FirstEnergy Corp.

On Behalf of
The Cleveland Electric Illuminating Company
Pennsylvania Power Company
Ohio Edison Company
The Toledo Edison Company
and
American Transmission Systems, Incorporated

2006-ELECTRIC

LONG-TERM FORECAST REPORT

TO THE

PUBLIC UTILITIES COMMISSION OF OHIO

CASE NO. 06-504-EL-FOR

By: FirstEnergy Corp.
76 South Main Street
Akron, OH 44308

CERTIFICATE OF SERVICE

I hereby certify that the FirstEnergy Corp. 2006 Long-Term Forecast Report was filed on behalf of The Cleveland Electric Illuminating Company, Ohio Edison Company, Pennsylvania Power Company, The Toledo Edison Company and American Transmission Systems, Inc. with the Public Utilities Commission of Ohio on April 14, 2006 and that:

1. Pursuant to Rule 4901:5-1-03(F), Ohio Administrative Code, a copy of FirstEnergy's 2005 Long-Term Forecast Report has been delivered or mailed on the day of filing to the Office of the Ohio Consumers' Counsel;

2. Pursuant to Rule 4901:5-1-03(G), Ohio Administrative Code, within three days of filing with the Public Utilities Commission of Ohio, a letter stating that the Long-Term Forecast Report has been filed with the Public Utilities Commission of Ohio and that a copy of the Long-Term Forecast report is available for public inspection at the Public Utilities Commission offices located at 180 East Broad Street, Columbus, Ohio, will be sent by first class mail to the appropriate county libraries

3. Pursuant to Rule 4901:5-1-03(H), Ohio Administrative Code, FirstEnergy Corp. will keep at least one copy of its 2005 Long-Term Forecast Report at its principal business office for public inspection during business hours; and

4. Pursuant to Rule 4901:5-1-03(I), Ohio Administrative Code, FirstEnergy Corp. will provide a copy of its 2005 Long-Term Forecast Report to any person upon request at a cost to cover the expenses incurred.

David M. Blank
Vice President, Rates and Regulatory Affairs
FirstEnergy Corp.
76 South Main Street
Akron, OH 44308-1890
(330) 384-5451

ATTESTATION

The FirstEnergy Corp. 2006 Long-Term Forecast Report filed on behalf of Ohio Edison Company, Pennsylvania Power Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company and American Transmission Systems, Incorporated is true and correct to the best of my knowledge and belief.

David M. Blank
Vice President, Rates and Regulatory Affairs
FirstEnergy Corp.

FirstEnergy Corp
Long-Term Forecast Report
2006

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CHAPTER 1

GENERAL REMARKS

GENERAL REMARKS

The following Long-Term Forecast Report is submitted in accordance with the requirements of the Ohio Revised Code, Chapter 4935. Section 4935.04 (C) of that Chapter provides in part:

> "Each person owning or operating a major utility facility within this state, or furnishing gas, natural gas, or electricity directly to more than fifteen thousand customers within this state annually shall furnish a report to the Commission for its review."

This Long-Term Forecast Report (LTFR) is submitted by The Cleveland Electric Illuminating Company (CEI), Ohio Edison Company (OEC), Toledo Edison Company (TE), and American Transmission System, Incorporated (ATSI), all of which are Ohio corporations, as well as by Pennsylvania Power Company (PP), a wholly-owned subsidiary of Ohio Edison Company and a Pennsylvania corporation (herein referred to as "Operating Companies" or the "Applicants"). The electric systems of the Operating Companies are interconnected and fully integrated, and for planning and operating purposes are treated as a single electric system. ATSI, FirstEnergy's wholly-owned subsidiary, owns and operates the companies' transmission assets, including the system control center. In this report, unless otherwise indicated, the information presented represents information for the Operating Companies treated as a single system hereinafter referred to as "ATSI", or simply the System. Separate data are presented for FirstEnergy's Ohio Operating Companies (OE, CEI, TE and ATSI) where required or where deemed appropriate because of the nature of the requirement to which a response is made.

The information on "existing substation and transmission facilities" reflects information regarding facilities that were in service prior to or on December 31, of the preceding year. The peak load and energy forecasts were developed in 2005 and are based on the most recently available data from 2004/2005.

A letter stating that a copy of this report is available for public inspection at the Commission's Offices located at 180 East Broad Street, Columbus, Ohio is being mailed to all public libraries listed on Exhibit A. This Exhibit lists the designated libraries for each Ohio county in the Companies' service area. Pursuant to Rule 4901:5-1-03(F) a copy of this report is also being provided to the Ohio Consumers' Counsel.

SPECIAL TOPIC QUESTIONS

By letter dated October 25, 2005, the Commission informed the Company of the Special Topics in the area of Transmission and Distribution that are to be addressed in the LTFR for 2006.

Ashland County
Ashland College Library
401 College Avenue
Ashland, OH 44805

Ashtabula County
Ashtabula County District Library
335 W. 44th Street
Ashtabula, OH 44004

Carroll County
Carroll County District Library
70 N. Lisbon Street
Carrollton, OH 44615

Champaign County
Champaign County Library
160 W. Market Street
Urbana, OH 43078

Clark County
Clark County Public Library
201 S. Fountain Avenue
Springfield, OH 45502

Columbiana County
Columbiana County Public Library
201 E. Fourth Street
East Liverpool, OH 43920

Lepper Library
303 E. Lincoln Way
Lisbon, OH 44432

Crawford County
Bucyrus Public Library
200 E. Mansfield
Bucyrus, OH 44820

Cuyahoga County
Cleveland Public Library
Reference Division
325 Superior Avenue, N.E.
Cleveland, OH 44114

Cuyahoga County Public Library
Maple Heights Regional
5225 Library Lane
Maple Heights, OH 44137

Defiance County
Defiance Public Library
320 Fort Street
Defiance, OH 43512

Delaware County
Delaware County District Library
84 E. Winter Street
Delaware, OH 43015

Erie County
Library Association of Sandusky
Columbus Avenue and W. Adams
Sandusky, OH 44870

Huron Public Library
333 Williams Street
Huron, OH 44839

Fayette County
Carnegie Public Library
127 S. North Street
Washington C.H., OH 43160

Franklin County
Columbus Metropolitan Library
Attn: N. Friday, Biography,
History & Travel Division
96 S. Grant Avenue
Columbus, OH 43215-4781

Fulton County
Delta Public Library
402 Main Street
Delta, OH 43515

Geauga County
Geauga County Public Library
110 E. Park Street
Chardon, OH 44024

Greene County
Hallie Q. Brown Memorial Library
Central State University
Wilberforce, OH 45384

Greene County District Library
76 East Market Street, POB 520
Xenia, OH 45385

Hardin County
Mary Lou Johnson Hardin County
District Library
325 E. Columbus Street
Kenton, OH 43326

Henry County
Napoleon Public Library
310 W. Clinton Street
Napoleon, OH 43545

Huron County
Willard Memorial Library
6 W. Emerald Street
Willard, OH 44890

Knox County
Mt. Vernon Public Library
201 N. Mulberry Street
Mt. Vernon, OH 43050

Lake County
Morley Library
184 Phelps Street
Painesville, OH 44077

Licking County
Newark Public Library
88 W. Church Street
Newark, OH 43055

Lorain County
Lorain Public Library
351 Sixth Street
Lorain, OH 44052

Oberlin College Library
Reference Division
Lorain & Professor Sts.
Oberlin, OH 44074

Elyria Public Library
320 Washington Avenue
Elyria, OH 44035

Lucas County
Toledo-Lucas County Public Library
Reference Division
325 Michigan Street
Toledo, OH 43624

University of Toledo Library
Reference Division
2801 West Bancroft Street
Toledo, OH 43606

Madison County
London Public Library
20 E. First Street
London, OH 43140

West Jefferson Public Library
270 Lilly Chapel Road
West Jefferson, OH 43162

Mahoning County
Public Library of Youngstown
Reference Division
305 Wick Avenue
Youngstown, OH 44503

Marion County
Marion Public Library
445 E. Church Street
Marion, OH 43302

Medina County
Franklin Sylvester Library
210 S. Broadway
Medina, OH 44256

Morrow County
Mt. Gilead Free Public Library
35 E. High Street
Mt. Gilead, OH 43338

Ottawa County
Ida Rupp Public Library
310 Madison Street
Port Clinton, OH 43452

Portage County
Portage County District Library
10482 South Street
Garrettsville, OH 44231

Kent State University Library
Serials Department
Kent, OH 44242-0001

Putnam County
Putnam County District Library
325 N. Thomas Street, P.O. Box 308
Ottawa, OH 45875-0308

Richland County
Mansfield Public Library
43 W. Third Street
Mansfield, OH 44902

Sandusky County
Birchard Public Library
423 Croghan Street
Fremont, OH 43420

Seneca County
Tiffin-Seneca Public Library
77 Jefferson Street
Tiffin, OH 44883

Stark County
Stark County District Library
715 Market Ave., N.
Canton, OH 44702

Summit County
Akron-Summit County Public Library
60 South High Street
Akron, OH 44326

Trumbull County
Warren Public Library
444 Mahoning Avenue, N.W.
Warren, OH 44483

Tuscarawas County
Tuscarawas County Public Library
121 Fair Avenue., N.W.
New Philadelphia, OH 44663

Union County
Marysville School District
Public Library
231 S. South Street
Marysville, OH 43040

Wayne County
Wayne County Public Library
304 N. Market Street
Wooster, OH 44691

Williams County
Bryan Public Library
107 E. High Street
Bryan, OH 43506

Wood County
Wood County District Public
Library
251 N. Main Street
Bowling Green, OH 43402

Bowling Green State
University Library
Documents Librarian
Bowling Green, OH 43403

Wyandot County
Upper Sandusky Community Library
301 N. Sandusky Avenue
Upper Sandusky, OH 43351

CHAPTER 2

GENERAL GUIDELINES

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GENERAL GUIDELINES

(A) DEFINITIONS

The terminology used in this chapter and throughout this report conforms to the definitions in Rules 4901:5-1-01 and 4901:5-5-01.

(B) SUMMARY OF THE LONG-TERM FORECAST REPORT

(1) Planning Objectives

The planning objective of the Long-Term Forecast Report is to present an estimate of future load and energy consumption by the Operating Companies' service area customers, taking into account local, and national business conditions, as well as historical usage patterns.

2)Energy and Load Forecast Summary

This Long-Term Forecast Report has been submitted by the Operating Companies in accordance with the Ohio Revised Code, Chapter 4935.

The Operating Companies' distribution forecast is the simple summation of the distribution forecasts for Ohio Edison Company (OE), The Cleveland Electric Illuminating Company (CEI), The Toledo Edison Company (TE) and Pennsylvania Power Company (PP). The 2006 Forecast of Energy and Peak Demands projects total energy for the Operating Companies System to grow at an average annual rate of 1.5% through 2016 reaching 69,133 GWH by 2010 and 75,343 GWH by 2016. Annual internal peak demand for the Operating Companies' System is expected to grow at an average annual rate of 1.1%.

(3)Load Forecasting Process

The forecasting for the transmission system is covered in Chapter 3. The forecasting for the distribution system is detailed in Chapter 4.

(C) **SPECIAL TOPICS AREA**

By a letter dated October 15th, 2005, The Commission informed the Operating Companies of the Special Topics in the area of Transmission and Distribution that are to be addressed in the LTFR for 2006. The Operating Companies' responses to the Special Topics are addressed on the following page.

(D) **FORECAST DOCUMENTATION**

The forecast is to include a description of the forecast methodology that includes a description of the forecast methodology used, assumptions and database documentation. This information is detailed in the Chapter 3 for the transmission system and Chapter 4 for the distribution system.

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CONFIDENTIAL HIGHLY SENSITIVE -CEII

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4(F)	DISTRIBUTION SWITCHING DIAGRAMS (FILED UNDER SEAL)

(A) SUMMARY OF THE LONG-TERM DISTRIBUTION FORECAST

(1) Planning Objectives

The Operating Companies are in business to meet the present and future energy needs of its customers. In pursuit of this mission, the Operating Companies' distribution planning processes are guided by the following general objectives:

- Deliver electricity and energy-related products and services, in a safe and environmentally responsible manner, at acceptable levels of price and reliability.
- Support a vital economy within the Operating Companies' service territory.
- Preserving sufficient flexibility in the Operating Companies distribution plans so as to enable the Operating Companies to pursue alternative courses of action as future circumstances warrant.
- Earning competitive cash returns on funds invested in distribution options.

(2) Energy and Load Forecast Summary

Forecasts were independently prepared for the four operating companies. Short-term models were re-estimated for all classes of the four companies. Long-term results from those same class models were reviewed and determined to be appropriate for the long-term forecast.

The forecast for each of the four companies is the summation of the forecasts for the various classes. The Operating Companies distribution forecast is the summation of these four energy forecasts. The Operating Companies' load forecast combines the load forecasts for the four Operating Companies using the appropriate diversity factors.

System Forecast

Adding the corresponding energy forecasts for Ohio Edison, Pennsylvania Power, Toledo Edison and CEI produces the FirstEnergy System energy forecast. However, the annual system peak demand cannot generally be computed by adding the four companies' peaks, because this would ignore the effects of diversity (or difference in the time of occurrence) between the peak demands of the individual companies. The correct equation for combining the individual company diversified peak demands into an overall FirstEnergy System diversified demand is:

$$FES = (OEC+PP + CEI + TE) * D$$

where FES is the monthly FirstEnergy System peak demand including firm off-system load, OEC is the monthly internal Ohio Edison peak demand , PP is the monthly internal Pennsylvania Power Company peak demand , CEI is the monthly internal Cleveland Electric Illuminating peak, TE is the monthly internal Toledo Edison peak, and D is a diversity factor needed to obtain the peak for the FirstEnergy system. For this forecast, the diversity factor D varies by month. The diversity factor is .984 for summer peaks, .992 for winter peaks, and .985 for an average of all months throughout the forecast period.

The annual load factors produced as a result of these forecasts are shown in the following table.

Annual Load Factors

Year	Ohio Edison	CEI	Toledo Edison	FE System*
2001	56.3%	58.0%	65.0%	58.7%
2002	51.6%	55.3%	65.3%	57.8%
2003	56.5%	60.4%	65.6%	63.4%
2004	63.7%	61.9%	66.9%	64.1%
2005	59.4%	58.9%	65.7%	60.1%
2006	56.7%	57.4%	64.5%	60.2%
2007	56.2%	57.4%	64.5%	60.0%
2008	55.8%	57.4%	64.5%	59.8%
2009	55.8%	57.7%	64.5%	60.0%
2010	55.7%	57.8%	64.2%	59.9%
2011	55.5%	57.9%	64.0%	59.9%
2012	55.3%	58.0%	63.7%	59.8%
2013	55.5%	58.3%	63.8%	60.1%
2014	55.5%	58.6%	63.8%	60.2%
2015	55.6%	58.8%	63.8%	60.4%
2016	55.5%	59.0%	63.7%	60.4%

Notes: These load factors are calculated from total distribution energy from Forms FE4-D1 and FE4-D2 and annual internal peaks from Forms FE4-D4 and FE4-D5. Historical load factors tend to be higher than forecast load factors due to company-initiated curtailments of customers served under curtailable contracts that lower historical peaks.

* Includes Pennsylvania Power.

(B) GENERAL GUIDELINES

This portion of the Operating Companies Long-Term Forecast is submitted to satisfy the requirements of Rule 4901:5-5-04. Rule 4901:5-5-04(A) specifies guidelines to be used to produce the EDU's monthly forecasts of energy and peak load in the Electric Distribution Forecast. These guidelines have been observed in the preparation of Chapter 4 of this Report. Rule 4901:5-5-02(C) requires that special subject areas be covered. Chapter 4(C) of this report supplies the necessary forecast documentation.

The necessity of reporting data in the manner set forth in the administrative rules means that energy and load data contained in this report may be different from data reported by the Operating Company in other filings and for other purposes. For example, the Operating Companies normally include Rural Electric Cooperative (REC) sales and loads in reported total sales and peak demands. However, for this report, all REC sales and loads have been excluded from the Operating Companies' distribution data. Additionally, the Operating Companies provide wholesale service to municipal customers located within their service territories. For the historical period and projected period, energy and the associated peak load delivered to municipal customers have been excluded from the distribution data contained in this report for the individual Operating Companies and the Operating Companies' System. However energy and peak loads associated with REC, municipal resale are included within the transmission data reported within this document.

(C) FORECAST DOCUMENTATION

Overview

The energy forecasts were independently prepared for the four distribution companies. Development of the electric sales forecast for each distribution company utilizes a "multi-model" approach in order to identify the model that best captures recent trends in actual electric consumption for each customer class. Quarterly electric sales and economic variables from the late 1980's onward are used in the forecasting models and in the overall analyses of trends. Focus is placed on electric sales for the most recent years in order to recognize impacts due to changes in customer usage including large customers and movement in the economy.

While the relationship between price and energy consumption was considered, models analyzed in the forecast method have indicated that historical prices are not a significant driver for retail energy demand in the Operating Companies' regions; therefore, price was not explicitly used as an independent variable in this year's forecast models due to this lack of correlation. The Operating Companies will continue to use a multi-model approach to consider the association between price and energy consumption in the same manner for future retail energy forecasts.

The energy (sales) forecasts were developed by evaluating the fits of econometric regressions, Holt/Winters exponential smoothing models, simple moving averages, and Box Jenkins ARIMA modeling. These forecasting tools are part of a forecasting software package called "Forecast Pro" (discussed below in the "Residential" section). The multi-model method used information about economic activity in the service area, the state, and the nation. Models were updated, rerun and evaluated for all customer classes of the Operating Companies. Information regarding economic conditions comes from a variety of sources, which include the following:

- Economic consulting firms
- Moody's Economy.com
- Large Industrial customer survey for each distribution company.

The preparation of the electric sales forecasts incorporates analysis of each individual class of customer (residential, commercial and industrial). A brief description of the forecast methodology used for each of the three major customer classes follows:

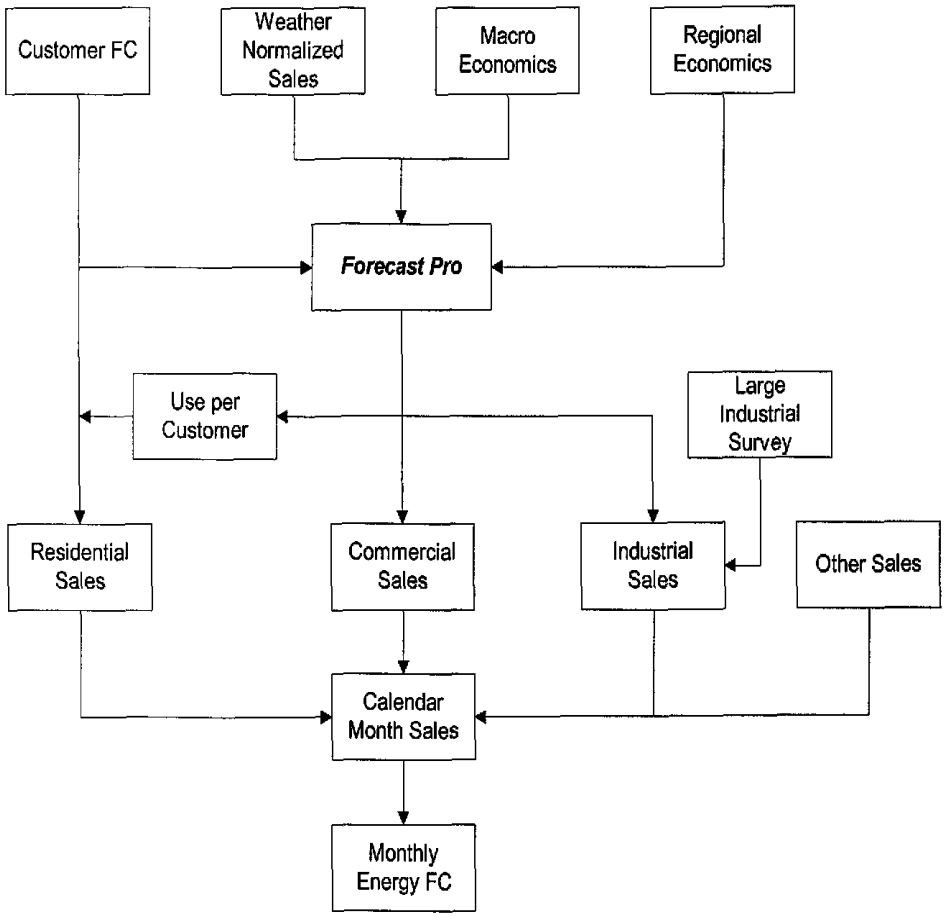
1) Residential - The best fit for the residential sectors within each of the Operating Companies consisted of trending models such as exponential smoothing and Box-Jenkins. The software used to project residential sales is Forecast Pro, a package which utilizes a variety of statistical forecasting techniques. Forecast Pro projects energy usage by fitting quantitative models to statistical seasonal and growth patterns from the past, either for the time series itself, or, in the case of regression, other explanatory variables like population, GDP and other income indicators.
2) Commercial – Sales forecasts for this class are developed by evaluating historical sales to variability with the movement of variables like, state non-manufacturing employment, state personal income, real gross domestic product, cooling and heating degree-days, consumer price index and the number of residential customers along with analysis of historical trend and seasonality patterns. Forecast Pro is the forecasting tool used to develop the relationships among the various variables.
3) Industrial – Electric sales to this class are more reliant upon microeconomic factors that are determined to consistently capture the movement of sales in the largest customers in each Operating Company. The industrial sales forecast also reflects specific information regarding large customer plans to expand or close facilities. A large industrial customer survey, reflecting approximately 50% of the company industrial sales, is conducted each year for each distribution company. This survey provides information on specific industrial plant operations over the next four years. If a customer indicates that the facility will be closing, cutting back or expanding operations, electric sales to that customer are adjusted for both the short and long-term forecasts.

Weather Normalization of MWH Sales

The historical MWH sales for the residential and commercial classes are weather normalized before being modeled so that the model does not reflect abnormal sales due to infrequent extreme weather events. Each month the heating and cooling degree-days for each of the Operating Companies are collected and used to weather modify the actual MWH sales so that sales no longer reflect weather abnormalities. The MWH adjustment is based on the difference of degree-days from "normal". Normal degree-days are defined as the average of the last 20 years for each of the 12 months. For tracking forecast accuracy, the weather-adjusted MWH sales are then compared to the Operating Companies' forecasts to determine the monthly accuracy.

A conceptual representation of the electric sales forecasting methodology is shown below:

FE SALES FORECAST PROCESS (WIRES)



(D) DISTRIBUTIONS FORECAST FORMS

The following pages contain the various forms required by Rule 4901:5-5-04

4901-5-04(B)(1)(a)

PUCO FORM FE4-D1: EDU SERVICE AREA ENERGY DELIVERY FORECAST
(Megawatt Hours/Year) (a)

Ohio Edison Company

		(1)	(2)	(3)	(4)	(5)	(6) Total End-Use Delivery	(7) Line Losses And	(8) Total Energy
	Year	Residential	Commercial	Industrial	Railways & Railroads	Other (b)	(1 + 2 + 3 + 4 +5)	Company Use	(6 + 7)
-5	2001	8,254,000	6,748,000	9,455,000	-	146,000	24,603,000	1,749,000	26,352,000
-4	2002	8,700,000	6,726,000	9,168,000	-	148,000	24,742,000	1,780,000	26,522,000
-3	2003	8,503,000	6,823,000	9,194,000	-	153,000	24,673,000	1,772,000	26,445,000
-2	2004	8,629,000	6,976,000	9,126,000	-	138,000	24,869,000	1,886,000	26,755,000
-1	2005	9,237,000	7,199,000	9,429,000	-	148,000	26,013,000	2,163,000	28,176,000
0	2006	9,010,000	7,200,000	9,441,000	-	150,000	25,801,000	1,863,000	27,664,000
1	2007	9,136,000	7,301,000	9,484,000	-	150,000	26,071,000	1,886,000	27,957,000
2	2008	9,280,000	7,410,000	9,562,000	-	150,000	26,402,000	1,912,000	28,314,000
3	2009	9,432,000	7,522,000	9,653,000	-	150,000	26,757,000	1,940,000	28,697,000
4	2010	9,583,000	7,635,000	9,730,000	-	150,000	27,098,000	1,968,000	29,066,000
5	2011	9,737,000	7,749,000	9,807,000	-	150,000	27,443,000	1,996,000	29,439,000
6	2012	9,893,000	7,865,000	9,885,000	-	150,000	27,793,000	2,024,000	29,817,000
7	2013	10,051,000	7,983,000	9,964,000	-	150,000	28,148,000	2,053,000	30,201,000
8	2014	10,212,000	8,103,000	10,044,000	-	150,000	28,509,000	2,082,000	30,591,000
9	2015	10,375,000	8,224,000	10,124,000	-	150,000	28,873,000	2,111,000	30,984,000
10	2016	10,541,000	8,347,000	10,205,000	-	150,000	29,243,000	2,141,000	31,384,000

(a) To be filled out by all EDUs. The category breakdown should refer to the Ohio portion of the EDU's total service area.
(b) Such as Street & Highway Lighting, Interdepartmental and Other Public Authorities.

4901-5-04(B)(1)(a)

PUCO FORM FE4-D1: EDU SERVICE AREA ENERGY DELIVERY FORECAST
(Megawatt Hours/Year) (a)

The Cleveland Electric Illuminating Company

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Year	Residential	Commercial	Industrial	Railways & Railroads	Other (b)	Total End-Use Delivery (1 + 2 + 3 + 4 +5)	Line Losses And Company Use	Total Energy (6 + 7)
-5	2001	5,061,000	4,907,000	9,593,000	-	167,000	19,728,000	1,288,000	21,016,000
-4	2002	5,370,000	4,628,000	8,921,000	-	167,000	19,086,000	1,443,000	20,529,000
-3	2003	5,217,000	4,690,000	8,908,000	-	169,000	18,984,000	1,434,000	20,418,000
-2	2004	5,264,000	4,817,000	9,006,000	-	162,000	19,249,000	1,557,000	20,806,000
-1	2005	5,700,000	4,998,000	9,041,000	-	172,000	19,911,000	1,738,000	21,649,000
0	2006	5,426,000	5,074,000	9,061,000	-	174,000	19,735,000	1,498,000	21,233,000
1	2007	5,471,000	5,206,000	9,185,000	-	174,000	20,036,000	1,521,000	21,557,000
2	2008	5,537,000	5,350,000	9,268,000	-	174,000	20,329,000	1,545,000	21,874,000
3	2009	5,603,000	5,494,000	9,352,000	-	174,000	20,623,000	1,569,000	22,192,000
4	2010	5,670,000	5,642,000	9,436,000	-	174,000	20,922,000	1,593,000	22,515,000
5	2011	5,738,000	5,794,000	9,521,000	-	174,000	21,227,000	1,618,000	22,845,000
6	2012	5,807,000	5,951,000	9,607,000	-	174,000	21,539,000	1,644,000	23,183,000
7	2013	5,877,000	6,111,000	9,693,000	-	174,000	21,855,000	1,670,000	23,525,000
8	2014	5,947,000	6,276,000	9,780,000	-	174,000	22,177,000	1,697,000	23,874,000
9	2015	6,018,000	6,445,000	9,868,000	-	174,000	22,505,000	1,724,000	24,229,000
10	2016	6,090,000	6,619,000	9,957,000	-	174,000	22,840,000	1,751,000	24,591,000

(a) To be filled out by all EDUs. The category breakdown should refer to the Ohio portion of the EDU's total service area.
(b) Such as Street & Highway Lighting, Interdepartmental and Other Public Authorities.

4901-5-04(B)(1)(a)

PUCO FORM FE4-D1: EDU SERVICE AREA ENERGY DELIVERY FORECAST
(Megawatt Hours/Year) (a)

The Toledo Edison Company

		(1)	(2)	(3)	(4)	(5)	(6) Total End-Use Delivery	(7) Line Losses And	(8) Total Energy
	Year	Residential	Commercial	Industrial	Railways & Railroads	Other (b)	(1 + 2 + 3 + 4 +5)	Company Use	(6 + 7)
-5	2001	2,258,000	2,667,000	5,397,000	-	60,000	10,382,000	556,000	10,938,000
-4	2002	2,427,000	2,702,000	5,280,000	-	57,000	10,466,000	598,000	11,064,000
-3	2003	2,312,000	2,771,000	5,097,000	-	69,000	10,249,000	589,000	10,838,000
-2	2004	2,316,000	2,796,000	5,006,000	-	56,000	10,174,000	880,000	11,054,000
-1	2005	2,543,000	2,938,000	5,110,000	-	64,000	10,655,000	685,000	11,340,000
0	2006	2,401,000	2,947,000	5,287,000	-	60,000	10,695,000	616,000	11,311,000
1	2007	2,419,000	3,005,000	5,445,000	-	60,000	10,929,000	627,000	11,556,000
2	2008	2,445,000	3,067,000	5,599,000	-	60,000	11,171,000	639,000	11,810,000
3	2009	2,472,000	3,128,000	5,699,000	-	60,000	11,359,000	649,000	12,008,000
4	2010	2,499,000	3,188,000	5,779,000	-	60,000	11,526,000	658,000	12,184,000
5	2011	2,526,000	3,249,000	5,860,000	-	60,000	11,695,000	668,000	12,363,000
6	2012	2,554,000	3,311,000	5,942,000	-	60,000	11,867,000	678,000	12,545,000
7	2013	2,582,000	3,374,000	6,026,000	-	60,000	12,042,000	688,000	12,730,000
8	2014	2,610,000	3,438,000	6,110,000	-	60,000	12,218,000	698,000	12,916,000
9	2015	2,639,000	3,503,000	6,195,000	-	60,000	12,397,000	708,000	13,105,000
10	2016	2,668,000	3,570,000	6,282,000	-	60,000	12,580,000	719,000	13,299,000

(a) To be filled out by all EDUs. The category breakdown should refer to the Ohio portion of the EDU's total service area.
(b) Such as Street & Highway Lighting, Interdepartmental and Other Public Authorities.

4901-5-04(B)(1)(b)

PUCO FORM FE4-D2: EDU SERVICE AREA ENERGY DELIVERY FORECAST
(Megawatt Hours/Year) (a)

FirstEnergy Corp.

		(1)	(2)	(3)	(4)	(5)	(6) Total End-Use Delivery	(7)	(8) Total Energy
	Year	Residential	Commercial	Industrial	Railways & Railroads	Other (b)	(1 + 2 + 3 + 4 +5)	Line Losses And Company Use	(6 + 7)
-5	2001	16,964,000	15,542,000	25,984,000	-	379,000	58,869,000	3,886,000	62,755,000
-4	2002	18,030,000	15,324,000	24,874,000	-	378,000	58,606,000	4,131,000	62,737,000
-3	2003	17,538,000	15,567,000	24,663,000	-	397,000	58,165,000	4,102,000	62,267,000
-2	2004	17,760,000	15,888,000	24,711,000	-	363,000	58,722,000	4,980,000	63,702,000
-1	2005	19,144,000	16,502,000	25,209,000	-	391,000	61,246,000	4,976,000	66,222,000
0	2006	18,496,000	16,605,000	25,354,000	-	390,000	60,845,000	4,311,000	65,156,000
1	2007	18,725,000	16,934,000	25,692,000	-	390,000	61,741,000	4,375,000	66,116,000
2	2008	19,006,000	17,287,000	26,023,000	-	390,000	62,706,000	4,446,000	67,152,000
3	2009	19,296,000	17,642,000	26,314,000	-	390,000	63,642,000	4,516,000	68,158,000
4	2010	19,587,000	18,000,000	26,571,000	-	390,000	64,548,000	4,585,000	69,133,000
5	2011	19,884,000	18,365,000	26,830,000	-	390,000	65,469,000	4,656,000	70,125,000
6	2012	20,186,000	18,739,000	27,092,000	-	390,000	66,407,000	4,729,000	71,136,000
7	2013	20,492,000	19,120,000	27,358,000	-	390,000	67,360,000	4,803,000	72,163,000
8	2014	20,802,000	19,510,000	27,626,000	-	390,000	68,328,000	4,878,000	73,206,000
9	2015	21,118,000	19,907,000	27,896,000	-	390,000	69,311,000	4,953,000	74,264,000
10	2016	21,439,000	20,314,000	28,170,000	-	390,000	70,313,000	5,030,000	75,343,000

(a) To be filled out by all EDUs operating across Ohio boundries. The category breakdown should refer to the EDU's total service area.
(b) Such as Street & Highway Lighting, Interdepartmental and Other Public Authorities.

4901-5-04(B)(2)(a)

PUCO FORM FE4-D4: EDU SYSTEM SEASONAL PEAK LOAD DEMAND FORECAST
(Megawatts) (a)

Ohio Edison Company

	Year	Summer	Winter (b)
-5	2001	5,341	3,809
-4	2002	5,872	4,102
-3	2003	5,343	4,058
-2	2004	4,778	4,344
-1	2005	5,417	4,375
0	2006	5,567	4,364
1	2007	5,678	4,403
2	2008	5,775	4,445
3	2009	5,868	4,486
4	2010	5,962	4,529
5	2011	6,059	4,556
6	2012	6,136	4,587
7	2013	6,216	4,615
8	2014	6,291	4,641
9	2015	6,382	4,667
10	2016	6,434	4,693

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area.

(b) Winter load reference is to peak loads which follow the summer peak load.

4901-5-04(B)(2)(a)

PUCO FORM FE4-D4: EDU SYSTEM SEASONAL PEAK LOAD DEMAND FORECAST
(Megawatts) (a)

The Cleveland Electric Illuminating Company

	Year	Summer	Winter (b)
-5	2001	4,133	2,962
-4	2002	4,239	3,247
-3	2003	3,859	3,177
-2	2004	3,825	3,168
-1	2005	4,196	3,219
0	2006	4,226	3,393
1	2007	4,285	3,420
2	2008	4,340	3,446
3	2009	4,394	3,473
4	2010	4,448	3,499
5	2011	4,503	3,525
6	2012	4,553	3,550
7	2013	4,603	3,575
8	2014	4,653	3,599
9	2015	4,700	3,623
10	2016	4,748	3,647

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area.

(b) Winter load reference is to peak loads which follow the summer peak load.

4901-5-04(B)(2)(a)

PUCO FORM FE4-D4: EDU SYSTEM SEASONAL PEAK LOAD DEMAND FORECAST
(Megawatts) (a)

The Toledo Edison Company

	Year	Summer	Winter (b)
-5	2001	1,921	1,482
-4	2002	1,935	1,569
-3	2003	1,886	1,648
-2	2004	1,881	1,675
-1	2005	1,971	1,636
0	2006	2,002	1,673
1	2007	2,045	1,689
2	2008	2,086	1,703
3	2009	2,125	1,717
4	2010	2,166	1,734
5	2011	2,205	1,749
6	2012	2,242	1,762
7	2013	2,278	1,775
8	2014	2,311	1,788
9	2015	2,344	1,800
10	2016	2,378	1,812

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area.

(b) Winter load reference is to peak loads which follow the summer peak load.

4901-5-04(B)(2)(b)

PUCO FORM FE4-D5: EDU SYSTEM SEASONAL PEAK LOAD DEMAND FORECAST
(Megawatts) (a)

FirstEnergy Corp.

	Year	Summer	Winter (b)
-5	2001	12,195	8,945
-4	2002	12,385	9,722
-3	2003	11,211	9,722
-2	2004	11,322	9,991
-1	2005	12,570	10,063
0	2006	12,350	10,269
1	2007	12,573	10,358
2	2008	12,777	10,449
3	2009	12,971	10,539
4	2010	13,168	10,634
5	2011	13,369	10,710
6	2012	13,543	10,787
7	2013	13,717	10,862
8	2014	13,884	10,933
9	2015	14,045	11,004
10	2016	14,209	11,076

(a) To be filled out by EDUs operating across Ohio boundaries. Data should refer to the the EDU's total service area.

(b) Winter load reference is to peak loads which follow the summer peak load.

Annual Growth Rates	
This Year's Average Annual Compound Grc	1.12%
Last Year's Compound Growth Rate=	1.48%

4901:5-5-04(B)(3)(a)

PUCO FORM FE4-D7: EDU's TOTAL MONTHLY ENERGY FORECAST (MWh)

Ohio Edison Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	2,535,800	-	-
February	2,252,900	-	-
March	2,318,600	-	-
April	2,092,800	-	-
May	2,179,400	-	-
June	2,304,700	-	-
July	2,474,300	-	-
August	2,438,400	-	-
September	2,150,400	-	-
October	2,272,000	-	-
November	2,236,800	-	-
December	2,407,900	-	-
Total	27,664,000		
Year 1 - 2007 (d)			
January	2,565,900	-	-
February	2,277,900	-	-
March	2,328,600	-	-
April	2,125,300	-	-
May	2,203,800	-	-
June	2,309,400	-	-
July	2,537,300	-	-
August	2,473,100	-	-
September	2,166,400	-	-
October	2,302,200	-	-
November	2,261,000	-	-
December	2,406,100	-	-
Total	27,957,000		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(a)

PUCO FORM FE4-D7: EDU's TOTAL MONTHLY ENERGY FORECAST (MWh)

The Cleveland Electric Illuminating Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	1,915,100	-	-
February	1,708,300	-	-
March	1,762,700	-	-
April	1,615,900	-	-
May	1,700,800	-	-
June	1,776,100	-	-
July	1,930,100	-	-
August	1,885,300	-	-
September	1,678,400	-	-
October	1,733,000	-	-
November	1,694,300	-	-
December	1,833,000	-	-
Total	21,233,000		
Year 1 - 2007 (d)			
January	1,945,300	-	-
February	1,733,900	-	-
March	1,779,100	-	-
April	1,648,500	-	-
May	1,727,300	-	-
June	1,788,800	-	-
July	1,989,200	-	-
August	1,921,800	-	-
September	1,699,100	-	-
October	1,762,300	-	-
November	1,718,800	-	-
December	1,842,900	-	-
Total	21,557,000		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(a)

PUCO FORM FE4-D7: EDU's TOTAL MONTHLY ENERGY FORECAST (MWh)

The Toledo Edison Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	1,017,900	-	-
February	908,500	-	-
March	947,800	-	-
April	863,900	-	-
May	897,400	-	-
June	947,400	-	-
July	1,015,700	-	-
August	986,800	-	-
September	894,700	-	-
October	934,900	-	-
November	920,200	-	-
December	975,800	-	-
Total	11,311,000		
Year 1 - 2007 (d)			
January	1,040,100	-	-
February	927,900	-	-
March	962,500	-	-
April	887,300	-	-
May	917,700	-	-
June	961,500	-	-
July	1,048,400	-	-
August	1,011,300	-	-
September	913,100	-	-
October	958,300	-	-
November	940,000	-	-
December	987,900	-	-
Total	11,556,000		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(a)

PUCO FORM FE4-D7: EDU's TOTAL MONTHLY ENERGY FORECAST (MWh)

FirstEnergy Corp.

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	5,468,800	5,934,000	-
February	4,869,700	5,279,500	-
March	5,029,100	5,461,200	-
April	4,572,600	4,960,000	-
May	4,777,600	5,169,500	-
June	5,028,200	5,422,600	-
July	5,420,100	5,858,800	-
August	5,310,500	5,750,900	-
September	4,723,500	5,095,500	-
October	4,939,900	5,331,400	-
November	4,851,300	5,241,600	-
December	5,216,700	5,651,000	-
Total	60,208,000	65,156,000	
Year 1 - 2007 (d)			
January	5,551,300	6,026,400	-
February	4,939,700	5,357,900	-
March	5,070,200	5,509,000	-
April	4,661,100	5,057,100	-
May	4,848,800	5,249,100	-
June	5,059,700	5,459,900	-
July	5,574,900	6,026,600	-
August	5,406,200	5,856,800	-
September	4,778,600	5,156,800	-
October	5,022,800	5,422,500	-
November	4,919,800	5,318,500	-
December	5,236,900	5,675,400	-
Total	61,070,000	66,116,000	

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

PUCO FORM FE4-D7: EDU's TOTAL MONTHLY ENERGY FORECAST (MWh)

Year 0 - 2006(d)	Ohio Edison Company (a)	The Cleveland Electric Illuminating Company (a)	Toledo Edison Company (a)	FirstEnergy Corp. (b)	Total System (c)
January	2,535,800	1,915,100	1,017,900	5,934,000	-
February	2,252,900	1,708,300	908,500	5,279,500	-
March	2,318,600	1,762,700	947,800	5,461,200	-
April	2,092,800	1,615,900	863,900	4,960,000	-
May	2,179,400	1,700,800	897,400	5,169,500	-
June	2,304,700	1,776,100	947,400	5,422,600	-
July	2,474,300	1,930,100	1,015,700	5,858,800	-
August	2,438,400	1,885,300	986,800	5,750,900	-
September	2,150,400	1,678,400	894,700	5,095,500	-
October	2,272,000	1,733,000	934,900	5,331,400	-
November	2,236,800	1,694,300	920,200	5,241,600	-
December	2,407,900	1,833,000	975,800	5,651,000	-
Total	27,664,000	21,233,000	11,311,000	65,156,000	
Year 1 - 2007(d)					
January	2,565,900	1,945,300	1,040,100	6,026,400	-
February	2,277,900	1,733,900	927,900	5,357,900	-
March	2,328,600	1,779,100	962,500	5,509,000	-
April	2,125,300	1,648,500	887,300	5,057,100	-
May	2,203,800	1,727,300	917,700	5,249,100	-
June	2,309,400	1,788,800	961,500	5,459,900	-
July	2,537,300	1,989,200	1,048,400	6,026,600	-
August	2,473,100	1,921,800	1,011,300	5,856,800	-
September	2,166,400	1,699,100	913,100	5,156,800	-
October	2,302,200	1,762,300	958,300	5,422,500	-
November	2,261,000	1,718,800	940,000	5,318,500	-
December	2,406,100	1,842,900	987,900	5,675,400	-
Total	27,957,000	21,557,000	11,556,000	66,116,000	

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(b)

PUCO FORM FE4-D8: EDU's TOTAL MONTHLY INTERNAL PEAK LOAD FORECAST
(Megawatts)

Ohio Edison Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	4,104 *	-	-
February	3,971 *	-	-
March	3,982	-	-
April	3,673	-	-
May	4,196	-	-
June	5,536	-	-
July	5,450	-	-
August	5,567	-	-
September	4,712	-	-
October	3,800	-	-
November	3,987	-	-
December	4,301	-	-
Total	5,567		
Year 1 - 2007 (d)			
January	4,364	-	-
February	4,186	-	-
March	4,026	-	-
April	3,713	-	-
May	4,279	-	-
June	5,645	-	-
July	5,558	-	-
August	5,678	-	-
September	4,805	-	-
October	3,835	-	-
November	4,023	-	-
December	4,341	-	-
Total	5,678		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(b)

PUCO FORM FE4-D8: EDU's TOTAL MONTHLY INTERNAL PEAK LOAD FORECAST
(Megawatts)
The Cleveland Electric Illuminating Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	3,090 *	-	-
February	3,008 *	-	-
March	3,156	-	-
April	2,997	-	-
May	3,339	-	-
June	4,226	-	-
July	4,196	-	-
August	4,183	-	-
September	3,657	-	-
October	3,071	-	-
November	3,138	-	-
December	3,386	-	-
Total	4,226		
Year 1 - 2007 (d)			
January	3,393	-	-
February	3,333	-	-
March	3,185	-	-
April	3,025	-	-
May	3,386	-	-
June	4,285	-	-
July	4,254	-	-
August	4,241	-	-
September	3,708	-	-
October	3,097	-	-
November	3,164	-	-
December	3,414	-	-
Total	4,285		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.
(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.
(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.
(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(b)

PUCO FORM FE4-D8: EDU's TOTAL MONTHLY INTERNAL PEAK LOAD FORECAST
(Megawatts)

The Toledo Edison Company

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	1,539 *	-	-
February	1,527 *	-	-
March	1,548	-	-
April	1,491	-	-
May	1,578	-	-
June	1,907	-	-
July	2,002	-	-
August	1,926	-	-
September	1,771	-	-
October	1,468	-	-
November	1,547	-	-
December	1,673	-	-
Total	2,002		
Year 1 - 2007 (d)			
January	1,666	-	-
February	1,636	-	-
March	1,564	-	-
April	1,505	-	-
May	1,612	-	-
June	1,949	-	-
July	2,045	-	-
August	1,967	-	-
September	1,809	-	-
October	1,482	-	-
November	1,560	-	-
December	1,689	-	-
Total	2,045		

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

4901:5-5-04(B)(3)(b)

PUCO FORM FE4-D8: EDU's TOTAL MONTHLY INTERNAL PEAK LOAD FORECAST
(Megawatts)

FirstEnergy Corp.

Year 0 - 2006(d)	Ohio Portion (a)	Total Service Area (b)	Total System (c)
January	-	9,378 *	-
February	-	9,225 *	-
March	-	9,378	-
April	-	8,727	-
May	-	9,699	-
June	-	12,280	-
July	-	12,340	-
August	-	12,350	-
September	-	10,792	-
October	-	8,860	-
November	-	9,406	-
December	-	10,187	-
Total		12,350	
Year 1 - 2007 (d)			
January	-	10,269	-
February	-	9,948	-
March	-	9,473	-
April	-	8,815	-
May	-	9,874	-
June	-	12,502	-
July	-	12,563	-
August	-	12,573	-
September	-	10,987	-
October	-	8,940	-
November	-	9,487	-
December	-	10,278	-
Total		12,573	

(a) To be filled out by all EDUs. Data should refer to the Ohio portion of the EDU's total service area in this column.

(b) EDUs operating across Ohio boundaries shall provide data for the total service area in this column.

(c) EDUs operating as a part of an integrated operating system shall provide data for the total system in this column.

(d) Actual data shall be indicated with an asterisk (*).

(E) SUBSTANTIATION OF THE PLANNED DISTRIBUTION SYSTEM

1) Thermal Overloading of Distribution Circuits and Equipment

Each of the Operating Companies perform distribution planning for their own service area. Distribution circuits range from 2400 volts to 34,500 volts depending upon the area. These distribution class circuits are all analyzed using similar techniques. Historically many methods were used to collect and analyze information concerning loading on circuits including reading substation meters and aggregating customer load data. The Operating Companies distribution systems are operated as radial systems. The planning for the sub-transmission systems (23 kV, 33kV and 34.5 kV), is performed by the local operating companies. The 23 kV, 33kV and 34.5 kV sub-transmission is considered distribution for planning purposes.

The Operating Companies provide the individual operating company personnel with the ability to forecast loads, by feeder and substation transformer, and in this process the program compares the forecasted load against the thermal ratings of the equipment. Any overloads are indicated on the output reports. This provides the fundamental way in which thermal overloads on distribution circuits and equipment are identified.

A load flow program, Windmill, has been made available to the individual operating companies and regional planners that will extract data from its automated mapping system. The regional planner uses this load flow program for detailed studies of individual circuits that are approaching loading limits. Detailed studies are also performed with this program to analyze the system in response to customer voltage complaints, siting capacitors and/or distribution circuit protection studies.

2) Voltage Variation on Distribution Circuits

ESSS rule 4901:1-10-04 requires each electric utility to file with the PUCO nominal service voltage information as part of the tariff. Distribution circuits are operated within acceptable ranges to provide proper service voltage to the customer as stated in the companies' tariffs. For secondary service voltage less than 600 volts, the Operating Companies comply with American National Standards Institute (ANSI) C84.1. For primary voltage service greater than 600 volts, the specified operating range is other than that stated in ANSI C84.1.

3) Analysis and Consideration of Proposed Solutions

When a planner reviews the load forecast and determines that an overload condition may occur in the future, the specific item that will experience overload is identified. The solution to prevent the overload depends upon the item. For instance, if it were an overhead conductor, replacing the existing conductor with a larger one may provide the required relief. At other times the solution may be to transfer load through a tie to another circuit. In still other instances it may be necessary to add a new circuit and/or substation in the area. The planner will typically develop several alternative solutions and estimate the costs for each of those solutions. The costs will be compared using normal economic analysis techniques, and the solution providing the most economic benefit will be chosen, absent technical constraints and operating concerns.

The analysis for a potential overload of a substation transformer will generally follow the same concepts employed for circuits. Replacement of existing units with larger capacity units or the addition of transformers or substations will be considered. The costs will again be estimated and analyzed using the same economic analysis techniques.

4) Adequacy of Distribution System to withstand Natural Disasters and Overload Conditions.

ESSS rule 4901:1-10-06 requires utilities to comply with the National Electrical Safety Code. These rules require utilities to design, install, and maintain lines and equipment to meet basic requirements. For example, distribution structures are designed to withstand both wind and ice loading. In the event that distribution outages occur, the Operating Companies have three regional dispatching offices that operate around the clock that will respond to system or customer problems.

The distribution system components have some inherent ability to withstand overload conditions. The design of equipment and lines has a temperature component that is incorporated into the rating of the equipment. When an overload occurs, the temperature may exceed its base value. However, there is some margin in the design, which can accommodate such events. Distribution systems have also been historically designed to allow for future growth and to allow the flexibility of transferring loads. While the Operating Companies' distribution systems are projected to see moderate to average load growth, in the future some areas will experience larger growth rates. This information is included in spot load growth forecasts that help identify overloads in advance of their occurring. Areas that are identified as having potential overloads are managed as described in Sections 1 and 3 above.

5) Studies Regarding Distribution System Improvement

For many years there have been guidelines used to select the size of the conductor to use for constructing new distribution circuits. These guidelines were developed by analyzing the losses for a given conductor type and the cost for using that conductor. The recommended size is based on assuring that the savings in losses will cover the increase in cost for the conductor.

The addition of capacitor banks on the distribution system is one of the alternatives that may be considered for reducing thermal loading. Personnel will periodically review distribution circuits to determine the power factor and recommend additional capacitors as necessary. By maintaining a high

its thermal capability most efficiently. Capacitor banks also help to improve the overall voltage profile of a system.

Distribution line regulators are another tool used to extend the reach of existing substation capacity. The regulators boost and re-regulate the distribution line voltage where the distance to the customers is such that service voltage violations could occur.

4(F) SWITCHING DIAGRAMS (FILED UNDER SEAL)

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