	0.93	0.31
18.00	0.67	0.84	0.49	0.40	0.55	0.69	0.77	0.90	0.91	0.31
19.00	0.50	0.69	0.32	0.24	0.32	0.49	0.68	0.74	0.88	0.20
20.00	0.38	0.56	0.21	0.24	0.26	0.30	0.49	0.70	0.86	0.20
21.00	0.32	0.46	0.19	0.24	0.25	0.29	0.31	0.52	0.72	0.20
22.00	0.31	0.43	0.19	0.24	0.24	0.29	0.30	0.37	0.73	0.20
23.00	0.29	0.38	0.21	0.24	0.24	0.29	0.30	0.33	0.72	0.20
24.00	0.28	0.36	0.21	0.24	0.24	0.29	0.30	0.32	0.72	0.06
Daily Values	12.46	13.80	11.11	10.80	11.76	12.43	13.53	14.01	15.25	7.76
Daily Sum from Hourly	12.46	14.74	10.17	10.26	11.16	12.51	13.70	14.79	16.99	5.95

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.29)  (2) (0.29)  (3) (0.29)  (4) (0.29)  (5) (0.29)  (6) (0.29)
 (7) (0.30)  (8) (0.58)  (9) (0.79)  (10) (0.90)  (11) (0.93)  (12) (0.93)
(13) (0.92)  (14) (0.93)  (15) (0.93)  (16) (0.93)  (17) (0.92)  (18) (0.89)
(19) (0.88)  (20) (0.87)  (21) (0.57)  (22) (0.31)  (23) (0.29)  (24) (0.29) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.29)  (2) (0.29)  (3) (0.29)  (4) (0.29)  (5) (0.29)  (6) (0.29)
 (7) (0.29)  (8) (0.30)  (9) (0.53)  (10) (0.80)  (11) (0.89)  (12) (0.90)
(13) (0.90)  (14) (0.90)  (15) (0.90)  (16) (0.89)  (17) (0.87)  (18) (0.69)
(19) (0.49)  (20) (0.30)  (21) (0.29)  (22) (0.29)  (23) (0.29)  (24) (0.29) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.31 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
      0.30, 0.58, 0.79, 0.90, 0.93, 0.93,
      0.92, 0.93, 0.93, 0.93, 0.92, 0.89,
      0.88, 0.87, 0.57, 0.31, 0.29, 0.29),
    SATURDAY THRU SUNDAY =
     (0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
      0.29, 0.30, 0.53, 0.80, 0.89, 0.90,
      0.90, 0.90, 0.90, 0.89, 0.87, 0.69,
      0.49, 0.30, 0.29, 0.29, 0.29, 0.29),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
      0.29, 0.30, 0.53, 0.80, 0.89, 0.90,
      0.90, 0.90, 0.90, 0.89, 0.87, 0.69,
      0.49, 0.30, 0.29, 0.29, 0.29, 0.29),
    SATURDAY THRU SUNDAY =
     (0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
      0.29, 0.30, 0.53, 0.80, 0.89, 0.90,
      0.90, 0.90, 0.90, 0.89, 0.87, 0.69,
      0.49, 0.30, 0.29, 0.29, 0.29, 0.29),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.31 W/sqft, Area=21100 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 49 kW (Metric units)
      LIGHTS= 166,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 166,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 166,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 166,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 166,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 166,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 166,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 166,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 166,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
   0.30, 0.58, 0.79, 0.90, 0.93, 0.93,
   0.92, 0.93, 0.93, 0.93, 0.92, 0.89,
   0.88, 0.87, 0.57, 0.31, 0.29, 0.29;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.29, 0.29, 0.29, 0.29, 0.29, 0.29,
   0.29, 0.30, 0.53, 0.80, 0.89, 0.90,
   0.90, 0.90, 0.90, 0.89, 0.87, 0.69,
   0.49, 0.30, 0.29, 0.29, 0.29, 0.29;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.31 W/sqft, Area=21100 sqft
```

```
  48753,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 42 - WAM003b

Category	:	Medium
Building ID	:	N/A
Building	:	Evergreen Bldg.
Location	:	Tacoma, WA
Building Area (ft^2)	:	21,100
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.18
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	0.72
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAM003b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Evergreen Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Tacoma, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 21,100 ft^2 .

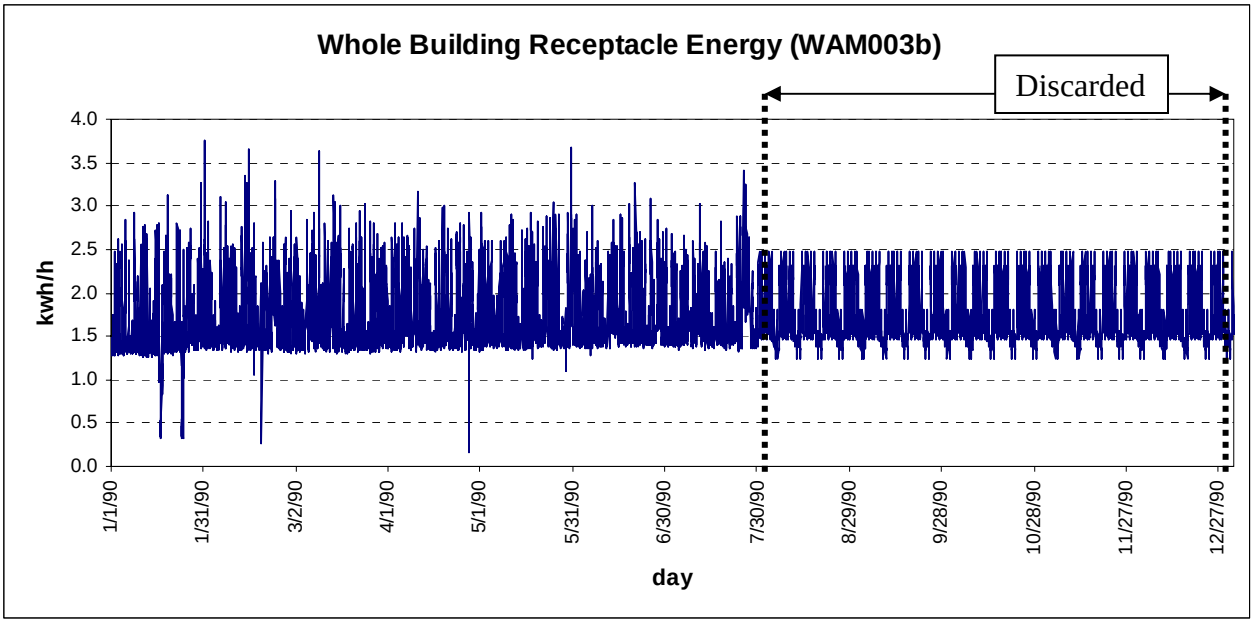
Lighting EUI: [(11.45 x 5) + (10.10 x 2)] x 52 x 0.18 = 0.72 kWh/ft^2.year

Lighting Type: N/A

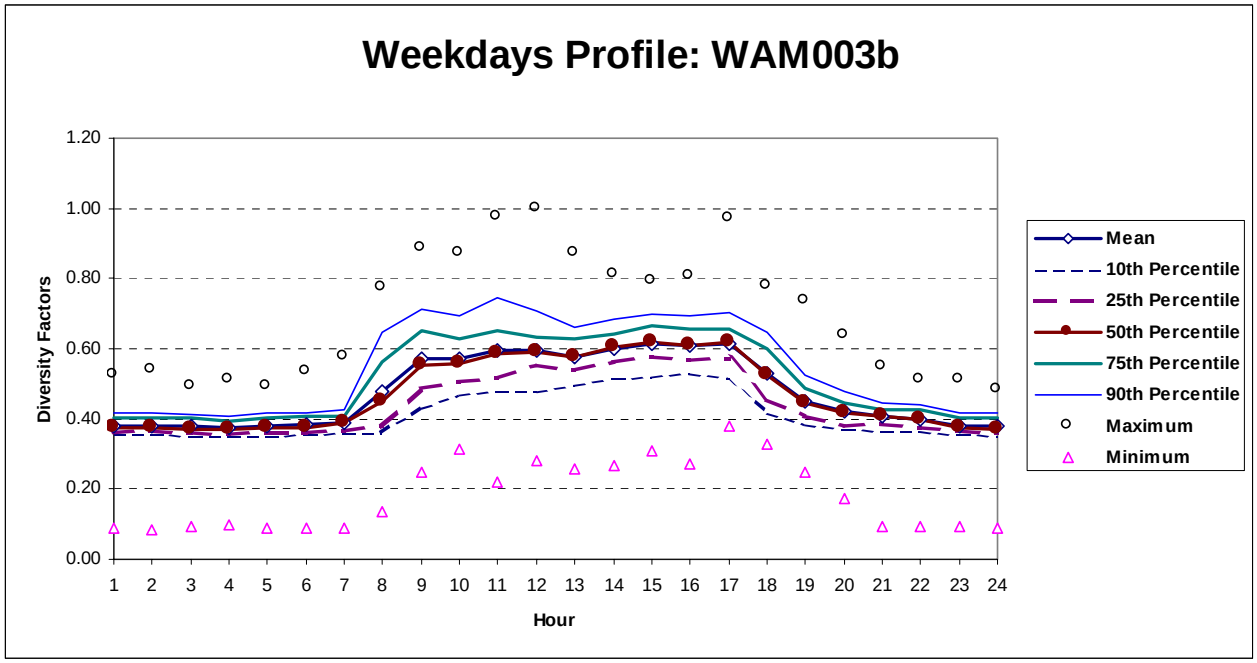
Dates: 1/1/90 - 12/31/90

Data Type: Receptacles

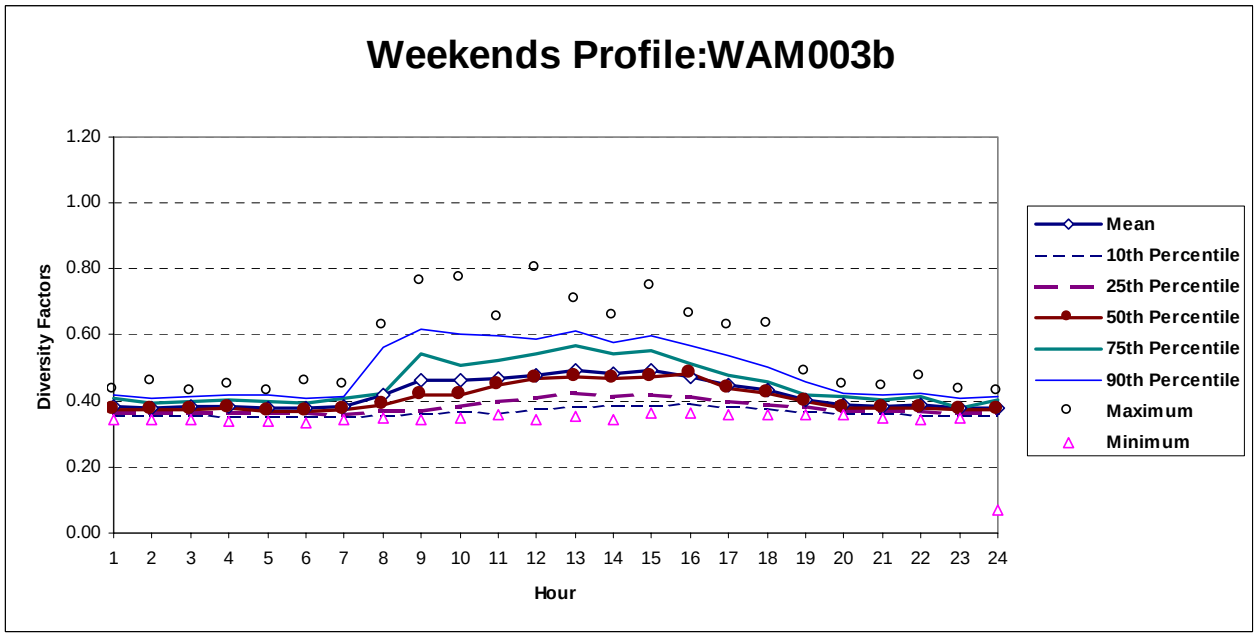
Maximum kW: 3.77 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 7/30 - 12/31/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.38	0.43	0.33	0.35	0.36	0.38	0.40	0.42	0.53	0.09
2.00	0.38	0.42	0.34	0.36	0.36	0.38	0.40	0.42	0.54	0.09
3.00	0.38	0.42	0.34	0.35	0.36	0.37	0.40	0.41	0.49	0.09
4.00	0.37	0.41	0.33	0.35	0.36	0.37	0.39	0.41	0.51	0.10
5.00	0.38	0.42	0.33	0.35	0.36	0.37	0.40	0.42	0.49	0.09
6.00	0.38	0.43	0.34	0.36	0.36	0.38	0.41	0.42	0.54	0.09
7.00	0.39	0.44	0.34	0.36	0.37	0.39	0.41	0.43	0.58	0.09
8.00	0.48	0.60	0.36	0.36	0.38	0.45	0.56	0.65	0.77	0.14
9.00	0.57	0.68	0.46	0.43	0.49	0.55	0.65	0.71	0.89	0.25
10.00	0.57	0.67	0.48	0.47	0.51	0.56	0.63	0.70	0.87	0.31
11.00	0.59	0.71	0.48	0.48	0.52	0.59	0.65	0.75	0.98	0.22
12.00	0.60	0.69	0.50	0.48	0.55	0.59	0.63	0.71	1.00	0.28
13.00	0.58	0.66	0.50	0.50	0.54	0.58	0.63	0.66	0.87	0.26
14.00	0.60	0.68	0.52	0.51	0.56	0.60	0.64	0.69	0.81	0.27
15.00	0.61	0.69	0.53	0.52	0.57	0.62	0.67	0.70	0.79	0.31
16.00	0.61	0.69	0.53	0.53	0.57	0.61	0.66	0.70	0.81	0.27
17.00	0.62	0.69	0.54	0.52	0.57	0.62	0.66	0.70	0.97	0.38
18.00	0.53	0.62	0.44	0.42	0.45	0.52	0.60	0.65	0.78	0.33
19.00	0.45	0.52	0.38	0.38	0.41	0.45	0.49	0.52	0.74	0.25
20.00	0.42	0.47	0.37	0.37	0.38	0.42	0.45	0.48	0.64	0.18
21.00	0.41	0.45	0.36	0.37	0.39	0.41	0.43	0.45	0.55	0.09
22.00	0.40	0.45	0.35	0.37	0.38	0.40	0.42	0.44	0.51	0.09
23.00	0.38	0.42	0.34	0.36	0.36	0.38	0.40	0.42	0.51	0.09
24.00	0.38	0.42	0.34	0.35	0.36	0.37	0.40	0.42	0.49	0.09
Daily Values	11.45	12.31	10.58	10.75	11.20	11.51	11.84	12.21	13.84	6.67
Daily Sum from Hourly	11.45	13.08	9.83	9.89	10.52	11.35	12.39	13.25	16.63	4.44

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.38	0.41	0.36	0.36	0.36	0.37	0.41	0.42	0.43	0.34
2.00	0.38	0.40	0.36	0.36	0.36	0.37	0.39	0.41	0.46	0.34
3.00	0.38	0.40	0.36	0.36	0.36	0.38	0.40	0.42	0.43	0.34
4.00	0.38	0.41	0.36	0.35	0.36	0.38	0.40	0.42	0.45	0.34
5.00	0.38	0.40	0.35	0.36	0.36	0.37	0.40	0.42	0.43	0.34
6.00	0.38	0.40	0.35	0.35	0.36	0.37	0.39	0.41	0.46	0.34
7.00	0.38	0.41	0.36	0.35	0.36	0.37	0.41	0.42	0.45	0.34
8.00	0.42	0.49	0.34	0.36	0.37	0.39	0.42	0.56	0.63	0.35
9.00	0.46	0.57	0.35	0.36	0.37	0.42	0.54	0.62	0.76	0.34
10.00	0.46	0.56	0.36	0.37	0.38	0.42	0.51	0.60	0.77	0.35
11.00	0.47	0.55	0.38	0.36	0.40	0.45	0.52	0.60	0.65	0.36
12.00	0.48	0.57	0.39	0.38	0.41	0.47	0.54	0.59	0.80	0.34
13.00	0.49	0.58	0.41	0.39	0.42	0.47	0.57	0.61	0.71	0.36
14.00	0.48	0.56	0.40	0.39	0.41	0.47	0.54	0.58	0.66	0.35
15.00	0.49	0.58	0.40	0.39	0.42	0.48	0.55	0.60	0.75	0.36
16.00	0.47	0.54	0.41	0.39	0.42	0.48	0.51	0.57	0.66	0.36
17.00	0.45	0.51	0.39	0.39	0.40	0.44	0.48	0.54	0.63	0.36
18.00	0.43	0.49	0.38	0.38	0.39	0.42	0.46	0.50	0.63	0.36
19.00	0.40	0.43	0.37	0.37	0.38	0.40	0.42	0.46	0.49	0.36
20.00	0.39	0.42	0.36	0.36	0.37	0.38	0.41	0.43	0.45	0.36
21.00	0.39	0.41	0.36	0.36	0.37	0.38	0.40	0.42	0.44	0.35
22.00	0.39	0.42	0.36	0.36	0.37	0.38	0.41	0.42	0.47	0.34
23.00	0.38	0.40	0.36	0.36	0.37	0.37	0.38	0.41	0.43	0.35
24.00	0.38	0.42	0.33	0.36	0.37	0.38	0.40	0.42	0.43	0.07
Daily Values	10.10	10.84	9.35	9.34	9.51	9.90	10.86	11.13	11.58	8.97
Daily Sum from Hourly	10.10	11.33	8.86	8.81	9.14	9.79	10.89	11.81	13.46	8.10

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.38)  (2) (0.38)  (3) (0.37)  (4) (0.37)  (5) (0.37)  (6) (0.38)
 (7) (0.39)  (8) (0.45)  (9) (0.55)  (10) (0.56)  (11) (0.59)  (12) (0.59)
(13) (0.58)  (14) (0.60)  (15) (0.62)  (16) (0.61)  (17) (0.62)  (18) (0.52)
(19) (0.45)  (20) (0.42)  (21) (0.41)  (22) (0.40)  (23) (0.38)  (24) (0.37) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.37)  (2) (0.37)  (3) (0.38)  (4) (0.38)  (5) (0.37)  (6) (0.37)
 (7) (0.37)  (8) (0.39)  (9) (0.42)  (10) (0.42)  (11) (0.45)  (12) (0.47)
(13) (0.47)  (14) (0.47)  (15) (0.48)  (16) (0.48)  (17) (0.44)  (18) (0.42)
(19) (0.40)  (20) (0.38)  (21) (0.38)  (22) (0.38)  (23) (0.37)  (24) (0.38) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.18 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
      (0.38, 0.38, 0.37, 0.37, 0.37, 0.38,
       0.39, 0.45, 0.55, 0.56, 0.59, 0.59,
       0.58, 0.60, 0.62, 0.61, 0.62, 0.52,
       0.45, 0.42, 0.41, 0.40, 0.38, 0.37),
    SATURDAY THRU SUNDAY =
      (0.37, 0.37, 0.38, 0.38, 0.37, 0.37,
       0.37, 0.39, 0.42, 0.42, 0.45, 0.47,
       0.47, 0.47, 0.48, 0.48, 0.44, 0.42,
       0.40, 0.38, 0.38, 0.38, 0.37, 0.38),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
      (0.37, 0.37, 0.38, 0.38, 0.37, 0.37,
       0.37, 0.39, 0.42, 0.42, 0.45, 0.47,
       0.47, 0.47, 0.48, 0.48, 0.44, 0.42,
       0.40, 0.38, 0.38, 0.38, 0.37, 0.38),
    SATURDAY THRU SUNDAY =
      (0.37, 0.37, 0.38, 0.38, 0.37, 0.37,
       0.37, 0.39, 0.42, 0.42, 0.45, 0.47,
       0.47, 0.47, 0.48, 0.48, 0.44, 0.42,
       0.40, 0.38, 0.38, 0.38, 0.37, 0.38),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.18 W/sqft, Area=21100 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 4 kW (Metric units)
      LIGHTS= 13,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 13,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 13,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 13,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 13,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 13,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 13,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 13,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 13,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Medium Office Building (Evergreen, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.38, 0.38, 0.37, 0.37, 0.37, 0.38,
   0.39, 0.45, 0.55, 0.56, 0.59, 0.59,
   0.58, 0.60, 0.62, 0.61, 0.62, 0.52,
   0.45, 0.42, 0.41, 0.40, 0.38, 0.37;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.37, 0.37, 0.38, 0.38, 0.37, 0.37,
   0.37, 0.39, 0.42, 0.42, 0.45, 0.47,
   0.47, 0.47, 0.48, 0.48, 0.44, 0.42,
   0.40, 0.38, 0.38, 0.38, 0.37, 0.38;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.18 W/sqft, Area=21100 sqft
```

```
  3766,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 43 - WAM003c

Category	:	Medium
Building ID	:	N/A
Building	:	Evergreen Bldg.
Location	:	Tacoma, WA
Building Area (ft^2)	:	21,100
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	2.43
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	12.47
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAM003c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: Evergreen Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Tacoma, Washington.

Category: Medium Office Building, based on the CBECS classification.

Square footage: 21,100 ft^2 .

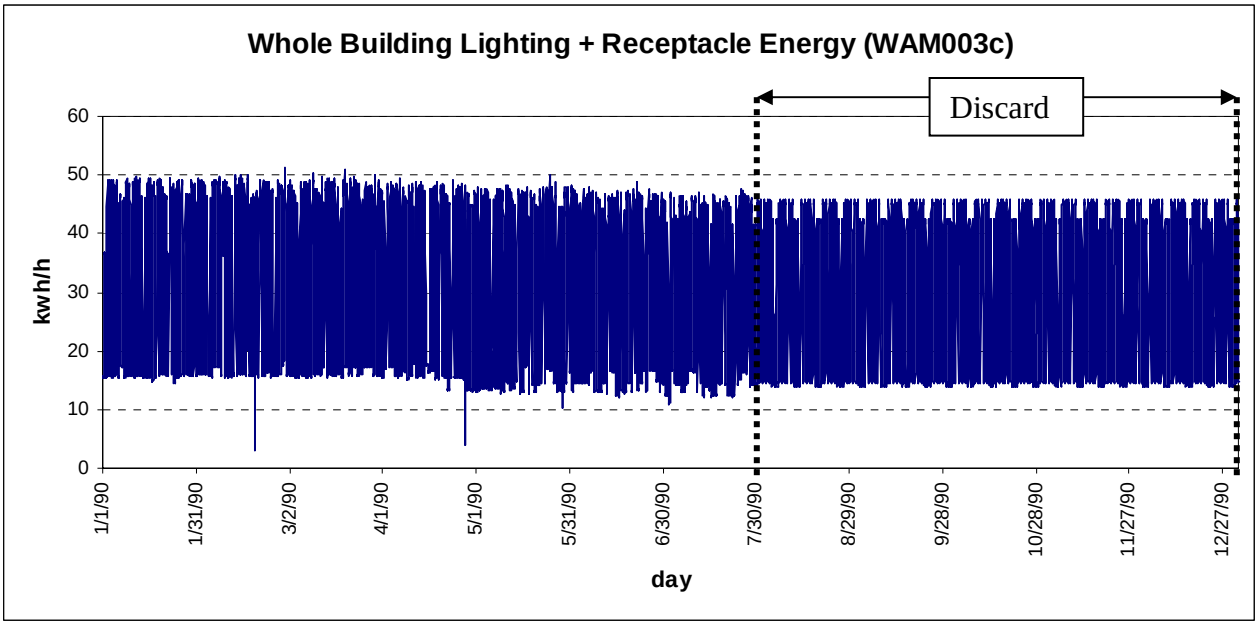
Lighting EUI: [(15.10 x 5) + (12.58 x 2)] x 52 x 2.43 = 12.72 kWh/ft^2.year

Lighting Type: N/A

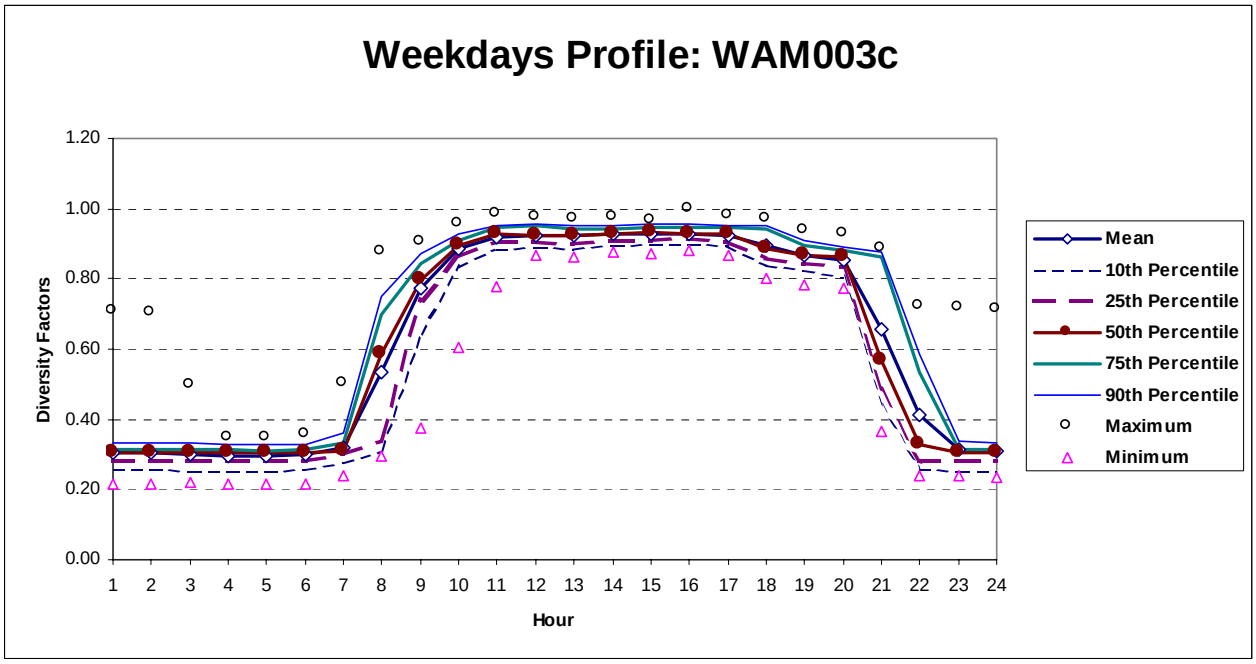
Dates: 1/1/90 - 12/31/90

Data Type: Lights + Receptacles

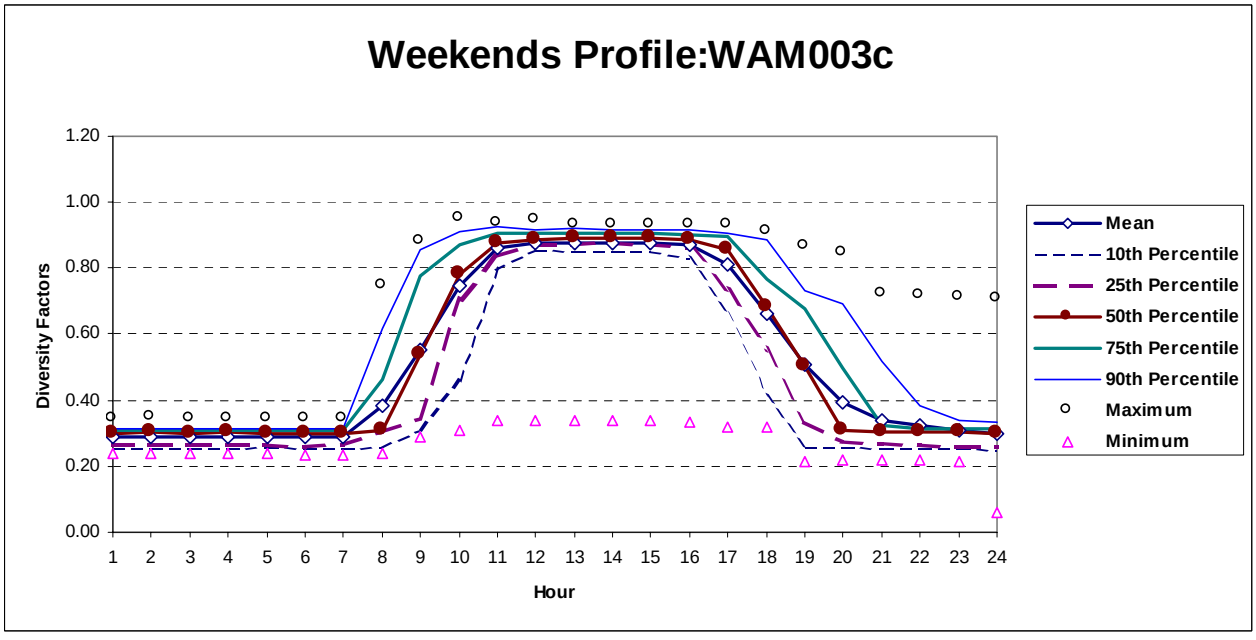
Maximum kW: 51.3 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 7/30 - 12/31/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.31	0.36	0.25	0.26	0.28	0.31	0.31	0.33	0.71	0.21
2.00	0.30	0.36	0.25	0.26	0.28	0.31	0.31	0.33	0.70	0.22
3.00	0.30	0.33	0.27	0.25	0.28	0.31	0.31	0.33	0.50	0.22
4.00	0.30	0.32	0.27	0.25	0.28	0.30	0.31	0.33	0.35	0.22
5.00	0.30	0.32	0.27	0.26	0.28	0.30	0.31	0.33	0.35	0.22
6.00	0.30	0.33	0.27	0.26	0.28	0.31	0.31	0.33	0.35	0.22
7.00	0.32	0.36	0.28	0.28	0.30	0.31	0.33	0.36	0.50	0.24
8.00	0.53	0.72	0.35	0.31	0.34	0.58	0.70	0.75	0.88	0.30
9.00	0.77	0.87	0.67	0.64	0.74	0.80	0.84	0.87	0.90	0.38
10.00	0.88	0.93	0.84	0.83	0.86	0.90	0.91	0.93	0.96	0.60
11.00	0.92	0.96	0.88	0.89	0.90	0.93	0.94	0.95	0.98	0.78
12.00	0.92	0.95	0.90	0.89	0.90	0.92	0.95	0.96	0.98	0.87
13.00	0.92	0.95	0.90	0.89	0.90	0.92	0.94	0.95	0.97	0.86
14.00	0.93	0.95	0.91	0.90	0.91	0.93	0.94	0.95	0.98	0.88
15.00	0.93	0.95	0.91	0.90	0.91	0.93	0.95	0.95	0.96	0.87
16.00	0.93	0.95	0.91	0.90	0.91	0.93	0.95	0.95	1.00	0.88
17.00	0.93	0.95	0.90	0.89	0.91	0.93	0.95	0.95	0.98	0.87
18.00	0.90	0.94	0.85	0.84	0.86	0.89	0.94	0.95	0.97	0.80
19.00	0.87	0.90	0.83	0.83	0.84	0.87	0.90	0.91	0.94	0.78
20.00	0.86	0.89	0.82	0.81	0.83	0.86	0.88	0.89	0.93	0.77
21.00	0.66	0.85	0.47	0.44	0.48	0.57	0.86	0.87	0.89	0.37
22.00	0.41	0.56	0.27	0.26	0.28	0.33	0.53	0.59	0.72	0.24
23.00	0.32	0.40	0.23	0.25	0.28	0.31	0.32	0.34	0.72	0.24
24.00	0.31	0.38	0.24	0.25	0.28	0.31	0.31	0.33	0.71	0.23
Daily Values	15.08	15.70	14.46	14.27	14.57	15.22	15.46	15.69	16.86	13.71
Daily Sum from Hourly	15.10	16.47	13.72	13.53	14.15	15.03	16.02	16.46	18.91	12.25

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.29	0.32	0.26	0.25	0.26	0.30	0.31	0.31	0.34	0.24
2.00	0.29	0.32	0.26	0.26	0.26	0.30	0.31	0.31	0.35	0.24
3.00	0.29	0.32	0.26	0.25	0.26	0.30	0.31	0.31	0.34	0.24
4.00	0.29	0.32	0.26	0.25	0.26	0.30	0.31	0.31	0.34	0.24
5.00	0.29	0.31	0.26	0.26	0.26	0.30	0.31	0.31	0.34	0.24
6.00	0.29	0.31	0.26	0.25	0.26	0.30	0.31	0.31	0.35	0.24
7.00	0.29	0.32	0.26	0.25	0.26	0.30	0.31	0.31	0.34	0.24
8.00	0.38	0.53	0.24	0.26	0.30	0.31	0.46	0.62	0.74	0.24
9.00	0.55	0.76	0.34	0.31	0.34	0.54	0.78	0.86	0.88	0.29
10.00	0.74	0.91	0.58	0.46	0.71	0.78	0.87	0.91	0.95	0.31
11.00	0.86	0.94	0.77	0.80	0.84	0.88	0.91	0.93	0.93	0.34
12.00	0.88	0.95	0.80	0.85	0.87	0.89	0.90	0.92	0.94	0.34
13.00	0.88	0.95	0.80	0.85	0.87	0.89	0.91	0.92	0.93	0.34
14.00	0.88	0.95	0.80	0.85	0.87	0.89	0.90	0.92	0.93	0.34
15.00	0.88	0.95	0.80	0.85	0.87	0.89	0.91	0.92	0.93	0.34
16.00	0.87	0.95	0.79	0.83	0.86	0.89	0.90	0.92	0.93	0.33
17.00	0.81	0.92	0.70	0.66	0.73	0.86	0.90	0.91	0.93	0.32
18.00	0.66	0.84	0.49	0.41	0.55	0.68	0.76	0.89	0.91	0.32
19.00	0.51	0.69	0.33	0.26	0.33	0.50	0.68	0.73	0.86	0.21
20.00	0.39	0.56	0.22	0.26	0.28	0.31	0.50	0.69	0.85	0.22
21.00	0.34	0.46	0.21	0.25	0.27	0.30	0.32	0.52	0.72	0.22
22.00	0.33	0.44	0.21	0.26	0.26	0.30	0.31	0.38	0.72	0.22
23.00	0.31	0.39	0.22	0.25	0.26	0.30	0.31	0.34	0.71	0.22
24.00	0.30	0.37	0.22	0.25	0.26	0.30	0.31	0.33	0.71	0.06
Daily Values	12.58	13.90	11.27	10.95	11.85	12.58	13.60	14.10	15.30	8.04
Daily Sum from Hourly	12.58	14.79	10.37	10.45	11.33	12.62	13.80	14.89	17.00	6.31

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.31)   (2) (0.31)   (3) (0.31)   (4) (0.30)   (5) (0.30)   (6) (0.31)
 (7) (0.31)   (8) (0.58)   (9) (0.80)  (10) (0.90)  (11) (0.93)  (12) (0.92)
(13) (0.92)  (14) (0.93)  (15) (0.93)  (16) (0.93)  (17) (0.93)  (18) (0.89)
(19) (0.87)  (20) (0.86)  (21) (0.57)  (22) (0.33)  (23) (0.31)  (24) (0.31) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.30)   (2) (0.30)   (3) (0.30)   (4) (0.30)   (5) (0.30)   (6) (0.30)
 (7) (0.30)   (8) (0.31)   (9) (0.54)  (10) (0.78)  (11) (0.88)  (12) (0.89)
(13) (0.89)  (14) (0.89)  (15) (0.89)  (16) (0.89)  (17) (0.86)  (18) (0.68)
(19) (0.50)  (20) (0.31)  (21) (0.30)  (22) (0.30)  (23) (0.30)  (24) (0.30) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.43 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Evergreen Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.31, 0.31, 0.31, 0.30, 0.30, 0.31,
      0.31, 0.58, 0.80, 0.90, 0.93, 0.92,
      0.92, 0.93, 0.93, 0.93, 0.93, 0.89,
      0.87, 0.86, 0.57, 0.33, 0.31, 0.31),
    SATURDAY THRU SUNDAY =
     (0.30, 0.30, 0.30, 0.30, 0.30, 0.30,
      0.30, 0.31, 0.54, 0.78, 0.88, 0.89,
      0.89, 0.89, 0.89, 0.89, 0.86, 0.68,
      0.50, 0.31, 0.30, 0.30, 0.30, 0.30),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.30, 0.30, 0.30, 0.30, 0.30, 0.30,
      0.30, 0.31, 0.54, 0.78, 0.88, 0.89,
      0.89, 0.89, 0.89, 0.89, 0.86, 0.68,
      0.50, 0.31, 0.30, 0.30, 0.30, 0.30),
    SATURDAY THRU SUNDAY =
     (0.30, 0.30, 0.30, 0.30, 0.30, 0.30,
      0.30, 0.31, 0.54, 0.78, 0.88, 0.89,
      0.89, 0.89, 0.89, 0.89, 0.86, 0.68,
      0.50, 0.31, 0.30, 0.30, 0.30, 0.30),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.43 W/sqft, Area=21100 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 51 kW (Metric units)
      LIGHTS= 175,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 175,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 175,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 175,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 175,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 175,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 175,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 175,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 175,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Medium Office Building (Evergreen, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.31, 0.31, 0.31, 0.30, 0.30, 0.31,
   0.31, 0.58, 0.80, 0.90, 0.93, 0.92,
   0.92, 0.93, 0.93, 0.93, 0.93, 0.89,
   0.87, 0.86, 0.57, 0.33, 0.31, 0.31;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.30, 0.30, 0.30, 0.30, 0.30, 0.30,
   0.30, 0.31, 0.54, 0.78, 0.88, 0.89,
   0.89, 0.89, 0.89, 0.89, 0.86, 0.68,
   0.50, 0.31, 0.30, 0.30, 0.30, 0.30;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.43 W/sqft, Area=21100 sqft
```

```
51278,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 44 - WAS001a

Category	:	Small
Building ID	:	N/A
Building	:	STS Bldg.
Location	:	Ellenburg, WA
Building Area (ft^2)	:	21,100
Data Type	:	Light
Max Load (W/ft^2)	:	2.45
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	4.77
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAS001a)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: STS Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Ellensburg, Washington.

Category: Small Office Building, based on the CBECS classification.

Square footage: 4,000 ft^2 .

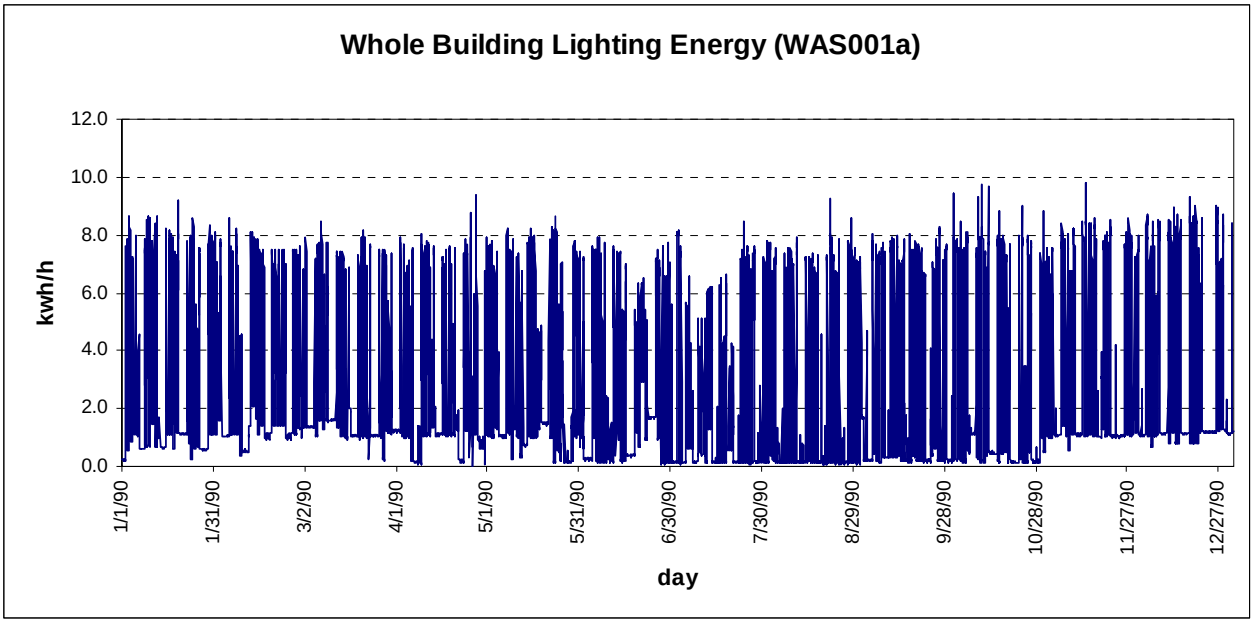
Lighting EUI: [(6.79 x 5) + (1.75 x 2)] x 52 x 2.45 = 4.77 kWh/ft^2.year

Lighting Type: N/A

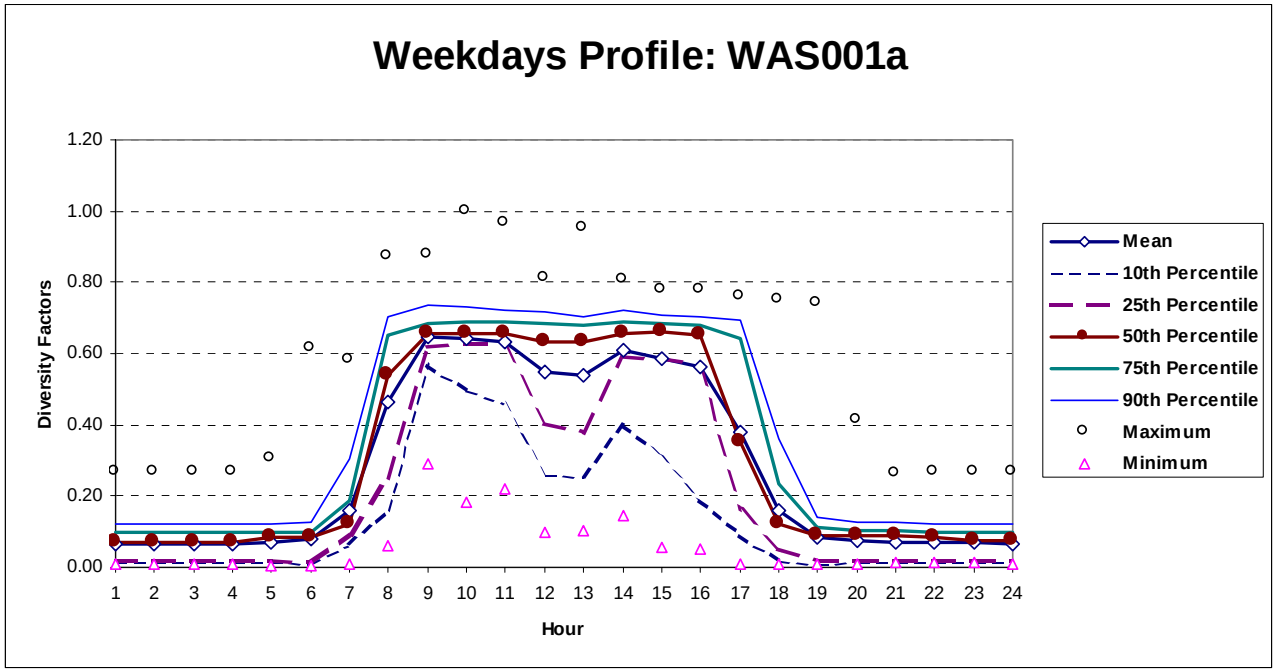
Dates: 1/1/90 - 12/31/90

Data Type: Lights

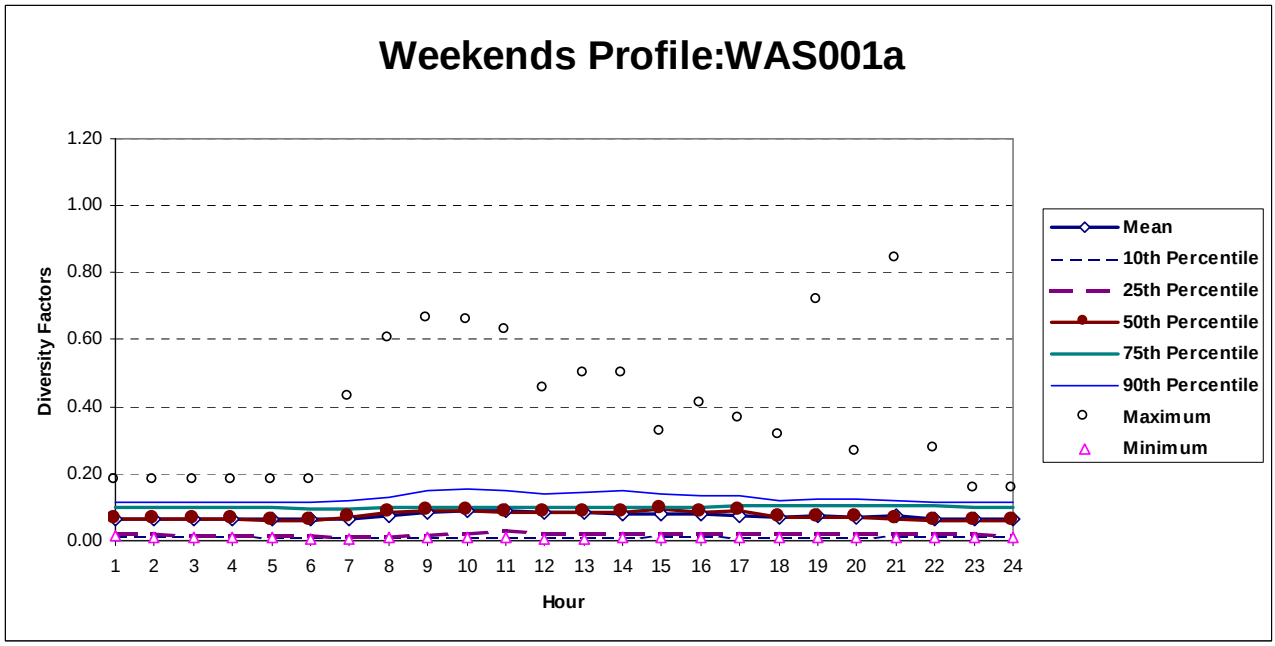
Maximum kW: 9.80 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 9/4/90, 11/23-24/90, and 12/25-29/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.07	0.11	0.02	0.01	0.02	0.07	0.10	0.12	0.27	0.01
2.00	0.07	0.11	0.02	0.01	0.02	0.07	0.10	0.12	0.27	0.01
3.00	0.07	0.11	0.02	0.01	0.02	0.07	0.10	0.12	0.27	0.01
4.00	0.07	0.11	0.02	0.01	0.02	0.07	0.10	0.12	0.26	0.01
5.00	0.07	0.12	0.02	0.01	0.02	0.08	0.10	0.12	0.30	0.01
6.00	0.08	0.16	0.00	0.01	0.02	0.08	0.10	0.13	0.61	0.00
7.00	0.16	0.27	0.05	0.06	0.09	0.12	0.19	0.31	0.58	0.01
8.00	0.46	0.68	0.24	0.16	0.25	0.54	0.65	0.70	0.87	0.06
9.00	0.65	0.73	0.57	0.56	0.62	0.66	0.68	0.74	0.88	0.29
10.00	0.64	0.74	0.55	0.50	0.63	0.66	0.69	0.73	1.00	0.18
11.00	0.63	0.74	0.52	0.46	0.63	0.65	0.69	0.72	0.97	0.22
12.00	0.55	0.73	0.37	0.26	0.41	0.63	0.68	0.72	0.81	0.10
13.00	0.54	0.73	0.36	0.25	0.38	0.63	0.68	0.71	0.95	0.11
14.00	0.61	0.74	0.48	0.40	0.59	0.65	0.69	0.72	0.80	0.15
15.00	0.59	0.76	0.42	0.31	0.59	0.66	0.68	0.71	0.78	0.06
16.00	0.56	0.75	0.38	0.19	0.57	0.65	0.68	0.70	0.78	0.05
17.00	0.38	0.62	0.14	0.09	0.16	0.35	0.64	0.69	0.76	0.01
18.00	0.16	0.30	0.02	0.02	0.05	0.12	0.24	0.36	0.75	0.01
19.00	0.08	0.16	0.01	0.01	0.02	0.09	0.11	0.14	0.74	0.01
20.00	0.08	0.13	0.02	0.01	0.02	0.09	0.10	0.13	0.41	0.01
21.00	0.07	0.12	0.02	0.01	0.02	0.09	0.10	0.13	0.26	0.01
22.00	0.07	0.12	0.02	0.01	0.02	0.09	0.10	0.12	0.27	0.01
23.00	0.07	0.11	0.02	0.01	0.02	0.08	0.10	0.12	0.27	0.01
24.00	0.07	0.11	0.02	0.01	0.02	0.08	0.10	0.12	0.27	0.01
Daily Values	6.78	7.98	5.57	5.12	6.23	6.96	7.53	8.17	9.33	2.61
Daily Sum from Hourly	6.79	9.25	4.32	3.42	5.19	7.29	8.39	9.30	14.12	1.36

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.07	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.18	0.01
2.00	0.07	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.18	0.01
3.00	0.06	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.18	0.01
4.00	0.06	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.18	0.01
5.00	0.06	0.11	0.02	0.01	0.01	0.06	0.10	0.11	0.18	0.01
6.00	0.06	0.11	0.02	0.01	0.01	0.06	0.10	0.11	0.18	0.01
7.00	0.07	0.12	0.01	0.01	0.01	0.07	0.10	0.12	0.43	0.01
8.00	0.07	0.15	0.00	0.01	0.01	0.08	0.10	0.13	0.60	0.01
9.00	0.08	0.17	-0.01	0.01	0.01	0.09	0.10	0.15	0.66	0.01
10.00	0.09	0.18	-0.01	0.01	0.02	0.09	0.10	0.15	0.66	0.01
11.00	0.09	0.18	0.00	0.01	0.03	0.08	0.10	0.15	0.63	0.01
12.00	0.08	0.16	0.01	0.01	0.02	0.08	0.10	0.14	0.45	0.00
13.00	0.08	0.17	0.00	0.01	0.02	0.08	0.10	0.14	0.50	0.00
14.00	0.08	0.15	0.01	0.01	0.02	0.09	0.10	0.15	0.50	0.01
15.00	0.08	0.14	0.02	0.01	0.02	0.09	0.10	0.14	0.32	0.01
16.00	0.08	0.14	0.01	0.01	0.02	0.08	0.10	0.13	0.41	0.01
17.00	0.08	0.14	0.01	0.01	0.02	0.09	0.10	0.13	0.36	0.01
18.00	0.07	0.12	0.02	0.01	0.02	0.07	0.10	0.12	0.31	0.01
19.00	0.07	0.15	0.00	0.01	0.02	0.07	0.10	0.12	0.72	0.01
20.00	0.07	0.12	0.02	0.01	0.02	0.07	0.10	0.12	0.27	0.01
21.00	0.07	0.16	-0.02	0.01	0.02	0.06	0.10	0.12	0.84	0.01
22.00	0.07	0.11	0.02	0.01	0.02	0.06	0.10	0.12	0.27	0.01
23.00	0.06	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.15	0.01
24.00	0.06	0.11	0.02	0.01	0.02	0.06	0.10	0.11	0.15	0.01
Daily Values	1.75	2.79	0.70	0.41	0.72	1.86	2.44	2.93	4.97	0.28
Daily Sum from Hourly	1.75	3.26	0.24	0.30	0.44	1.75	2.41	3.05	9.33	0.23

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.07)   (2) (0.07)   (3) (0.07)   (4) (0.07)   (5) (0.08)   (6) (0.08)
 (7) (0.12)   (8) (0.54)   (9) (0.66)  (10) (0.66)  (11) (0.65)  (12) (0.63)
(13) (0.63)  (14) (0.65)  (15) (0.66)  (16) (0.65)  (17) (0.35)  (18) (0.12)
(19) (0.09)  (20) (0.09)  (21) (0.09)  (22) (0.09)  (23) (0.08)  (24) (0.08) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.06)   (2) (0.06)   (3) (0.06)   (4) (0.06)   (5) (0.06)   (6) (0.06)
 (7) (0.07)   (8) (0.08)   (9) (0.09)  (10) (0.09)  (11) (0.08)  (12) (0.08)
(13) (0.08)  (14) (0.09)  (15) (0.09)  (16) (0.08)  (17) (0.09)  (18) (0.07)
(19) (0.07)  (20) (0.07)  (21) (0.06)  (22) (0.06)  (23) (0.06)  (24) (0.06) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 2.45 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.07, 0.07, 0.07, 0.07, 0.08, 0.08,
      0.12, 0.54, 0.66, 0.66, 0.65, 0.63,
      0.63, 0.65, 0.66, 0.65, 0.35, 0.12,
      0.09, 0.09, 0.09, 0.09, 0.08, 0.08),
    SATURDAY THRU SUNDAY =
     (0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.07, 0.08, 0.09, 0.09, 0.08, 0.08,
      0.08, 0.09, 0.09, 0.08, 0.09, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.07, 0.08, 0.09, 0.09, 0.08, 0.08,
      0.08, 0.09, 0.09, 0.08, 0.09, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    SATURDAY THRU SUNDAY =
     (0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
      0.07, 0.08, 0.09, 0.09, 0.08, 0.08,
      0.08, 0.09, 0.09, 0.08, 0.09, 0.07,
      0.07, 0.07, 0.06, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=2.45 W/sqft, Area=4000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 10 kW (Metric units)
      LIGHTS= 33,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 33,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 33,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 33,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 33,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 33,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 33,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 33,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 33,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.07, 0.07, 0.07, 0.07, 0.08, 0.08,
   0.12, 0.54, 0.66, 0.66, 0.65, 0.63,
   0.63, 0.65, 0.66, 0.65, 0.35, 0.12,
   0.09, 0.09, 0.09, 0.09, 0.08, 0.08;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
   0.07, 0.08, 0.09, 0.09, 0.08, 0.08,
   0.08, 0.09, 0.09, 0.08, 0.09, 0.07,
   0.07, 0.07, 0.06, 0.06, 0.06, 0.06;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=2.45 W/sqft, Area=4000 sqft
```

```
  9804,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 45 - WAS001b

Category	:	Small
Building ID	:	N/A
Building	:	STS Bldg.
Location	:	Ellenburg, WA
Building Area (ft^2)	:	21,100
Data Type	:	Receptacles
Max Load (W/ft^2)	:	0.79
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	0.95
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAS001b)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: STS Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Ellensburg, Washington.

Category: Small Office Building, based on the CBECS classification.

Square footage: 4,000 ft^2 .

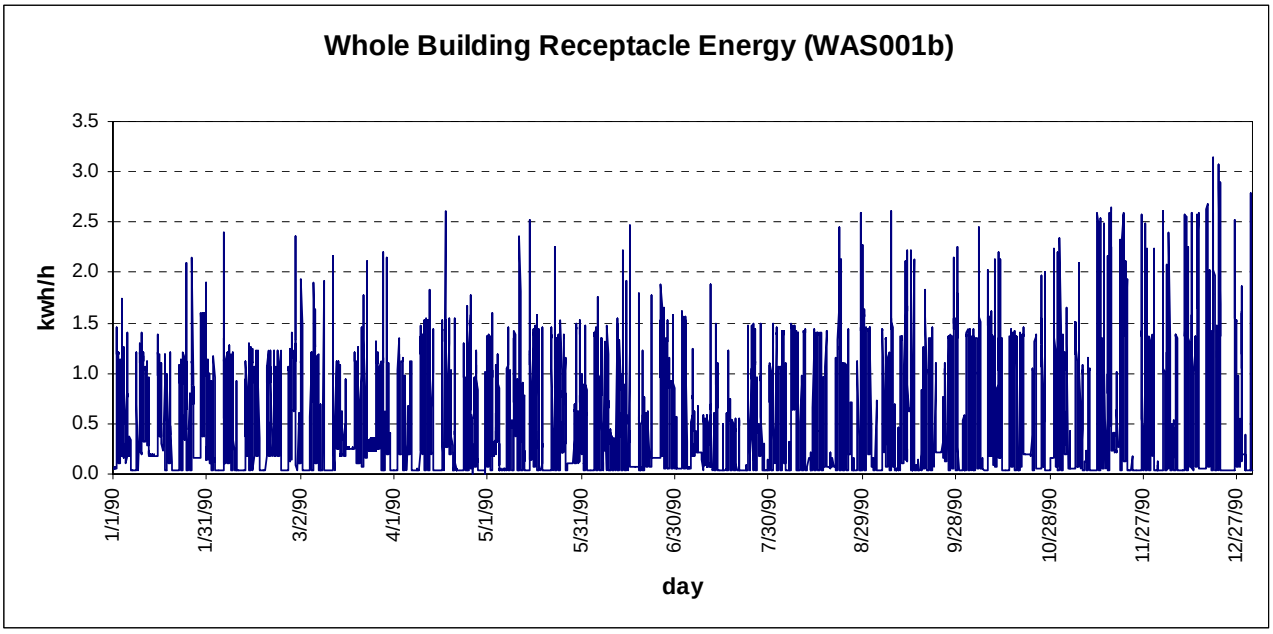
Lighting EUI: [(4.38 x 5) + (0.73 x 2)] x 52 x 0.79 = 0.95 kWh/ft^2.year

Lighting Type: N/A

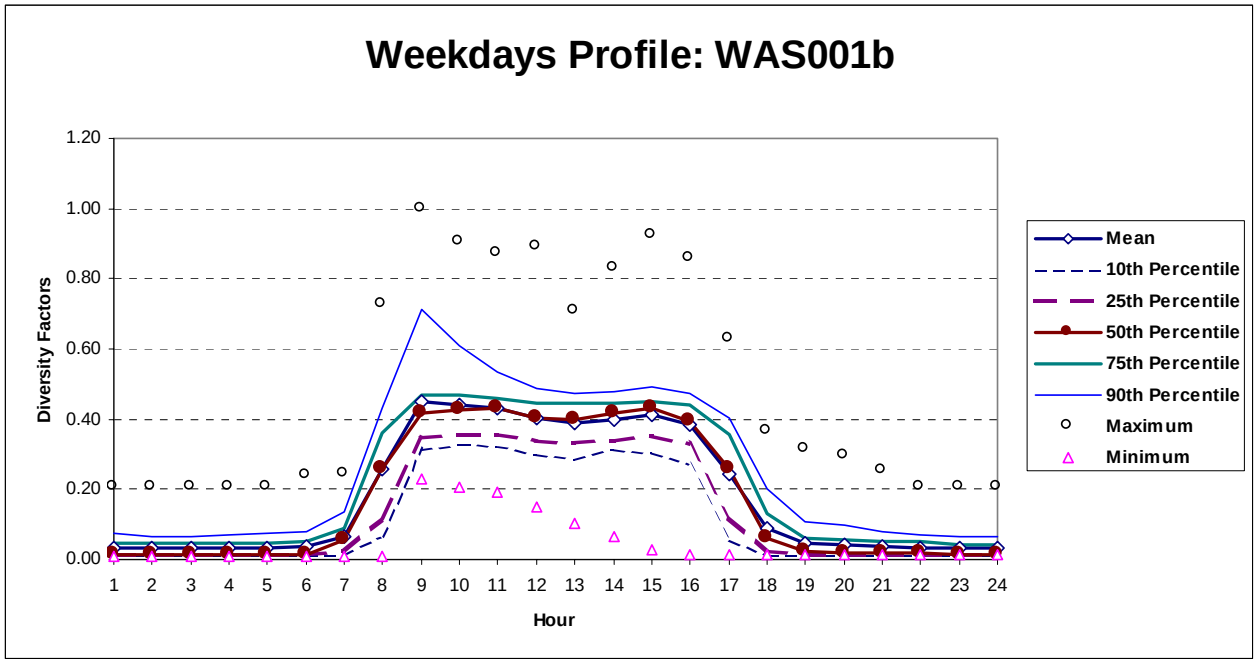
Dates: 1/1/90 - 12/31/90

Data Type: Receptacles

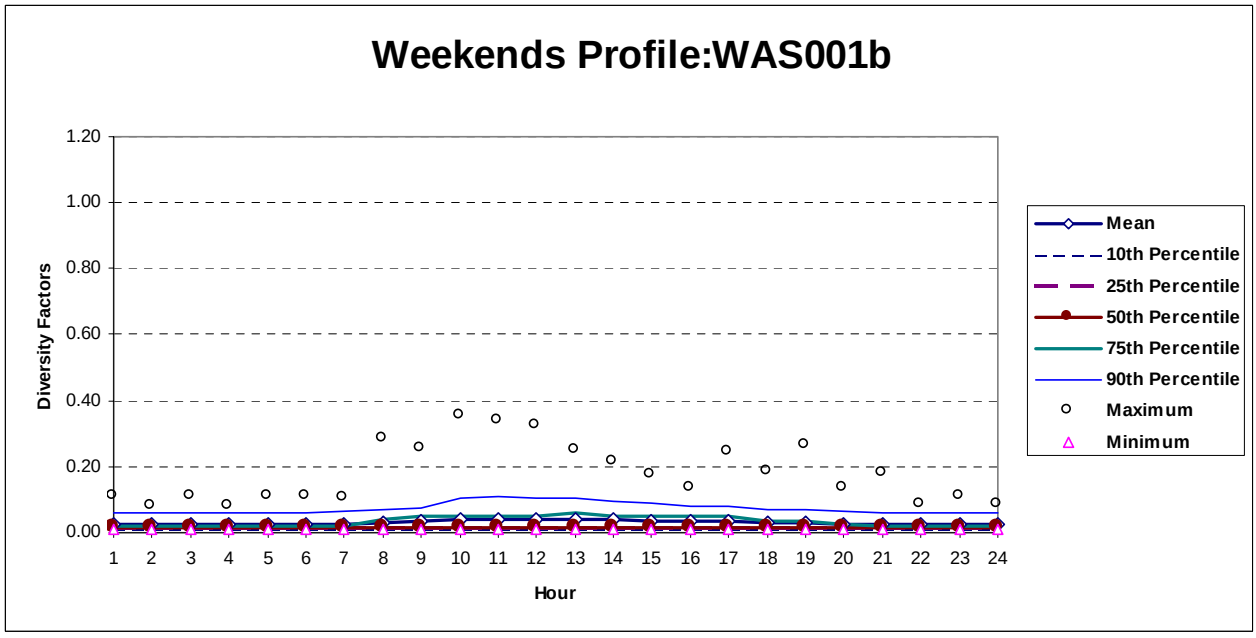
Maximum kW: 3.14 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 9/4/90, 11/23-24/90, and 12/25-29/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.07	0.21	0.01
2.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.06	0.21	0.01
3.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.06	0.21	0.01
4.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.07	0.21	0.01
5.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.07	0.21	0.01
6.00	0.04	0.08	0.00	0.01	0.01	0.02	0.05	0.08	0.24	0.01
7.00	0.07	0.12	0.01	0.01	0.02	0.06	0.09	0.14	0.24	0.01
8.00	0.26	0.41	0.11	0.06	0.12	0.26	0.36	0.43	0.73	0.01
9.00	0.45	0.60	0.30	0.32	0.34	0.42	0.47	0.71	1.00	0.23
10.00	0.44	0.56	0.31	0.33	0.36	0.42	0.47	0.61	0.90	0.21
11.00	0.43	0.54	0.32	0.33	0.36	0.43	0.46	0.54	0.87	0.19
12.00	0.40	0.51	0.29	0.30	0.34	0.40	0.45	0.49	0.89	0.15
13.00	0.39	0.48	0.29	0.29	0.33	0.40	0.44	0.47	0.71	0.10
14.00	0.40	0.49	0.30	0.31	0.34	0.42	0.44	0.48	0.83	0.07
15.00	0.41	0.54	0.29	0.30	0.35	0.43	0.45	0.49	0.92	0.03
16.00	0.39	0.49	0.28	0.27	0.33	0.39	0.44	0.47	0.86	0.02
17.00	0.24	0.38	0.11	0.06	0.12	0.26	0.35	0.40	0.63	0.01
18.00	0.09	0.17	0.01	0.01	0.02	0.06	0.13	0.20	0.37	0.01
19.00	0.05	0.10	0.00	0.01	0.01	0.02	0.06	0.11	0.32	0.01
20.00	0.04	0.09	0.00	0.01	0.01	0.02	0.06	0.10	0.30	0.01
21.00	0.04	0.08	0.00	0.01	0.01	0.02	0.05	0.08	0.25	0.01
22.00	0.03	0.07	0.00	0.01	0.01	0.02	0.05	0.07	0.21	0.01
23.00	0.03	0.07	0.00	0.01	0.01	0.02	0.04	0.07	0.21	0.01
24.00	0.03	0.07	0.00	0.01	0.01	0.02	0.04	0.06	0.21	0.01
Daily Values	4.38	5.11	3.65	3.52	3.88	4.26	4.82	5.24	7.12	3.06
Daily Sum from Hourly	4.38	6.18	2.59	2.74	3.20	4.13	5.14	6.35	11.70	1.18

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.11	0.01
2.00	0.02	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.08	0.01
3.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.11	0.01
4.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.08	0.01
5.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.11	0.01
6.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.11	0.01
7.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.07	0.11	0.01
8.00	0.03	0.07	0.00	0.01	0.01	0.01	0.04	0.07	0.29	0.01
9.00	0.04	0.08	0.00	0.01	0.01	0.01	0.05	0.07	0.25	0.01
10.00	0.04	0.10	0.00	0.01	0.01	0.01	0.05	0.10	0.35	0.01
11.00	0.04	0.10	0.00	0.01	0.01	0.01	0.05	0.11	0.34	0.01
12.00	0.04	0.09	0.00	0.01	0.01	0.01	0.05	0.10	0.32	0.01
13.00	0.04	0.09	0.00	0.01	0.01	0.01	0.06	0.11	0.25	0.01
14.00	0.04	0.08	0.00	0.01	0.01	0.01	0.05	0.09	0.21	0.01
15.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.09	0.17	0.01
16.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.08	0.13	0.01
17.00	0.03	0.07	0.00	0.01	0.01	0.01	0.05	0.08	0.24	0.01
18.00	0.03	0.06	0.00	0.01	0.01	0.01	0.04	0.07	0.18	0.01
19.00	0.03	0.06	0.00	0.01	0.01	0.01	0.04	0.07	0.27	0.01
20.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.07	0.14	0.01
21.00	0.03	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.18	0.01
22.00	0.02	0.04	0.00	0.01	0.01	0.01	0.02	0.06	0.09	0.01
23.00	0.02	0.05	0.00	0.01	0.01	0.01	0.02	0.06	0.11	0.01
24.00	0.02	0.04	0.00	0.01	0.01	0.01	0.02	0.06	0.09	0.01
Daily Values	0.73	1.34	0.00	0.28	0.32	0.37	1.06	1.78	2.57	0.27
Daily Sum from Hourly	0.73	1.52	0.00	0.28	0.31	0.33	0.83	1.79	4.33	0.27

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.01)   (2) (0.01)   (3) (0.01)   (4) (0.01)   (5) (0.01)   (6) (0.02)
 (7) (0.06)   (8) (0.26)   (9) (0.42)  (10) (0.42)  (11) (0.43)  (12) (0.40)
(13) (0.40)  (14) (0.42)  (15) (0.43)  (16) (0.39)  (17) (0.26)  (18) (0.06)
(19) (0.02)  (20) (0.02)  (21) (0.02)  (22) (0.02)  (23) (0.02)  (24) (0.02) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.01)   (2) (0.01)   (3) (0.01)   (4) (0.01)   (5) (0.01)   (6) (0.01)
 (7) (0.01)   (8) (0.01)   (9) (0.01)  (10) (0.01)  (11) (0.01)  (12) (0.01)
(13) (0.01)  (14) (0.01)  (15) (0.01)  (16) (0.01)  (17) (0.01)  (18) (0.01)
(19) (0.01)  (20) (0.01)  (21) (0.01)  (22) (0.01)  (23) (0.01)  (24) (0.01) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 0.79 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.01, 0.01, 0.01, 0.01, 0.01, 0.02,
      0.06, 0.26, 0.42, 0.42, 0.43, 0.40,
      0.40, 0.42, 0.43, 0.39, 0.26, 0.06,
      0.02, 0.02, 0.02, 0.02, 0.02, 0.02),
    SATURDAY THRU SUNDAY =
     (0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01),
    SATURDAY THRU SUNDAY =
     (0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
      0.01, 0.01, 0.01, 0.01, 0.01, 0.01),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=0.79 W/sqft, Area=4000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 3 kW (Metric units)
      LIGHTS= 11,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 11,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 11,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 11,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 11,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 11,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 11,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 11,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 11,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting diversity factors** for a Small Office Building (STS Bldg, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES ***********************************

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.01, 0.01, 0.01, 0.01, 0.01, 0.02,
   0.06, 0.26, 0.42, 0.42, 0.43, 0.40,
   0.40, 0.42, 0.43, 0.39, 0.26, 0.06,
   0.02, 0.02, 0.02, 0.02, 0.02, 0.02;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
   0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
   0.01, 0.01, 0.01, 0.01, 0.01, 0.01,
   0.01, 0.01, 0.01, 0.01, 0.01, 0.01;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=0.79 W/sqft, Area=4000 sqft
```

```
  3141,  ! Design Level [W]
  ! Return-vented fluorescent lights
  0.20,  ! Return Air Fraction
  0.20,  ! Fraction Radiant
  0.20,  ! Fraction Visible
  0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.

SITE # 46 - WAS001c

Category	:	Small
Building ID	:	N/A
Building	:	STS Bldg.
Location	:	Ellenburg, WA
Building Area (ft^2)	:	21,100
Data Type	:	Light + Receptacles
Max Load (W/ft^2)	:	3.01
Source	:	LBNL
EUI (kWh/ft^2-yr)	:	6.11
Start Date	:	1/1/90
End date	:	12/31/90

(Page 1) Building Descriptions: (WAS001c)

(This section depends on the extent of information available on each building).

Building 1:

Building Name: STS Bldg.

Source of Data: An Energy Edge Building, LBNL.

Location: Ellensburg, Washington.

Category: Small Office Building, based on the CBECS classification.

Square footage: 4,000 ft^2 .

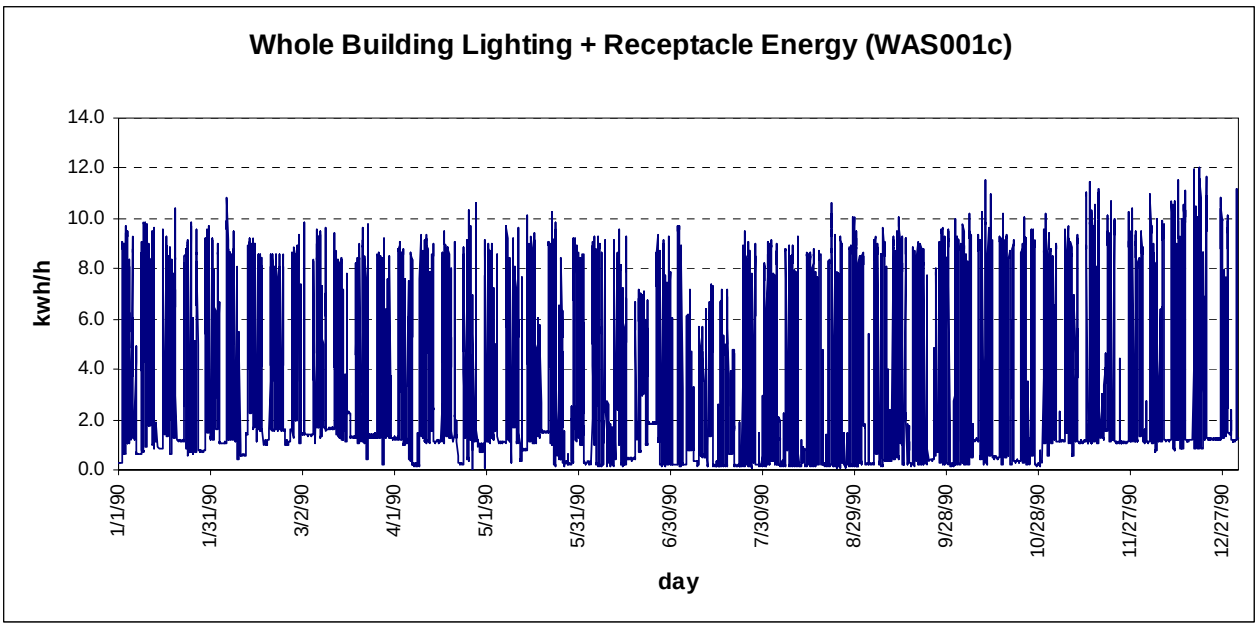
Lighting EUI: [(7.10 x 5) + (1.76 x 2)] x 52 x 3.01 = 6.11 kWh/ft^2.year

Lighting Type: N/A

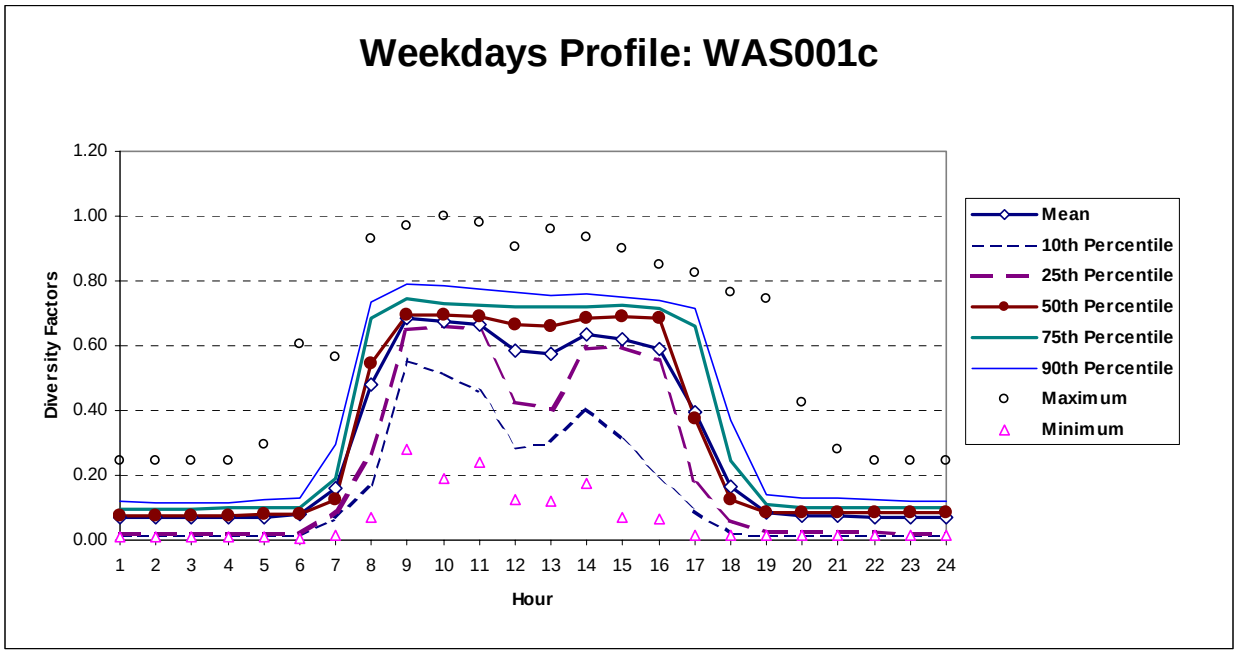
Dates: 1/1/90 - 12/31/90

Data Type: Lights + Receptacles

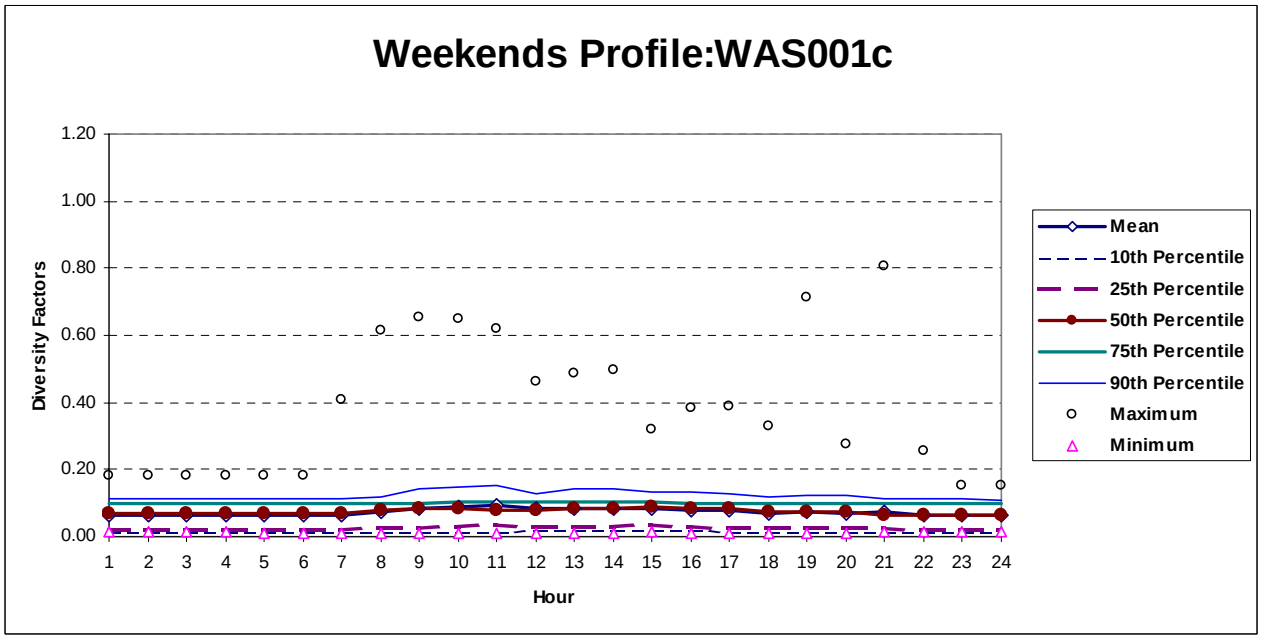
Maximum kW: 12 kW



(Page 2) Typical Load Shapes of the Daytypes



**The dates that are excluded from the weekday profile are as follow: 1/1/90, 1/2/90, 5/29/90, 7/4/90, 9/4/90, 11/23-24/90, and 12/25-29/90.*



(Page 3) Diversity Factors and Statistics

WEEKDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.24	0.01
2.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.24	0.01
3.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.24	0.01
4.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.24	0.01
5.00	0.07	0.11	0.02	0.01	0.02	0.08	0.10	0.13	0.30	0.01
6.00	0.08	0.16	0.00	0.01	0.02	0.08	0.10	0.13	0.60	0.01
7.00	0.16	0.27	0.05	0.07	0.09	0.13	0.19	0.29	0.57	0.02
8.00	0.48	0.71	0.25	0.17	0.26	0.55	0.68	0.74	0.93	0.07
9.00	0.69	0.79	0.58	0.56	0.65	0.69	0.74	0.79	0.97	0.28
10.00	0.68	0.79	0.56	0.51	0.66	0.69	0.73	0.79	1.00	0.19
11.00	0.66	0.79	0.54	0.46	0.66	0.69	0.73	0.77	0.98	0.24
12.00	0.59	0.77	0.40	0.29	0.43	0.67	0.72	0.76	0.90	0.12
13.00	0.57	0.76	0.39	0.30	0.40	0.66	0.72	0.75	0.96	0.12
14.00	0.64	0.78	0.50	0.41	0.59	0.69	0.72	0.76	0.93	0.18
15.00	0.62	0.80	0.43	0.31	0.59	0.69	0.73	0.75	0.90	0.07
16.00	0.59	0.79	0.39	0.20	0.56	0.68	0.72	0.74	0.85	0.06
17.00	0.39	0.64	0.15	0.09	0.17	0.37	0.66	0.72	0.83	0.01
18.00	0.16	0.30	0.03	0.02	0.06	0.12	0.24	0.37	0.76	0.01
19.00	0.09	0.16	0.01	0.01	0.03	0.09	0.11	0.14	0.75	0.01
20.00	0.08	0.13	0.02	0.02	0.03	0.09	0.10	0.13	0.43	0.01
21.00	0.07	0.12	0.03	0.02	0.03	0.09	0.10	0.13	0.28	0.02
22.00	0.07	0.12	0.03	0.02	0.02	0.08	0.10	0.13	0.25	0.02
23.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.25	0.02
24.00	0.07	0.11	0.03	0.02	0.02	0.08	0.10	0.12	0.25	0.01
Daily Values	7.09	8.39	5.78	5.23	6.51	7.32	7.90	8.55	9.94	2.46
Daily Sum from Hourly	7.10	9.65	4.54	3.57	5.39	7.61	8.77	9.72	14.64	1.52

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

WEEKENDS/HOLIDAYS

Hour	Mean	Mean+1Std	Mean-1Std	10th Perctl	25th Perctl	50th Perctl	75th Perctl	90th Perctl	Maximum	Minimum
1.00	0.07	0.11	0.02	0.02	0.02	0.07	0.10	0.11	0.18	0.02
2.00	0.06	0.11	0.02	0.02	0.02	0.07	0.10	0.11	0.18	0.01
3.00	0.06	0.11	0.02	0.02	0.02	0.07	0.10	0.11	0.18	0.01
4.00	0.06	0.11	0.02	0.02	0.02	0.07	0.10	0.11	0.18	0.01
5.00	0.06	0.11	0.02	0.01	0.02	0.07	0.10	0.11	0.18	0.01
6.00	0.06	0.11	0.02	0.01	0.02	0.07	0.10	0.11	0.18	0.01
7.00	0.07	0.12	0.01	0.01	0.02	0.07	0.10	0.11	0.41	0.01
8.00	0.08	0.15	0.00	0.01	0.02	0.08	0.10	0.12	0.62	0.01
9.00	0.08	0.17	-0.01	0.01	0.02	0.08	0.10	0.14	0.65	0.01
10.00	0.09	0.19	0.00	0.01	0.03	0.09	0.11	0.15	0.65	0.01
11.00	0.09	0.18	0.00	0.02	0.03	0.08	0.10	0.15	0.62	0.01
12.00	0.08	0.16	0.01	0.02	0.03	0.08	0.10	0.13	0.46	0.01
13.00	0.09	0.17	0.01	0.02	0.03	0.08	0.10	0.14	0.49	0.01
14.00	0.08	0.15	0.01	0.02	0.03	0.08	0.10	0.14	0.50	0.01
15.00	0.08	0.14	0.02	0.02	0.03	0.09	0.10	0.13	0.32	0.01
16.00	0.08	0.14	0.02	0.02	0.03	0.08	0.10	0.13	0.38	0.01
17.00	0.08	0.14	0.02	0.02	0.03	0.08	0.10	0.13	0.39	0.01
18.00	0.07	0.12	0.02	0.01	0.02	0.07	0.10	0.12	0.33	0.01
19.00	0.07	0.15	0.00	0.02	0.02	0.07	0.10	0.12	0.71	0.01
20.00	0.07	0.12	0.02	0.01	0.02	0.07	0.10	0.12	0.27	0.01
21.00	0.07	0.16	-0.01	0.02	0.02	0.07	0.10	0.11	0.80	0.01
22.00	0.07	0.11	0.02	0.02	0.02	0.06	0.10	0.11	0.26	0.01
23.00	0.06	0.10	0.02	0.02	0.02	0.06	0.10	0.11	0.15	0.01
24.00	0.06	0.10	0.02	0.02	0.02	0.06	0.10	0.11	0.15	0.01
Daily Values	1.76	2.73	0.79	0.55	0.84	1.86	2.31	2.92	4.96	0.33
Daily Sum from Hourly	1.76	3.20	0.32	0.38	0.60	1.78	2.37	2.97	9.26	0.29

Daily Values: The Daily results as the statistics are applied on daily data.

Daily Sum from Hourly: The aggregated Daily results as the statistics are applied on Hour-of-Day data.

(Page 4)

1. DOE-2 Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL) into the DOE-2 program. The calculated **50th percentile** values are used in these schedules.

```
$ ********** LIGHTING SCHEDULES ********** $

$ WEEKDAY SCHEDULE $
WKDAY = DAY-SCHEDULE
 (1) (0.08)   (2) (0.08)   (3) (0.08)   (4) (0.08)   (5) (0.08)   (6) (0.08)
 (7) (0.13)   (8) (0.55)   (9) (0.69)  (10) (0.69)  (11) (0.69)  (12) (0.67)
(13) (0.66)  (14) (0.69)  (15) (0.69)  (16) (0.68)  (17) (0.37)  (18) (0.12)
(19) (0.09)  (20) (0.09)  (21) (0.09)  (22) (0.08)  (23) (0.08)  (24) (0.08) ..

$ WEEKEND SCHEDULE $
WKEND = DAY-SCHEDULE
 (1) (0.07)   (2) (0.07)   (3) (0.07)   (4) (0.07)   (5) (0.07)   (6) (0.07)
 (7) (0.07)   (8) (0.08)   (9) (0.08)  (10) (0.09)  (11) (0.08)  (12) (0.08)
(13) (0.08)  (14) (0.08)  (15) (0.09)  (16) (0.08)  (17) (0.08)  (18) (0.07)
(19) (0.07)  (20) (0.07)  (21) (0.07)  (22) (0.06)  (23) (0.06)  (24) (0.06) ..

WORK = WEEK-SCHEDULE  (WD) WKDAY  (WE) WKEND  (HOL) WKEND ..
VAC  = WEEK-SCHEDULE  (WD) WKEND  (WE) WKEND  (HOL) WKEND ..

ELE-SCH = SCHEDULE
THRU JAN  1 VAC  THRU JUL  3 WORK
THRU JUL  4 VAC  THRU NOV 22 WORK
THRU NOV 24 VAC  THRU DEC 24 WORK
THRU DEC 25 VAC  THRU DEC 30 WORK
THRU DEC 31 VAC ..

G-ZONE = SPACE-CONDITIONS
LIGHTING-SCHEDULE = ELE-SCH
LIGHTING-TYPE     = REC-FLUOR-RV
LIGHT-TO-SPACE    = 0.8
LIGHTING-W/SQFT = 3.01 ..
```

The "LIGHT-TO-SPACE" and "LIGHTING-TYPE" values shown above are for illustrative purpose. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The "LIGHTING-W/SQFT" value shown scales, the diversity factor to maximum observed value (W /ft^2) in the building (#1) for the period Jan. 1 - Dec. 31 1990.

The input file shown uses Weekends schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has selected the sub-commend "HOLIDAY = NO" in the "BUILDING LOCATION" commend of the "LOADS" input file.

2. BLAST Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (STS Bldg., WA, Energy Edge, LBNL.) into the BLAST program. The calculated **50th percentile** values are used in these schedules.

```
** ============ LIGHTING SCHEDULES ============

** WORK WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-WORK):
    MONDAY THRU FRIDAY =
     (0.08, 0.08, 0.08, 0.08, 0.08, 0.08,
      0.13, 0.55, 0.69, 0.69, 0.69, 0.67,
      0.66, 0.69, 0.69, 0.68, 0.37, 0.12,
      0.09, 0.09, 0.09, 0.08, 0.08, 0.08),
    SATURDAY THRU SUNDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.09, 0.08, 0.08,
      0.08, 0.08, 0.09, 0.08, 0.08, 0.07,
      0.07, 0.07, 0.07, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** VACATION WEEK SCHEDULE
   TEMPORARY SCHEDULE (ELE-VAC):
    MONDAY THRU FRIDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.09, 0.08, 0.08,
      0.08, 0.08, 0.09, 0.08, 0.08, 0.07,
      0.07, 0.07, 0.07, 0.06, 0.06, 0.06),
    SATURDAY THRU SUNDAY =
     (0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
      0.07, 0.08, 0.08, 0.09, 0.08, 0.08,
      0.08, 0.08, 0.09, 0.08, 0.08, 0.07,
      0.07, 0.07, 0.07, 0.06, 0.06, 0.06),
    HOLIDAY  = SUNDAY,
    SPECIAL1 = SUNDAY,
    SPECIAL2 = SUNDAY,
    SPECIAL3 = SUNDAY,
    SPECIAL4 = SUNDAY;
   END;

** LIGHTING INTERNAL LOADS COMMANDS
      ** Lighting level=3.01 W/sqft, Area=4000 sqft
      ** Lighting level in kBtu/hr (English units)
      ** or 12 kW (Metric units)
      LIGHTS= 41,
       ELE-VAC,
       ** Return-vented fluorescent lights
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
       20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
       FROM 01JAN THRU 01JAN;

      LIGHTS= 41,
       ELE-WORK,
       20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
```

```
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 02JAN THRU 03JUL;

LIGHTS= 41,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 04JUL THRU 04JUL;

LIGHTS= 41,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 05JUL THRU 22NOV;

LIGHTS= 41,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 23NOV THRU 24NOV;

LIGHTS= 41,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25NOV THRU 24DEC;

LIGHTS= 41,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 25DEC THRU 25DEC;

LIGHTS= 41,
  ELE-WORK,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 26DEC THRU 30DEC;

LIGHTS= 41,
  ELE-VAC,
  20.00 PERCENT RETURN AIR, 20.00 PERCENT RADIANT,
  20.00 PERCENT VISIBLE, 0.00 PERCENT REPLACEABLE,
  FROM 31DEC THRU 31DEC;
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC" and ELE-WORK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes that no holidays are defined on the weather file

3. EnergyPlus Input Sample

This is an example of how to input **Lighting + Receptacle diversity factors** for a Small Office Building (STS Bldg, WA, Energy Edge, LBNL) into the EnergyPlus program. The calculated **50th percentile** values are used in these schedules. Note that at the time of publication these inputs were consistent with the EnergyPlus Beta 3 version. Some changes may be required to be compatible with the Version 1.0 release.

```
! Schedule Type Declaration, needed if not already present in input file
ScheduleType,Fraction, 0.0 : 1.0 ,CONTINUOUS;

! ********** LIGHTING SCHEDULES **********

! WORK DAY SCHEDULE
DAYSCHEDULE,ELE-WKDAY,Fraction,
   0.08, 0.08, 0.08, 0.08, 0.08, 0.08,
   0.13, 0.55, 0.69, 0.69, 0.69, 0.67,
   0.66, 0.69, 0.69, 0.68, 0.37, 0.12,
   0.09, 0.09, 0.09, 0.08, 0.08, 0.08;

! VACATION DAY SCHEDULE
DAYSCHEDULE,ELE-WKEND,Fraction,
   0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
   0.07, 0.08, 0.08, 0.09, 0.08, 0.08,
   0.08, 0.08, 0.09, 0.08, 0.08, 0.07,
   0.07, 0.07, 0.07, 0.06, 0.06, 0.06;

! WORK WEEK SCHEDULE
WEEKSCHEDULE, ELE-WORK-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKDAY, ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

! VACATION WEEK SCHEDULE
WEEKSCHEDULE, ELE-VAC-WEEK,
   ! Sunday thru Saturday
   ELE-WKEND, ELE-WKEND, ELE-WKEND, ELE-WKEND,
   ELE-WKEND, ELE-WKEND,ELE-WKEND,
   ! Holiday, Summer Design Day, Winter Design Day, Custom 1, Custom 2
   ! For Summer design days use Weekday loads,  for Winter use weekend
   ELE-WKEND, ELE-WKDAY, ELE-WKEND, ELE-WKEND, ELE-WKEND;

SCHEDULE,ELE-SCH,Fraction,
   ELE-VAC-WEEK , 1, 1, 1, 1,
   ELE-WORK-WEEK, 1, 2, 7, 3,
   ELE-VAC-WEEK , 7, 4, 7, 4,
   ELE-WORK-WEEK, 7, 5,11,22,
   ELE-VAC-WEEK ,11,23,11,24,
   ELE-WORK-WEEK,11,25,12,24,
   ELE-VAC-WEEK ,12,25,12,25,
   ELE-WORK-WEEK,12,26,12,30,
   ELE-VAC-WEEK ,12,31,12,31;

! LIGHTING INTERNAL LOADS COMMAND
! Insert appropriate Zone Name in place of "ZoneName" in next line
LIGHTS, ZoneName, ELE-SCH,
   ! Lighting level=3.01 W/sqft, Area=4000 sqft
```

```
12044,  ! Design Level [W]
! Return-vented fluorescent lights
0.20,  ! Return Air Fraction
0.20,  ! Fraction Radiant
0.20,  ! Fraction Visible
0.00;  ! Fraction Replaceable
```

The values shown above for the peak lighting level for "LIGHTS" are for illustrative purposes. Normally, the user would select these values based on the observed characteristics (or design) for the building considered.

The schedules "ELE-VAC-WEEK" and ELE-WORK-WEEK" scale the peak value shown.

The input file shown uses the Weekend schedules for Holidays.

The Holidays shown in the input file are: New Year's Day, U.S. Independence Day, Thanksgiving, and Christmas. This assumes the user has set the "Use WeatherFile Holidays/Special Days" field to "No" in the “RunPeriod" object.