APPENDIX P

PROJECT AREA SUBSTATION LOAD DATA AND MINNESOTA POWER'S JULY 2021 ANNUAL ELECTRIC UTILITY FORECAST REPORT

Appendix P

Project Area Substation Load Data and Minnesota Power's July 2021 Annual Electric Utility Forecast Report

Pursuant to Minn. R. 7849.0270, Subp. 1 and Minn. R. 7849.0270, Subp. 2(A)-2(D), a Certificate of Need application must provide information related to peak demand and annual consumption data for an applicant's entire service territory and system. Minnesota Power requested and was granted an exemption from this rule requirement by the Minnesota Public Utilities Commission.[1] In lieu of the information required by Minn. R. 7849.0270, Minnesota Power agreed to substitute data in the form of historical substation load data for the Project area substations and to provide forecast information from Minnesota Power's most recent Annual Electric Utility Forecast Report ("AFR").[2]

Table 1 below provides historical substation peak demand data for the Project area substations.

Table 1: Historical Coincident Peak Demand for Project Area Substations

	2016		2017		2018		2019		2020	
	SUM	WTR	SUM	WTR	SUM	WTR	SUM	WTR	SUM	WTR
Peak Date	8/2/2016 16:00	1/18/2016 18:00	7/6/2017 16:00	1/4/2017 18:00	7/9/2018 14:00	12/27/2017 17:00	7/15/2019 14:00	1/29/2019 18:00	7/2/2020 16:00	2/13/2020 7:00
Total Load	122.70	138.76	118.95	139.05	117.30	137.90	118.90	139.70	120.10	129.00
Subtotals By Substation										
Haines Road	26.20	28.90	25.70	27.70	24.20	27.80	23.80	28.10	24.30	23.50
Swan Lake Road	31.60	27.70	31.10	30.40	28.70	26.00	32.50	25.60	28.90	28.50
Ridgeview	22.00	27.10	25.50	27.10	21.90	31.40	22.90	29.80	23.80	22.70
Colbyville	18.60	26.80	16.20	23.20	18.80	20.30	19.70	27.40	22.70	22.60
French River	3.44	3.55	2.26	4.57	3.17	4.45	1.69	3.53	1.95	3.78
Clover Valley (GRE)	1.54	2.41	1.49	3.39	1.48	3.63	2.42	2.86	1.80	3.76
Two Harbors	3.42	3.54	2.25	4.54	3.15	4.42	1.69	3.51	1.95	3.76
Big Rock	4.80	4.90	4.80	4.90	5.10	5.20	4.80	5.20	4.60	4.30
Waldo (GRE)	7.62	9.85	7.86	11.33	7.87	12.38	7.05	11.29	7.58	12.38
Silver Bay Hillside	3.48	4.01	1.79	1.92	2.93	2.32	2.35	2.41	2.52	3.72

[1] In the Matter of the Application of Minnesota Power for a Certificate of Need for the Duluth Loop Reliability Project, Docket No. E015/CN-21-140, *Order Approving Notice Plan and Granting Variances and Exemptions* (Feb. 26, 2021).

[2] In the Matter of the Application of Minnesota Power for a Certificate of Need for the Duluth Loop Reliability Project, Docket No. E015/CN-21-140, *Exemption Request* (Feb. 26, 2021).

Minnesota Power filed its 2021 AFR filing with the Commission on June 29, 2021 in Docket No. E-999/PR-21-11. A copy of Section I (Introduction) and Section III (Forecast Results) of the 2021 AFR filing is provided in this appendix.

minnesota power
AN ALLETE COMPANY

June 29, 2021

VIA E-FILING
Ms. Anne Sell
Department of Commerce – Division of Energy Resources
85 7th Place East, Suite 280
St. Paul, MN 55101-2198

Re: Minnesota Power's 2021 Annual Electric Utility Forecast Report
Docket No.: E-999/PR-21-11

Dear Ms. Sell:

Enclosed please find Minnesota Power's 2021 Annual Electric Utility Forecast Report pursuant to Minn. Stat. § 216C.17, subd. 2 and Minn. Rules Chapter 7610. As an electric utility with Minnesota service areas, Minnesota Power (or the "Company") is required to submit to the Minnesota Department of Commerce – Division of Energy Resources ("Department") by July 1 of each year an annual report specifying its short- and long-term energy demand forecasts and the facilities necessary to meet the demand.

Information included in the "**ELEC_68_2020 Largest Customer List.xlsx**" and "**ELEC_68_2020 Forecast Report.xlsx**" Excel workbooks, as well as the **Methodology** document has been designated as **TRADE SECRET**.

Minnesota Power has excised material from the public version of the attached report documents as they identify and contain confidential, competitive information regarding Minnesota Power's methods, techniques and process for supplying electric service to its customers. The energy usage by specific customers and generation by fuel type has been consistently treated as Trade Secret in individual filings before the Minnesota Public Utilities Commission. Minnesota Power follows strict internal procedures to maintain the privacy of this information. The public disclosure of this information would have severe competitive implications for customers and Minnesota Power.

Minnesota Power is providing this justification for the information excised from the attached report and why the information should remain trade secret under Minn. Stat. 13.37. Minnesota Power respectfully requests the opportunity to provide additional justification in the event of a challenge to the Trade Secret designation provided herein.

The following documents have been uploaded to the Department and Minnesota Public Utilities Commission eDockets/eFiling system using Docket Number 21-11:

- ELEC_68_2020 Annual Report.xlsx
- ELEC_68_2020 Forecast Report.xlsx (**TRADE SECRET** & Public versions)
- ELEC_68_2020 Largest Customer List.xlsx (**TRADE SECRET**)
- ELEC_68_2020 Monthly Power Cost Adjustments.xlsx
- ELEC_68_2020 MN Service Area Map.pdf
- ELEC_68_2020 USDOE EIA-861.pdf
- ELEC_68_2020 Rate Schedules.pdf
- METHOD21.pdf (**TRADE SECRET** & Public versions)

Please don't hesitate to contact either one of us if you need additional paper copies or have any questions.

Sincerely,

Benjamin Levine	Kyle Schmidt
Utility Load Forecaster	Utility Load Forecaster
Minnesota Power	Minnesota Power
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BL/KS:th
Attach.

cc: Leah Peterson
David Moeller
Lori Hoyum

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I. INTRODUCTION

The utility customer load forecast is the initial step in electric utility planning. Capacity and energy resource commitments are based on forecasts of energy consumption and seasonal peak demand requirements. Minnesota Power's forecast process combines a sound econometric methodology and data from reputable sources to produce a reasonable long-term outlook suitable for planning.

Minnesota Power (or the Company) is committed to continuous forecast process improvement, process transparency, forecast accuracy, and gaining customer insight. This 2021 forecast methodology document demonstrates Minnesota Power's continued efforts to meet these goals through comprehensive documentation, implementation of more systematic and replicable processes, and thorough analysis of results.

A history of increasing accuracy in load forecasting also speaks to the Company's commitment to innovate and enhance its forecast processes. Since 2000, current-year energy sales forecast error has decreased at an average rate of 0.05 percent per-year.[1] Minnesota Power owes its record of forecast accuracy to a combination of close contact with customers, continuous validation of forecast model inputs, and steady improvements in statistical analytic capabilities.

Since the 2019 Annual Forecast Report (AFR), Minnesota Power has included estimated impacts of energy efficiency, distributed generation (solar), and electric vehicles in the Expected scenario outlook. This expanded approach to forecasting can then be integrated into the Company's proactive and flexible planning to better inform the critical electric resource

[1] The error figure utilizes the LINEST function in Excel to estimate the trend in energy sales forecast accuracy based off of current-year historical accuracy metrics (Mean Absolute Percent Error, or MAPE), and was calculated excluding the recessionary years of 2009/2010, 2015/2016, and 2020 in which there are significant and unpredictable fluctuations in large industrial loads.

decisions ahead. Minnesota Power's forecasting approach helps keep the potential demand and energy outcomes transparent and robust.

A. 2021 FORECAST RESULTS OVERVIEW

Table 1 below shows the Expected case forecast for annual energy sales and seasonal peak demand. Annual energy sales are projected to decrease at a 0.3 percent per year rate (on average) from 2019 through 2035.[2] Summer and Winter peak demands are projected to decrease at average annual rates of 0.3 percent and 0.2 percent respectively. See Figures 1 and 2 on page 4 below for graphical representations of energy and peak demand. The AFR 2021 load forecast reflects 112 megawatts (MW)[3] of system load growth by 2035.

[2] Minnesota Power started growth calculations from 2019 levels to illustrate how the long-term energy and peak outlooks compare to pre-COVID-19 levels. Starting from 2020 would imply that the Company expects to see significant growth – while this is a true statement coming out of a pandemic-induced recession, it is not accurate compared to non-recessionary sales and peak levels.

[3] 112 MW = 2035 Summer Peak (1,599 MW) – 2020 Summer Peak (1,487 MW).

Table 1: Expected Case Energy Sales and Seasonal System Peak Demand Outlook

Total Energy Sales			System Peak Demand					
	MWh	Y/Y Growth		Summer (MW)	Y/Y Growth		Winter (MW)	Y/Y Growth
2010	10,417,422		2010	1,732		2010	1,789	
2011	10,988,200	5.5%	2011	1,746	0.8%	2011	1,780	-0.5%
2012	11,107,357	1.1%	2012	1,790	2.5%	2012	1,774	-0.3%
2013	10,985,809	-1.1%	2013	1,782	-0.5%	2013	1,751	-1.3%
2014	11,038,979	0.5%	2014	1,805	1.3%	2014	1,821	4.0%
2015	10,059,466	-8.9%	2015	1,597	-11.5%	2015	1,554	-14.6%
2016	9,830,787	-2.3%	2016	1,609	0.8%	2016	1,692	8.9%
2017	10,654,217	8.4%	2017	1,688	4.9%	2017	1,789	5.7%
2018	10,638,691	-0.1%	2018	1,723	2.1%	2018	1,707	-4.5%
2019	10,482,913	-1.5%	2019	1,668	-3.2%	2019	1,687	-1.2%
2020	9,230,235	-11.9%	2020	1,487	-10.8%	2020	1,646	-2.4%
2021	9,395,177	**1.8%**	2021	1,522	**2.3%**	2021	1,547	**-6.0%**
2022	9,527,551	**1.4%**	2022	1,544	**1.5%**	2022	1,547	**0.0%**
2023	9,681,546	**1.6%**	2023	1,571	**1.7%**	2023	1,575	**1.8%**
2024	9,759,919	**0.8%**	2024	1,567	**-0.2%**	2024	1,574	**-0.1%**
2025	9,722,578	**-0.4%**	2025	1,566	**-0.1%**	2025	1,577	**0.2%**
2026	9,915,557	**2.0%**	2026	1,598	**2.0%**	2026	1,619	**2.7%**
2027	10,052,876	**1.4%**	2027	1,608	**0.6%**	2027	1,618	**0.0%**
2028	10,070,130	**0.2%**	2028	1,606	**-0.1%**	2028	1,618	**0.0%**
2029	10,033,190	**-0.4%**	2029	1,604	**-0.1%**	2029	1,618	**0.0%**
2030	10,028,288	**0.0%**	2030	1,603	**-0.1%**	2030	1,618	**0.0%**
2031	10,023,985	**0.0%**	2031	1,601	**-0.1%**	2031	1,620	**0.1%**
2032	10,060,694	**0.4%**	2032	1,601	**0.0%**	2032	1,622	**0.1%**
2033	10,037,766	**-0.2%**	2033	1,600	**0.0%**	2033	1,625	**0.2%**
2034	10,046,890	**0.1%**	2034	1,600	**0.0%**	2034	1,628	**0.2%**
2035	10,056,598	**0.1%**	2035	1,599	**0.0%**	2035	1,631	**0.2%**

Minnesota Power remains a Winter peaking utility and will continue to expect an approximate 20 MW difference in this seasonal profile. Figures 1 and 2 below show the projected energy sales and system peak demand, respectively for AFR 2021 compared to AFR 2020.

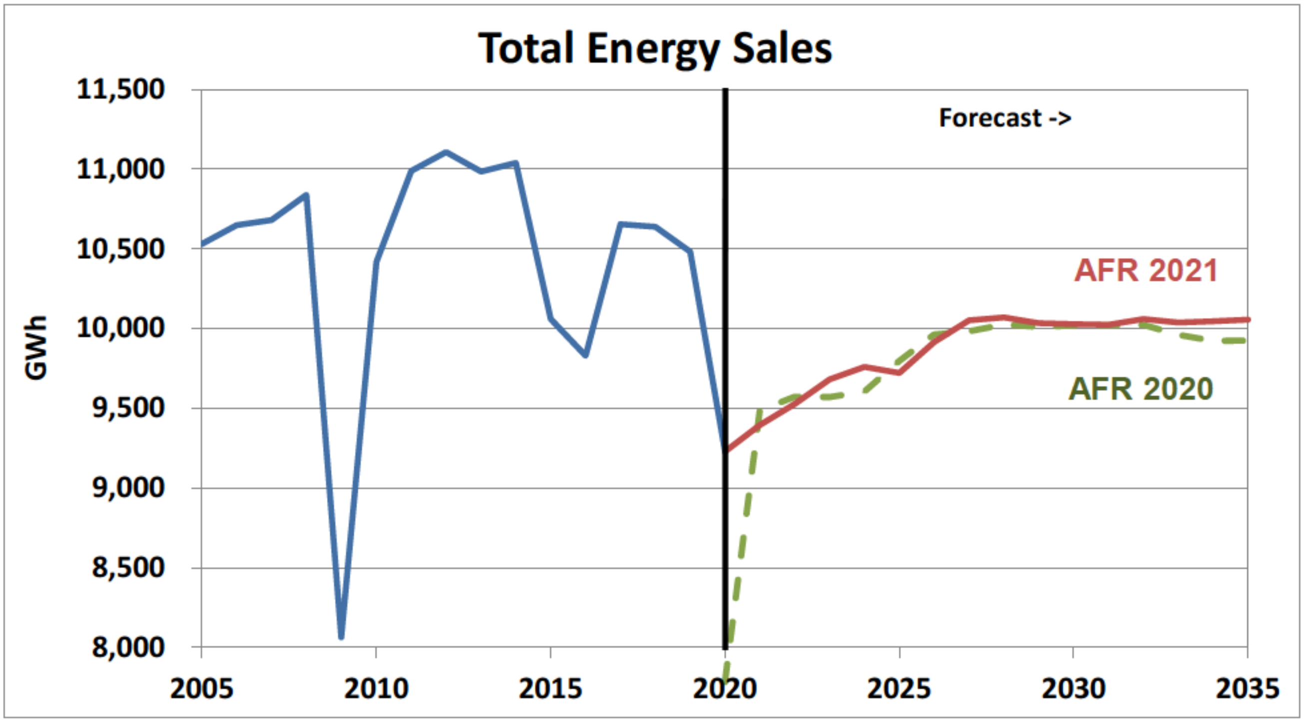

Figure 1: Expected Case Energy Sales Outlook

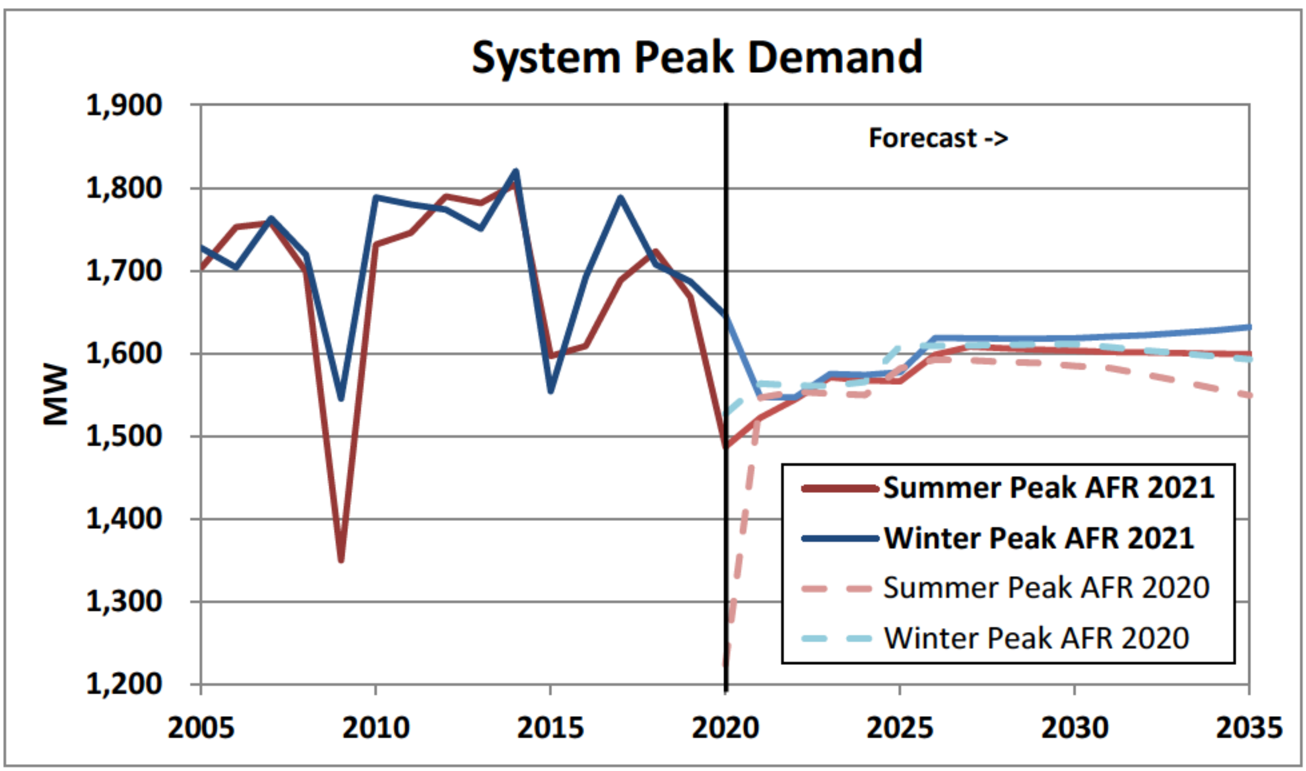

Figure 2: Expected Case Peak Demand Outlook

B. Document Structure

This report details the construction of the energy sales and demand forecast for Minnesota Power for the 2021-2035 timeframe. Each section is designed to convey the report requirements per Minn. Rules Chapter 7610, and give insight into the Company's forecasting process and results.

Section II: *Forecast Methodology, Data Inputs, and Assumptions* details the development of customer count, peak demand, and energy sales forecasts. This section contains a step-by-step description of Minnesota Power's forecasting process and details the development of databases and models.

Other information included in Section II:

- Descriptions of all forecast models used in the development of this year's forecasts, including:
    - Model specifications
    - Model statistics
    - Resulting forecast's growth rates
    - A discussion of each model's econometric merits and potential issues, as well as an explanation/justification of each variable
- Additional steps taken in 2021 to improve the forecast process and final product
- Strengths and weaknesses of Minnesota Power's methodology
- All data inputs and sources, including an overview of key economic assumptions
- A description of all changes made to the forecast database since last year's forecast
- A discussion of Minnesota Power's sensitivity to Large Industrial customer contracts
- Minnesota Power's confidence in the forecast

Section III: *Forecast Results* presents the Expected scenario forecast Minnesota Power developed for the AFR 2021 forecast. This forecast is the product of a robust econometric modeling process and careful consideration of potential industrial and resale customer load developments.

Section IV: *Other Information* presents other report information required by Minnesota law and cross-references the specific requirements to specific sections in this document.

III. AFR 2021 SCENARIO FORECAST DESCRIPTIONS

A. Expected Forecast Scenario Description

The AFR 2021 Expected scenario includes changes in customer operations that are not certain, but have a high likelihood of occurring. This high likelihood is characterized by formal communication from the customer, plus one or more of the following:

- An Electric Service Agreement is either executed or is in negotiation;
- The change in operation is supported by customer actions, such as construction or investment that will result in additional power requirements; and/or
- A timeframe for the operation and resulting power.

The Expected scenario assumes additional load from several new and existing customers. Most notably, this scenario accounts for a new industrial facility on the Iron Range; the facility is expected to reach full demand in mid-2026. Additionally, this scenario assumes the start-up of a new industrial facility in Duluth; the facility is expected to reach full demand in Q2 2023.

The scenario assumes a moderate, or "expected," rate of national economic growth as the basis for the regional economic model.[51]

The Expected scenario results in compound annual energy sales and Summer peak demand growth of 0.6 percent and 0.4 percent, respectively, from 2020 through 2035.

B. Other Adjustments to Econometric Forecast

Minnesota Power's forecast scenario is the summation of the econometric model results and arithmetic adjustments for impacts which cannot be accurately modeled. These exogenous impacts are documented as separate seasonal peak and energy adjustments in the Expected scenario tables. These adjustments fall into the following categories:

1. **Net Load/Energy Added**: are exogenous adjustments for load added due to Distributed Solar Generation, Electric Vehicle impacts, new customers or expansion by

[51] All econometric models use the "expected" rate of national economic growth per IHS Global Insight's January 2021 release.

existing customers, and lost load due to closure or loss of contract. This adjustment includes all load added or lost on the system, regardless of how that load is met; “Net Load/Energy Added” accounts for any change in load at the system level. To preserve customer confidentiality, the seasonal demand and energy impacts are netted to a single value before being applied to the econometric values.

2. **Customer Generation:** is the demand on Minnesota Power system that is met by customer owned generation. Customer generation can fluctuate without clear economic causes so this component of Minnesota Power system peak is removed to more accurately model demand for an econometric forecast. The process for this adjustment can be outlined in 3 steps:

    - Remove Customer Generation from the historical peak series.
    - Econometrically project a less volatile “FERC load coincident w/Monthly Minnesota Power System peak (MW)” monthly peak series.
    - Arithmetically account for Customer Generation after forecasting.

    This procedure has been a methodological staple of Minnesota Power forecasting for over a decade and increases the quality of the econometric processes and resulting forecasts.

    The forecast assumption for customer generation is determined by averaging the historical customer generation coincident with the monthly peak over a twelve-year historical timeframe. The result is a set of 12 distinct monthly values for each month of the year. The MWh adjustment is determined similarly through averaging the most recent twelve-year historical timeframe, but excluding 2009 due to its irregularly low value. These adjustments are credits that increase the estimated peaks and system energy use projection by the estimated amount.

    This Customer Generation adjustment to peak and energy forecasts also accounts for expected changes in the operation or ownership of generating assets that would affect deliveries to customers.

3. **Dual Fuel**: Minnesota Power has a robust Dual Fuel program for residential and commercial customers. The impacts of historical interruptions are assumed to be inherent in the forecast since curtailments affected historical monthly peak demand. Post-regression adjustments for dual fuel would produce an artificially low peak demand forecast. Minnesota Power will account for dual fuel interruption as a resource and not as an adjustment to the load forecast.

C. Expected Scenario Peak Demand and Energy Outlooks

Peak Forecast (MW)

	Econometric		+ Net Load Added		= MP Delivered Load		+ Customer Gen.		= MP System Peak			
	Sum	Win	Sum	Win	**Sum**	**Win**	Sum	Win	**Sum**	**Win**	*Annual*	
2000					1,469	1,503	242	281	1,711	1,784	*1,784*	2000
2001					1,383	1,421	150	175	1,533	1,595	*1,595*	2001
2002					1,464	1,456	165	180	1,629	1,636	*1,636*	2002
2003					1,408	1,496	163	175	1,570	1,671	*1,671*	2003
2004					1,449	1,533	168	189	1,617	1,721	*1,721*	2004
2005					1,535	1,555	169	172	1,703	1,727	*1,727*	**2005**
2006					1,584	1,534	169	170	1,753	1,704	*1,753*	2006
2007					1,582	1,584	176	179	1,758	1,763	*1,763*	2007
2008					1,552	1,575	147	145	1,699	1,719	*1,719*	2008
2009					1,200	1,369	150	176	1,350	1,545	*1,545*	2009
2010					1,591	1,599	140	190	1,732	1,789	*1,789*	**2010**
2011					1,573	1,630	173	150	1,746	1,780	*1,780*	2011
2012					1,603	1,605	187	169	1,790	1,774	*1,790*	2012
2013					1,645	1,589	136	162	1,782	1,751	*1,782*	2013
2014					1,620	1,637	184	184	1,805	1,821	*1,821*	2014
2015					1,442	1,461	155	94	1,597	1,554	*1,597*	**2015**
2016					1,453	1,520	156	173	1,609	1,692	*1,692*	2016
2017					1,538	1,594	150	195	1,688	1,789	*1,789*	2017
2018					1,585	1,557	139	150	1,723	1,707	*1,723*	2018
2019					1,560	1,588	108	99	1,668	1,687	*1,687*	2019
2020					1,410	1,548	78	97	1,487	1,646	*1,646*	**2020**
2021	1,458	1,464	(52)	(33)	**1,406**	**1,431**	116	116	**1,522**	**1,547**	**1,547**	2021
2022	1,464	1,464	(35)	(33)	**1,429**	**1,431**	116	116	**1,544**	**1,547**	**1,547**	2022
2023	1,462	1,464	(7)	(5)	**1,455**	**1,459**	116	116	**1,571**	**1,575**	**1,575**	2023
2024	1,460	1,463	(8)	(4)	**1,452**	**1,458**	116	116	**1,567**	**1,574**	**1,574**	2024
2025	1,459	1,462	(9)	(1)	**1,450**	**1,461**	116	116	**1,566**	**1,577**	**1,577**	**2025**
2026	1,459	1,462	24	41	**1,482**	**1,503**	116	116	**1,598**	**1,619**	**1,619**	2026
2027	1,458	1,461	34	41	**1,492**	**1,502**	116	116	**1,608**	**1,618**	**1,618**	2027
2028	1,457	1,460	33	42	**1,490**	**1,502**	116	116	**1,606**	**1,618**	**1,618**	2028
2029	1,456	1,460	32	43	**1,489**	**1,502**	116	116	**1,604**	**1,618**	**1,618**	2029
2030	1,456	1,459	31	43	**1,487**	**1,502**	116	116	**1,603**	**1,618**	**1,618**	**2030**
2031	1,455	1,460	30	44	**1,486**	**1,504**	116	116	**1,601**	**1,620**	**1,620**	2031
2032	1,456	1,460	29	46	**1,485**	**1,506**	116	116	**1,601**	**1,622**	**1,622**	2032
2033	1,457	1,461	28	48	**1,484**	**1,509**	116	116	**1,600**	**1,625**	**1,625**	2033
2034	1,458	1,462	26	50	**1,484**	**1,512**	116	116	**1,600**	**1,628**	**1,628**	2034
2035	1,458	1,463	25	52	**1,483**	**1,515**	116	116	**1,599**	**1,631**	**1,631**	**2035**

Energy Sales Forecast (MWh)

	Econometric	+ Net Energy Added	= MP Delivered Energy	- Customer Gen.	= System Energy Use	MP System		
						Peak	*Load Factor*	
2000			10,029,324					
2001			9,476,860					
2002			9,950,113	1,187,858	11,137,971	1,636	*0.78*	2002
2003			9,638,417	1,232,635	10,871,052	1,671	*0.74*	2003
2004			10,117,168	1,267,728	11,384,896	1,721	*0.76*	2004
2005			10,345,265	1,258,895	11,604,160	1,727	*0.77*	**2005**
2006			10,443,777	1,195,070	11,638,847	1,753	*0.76*	2006
2007			10,670,857	1,252,965	11,923,822	1,763	*0.77*	2007
2008			10,826,034	1,276,158	12,102,192	1,719	*0.80*	2008
2009			8,062,253	1,108,014	9,170,267	1,545	*0.68*	2009
2010			10,417,422	1,299,292	11,716,714	1,789	*0.75*	**2010**
2011			10,988,200	1,422,107	12,410,307	1,780	*0.80*	2011
2012			11,107,357	1,200,317	12,307,674	1,790	*0.79*	2012
2013			10,985,809	1,185,139	12,170,948	1,782	*0.78*	2013
2014			11,038,979	1,287,965	12,326,944	1,821	*0.77*	2014
2015			10,059,466	1,227,221	11,286,687	1,597	*0.81*	**2015**
2016			9,830,787	1,074,786	10,905,573	1,692	*0.74*	2016
2017			10,654,217	1,215,894	11,870,111	1,789	*0.76*	2017
2018			10,638,691	1,236,276	11,874,967	1,723	*0.79*	2018
2019			10,482,913	1,064,454	11,547,367	1,687	*0.78*	2019
2020			9,230,235	812,490	10,042,725	1,646	*0.70*	**2020**
2021	9,900,752	(505,575)	**9,395,177**	932,620	**10,327,796**	**1,547**	***0.76***	2021
2022	9,946,909	(419,358)	**9,527,551**	932,524	**10,460,075**	**1,547**	***0.77***	2022
2023	9,937,418	(255,872)	**9,681,546**	932,524	**10,614,070**	**1,575**	***0.77***	2023
2024	9,949,609	(189,690)	**9,759,919**	934,983	**10,694,902**	**1,574**	***0.78***	2024
2025	9,912,380	(189,802)	**9,722,578**	932,620	**10,655,198**	**1,577**	***0.77***	**2025**
2026	9,906,031	9,526	**9,915,557**	932,524	**10,848,081**	**1,619**	***0.77***	2026
2027	9,900,786	152,090	**10,052,876**	932,524	**10,985,400**	**1,618**	***0.78***	2027
2028	9,918,457	151,673	**10,070,130**	934,983	**11,005,113**	**1,618**	***0.78***	2028
2029	9,882,833	150,358	**10,033,190**	932,620	**10,965,810**	**1,618**	***0.77***	2029
2030	9,878,696	149,592	**10,028,288**	932,524	**10,960,811**	**1,618**	***0.77***	**2030**
2031	9,874,754	149,231	**10,023,985**	932,524	**10,956,509**	**1,620**	***0.77***	2031
2032	9,910,859	149,836	**10,060,694**	934,983	**10,995,677**	**1,622**	***0.77***	2032
2033	9,887,566	150,200	**10,037,766**	932,620	**10,970,386**	**1,625**	***0.77***	2033
2034	9,895,130	151,759	**10,046,890**	932,524	**10,979,414**	**1,628**	***0.77***	2034
2035	9,902,719	153,879	**10,056,598**	932,524	**10,989,122**	**1,631**	***0.77***	**2035**

Customer Count Forecast by Class

Year	Residential	Commercial	Industrial	Street Lighting	Public Authorities	Resale	Total
2005	116,072	20,040	460	490	233	18	137,313
2006	117,596	20,419	451	509	237	18	139,229
2007	118,870	20,630	435	548	241	18	140,742
2008	119,300	20,969	431	585	246	18	141,549
2009	121,217	21,287	429	618	262	18	143,831
2010	121,235	21,491	424	2,209	278	18	145,655
2011	121,251	21,603	421	5,335	281	18	148,909
2012	120,697	21,614	411	6,414	275	18	149,429
2013	121,314	21,915	402	655	287	18	144,591
2014	121,601	22,096	394	660	282	17	145,050
2015	121,515	22,170	394	673	281	17	145,050
2016	121,836	22,420	396	689	281	17	145,639
2017	122,295	22,695	390	695	278	17	146,370
2018	122,557	22,834	380	693	277	17	146,758
2019	122,926	23,059	379	701	275	17	147,356
2020	123,617	23,346	378	720	271	16	148,348
2021	**123,702**	**23,437**	**371**	**740**	**270**	**16**	**148,536**
2022	**123,854**	**23,647**	**369**	**746**	**269**	**16**	**148,902**
2023	**124,074**	**23,842**	**365**	**752**	**268**	**16**	**149,317**
2024	**124,292**	**24,040**	**361**	**757**	**267**	**16**	**149,733**
2025	**124,517**	**24,238**	**357**	**763**	**266**	**16**	**150,157**
2026	**124,746**	**24,453**	**353**	**769**	**267**	**16**	**150,604**
2027	**124,957**	**24,655**	**348**	**774**	**266**	**16**	**151,017**
2028	**125,155**	**24,859**	**344**	**780**	**266**	**16**	**151,419**
2029	**125,359**	**25,061**	**339**	**785**	**265**	**16**	**151,825**
2030	**125,567**	**25,266**	**334**	**791**	**265**	**16**	**152,239**
2031	**125,769**	**25,469**	**330**	**796**	**265**	**16**	**152,644**
2032	**125,962**	**25,673**	**325**	**802**	**264**	**16**	**153,041**
2033	**126,140**	**25,877**	**320**	**807**	**264**	**16**	**153,423**
2034	**126,298**	**26,082**	**316**	**813**	**263**	**16**	**153,787**
2035	**126,442**	**26,286**	**311**	**818**	**263**	**16**	**154,136**

Energy Sales Forecast (MWh) by Customer Class

Year	Residential	Commercial	Industrial	Street Lighting	Public Authorities	Resale	Total
2005	1,013,156	1,200,075	6,761,669	15,646	61,396	1,293,323	10,345,265
2006	1,011,699	1,206,607	6,782,975	15,831	60,882	1,365,783	10,443,777
2007	1,051,453	1,244,930	6,622,051	15,752	67,056	1,669,615	10,670,857
2008	1,079,837	1,240,324	6,737,333	15,983	64,912	1,687,645	10,826,034
2009	1,075,116	1,212,778	4,051,352	16,049	62,036	1,644,922	8,062,253
2010	1,057,476	1,221,754	6,364,080	15,833	61,768	1,696,511	10,417,422
2011	1,069,856	1,226,174	6,913,648	16,420	62,458	1,699,643	10,988,200
2012	1,043,281	1,237,386	7,037,843	15,954	54,074	1,718,819	11,107,357
2013	1,086,481	1,256,540	6,873,993	16,066	51,736	1,700,993	10,985,809
2014	1,112,579	1,262,464	6,946,536	16,400	53,237	1,647,763	11,038,979
2015	1,026,454	1,254,681	6,073,273	15,801	54,471	1,634,786	10,059,466
2016	1,015,465	1,243,045	5,855,829	15,588	51,455	1,649,405	9,830,787
2017	1,010,955	1,223,786	6,697,793	14,873	49,945	1,656,865	10,654,217
2018	1,052,800	1,233,117	6,677,892	14,206	49,884	1,610,791	10,638,691
2019	1,042,353	1,202,403	6,709,265	13,482	47,302	1,468,108	10,482,913
2020	1,046,910	1,131,101	5,652,942	12,617	46,375	1,340,290	9,230,235
2021	**1,039,073**	**1,159,875**	**5,749,865**	**11,195**	**44,201**	**1,390,968**	**9,395,177**
2022	**1,037,401**	**1,184,475**	**5,833,497**	**10,076**	**43,550**	**1,418,551**	**9,527,551**
2023	**1,036,816**	**1,195,779**	**5,892,149**	**9,524**	**43,208**	**1,504,070**	**9,681,546**
2024	**1,039,466**	**1,209,562**	**5,899,804**	**9,546**	**42,963**	**1,558,578**	**9,759,919**
2025	**1,035,239**	**1,212,042**	**5,863,912**	**9,512**	**42,289**	**1,559,583**	**9,722,578**
2026	**1,034,529**	**1,222,220**	**6,044,853**	**9,516**	**42,367**	**1,562,073**	**9,915,557**
2027	**1,035,014**	**1,228,425**	**6,166,005**	**9,529**	**42,267**	**1,571,637**	**10,052,876**
2028	**1,039,497**	**1,235,264**	**6,161,492**	**9,591**	**41,973**	**1,582,313**	**10,070,130**
2029	**1,036,761**	**1,234,350**	**6,125,173**	**9,587**	**41,356**	**1,585,963**	**10,033,190**
2030	**1,037,366**	**1,236,251**	**6,107,059**	**9,616**	**40,821**	**1,597,176**	**10,028,288**
2031	**1,038,131**	**1,239,758**	**6,093,257**	**9,640**	**40,596**	**1,602,603**	**10,023,985**
2032	**1,043,288**	**1,248,561**	**6,098,415**	**9,691**	**40,534**	**1,620,205**	**10,060,694**
2033	**1,042,247**	**1,248,269**	**6,071,658**	**9,678**	**39,993**	**1,625,920**	**10,037,766**
2034	**1,045,437**	**1,253,445**	**6,062,199**	**9,676**	**39,703**	**1,636,430**	**10,046,890**
2035	**1,049,178**	**1,258,707**	**6,053,480**	**9,667**	**39,376**	**1,646,189**	**10,056,598**