Appendix E: Short-Term Load Forecast

Purpose

The purpose of the Short-Term Forecast is to provide an accurate estimate of monthly demand and energy for each MRES member community. The forecast takes weather and monthly load patterns into account and is blended with the long-term forecast to account for long-term economic factors. The resulting short-term data is used for annual budgeting as well as short-term capacity planning.

Form of the Model

The general form of the regression model developed for each member is as follows:

$$TOTENG_i = \beta_0 + \beta_1 TREND_i + \beta_2 D1_i + \beta_3 D2_i + \beta_4 D3_i + \beta_5 D4_i + \beta_6 D5_i + \beta_7 D6_i$$

$$+ \beta_8 D7_i + \beta_9 D8_i + \beta_{10} D9_i + \beta_{11} D10_i + \beta_{12} D11_i + \beta_{13} CDD_i + \beta_{14} HDD_i$$

$$+ \beta_{15} TOTENG_{i-n}$$

where:

$TOTENG_i$ = The city's total energy for the monthly observation "i."
β_0 = The constant term to be estimated by the model
β_x = The coefficient to be estimated for each respective variable
$TREND_i$ = The trend variable for the monthly observation "i."
D_i = The dummy variable for the monthly observation "i" (Jan.-Nov.).
CDD_i = Cooling degree days for monthly observation "i."
HDD_i = Heating degree days for monthly observation "i."
$TOTENG_{i-n}$ = Total energy lagged "n" months from before the current monthly observation "i." Only one-month or 12-month lags were used.

Not all of the above terms appear in each member's model. In some models, some of the terms are included in logarithmic form. The monthly dummy variables were used to account for the monthly variation in energy sales within a year; they are set to zero, except that during the month they represent they are set to 1. A few models used total degree days, which are labeled TDD_i.

Variables Considered for Each Forecast Model

Total Energy

- energy: monthly energy
- ln_eng: logarithm of energy

Monthly total town gate energy for each city between June 2010 and May 2015 was used for the dependent variable in each regression model. Either energy or the logarithm of energy was included as the dependent variable in each model.

Weather Variables

- cdd: cooling degree days
- hdd: heating degree days
- tdd: total degree days
- ln_cdd, ln_hdd, ln_tdd: logarithm of cdd, hdd, and tdd

Each model included one or more weather variables. Historic monthly degree day variables and the logarithmic transformations of these variables between June 2010 and May 2015 were tabulated for eight National Oceanographic and Atmospheric Administration (NOAA) weather stations that represent the member cities. All degree day variables are equal to the 1981-2010 normals as published by NOAA. At least one of the above weather variables was forced into each model. Additionally, no more than two weather variables could be included per model.

Lagged Energy Variables

- lageng1: energy from the previous month
- lageng12: energy from 12 months previous
- ln_lageng1: logarithm of lageng1
- ln_lageng12: logarithm of lageng12

Both one-month and twelve-month lagged energy variables were included as potential variables in the regression models. If the model uses one of these variables, it would suggest that future energy is a function of either one-month or twelve-months prior energy. The logarithmic transformations of one-month and twelve-month lags were also included. Note that only one lag variable or transformation thereof could be included per model.

Trend Variables

- trend: increases by one each month, starting with 1 in the first month of history

- ln_trend: logarithm of trend

A linear trend variable and the non-linear logarithmic transformation of the linear trend were included in some models if necessary to achieve acceptable statistical results. Any long-term growth (or negative growth) realized by the cities should be accounted for by including a trend component. Only one trend variable or transformation of a trend could be included per model.

Monthly Dummy Variables

Monthly dummy variables were used to account for the monthly variation in energy sales. Dummy variables take the value of one or zero depending upon a condition occurring or not occurring. There were 11 dummy variables, with the first dummy variable, d1, being equal to 1 for January, and the other 10 dummy variables being equal to 0 in January. The second dummy variable, d2, being equal to 1 for February, and the other 10 dummy variables being equal to 0 for February, and so on. It is mandatory in regression modeling that one month does not have a dummy variable, in order that some base level is set, and subsequent months are either an addition or a subtraction to that base level. In this case December was the month not represented by a dummy variable. All 11 monthly dummy variables were forced into each regression model.

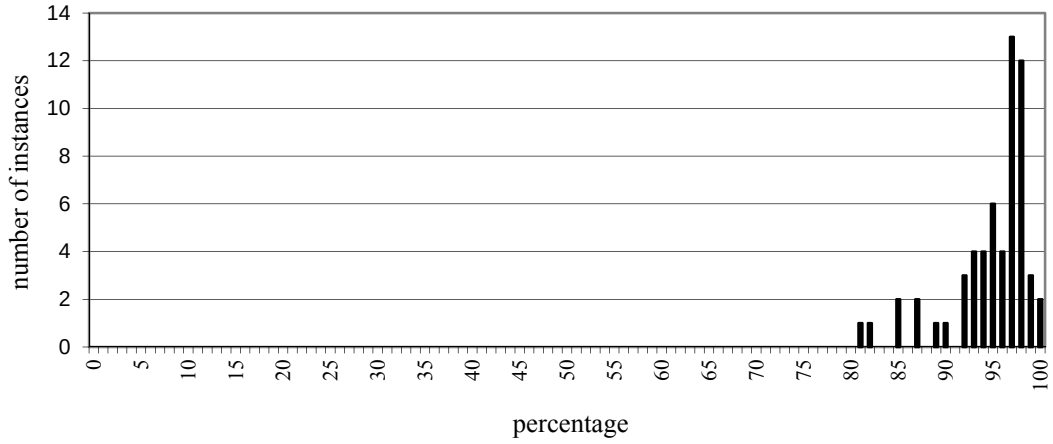
Model Selection

With all variables input into a spreadsheet, over 800 unique models containing all combinations of the above variables were constructed in Microsoft® Excel. Model results were sorted based on R-square statistics, Durbin-Watson statistics, T-statistics, and growth rates. This enabled the selection of a model that was statistically sound yet provided a reasonable expected growth rate.

Key Statistics

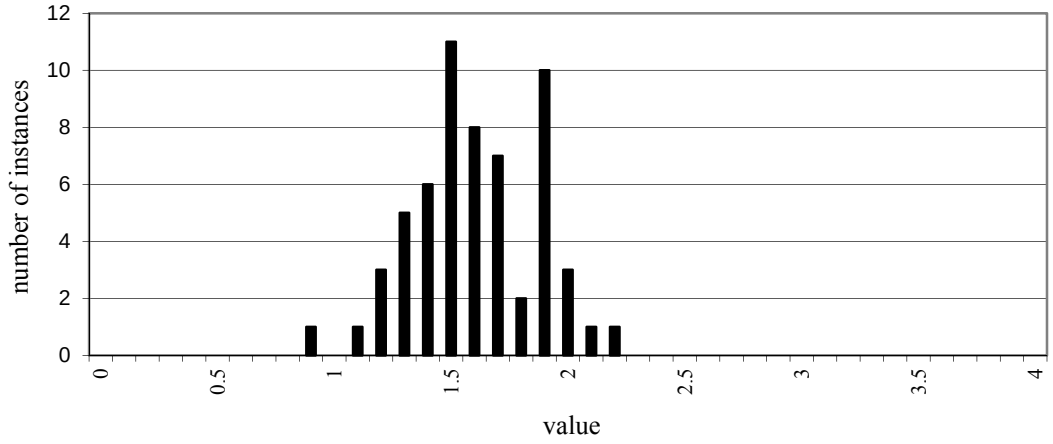
Adjusted R-square: The adjusted R-square represents the percent variation in total monthly energy that is explained by the variables used in the model. Unlike standard R-square, adjusted R-square is corrected to remove bias towards models with greater number of variables. Every effort was made to maximize this statistic while keeping other variables at an acceptable level. The frequency distribution graph below displays the occurrences of Adjusted R-Square statistics for all the models.

Adjusted R-Square



Durbin-Watson: The Durbin-Watson statistic tests for the presence of residual correlation. The range for Durbin-Watson is between 0 and 4. Values of 2 signify residuals are uncorrelated, meaning successive residuals in the time series are random rather than related. If the residuals are positively correlated, the value will be less than 2, and stronger correlation is implied as the number approaches 0. If the residuals are negatively correlated, the value of the Durbin-Watson statistic will be greater than 2, and stronger negative correlation is implied as the value approaches 4. The Durbin-Watson statistic was monitored during model selection, in order that using two variables with strong correlation could be avoided when possible. The graph below displays the occurrences of Durbin-Watson statistics for all the models.

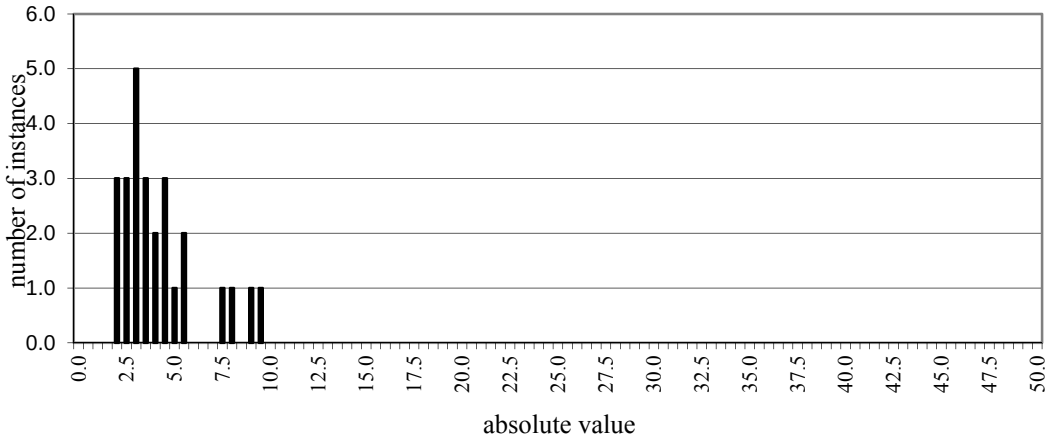
Durbin-Watson



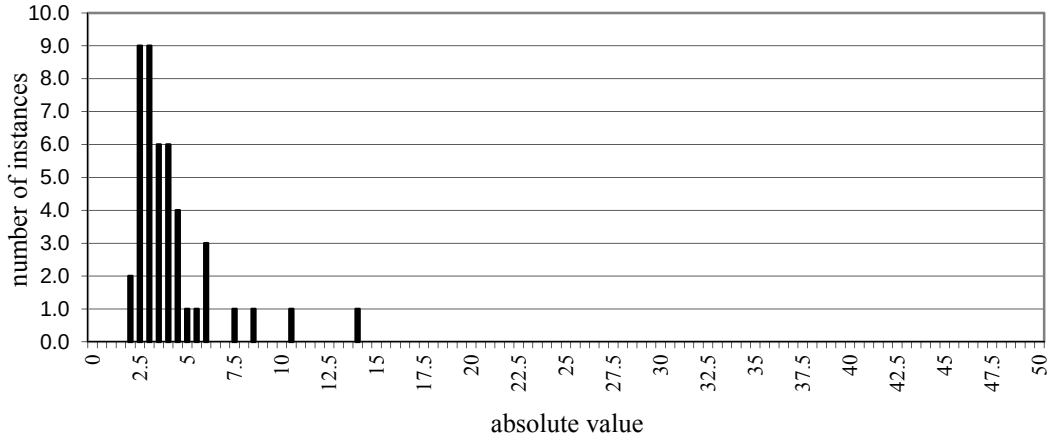
T-Statistics: The T-Statistic tests the statistical significance of each corresponding variable in predicting the variation in the dependent variable. Based upon the number of

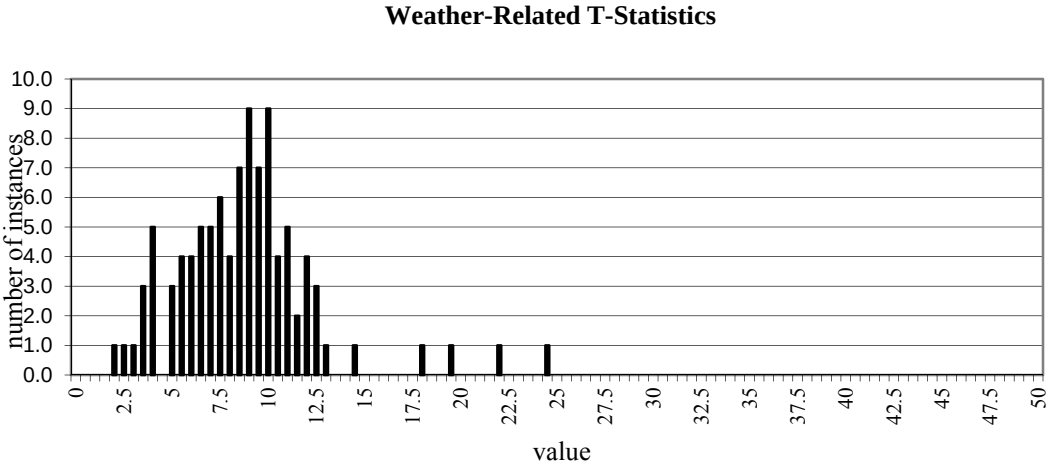
historical observations used in the regression, if the T-Statistic is greater than 2.0, it is at least 95 percent certain that the independent variable contributes to the explanation of the dependent variable. If the T-Statistic is equal to 1, it is 66 percent likely that the independent variable contributes to the explanation of the dependent variable. Generally, the T-Statistic had to be above 2.0 for it to remain in the model as a significant variable that positively impacted the model results. Additionally, the coefficients of all variables had to have a positive sign, with the exception of trend or lag variables, for which a negative T-Statistic would be appropriate if the city is experiencing negative growth. In this case, the T-Statistic is preferred to be greater than 2.0 in absolute value. The graphs below show the occurrences of T-Statistics for the different categories of variables; however, the signs or the values of the T-Statistics of the monthly dummy variables were not subjected to these tests and are not included in the graphs below.

Trend-Related T-Statistics



Lag-Related T-Statistics





Spot Loads

Pella, IA, Alexandria, Detroit Lakes, Luverne, Marshall, Moorhead, and Staples, MN, and Watertown, SD required separate analysis of individual loads within the city.

In Pella a spot load of 500 kW with a 45 percent load factor was added for the Red Rock Hydro Project starting in June 2015.

In Alexandria spot loads were added for the following:

Henry's Foods expansion: 800 kW with a 60 percent load factor starting in January 2016.
Beverage Wholesalers Inc. expansion: 500 kW with a 60 percent load factor starting in March 2016.
Grand Arbor expansion: 500 kW with a 50 percent load factor starting in August 2016.

In Detroit Lakes a spot load of 750 kW with a 60 percent load factor starting in July 2016 was added for the combined load of the Fairfield Inn & Suites by Marriott and the McKinley Plaza Project.

In Luverne the ethanol plant (Gevo) added isobutanol production starting in December 2012. The introduction of isobutanol caused a distortion in the city's load shape as a result of sporadic production with demand and energy varying greatly. Gevo load was subtracted from the history and the forecast was done without Gevo. A spot load based on the last twelve months of Gevo demand and energy was added after the regression. Demand ranges from 2660 to 6592 kW.

In Marshall, Archer Daniels Midland Company accounts for roughly half of the city's load. ADM's load is not expected to grow in the future. ADM was subtracted from the history and the forecast was done without ADM. ADM load was added after the regression, and alternate weather and alternate economic forecast bandwidths were applied to the total load without ADM, as ADM is not weather sensitive, and not prone to changes in usage due to economic changes.

In Moorhead a spot load of 1200 kW with a 65 percent load factor was added for the combined load of Hornbacher's grocery store and the Azool retail center starting in June 2015.

Staples will be acquiring additional service territory from Minnesota Power starting in December 2016. The territory primarily consists of a large hospital, Lakewood Health System. A spot load using 2010 data for demand and energy was added starting in December 2016. Demand ranges from 656 to 1003 kW with a 70% average load factor.

In Watertown spot loads were added for:

Watertown Middle School: 500 kW with a 55 percent load factor starting August in 2015.
Watertown Community Center: 500 kW with a 55 percent load factor starting in March 2017.

Demand Forecasting

A separate demand forecast is not conducted. The demand is a considered to be a function of energy, with monthly five-year average load factors applied to the expected monthly energy values. The result is monthly estimated demand with a load factor that is equal to the average load factor of the last five years for that particular month.

The lone exception to this method is Valley City, North Dakota. Valley City has a load management system. Due to the ability to control the peak, the highest historical demand was used as the upper limit for the demand forecasted. A five-year average load factor was still used; however, in months where the forecasted demand was higher than the highest historical monthly demand, the highest historical monthly demand was used.

Weather and Economic Bandwidths

Monthly cooling degree days, heating degree days, total degree days, and the logarithmic functions of these variables were analyzed between 1981 and 2010. These variables were individually sorted and the mildest 10 percent of all occurrences were removed from further consideration for the extreme forecast. The most extreme 10 percent of all occurrences were removed from further consideration for the mild forecast. The highest and lowest remaining degree-day values were saved and later used to replace the 30-year normal degree-day values in the regression models while using coefficients from the original model. The result was both a mild and extreme monthly percentage variance from normal. These monthly percentages were applied to the monthly base demand and energy forecasts as described above. The adjustments to the base forecast represents the mildest and most extreme demand and energy that could be expected 9 out of 10 years. Since weather effects can affect demand and energy immediately, mild and extreme percentage variances were applied beginning the first month of the forecast.

Economic bandwidths were also created. The low and high economic cases assumed a -.5 percent and a +.5 percent adjustment to the base demand and energy forecasts respectively. The percentage adjustments are cumulative, and as such, the total adjustment is greater in the year 2025 than in the year 2017. This accounts for the greater level of economic uncertainty further

in the future. Since fluctuations in economic health do not affect near-term demand and energy loads, these adjustments first begin in January of 2017.

In addition to the mild weather, extreme weather, low economic growth, and high economic growth forecasts, two combination forecasts were also created: the extreme low forecast and the extreme high forecast. The extreme low is the same -.5 percent low economic growth adjustment applied to the extreme weather demand and energy forecasts rather than the base demand and energy forecasts. The extreme high forecast is the +.5 percent high economic growth adjustment applied to the extreme weather forecast instead of the base demand and energy forecasts. These two forecasts represent the lowest and highest demand and energy loads that could be expected under a combination of extreme weather and low economic growth, and extreme weather and high economic growth respectively.

Implementation

After the models were selected, the resulting forecasted monthly loads for each city were blended with annual growth rates starting in January of 2017 (long-term growth rates were calculated in the long-term forecast conducted February 2015). This step creates a single integrated forecast that includes both short-term and long-term estimates for demand and energy, and is useful for both short-term budgeting as well as long-term planning.

Graphs and Statistics from Selected Regression Models

A graph showing historical and forecasted monthly energy usage is presented for each Minnesota S-1 member community. The period from June 2010 to May 2015 represents historical data and the period from June 2015 to May 2017 represents forecasted data.

A graph showing historical and forecasted monthly demand was also prepared for the same time period. The forecast portion of the demand graph was based on the five-year load factor as explained earlier.

Below the graphs are sections pertaining to the statistical measures of the model selected for each Minnesota S-1 member community. The section entitled Regression Statistics contains information on the statistics used to evaluate each model. Following are the statistics that were primarily evaluated for each model.

- The R-squared measures how much of the variation in the dependent variable can be "explained" in the model. R-squared values lie between 0 and 1, with 1 indicating a perfect fit.

- The Adjusted R-squared corrects the R-squared value for the number of degrees of freedom (the number of observations used to calculate a particular statistic less the number of variables included in the equation). R-squared increases with each additional independent variable in the equation, whereas Adjusted R-squared may increase or decrease depending on the overall contribution of the additional variable.

- The F-statistic is a statistical test of the overall fit of the estimated equation. The overall fit of the equation is determined to be statistically acceptable when the F-statistic is larger than another "critical value", which again depends on the number of variables and observations in the model.

- The Durbin-Watson is a test for the randomness of the errors of the equation. In a good model, the errors are randomly distributed and are approximately the same magnitude. Generally, a Durbin-Watson in the range of 1.5 to 2.5 indicates the residuals are random. The "critical value" in determining whether the residuals are non-random depends on the number of variables and observations in the model.

- The Pre-Shift Growth Rate represents the growth between the last year of historical data and the first year of forecast data. The Forecasted Growth Rate represents the growth between the first and second year of forecasted data. The Last 5 Yrs Growth Rate represents the growth between the first year and the fifth year of historical data.

The first section on the bottom contains data about the variables that were chosen for each model. No evaluations of the intercept or the dummy variables were done. Only those variables listed below the dummy variables were evaluated.

- The standard error is an estimate of how much the coefficient could vary. Coefficients that are much larger than their standard error terms are more "significant," meaning there is a better probability that it is a good estimate of the actual relationship between the independent variable and the dependent variable, energy sales. Conversely, if the standard error is large compared to the coefficient, there may be a high probability that the true coefficient is zero and this variable is not significant.

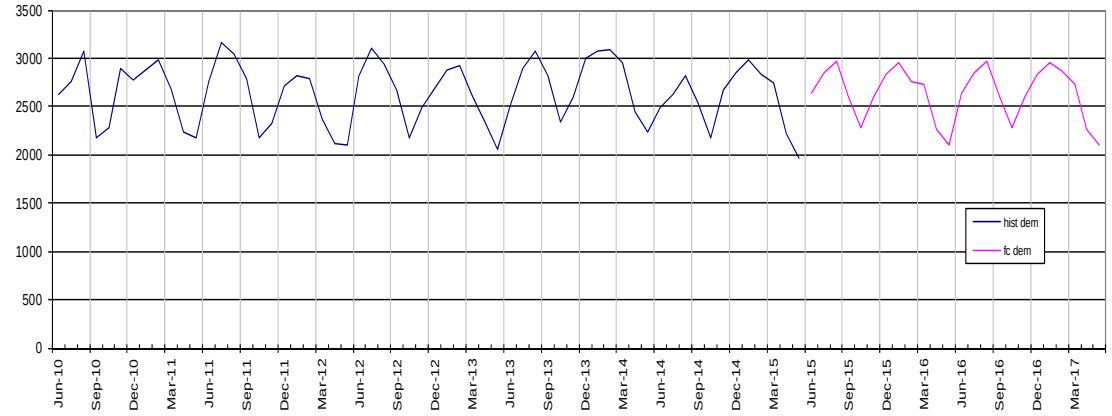
- The T-statistic is the coefficient divided by the standard error. It is used to test the statistical significance of the variable in explaining the variation of the dependent variable. The independent variables used were chosen primarily based on the T-statistic. The higher the T-statistic, the more likely that particular variable is useful as a predictor of the dependent variable.

- P-Value is another determinant of a variable's usefulness in predicting the dependent variable. The lower the P-Value the more likely that particular variable is useful as a predictor of the dependent variable.

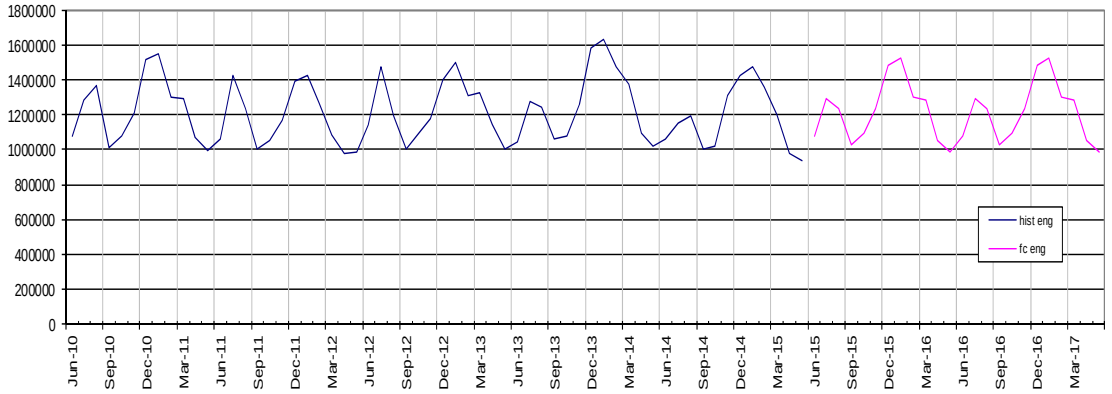
- The Lower 95% and Upper 95% columns give the range in which it is at least 95% certain the true coefficient lies.

The section entitled Notes contains information about any adjustments made outside of the normal forecasting procedure. The most frequent use for this section is the treatment of large loads either coming on-line or off-line.

Adrian, MN Demand - Model 20/163



Adrian, MN Energy - Model 20/163



Regression Statistics	
Multiple R	0.980
R Square	0.961
Adjusted R Square	0.951
Standard Error	40364.903
Observations	60

Dependent Variable	***energy***

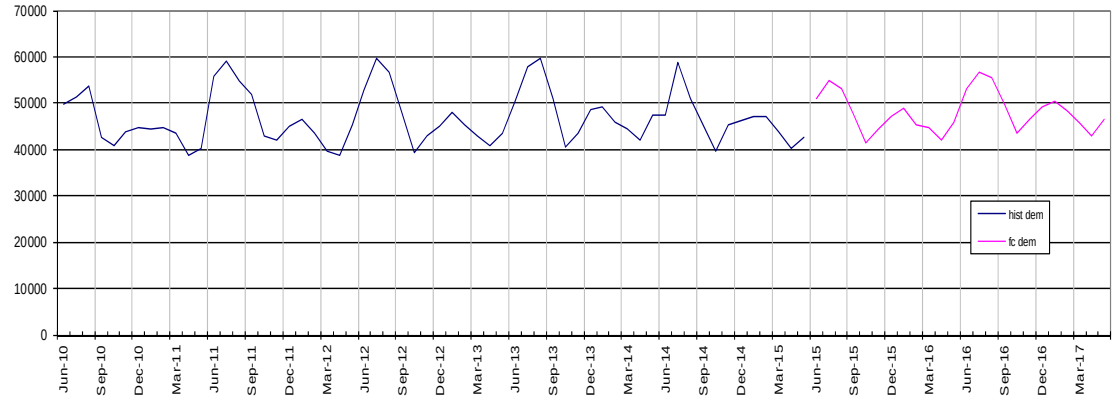
	df	*SS*	*MS*	*F*	*Significance F*
Regression	12	1.8922E+12	1.5768E+11	96.77611254	6.52337E-29
Residual	47	7.6578E+10	1629325355	0	0
Total	59	1.9687E+12	0	0	0

Durbin Watson	*1.45*
Pre-Shift Growth Rate	3.5%
Forecasted Growth Rate	0.0%
Last 5 Yrs Growth Rate:	-0.9%

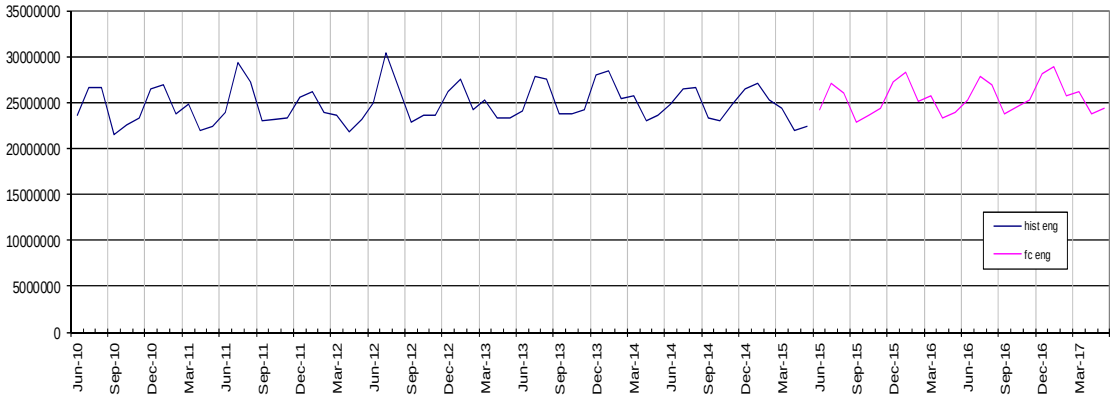
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	832526.6991	60824.9464	13.69	0.00	710162.69	954890.708
d1	7994.640179	25840.83848	0.31	0.76	-43990.4215	59979.7019
d2	-84483.12955	25722.99064	-3.28	0.00	-136231.112	-32735.147
d3	2698.450914	31845.15452	0.08	0.93	-61365.7366	66762.6384
d4	-35911.46271	42748.88774	-0.84	0.41	-121911.132	50088.2067
d5	27482.15558	52853.56604	0.52	0.61	-78845.5045	133809.816
d6	162158.2354	56518.7106	2.87	0.01	48457.2555	275859.215
d7	342461.9957	51234.33606	6.68	0.00	239391.806	445532.185
d8	304653.0426	54324.69779	5.61	0.00	195365.847	413940.238
d9	91550.08484	55747.41169	1.64	0.11	-20599.2418	203699.411
d10	13663.8289	45686.03365	0.30	0.77	-78244.6159	105572.274
d11	-43260.63139	31155.76672	-1.39	0.17	-105937.95	19416.6868
tdd	456.1529393	42.04147299	10.85	0.00	371.576405	540.729474

Notes

Alexandria, MN Demand - Model 21/334



Alexandria, MN Energy - Model 21/334



Regression Statistics	
Multiple R	0.989
R Square	0.977
Adjusted R Square	0.969
Standard Error	0.014
Observations	60

Dependent Variable	***ln_eng***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	15	0.36705498	0.02447033	125.3785642	5.34861E-31
Residual	44	0.00858755	0.00019517	0	0
Total	59	0.37564253	0	0	0

Durbin Watson	*1.46*
Pre-Shift Growth Rate	1.0%
Forecasted Growth Rate	0.8%
Last 5 Yrs Growth Rate:	0.4%

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	16.6410788	0.062188426	267.59	0.00	16.5157463	16.7664113
d1	-0.022430689	0.011305362	-1.98	0.05	-0.04521515	0.00035377
d2	-0.115787793	0.012882754	-8.99	0.00	-0.14175128	-0.0898243
d3	-0.039041457	0.010686511	-3.65	0.00	-0.0605787	-0.0175042
d4	-0.091606543	0.01545998	-5.93	0.00	-0.12276409	-0.060449
d5	-0.016944612	0.018671464	-0.91	0.37	-0.05457448	0.02068525
d6	0.002745412	0.022600138	0.12	0.90	-0.04280217	0.048293
d7	0.034639058	0.028850542	1.20	0.24	-0.02350539	0.0927835
d8	-0.001083432	0.031416966	-0.03	0.97	-0.06440017	0.0622333
d9	-0.073497732	0.024370721	-3.02	0.00	-0.12261369	-0.0243818
d10	-0.023912529	0.015566622	-1.54	0.13	-0.05528499	0.00745994
d11	-0.050910163	0.010681624	-4.77	0.00	-0.07243756	-0.0293828
trend	0.000389504	0.000115649	3.37	0.00	0.00015643	0.00062258
lageng1	1.17728E-08	2.7712E-09	4.25	0.00	6.1878E-09	1.7358E-08
cdd	0.000685574	6.7909E-05	10.10	0.00	0.00054871	0.00082244
hdd	0.000107981	1.42945E-05	7.55	0.00	7.9173E-05	0.00013679

Notes

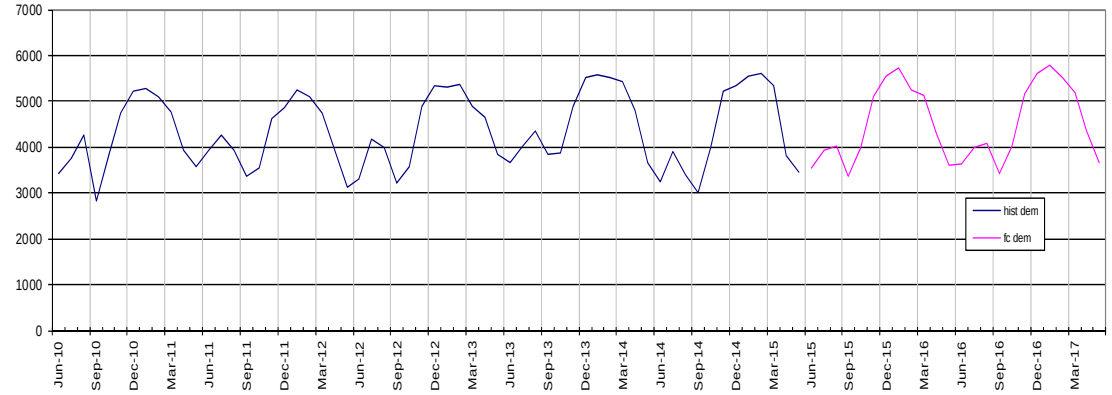
Spot loads added for:

Henry's Foods expansion: 800 kW and 60% load factor starting January 2016.

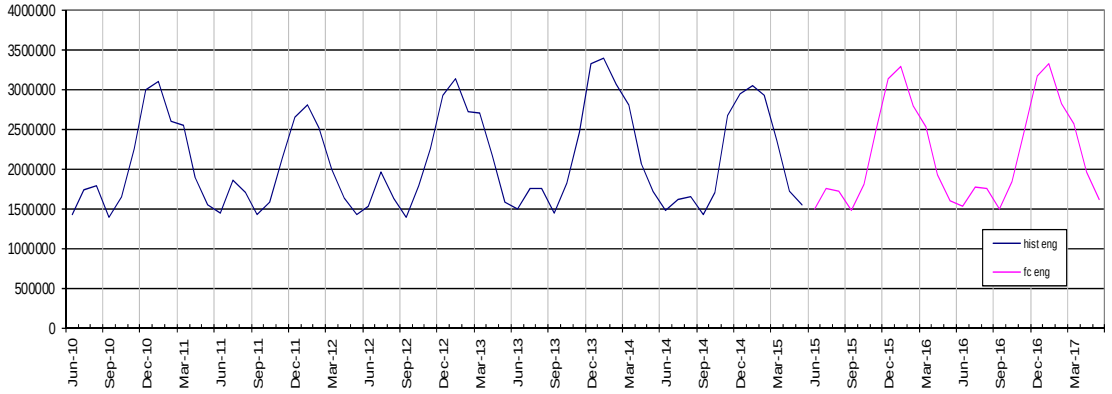
Beverage Wholesalers Inc. expansion: 500 kW and 60% load factor starting March 2016.

Grand Arbor expansion: 500 kW and 50% load factor starting August 2016.

Barnesville, MN Demand - Model 22/340



Barnesville, MN Energy - Model 22/340



Regression Statistics	
Multiple R	0.996
R Square	0.992
Adjusted R Square	0.990
Standard Error	0.028
Observations	60

Dependent Variable	***ln_eng***

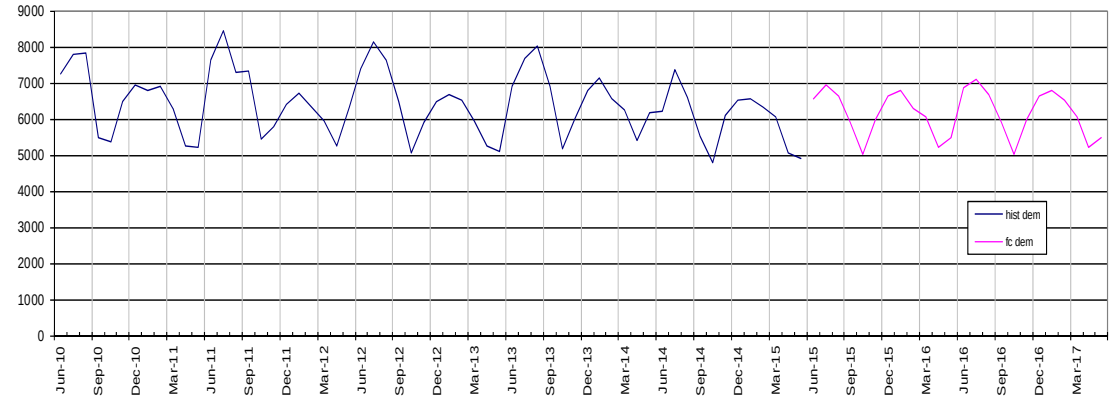
	df	*SS*	*MS*	*F*	*Significance F*
Regression	15	4.55467061	0.30364471	378.5727195	2.28376E-41
Residual	44	0.03529142	0.00080208	0	0
Total	59	4.58996203	0	0	0

Durbin Watson	*1.42*
Pre-Shift Growth Rate	3.6%
Forecasted Growth Rate	1.4%
Last 5 Yrs Growth Rate:	0.1%

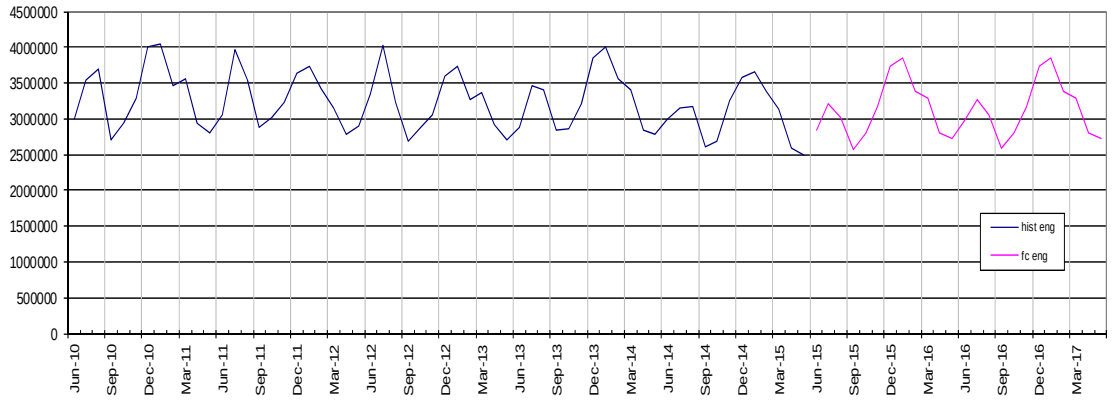
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	10.47091254	0.854810942	12.25	0.00	8.74815429	12.1936708
d1	-0.068667032	0.022047889	-3.11	0.00	-0.11310163	-0.0242324
d2	-0.132892584	0.024505834	-5.42	0.00	-0.18228085	-0.0835043
d3	-0.1006518	0.024429449	-4.12	0.00	-0.14988612	-0.0514175
d4	-0.165509489	0.031246214	-5.30	0.00	-0.2284821	-0.1025369
d5	-0.183508905	0.037188272	-4.93	0.00	-0.25845694	-0.1085609
d6	-0.192396463	0.045169675	-4.26	0.00	-0.28342996	-0.101363
d7	-0.101408887	0.055107763	-1.84	0.07	-0.21247129	0.00965351
d8	-0.126729859	0.048413393	-2.62	0.01	-0.22430064	-0.0291591
d9	-0.225587775	0.0394586	-5.72	0.00	-0.30511136	-0.1460642
d10	-0.077113735	0.036660541	-2.10	0.04	-0.1509982	-0.0032293
d11	0.011932374	0.025536868	0.47	0.64	-0.0395338	0.06339855
trend	0.000791572	0.000225998	3.50	0.00	0.0003361	0.00124704
ln_lageng1	0.607603879	0.137036208	4.43	0.00	0.33142555	0.88378221
cdd	0.000977832	0.000138863	7.04	0.00	0.00069797	0.00125769
hdd	0.000347286	2.79807E-05	12.41	0.00	0.00029089	0.00040368

Notes

Benson, MN Demand - Model 23/338



Benson, MN Energy - Model 23/338



Regression Statistics	
Multiple R	0.979
R Square	0.958
Adjusted R Square	0.945
Standard Error	0.030
Observations	60

Dependent Variable	***ln_eng***

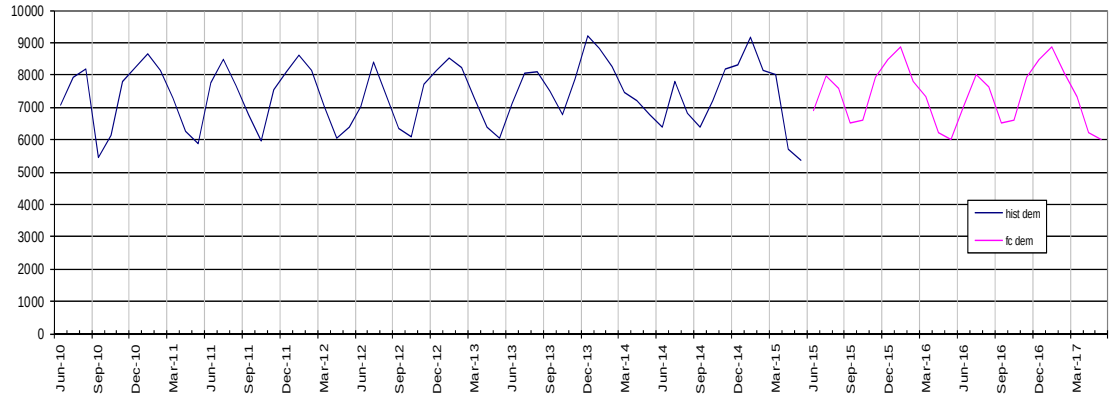
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	0.90166409	0.06440458	73.06020683	3.76214E-26
Residual	45	0.03966874	0.00088153	0	0
Total	59	0.94133282	0	0	0

Durbin Watson	*1.20*
Pre-Shift Growth Rate	1.8%
Forecasted Growth Rate	0.7%
Last 5 Yrs Growth Rate:	-1.6%

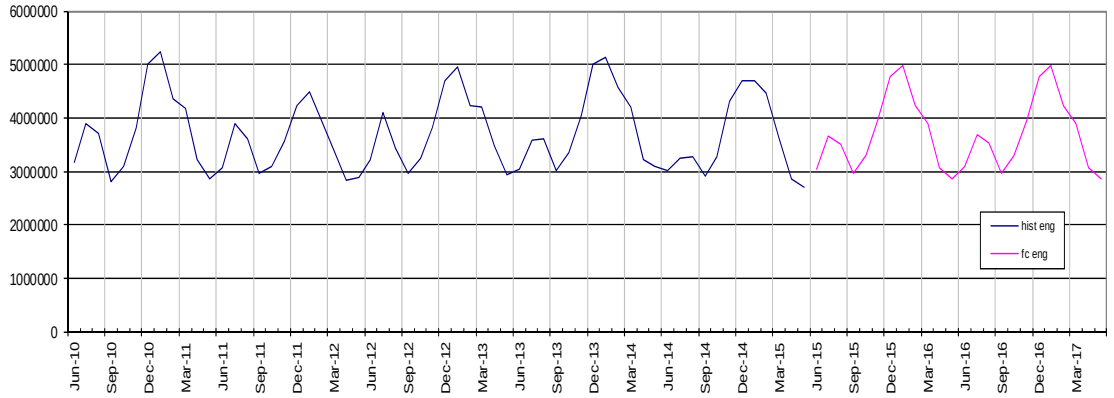
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	7.725603735	1.217779435	6.34	0.00	5.27287005	10.1783374
d1	-0.064198678	0.022641453	-2.84	0.01	-0.1098009	-0.0185965
d2	-0.168987895	0.023845817	-7.09	0.00	-0.21701583	-0.12096
d3	-0.107016144	0.022465044	-4.76	0.00	-0.15226307	-0.0617692
d4	-0.200070945	0.030598527	-6.54	0.00	-0.26169954	-0.1384423
d5	-0.131446754	0.039675738	-3.31	0.00	-0.21135779	-0.0515357
d6	-0.09158435	0.046840726	-1.96	0.06	-0.18592642	0.00275772
d7	-0.12882211	0.057073284	-2.26	0.03	-0.2437736	-0.0138706
d8	-0.182871596	0.053088626	-3.44	0.00	-0.28979758	-0.0759456
d9	-0.232483014	0.0423747	-5.49	0.00	-0.31783004	-0.147136
d10	-0.080585292	0.034164084	-2.36	0.02	-0.14939529	-0.0117753
d11	-0.046467372	0.023848375	-1.95	0.06	-0.09450046	0.00156572
ln_lageng1	1.111322136	0.187791237	5.92	0.00	0.73309117	1.4895531
cdd	0.001140229	0.000142702	7.99	0.00	0.00085281	0.00142765
hdd	0.000119536	2.89064E-05	4.14	0.00	6.1316E-05	0.00017776

Notes

Breckenridge, MN Demand - Model 25/175



Breckenridge, MN Energy - Model 25/175



Regression Statistics	
Multiple R	0.989
R Square	0.978
Adjusted R Square	0.971
Standard Error	118563.004
Observations	60

Dependent Variable	***energy***

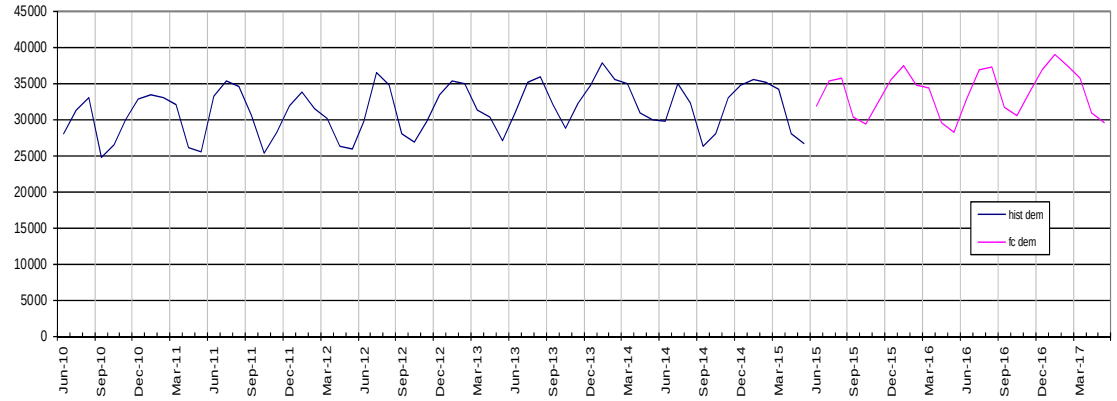
	df	*SS*	*MS*	*F*	*Significance F*
Regression	13	2.8313E+13	2.1779E+12	154.9345435	2.05993E-33
Residual	46	6.4663E+11	1.4057E+10	0	0
Total	59	2.896E+13	0	0	0

Durbin Watson	*1.50*
Pre-Shift Growth Rate	2.7%
Forecasted Growth Rate	0.2%
Last 5 Yrs Growth Rate:	-1.0%

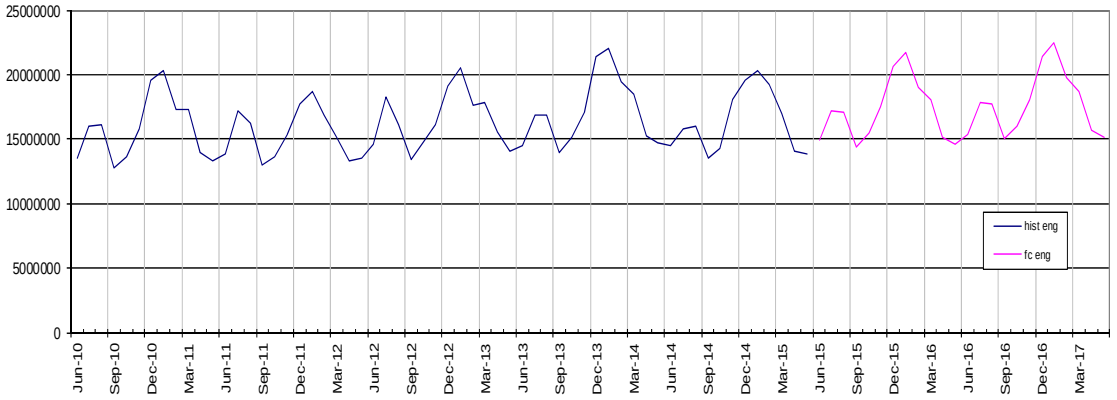
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-10749775.57	4363395.228	-2.46	0.02	-19532834.6	-1966716.5
d1	-160282.1387	90561.10236	-1.77	0.08	-342572.183	22007.9057
d2	-569101.9372	101501.3393	-5.61	0.00	-773413.536	-364790.34
d3	-444139.6718	97680.28995	-4.55	0.00	-640759.897	-247519.45
d4	-574418.2323	128117.8257	-4.48	0.00	-832306.04	-316530.42
d5	-179654.4992	151236.5563	-1.19	0.24	-484077.898	124768.899
d6	255658.9264	165290.9824	1.55	0.13	-77054.5646	588372.417
d7	733021.2994	155439.323	4.72	0.00	420138.17	1045904.43
d8	434559.056	171731.64	2.53	0.01	88881.1936	780236.918
d9	-150609.7394	163761.674	-0.92	0.36	-480244.892	179025.414
d10	-74044.33792	134427.4362	-0.55	0.58	-344632.733	196544.057
d11	-91153.31391	95847.09721	-0.95	0.35	-284083.514	101776.886
ln_lageng1	2070885.694	673612.8351	3.07	0.00	714973.383	3426798.01
tdd	1186.645369	118.8027517	9.99	0.00	947.507833	1425.78291

Notes

Detroit Lakes, MN Demand - Model 26/226



Detroit Lakes, MN Energy - Model 26/226



Regression Statistics	
Multiple R	0.989
R Square	0.977
Adjusted R Square	0.970
Standard Error	0.025
Observations	60

Dependent Variable	***ln_eng***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	1.16935199	0.08352514	137.5411059	4.34714E-32
Residual	45	0.02732733	0.00060727	0	0
Total	59	1.19667932	0	0	0

Durbin Watson	*2.02*
Pre-Shift Growth Rate	4.8%
Forecasted Growth Rate	1.9%
Last 5 Yrs Growth Rate:	0.7%

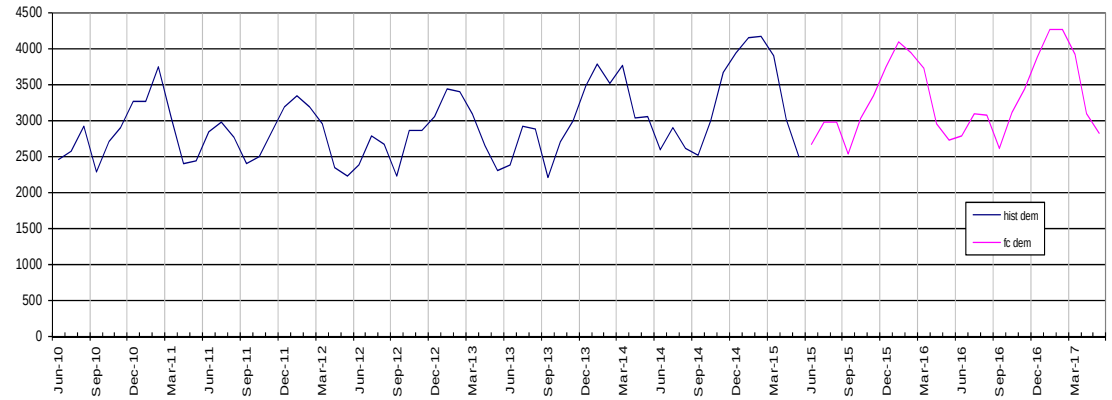
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	15.20682834	0.134846757	112.77	0.00	14.935233	15.4784236
d1	-0.024085688	0.020538419	-1.17	0.25	-0.06545219	0.01728081
d2	-0.1406847	0.023861588	-5.90	0.00	-0.18874441	-0.092625
d3	-0.111269626	0.01886944	-5.90	0.00	-0.14927463	-0.0732646
d4	-0.171061348	0.023181447	-7.38	0.00	-0.21775118	-0.1243715
d5	-0.030674457	0.032813147	-0.93	0.35	-0.09676353	0.03541461
d6	0.11948783	0.043299074	2.76	0.01	0.03227902	0.20669664
d7	0.201371613	0.035477259	5.68	0.00	0.12991675	0.27282648
d8	0.171176964	0.04298162	3.98	0.00	0.08460754	0.25774639
d9	-0.043698122	0.039571657	-1.10	0.28	-0.12339953	0.03600329
d10	-0.071879211	0.025591909	-2.81	0.01	-0.12342396	-0.0203345
d11	-0.066708255	0.018543564	-3.60	0.00	-0.10405691	-0.0293596
trend	0.001023456	0.000219827	4.66	0.00	0.0005807	0.00146621
lageng1	1.79205E-08	4.65906E-09	3.85	0.00	8.5367E-09	2.7304E-08
ln_tdd	0.392422302	0.043896842	8.94	0.00	0.30400952	0.48083508

Notes

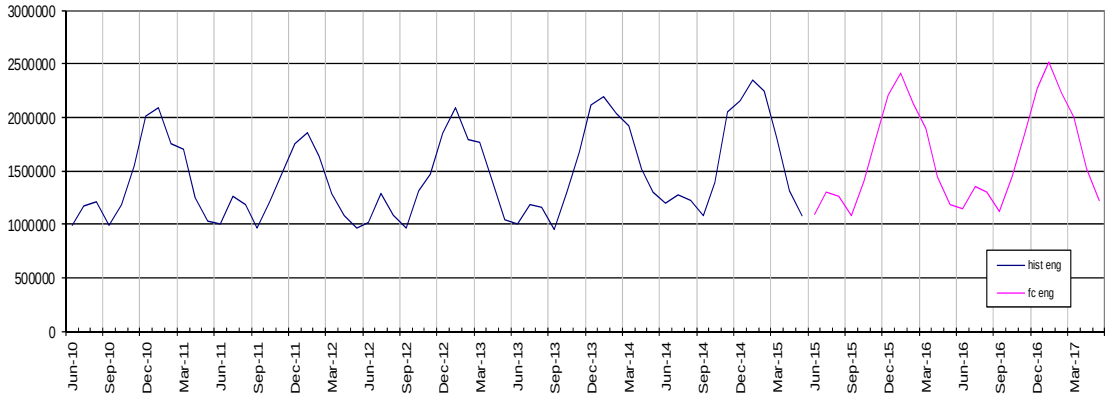
Spot load added for Fairfield Inn & Suites by Marriott and McKinley Plaza Project.

750 kW and 60% load factor starting July 2016.

Elbow Lake, MN Demand - Model 27/172



Elbow Lake, MN Energy - Model 27/172



Regression Statistics	
Multiple R	0.989
R Square	0.978
Adjusted R Square	0.971
Standard Error	0.047
Observations	60

Dependent Variable	***ln_eng***

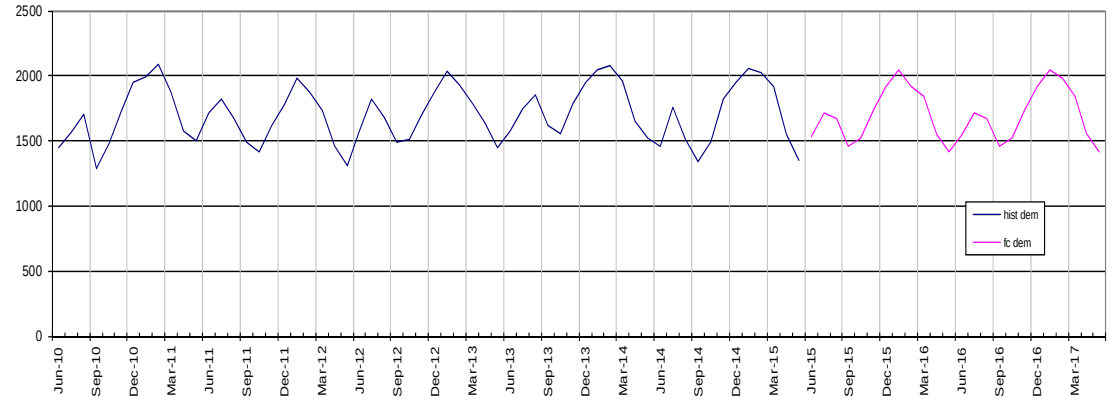
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	4.24652941	0.30332353	140.2608617	2.83332E-32
Residual	45	0.09731552	0.00216257	0	0
Total	59	4.34384493	0	0	0

Durbin Watson	*1.50*
Pre-Shift Growth Rate	0.3%
Forecasted Growth Rate	4.0%
Last 5 Yrs Growth Rate:	2.6%

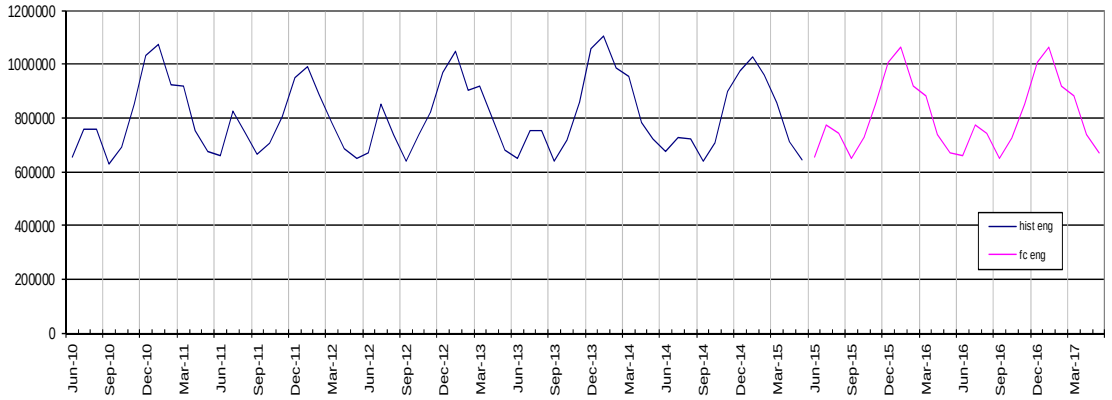
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	13.49153694	0.094684805	142.49	0.00	13.300832	13.6822419
d1	-0.07930838	0.034167972	-2.32	0.02	-0.14812621	-0.0104906
d2	-0.190266155	0.03879596	-4.90	0.00	-0.26840523	-0.1121271
d3	-0.139306546	0.037022496	-3.76	0.00	-0.21387368	-0.0647394
d4	-0.190405862	0.048014925	-3.97	0.00	-0.28711288	-0.0936988
d5	-0.16044233	0.059935475	-2.68	0.01	-0.28115857	-0.0397261
d6	-0.065604716	0.06664818	-0.98	0.33	-0.19984104	0.06863161
d7	0.090448029	0.063883785	1.42	0.16	-0.03822052	0.21911658
d8	-0.007134487	0.064117483	-0.11	0.91	-0.13627373	0.12200475
d9	-0.165594195	0.063641943	-2.60	0.01	-0.29377565	-0.0374127
d10	0.055494011	0.057050848	0.97	0.34	-0.0594123	0.17040032
d11	0.060220134	0.038406318	1.57	0.12	-0.01713416	0.13757443
trend	0.001400687	0.000440569	3.18	0.00	0.00051334	0.00228804
lageng1	3.1975E-07	5.37925E-08	5.94	0.00	2.1141E-07	4.2809E-07
tdd	0.000281894	4.30475E-05	6.55	0.00	0.00019519	0.0003686

Notes

Henning, MN Demand - Model 29/169



Henning, MN Energy - Model 29/169



Regression Statistics	
Multiple R	0.993
R Square	0.986
Adjusted R Square	0.982
Standard Error	18388.473
Observations	60

Dependent Variable	***energy***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	13	1.0687E+12	8.2208E+10	243.1215025	8.18754E-38
Residual	46	1.5554E+10	338135952	0	0
Total	59	1.0843E+12	0	0	0

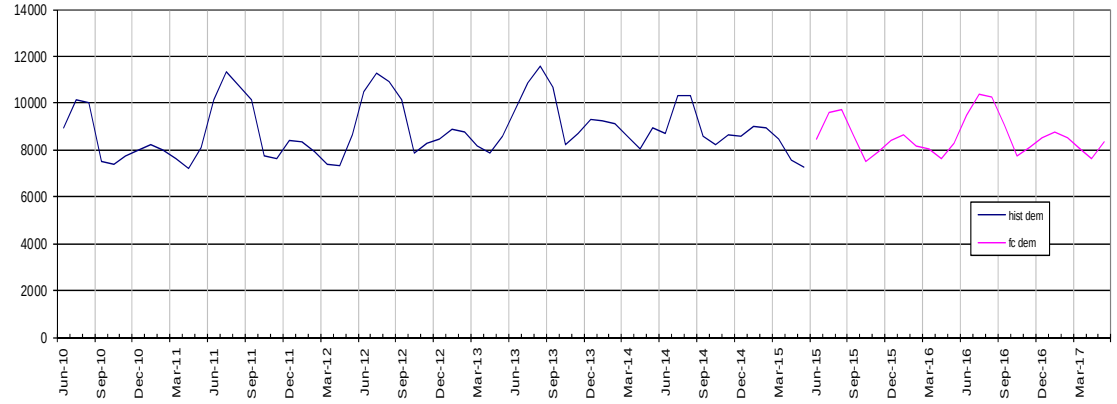
Durbin Watson	*1.85*

Pre-Shift Growth Rate	1.3%
Forecasted Growth Rate	0.1%
Last 5 Yrs Growth Rate:	-0.4%

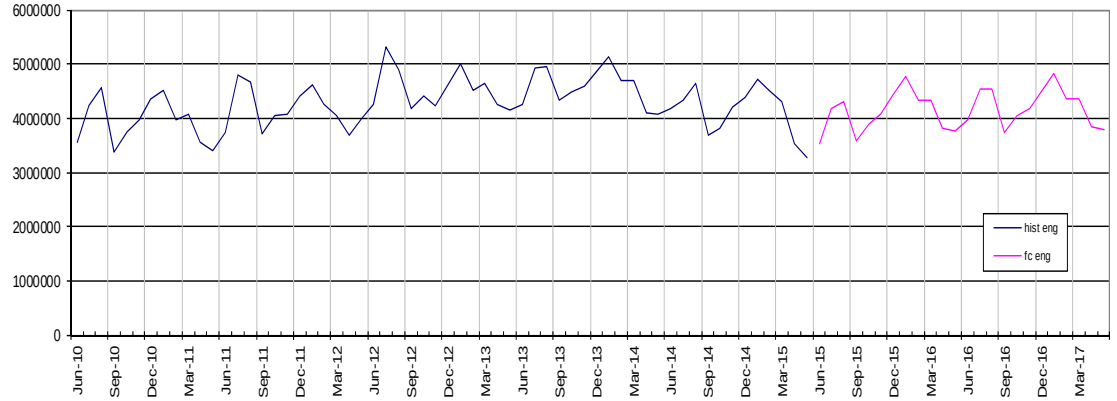
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	517856.2933	58474.5599	8.86	0.00	400153.109	635559.478
d1	-7659.106481	15697.76451	-0.49	0.63	-39257.0676	23938.8546
d2	-103396.0047	19235.25834	-5.38	0.00	-142114.572	-64677.438
d3	-59417.31685	15858.92236	-3.75	0.00	-91339.6719	-27494.962
d4	-94278.38665	20557.0236	-4.59	0.00	-135657.529	-52899.244
d5	-66419.95166	23475.54893	-2.83	0.01	-113673.781	-19166.123
d6	-37334.38969	25726.64613	-1.45	0.15	-89119.4425	14450.6631
d7	70298.43808	24601.61596	2.86	0.01	20777.9536	119818.923
d8	15681.09056	25560.89512	0.61	0.54	-35770.3227	67132.5038
d9	-81965.57491	24729.61244	-3.31	0.00	-131743.703	-32187.447
d10	-50573.92025	21854.86228	-2.31	0.03	-94565.4763	-6582.3642
d11	-33591.0455	15502.03413	-2.17	0.04	-64795.0218	-2387.0692
lageng1	0.218833497	0.073866307	2.96	0.00	0.07014833	0.36751866
tdd	191.4574589	17.92848019	10.68	0.00	155.3693	227.545618

Notes

Jackson, MN Demand - Model 30/337



Jackson, MN Energy - Model 30/337



Regression Statistics	
Multiple R	0.960
R Square	0.921
Adjusted R Square	0.896
Standard Error	147910.086
Observations	60

Dependent Variable	***energy***

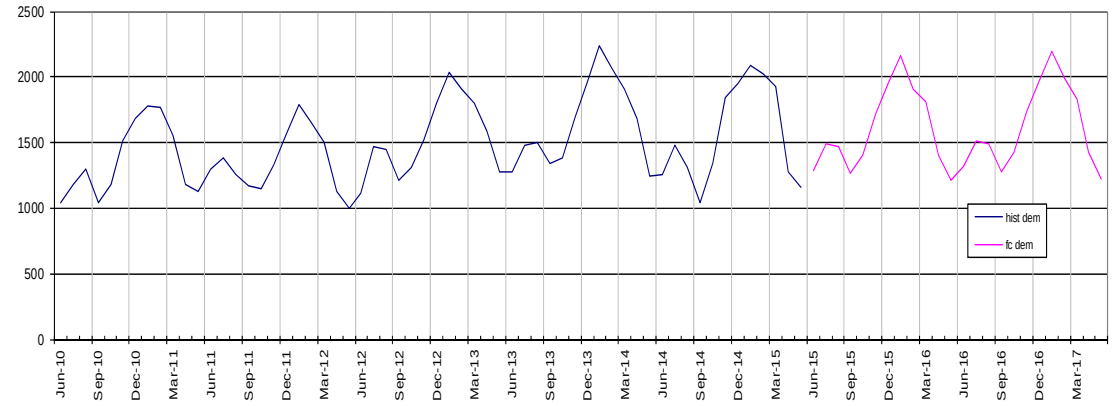
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	1.1459E+13	8.1849E+11	37.41249939	4.29339E-20
Residual	45	9.8448E+11	2.1877E+10	0	0
Total	59	1.2443E+13	0	0	0

Durbin Watson	*1.72*
Pre-Shift Growth Rate	-1.1%
Forecasted Growth Rate	3.3%
Last 5 Yrs Growth Rate:	1.0%

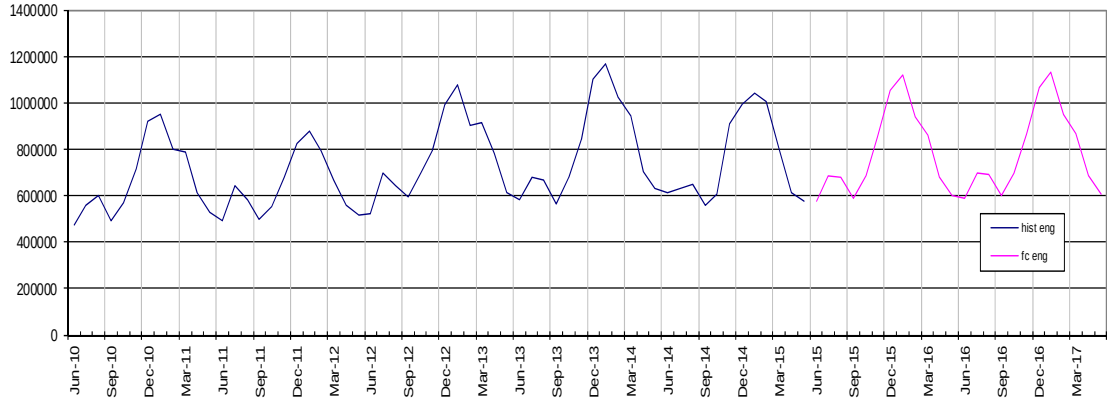
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-41837331.18	4370525.326	-9.57	0.00	-50640021	-33034641
d1	21720.96805	96359.24185	0.23	0.82	-172356.508	215798.444
d2	-492019.1848	102749.7573	-4.79	0.00	-698967.819	-285070.55
d3	-113662.3375	121722.8222	-0.93	0.36	-358824.686	131500.011
d4	-460077.8925	165093.6042	-2.79	0.01	-792593.48	-127562.3
d5	-61156.84784	203900.3573	-0.30	0.77	-471833.249	349519.553
d6	-35716.63764	238946.8024	-0.15	0.88	-516980.202	445546.927
d7	82051.60915	271699.1975	0.30	0.76	-465178.665	629281.884
d8	-161100.2286	263056.6478	-0.61	0.54	-690923.514	368723.057
d9	-664003.4738	231543.3318	-2.87	0.01	-1130355.68	-197651.26
d10	212601.4801	172369.2394	1.23	0.22	-134567.989	559770.949
d11	-49152.23659	115689.6056	-0.42	0.67	-282163.063	183858.59
ln_lageng1	6910081.597	666410.0794	10.37	0.00	5567862.8	8252300.4
cdd	2706.222547	471.529538	5.74	0.00	1756.51331	3655.93179
hdd	427.5167858	163.3196452	2.62	0.01	98.5741349	756.459437

Notes

Lake Park, MN Demand - Model 31/180



Lake Park, MN Energy - Model 31/180



Regression Statistics	
Multiple R	0.990
R Square	0.980
Adjusted R Square	0.974
Standard Error	0.039
Observations	60

Dependent Variable	***ln_eng***

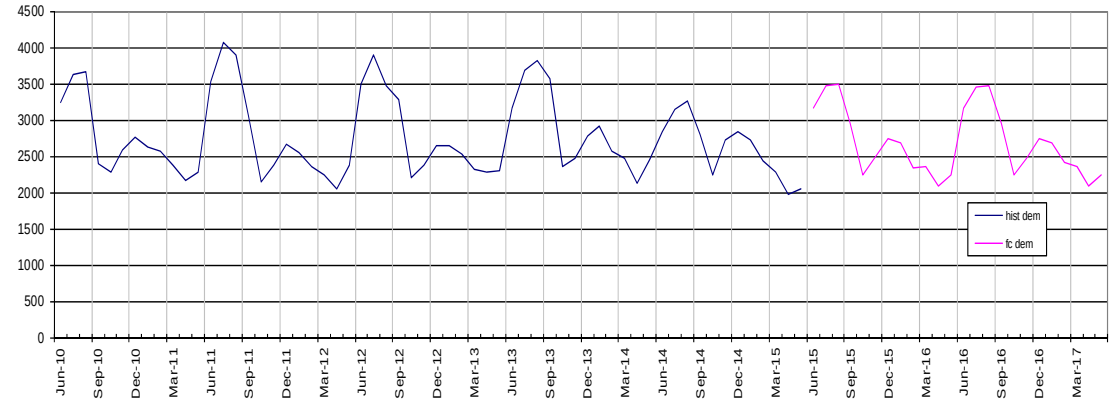
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	3.30753554	0.23625254	157.3458779	2.28554E-33
Residual	45	0.06756684	0.00150149	0	0
Total	59	3.37510238	0	0	0

Durbin Watson	*1.86*
Pre-Shift Growth Rate	3.4%
Forecasted Growth Rate	1.3%
Last 5 Yrs Growth Rate:	2.5%

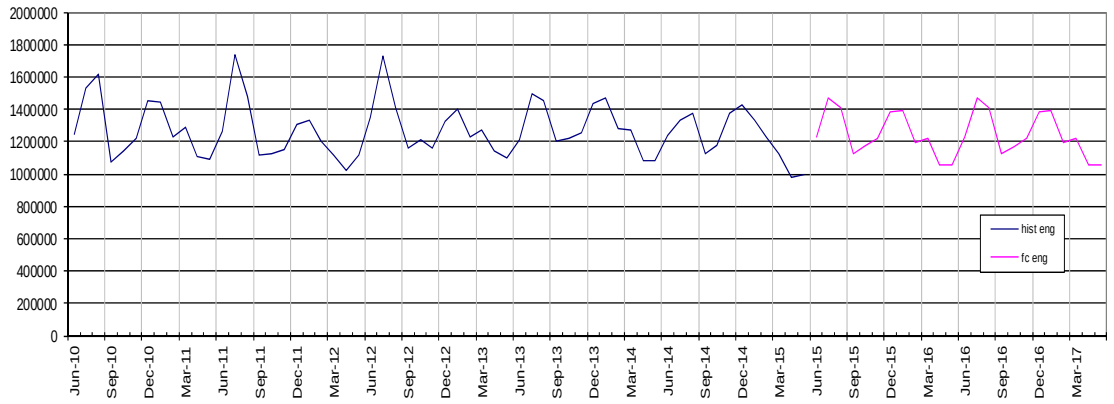
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	8.042870215	0.942874813	8.53	0.00	6.14382286	9.94191757
d1	-0.067405018	0.027868202	-2.42	0.02	-0.12353446	-0.0112756
d2	-0.153960062	0.030974601	-4.97	0.00	-0.21634611	-0.091574
d3	-0.093481062	0.031399464	-2.98	0.00	-0.15672283	-0.0302393
d4	-0.118258176	0.041819936	-2.83	0.01	-0.20248785	-0.0340285
d5	-0.039847212	0.049603367	-0.80	0.43	-0.13975352	0.0600591
d6	0.032052475	0.053980563	0.59	0.56	-0.07666996	0.14077491
d7	0.190782732	0.051292108	3.72	0.00	0.08747512	0.29409034
d8	0.12401921	0.053394894	2.32	0.02	0.01647637	0.23156205
d9	-0.036721794	0.052223825	-0.70	0.49	-0.14190598	0.06846239
d10	0.04548982	0.044204292	1.03	0.31	-0.04354219	0.13452184
d11	0.047895197	0.031075363	1.54	0.13	-0.0146938	0.11048419
ln_trend	0.100303508	0.017472769	5.74	0.00	0.06511154	0.13549547
ln_lageng1	0.859298238	0.166187198	5.17	0.00	0.52458004	1.19401644
tdd	0.0003428	3.79727E-05	9.03	0.00	0.00026632	0.00041928

Notes

Lakefield, MN Demand - Model 32/329



Lakefield, MN Energy - Model 32/329



Regression Statistics	
Multiple R	0.975
R Square	0.951
Adjusted R Square	0.936
Standard Error	42064.288
Observations	60

Dependent Variable	***energy***

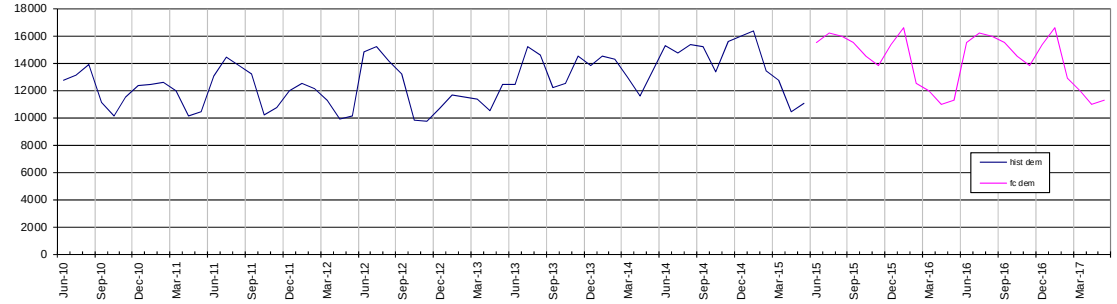
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	1.5615E+12	1.1154E+11	63.03549027	8.62377E-25
Residual	45	7.9623E+10	1769404310	0	0
Total	59	1.6411E+12	0	0	0

Durbin Watson	*1.22*
Pre-Shift Growth Rate	1.7%
Forecasted Growth Rate	-0.2%
Last 5 Yrs Growth Rate:	-1.0%

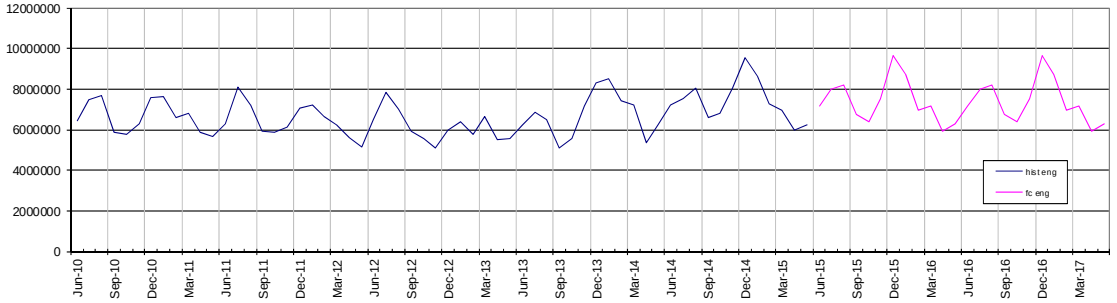
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	975458.3526	67840.00453	14.38	0.00	838821.57	1112095.14
d1	-22413.17302	26951.6842	-0.83	0.41	-76696.6515	31870.3055
d2	-126311.9775	26830.03926	-4.71	0.00	-180350.45	-72273.505
d3	-23104.46144	33692.12496	-0.69	0.50	-90963.8845	44754.9616
d4	-53238.01415	45719.39356	-1.16	0.25	-145321.6	38845.5714
d5	25150.48745	57990.90164	0.43	0.67	-91649.1841	141950.159
d6	135020.0586	67953.78597	1.99	0.05	-1845.89201	271886.009
d7	242538.1704	77218.09919	3.14	0.00	87012.9352	398063.406
d8	248016.2306	72402.11053	3.43	0.00	102190.894	393841.567
d9	77208.10855	62292.73699	1.24	0.22	-48255.9041	202672.121
d10	73729.75053	48989.91349	1.50	0.14	-24941.0003	172400.501
d11	-15770.77725	32835.58045	-0.48	0.63	-81905.0311	50363.4766
ln_trend	-32523.17231	14522.45673	-2.24	0.03	-61772.9016	-3273.443
cdd	1205.132672	132.9594211	9.06	0.00	937.338651	1472.92669
hdd	332.0107318	45.32677082	7.32	0.00	240.717929	423.303534

Notes

Luverne, MN Demand - Model 33/326



Luverne, MN Energy - Model 33/326



Regression Statistics	
Multiple R	0.966
R Square	0.934
Adjusted R Square	0.915
Standard Error	0.036
Observations	60

Dependent Variable	***ln_eng***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	13	0.82745993	0.06365076	50.08114758	1.08152E-22
Residual	46	0.05846382	0.00127095	0	0
Total	59	0.88592374	0	0	0

Durbin Watson	*1.47*
Pre-Shift Growth Rate	-28.0%
Forecasted Growth Rate	0.0%
Last 5 Yrs Growth Rate:	2.3%

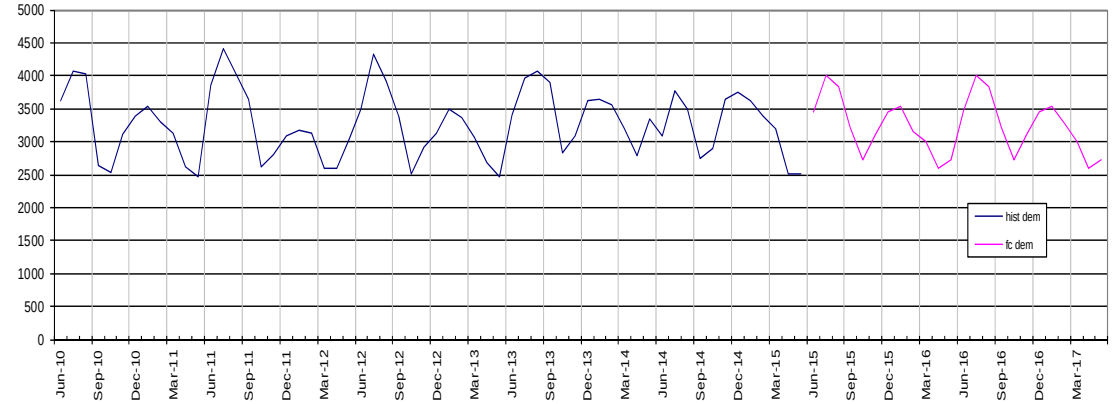
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	15.23139336	0.055389042	274.99	0.00	15.119901	15.3428857
d1	0.015642503	0.022841644	0.68	0.50	-0.03033534	0.06162035
d2	-0.03446107	0.022730436	-1.52	0.14	-0.08021507	0.01129293
d3	0.00447969	0.02852345	0.16	0.88	-0.05293504	0.06189442
d4	-0.036963466	0.038695445	-0.96	0.34	-0.11485336	0.04092643
d5	0.018620508	0.049087061	0.38	0.71	-0.08018662	0.11742764
d6	0.102255711	0.057555576	1.78	0.08	-0.01359765	0.21810908
d7	0.175196685	0.065412155	2.68	0.01	0.04352885	0.30686452
d8	0.171177486	0.061354451	2.79	0.01	0.04767738	0.29467759
d9	0.048990486	0.052794011	0.93	0.36	-0.05727835	0.15525932
d10	0.016258424	0.041517182	0.39	0.70	-0.06731133	0.09982818
d11	-0.059294657	0.027827802	-2.13	0.04	-0.11530912	-0.0032802
cdd	0.000686811	0.000112555	6.10	0.00	0.00046025	0.00091337
hdd	0.00027695	3.83938E-05	7.21	0.00	0.00019967	0.00035423

Notes

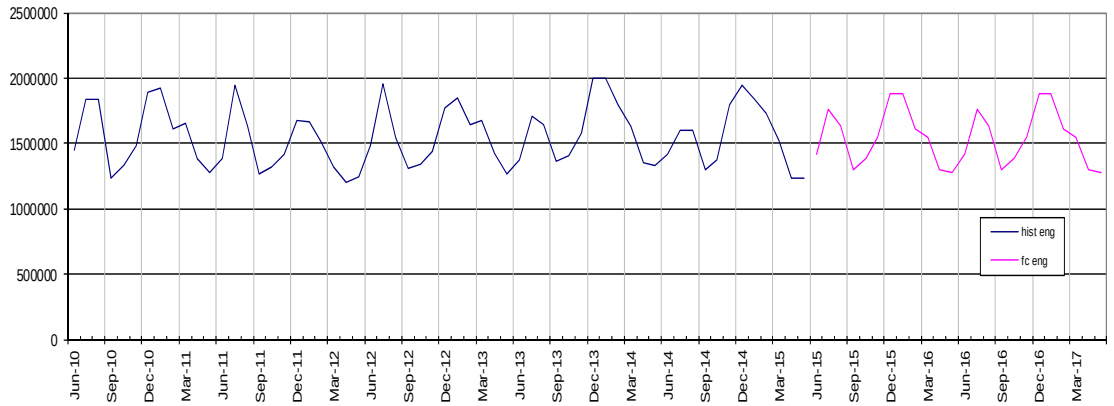
Historical Gevo/ethanol plant load was subtracted prior to running the regression and the city was forecasted without Gevo. A spot load using the last year of demand and energy for Gevo was added going forward. A 75% coincidence factor was applied to the spot load demand. Demand used ranged from 2660 kW to 6592 kW.

A coincidence factor with the system peak ranging from 80% to 95% was applied to historical Gevo demand.

Madison, MN Demand - Model 34/176



Madison, MN Energy - Model 34/176



Regression Statistics	
Multiple R	0.971
R Square	0.943
Adjusted R Square	0.927
Standard Error	0.040
Observations	60

Dependent Variable	***ln_eng***

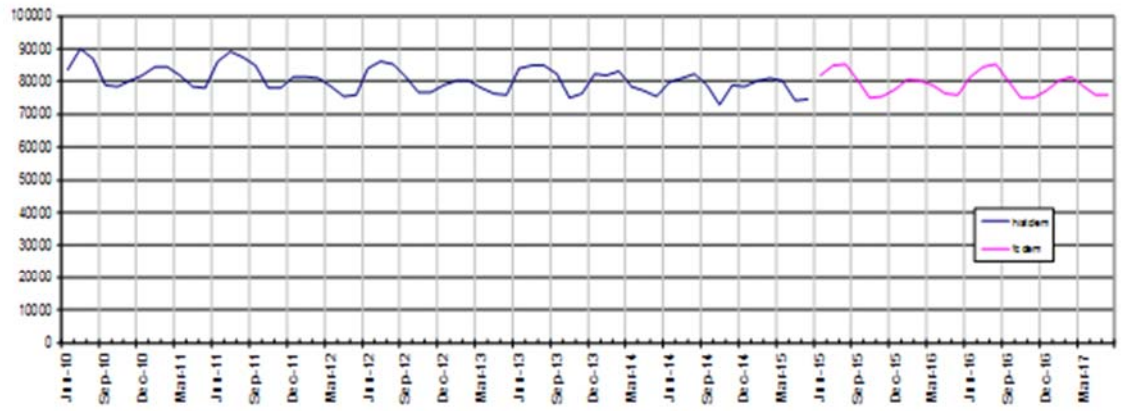
	df	*SS*	*MS*	*F*	*Significance F*
Regression	13	1.22910754	0.09454673	58.67957964	3.72028E-24
Residual	46	0.07411692	0.00161124	0	0
Total	59	1.30322446	0	0	0

Durbin Watson	*1.70*
Pre-Shift Growth Rate	-0.3%
Forecasted Growth Rate	0.1%
Last 5 Yrs Growth Rate:	-0.4%

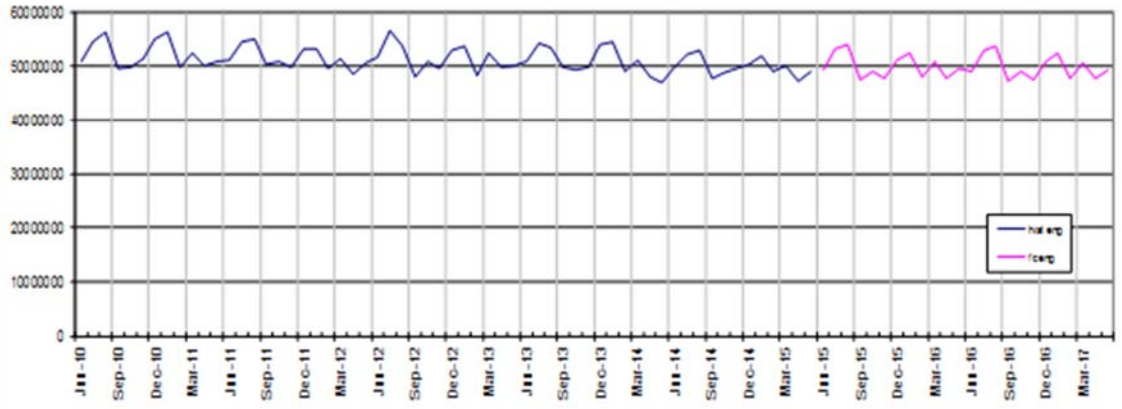
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	10.82050583	1.312356661	8.25	0.00	8.17886888	13.4621428
d1	-0.090047925	0.030120719	-2.99	0.00	-0.15067779	-0.0294181
d2	-0.145944076	0.031092001	-4.69	0.00	-0.20852903	-0.0833591
d3	-0.078250019	0.03175879	-2.46	0.02	-0.14217715	-0.0143229
d4	-0.090166306	0.043154723	-2.09	0.04	-0.17703226	-0.0033004
d5	0.020626283	0.052175034	0.40	0.69	-0.08439661	0.12564918
d6	0.180096088	0.057089973	3.15	0.00	0.06517993	0.29501224
d7	0.36451403	0.054471206	6.69	0.00	0.25486918	0.47415888
d8	0.245477334	0.066259642	3.70	0.00	0.11210359	0.37885108
d9	0.009881442	0.060695433	0.16	0.87	-0.11229213	0.13205501
d10	0.012066109	0.043960703	0.27	0.78	-0.0764222	0.10055441
d11	-0.023414353	0.030881319	-0.76	0.45	-0.08557523	0.03874652
ln_lageng1	0.510026081	0.215853741	2.36	0.02	0.07553504	0.94451713
tdd	0.000310203	4.1966E-05	7.39	0.00	0.00022573	0.00039468

Notes

Marshall, MN Demand - Model 63/327



Marshall, MN Energy - Model 63/327



Regression Statistics	
Multiple R	0.977
R Square	0.955
Adjusted R Square	0.942
Standard Error	528250.789
Observations	60

Dependent Variable	energy				
	df	SS	MS	F	Significance F
Regression	14	2.69686E+14	1.9255E+13	69.00377101	1.2664TE-25
Residual	45	1.2557E+13	2.7905E+11	0	0
Total	59	2.8213E+14	0	0	0

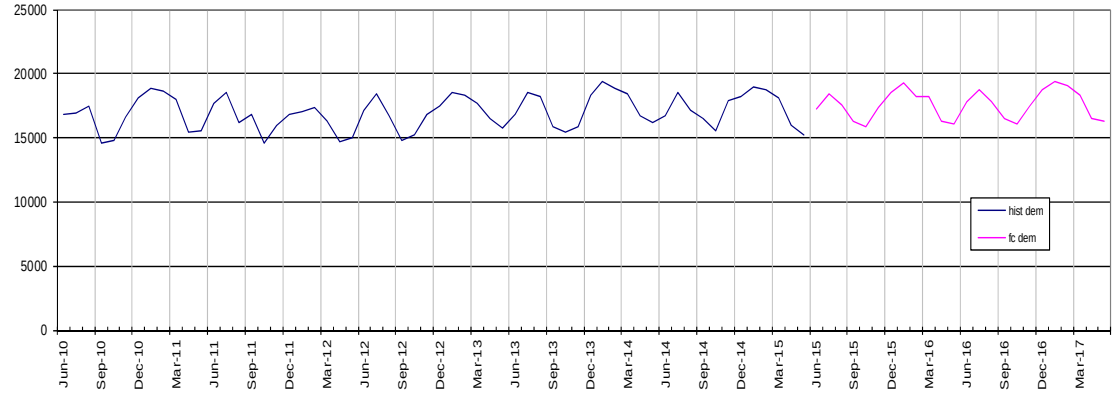
Durbin Watson	1.88
Pre-Shift Growth Rate	0.6%
Forecasted Growth Rate	-0.6%
Last 5 Yrs Growth Rate:	-1.2%

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	17946000.18	827564.9017	21.69	0.00	16279219	19612781.3
d1	797309.239	337289.2553	2.36	0.02	117973.807	1476644.67
d2	-1101655.779	337662.1096	-3.26	0.00	-1781922.04	-421389.52
d3	347377.862	410526.4335	0.85	0.40	-479464.819	1174220.54
d4	-150179.9323	577184.6878	-0.26	0.80	-1312689.57	1012329.7
d5	671962.5663	731284.6254	1.19	0.24	-800920.276	2244845.41
d6	1738440.152	853462.1961	2.10	0.04	69438.7683	3507441.54
d7	2717587.644	974343.8907	2.79	0.01	755158.715	4680016.57
d8	3478326.331	913826.7902	3.81	0.00	1638187.52	5318465.15
d9	976412.5969	788611.713	1.24	0.22	-607904.72	2560729.91
d10	415633.9888	815617.8693	0.68	0.50	-924283.625	1655551.6
d11	-915688.6749	406039.5077	-2.26	0.03	-1733694.22	-98083.128
trend	-15279.0044	4065.110484	-3.76	0.00	-23466.5572	-7091.4516
cdd	13962.29039	1667.301875	8.39	0.00	10624.172	17340.4087
hdd	4840.186022	561.406027	8.62	0.00	3709.45624	5970.9158

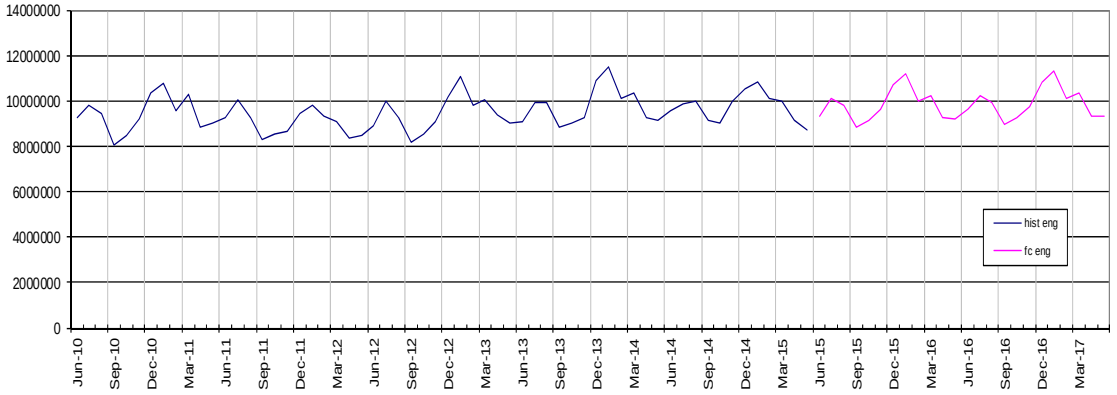
Notes

ADM was subtracted from the historical data and the city was forecasted without ADM. ADM load was added after regression and alternate weather and economic forecast bandwidths were applied to the total load without ADM, as ADM is not weather sensitive and not prone to changes in usage due to economic changes.

Melrose, MN Demand - Model 83/177



Melrose, MN Energy - Model 83/177



Regression Statistics	
Multiple R	0.969
R Square	0.939
Adjusted R Square	0.920
Standard Error	214553.614
Observations	60

Dependent Variable	***energy***

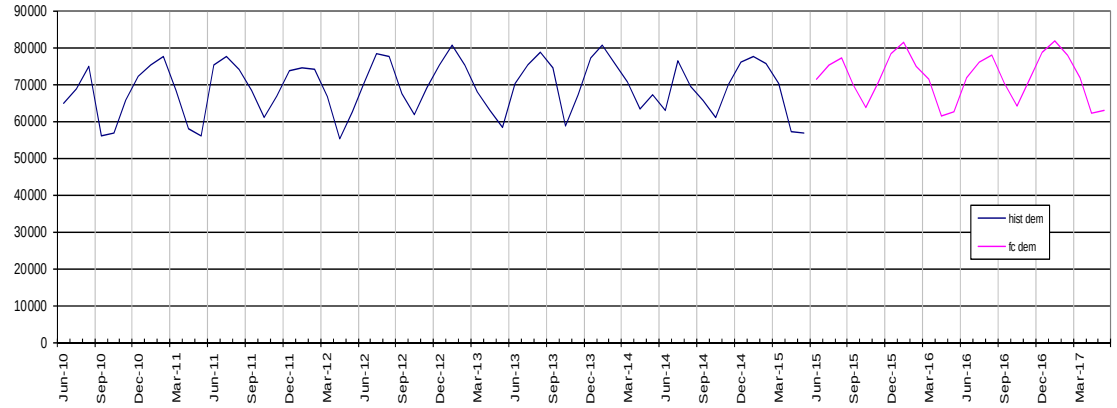
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	3.2052E+13	2.2894E+12	49.73420161	1.24043E-22
Residual	45	2.0715E+12	4.6033E+10	0	0
Total	59	3.4123E+13	0	0	0

Durbin Watson	*1.87*
Pre-Shift Growth Rate	0.4%
Forecasted Growth Rate	1.3%
Last 5 Yrs Growth Rate:	0.7%

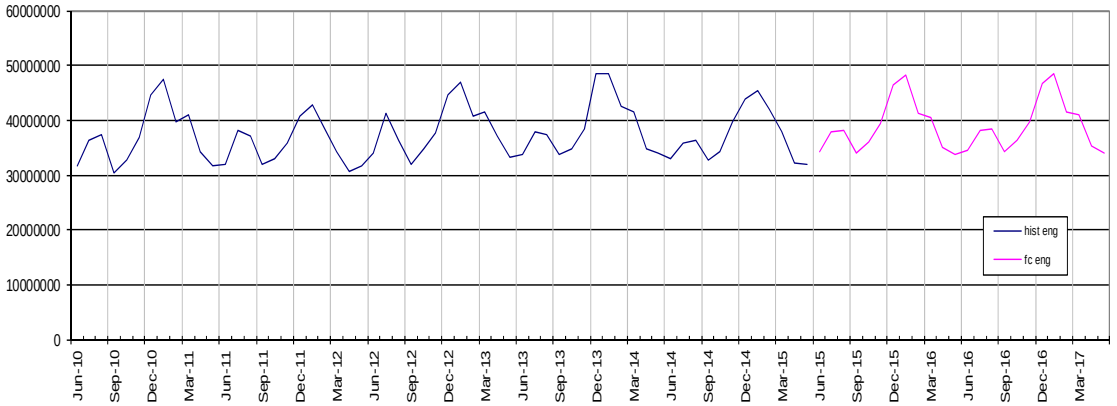
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-48477651.84	14696619.42	-3.30	0.00	-78078162.8	-18877141
d1	-58592.38136	162533.1932	-0.36	0.72	-385951.037	268766.274
d2	-1012787.941	198320.3648	-5.11	0.00	-1412225.66	-613350.22
d3	-45306.66604	175794.4298	-0.26	0.80	-399374.823	308761.491
d4	-451519.0995	257292.503	-1.75	0.09	-969732.802	66694.6028
d5	279317.0089	289587.7592	0.96	0.34	-303942.678	862576.696
d6	889826.2773	317856.9687	2.80	0.01	249629.479	1530023.08
d7	1343892.013	303923.1153	4.42	0.00	731759.436	1956024.59
d8	816125.5576	349191.5404	2.34	0.02	112817.693	1519433.42
d9	-183967.8994	324711.8132	-0.57	0.57	-837971.063	470035.264
d10	39372.53737	236227.0285	0.17	0.87	-436413.121	515158.196
d11	-219803.2117	164193.8564	-1.34	0.19	-550506.614	110900.191
trend	5617.321203	1947.94858	2.88	0.01	1693.95137	9540.69104
ln_lageng1	8119538.389	2132439.361	3.81	0.00	3824585.05	12414491.7
tdd	1375.43494	225.7423014	6.09	0.00	920.766606	1830.10327

Notes

Moorhead, MN Demand - Model 35/327



Moorhead, MN Energy - Model 35/327



Regression Statistics	
Multiple R	0.994
R Square	0.988
Adjusted R Square	0.984
Standard Error	608050.727
Observations	60

Dependent Variable	***energy***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	1.3599E+15	9.7135E+13	262.7213455	2.80844E-38
Residual	45	1.6638E+13	3.6973E+11	0	0
Total	59	1.3765E+15	0	0	0

Durbin Watson	*2.01*
Pre-Shift Growth Rate	2.8%
Forecasted Growth Rate	0.8%
Last 5 Yrs Growth Rate:	0.0%

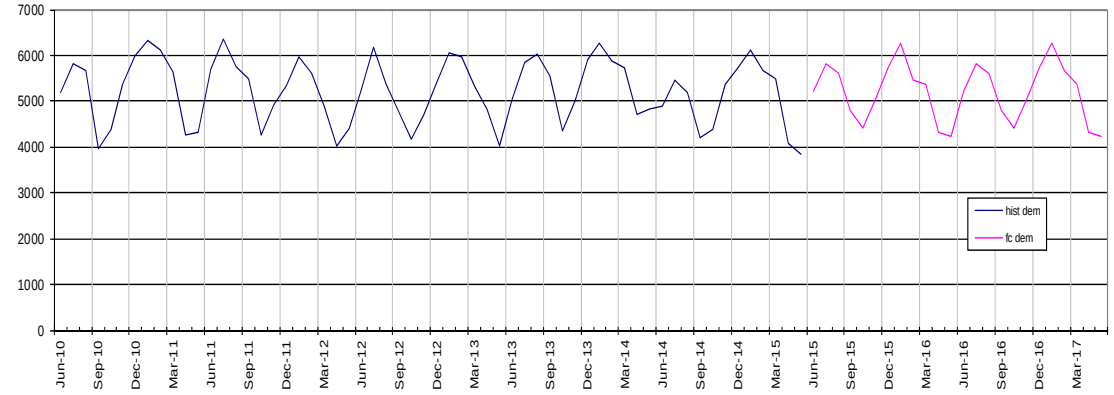
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	28422671.25	896069.103	31.72	0.00	26617895.4	30227447.1
d1	432312.9602	391799.1501	1.10	0.28	-356811.036	1221436.96
d2	-3412762.032	385302.9767	-8.86	0.00	-4188802.06	-2636722
d3	-1650370.535	436340.1321	-3.78	0.00	-2529204.67	-771536.4
d4	-2141749.766	616098.4973	-3.48	0.00	-3382635.84	-900863.69
d5	-612839.2275	798260.4483	-0.77	0.45	-2220618.3	994939.847
d6	-88177.30172	958867.4162	-0.09	0.93	-2019435.41	1843080.81
d7	1293996.148	1162004.7	1.11	0.27	-1046401.46	3634393.75
d8	2436115.051	1039223.041	2.34	0.02	343012.402	4529217.7
d9	-94510.21273	843271.1537	-0.11	0.91	-1792945.5	1603925.08
d10	-797231.9181	675261.2376	-1.18	0.24	-2157277.87	562814.029
d11	-2104131.671	462165.6045	-4.55	0.00	-3034980.98	-1173282.4
trend	25901.61611	4641.316142	5.58	0.00	16553.5255	35249.7067
cdd	28455.69111	2981.340127	9.54	0.00	22450.9639	34460.4184
hdd	9896.613409	551.9855141	17.93	0.00	8784.85751	11008.3693

Notes

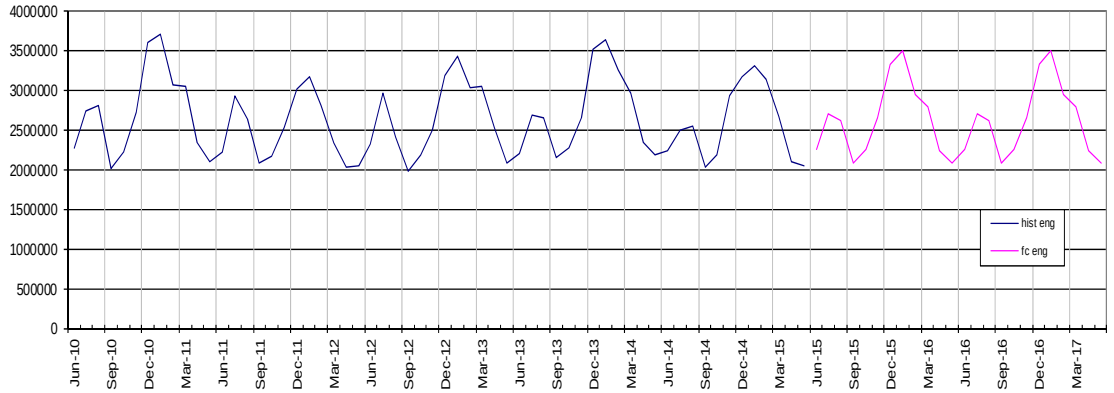
Added spot load for Hornbacher's grocery store and Azool retail center.

June 2015 start. 1200 kW with 65% load factor.

Ortonville, MN Demand - Model 37/163



Ortonville, MN Energy - Model 37/163



Regression Statistics	
Multiple R	0.990
R Square	0.981
Adjusted R Square	0.976
Standard Error	74779.860
Observations	60

Dependent Variable	***energy***

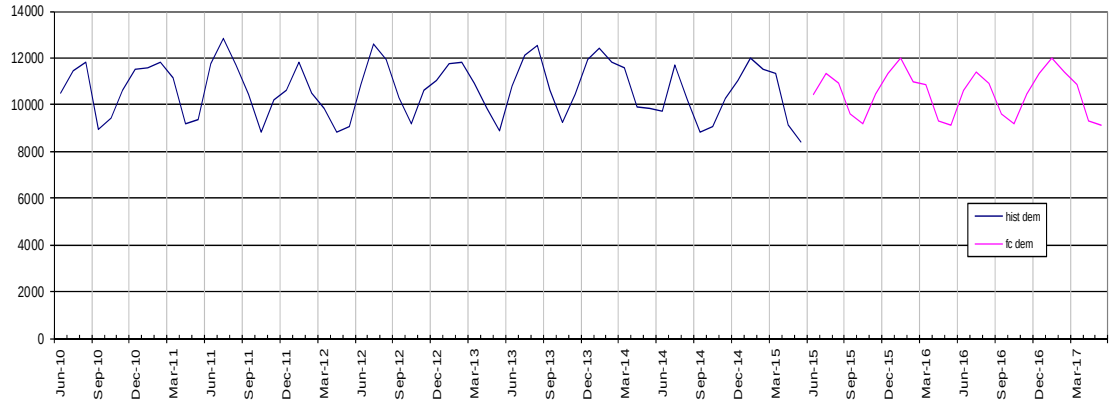
	df	*SS*	*MS*	*F*	*Significance F*
Regression	12	1.3331E+13	1.1109E+12	198.6582005	5.2733E-36
Residual	47	2.6283E+11	5592027449	0	0
Total	59	1.3594E+13	0	0	0

Durbin Watson	*1.45*
Pre-Shift Growth Rate	2.0%
Forecasted Growth Rate	0.0%
Last 5 Yrs Growth Rate:	-1.1%

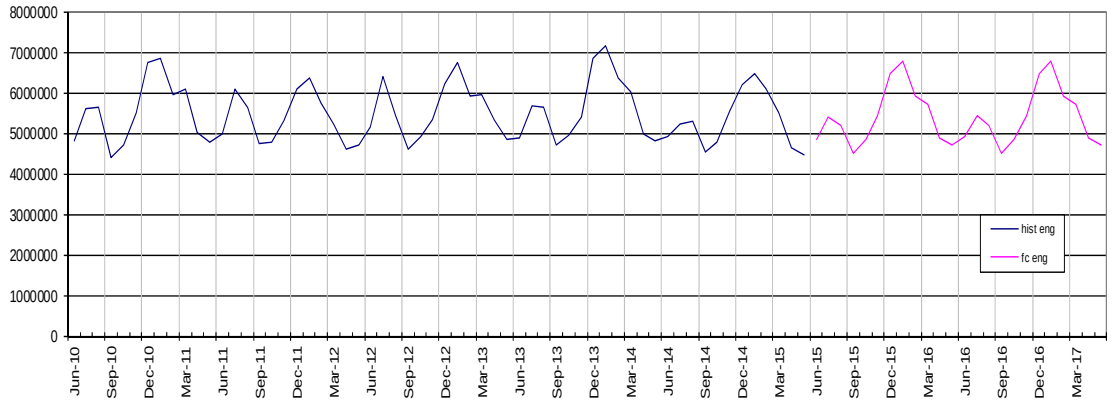
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1746652.742	110024.0549	15.88	0.00	1525312.89	1967992.59
d1	57914.81337	47725.73373	1.21	0.23	-38096.9787	153926.605
d2	-177300.6046	47454.80741	-3.74	0.00	-272767.363	-81833.846
d3	-82132.68972	54462.27989	-1.51	0.14	-191696.665	27431.2852
d4	-151680.6001	75853.80083	-2.00	0.05	-304278.764	917.564119
d5	10701.07448	95048.40719	0.11	0.91	-180511.657	201913.806
d6	332646.7678	104774.1569	3.17	0.00	121868.352	543425.184
d7	730522.1553	98026.23992	7.45	0.00	533318.797	927725.514
d8	657068.6911	102966.8141	6.38	0.00	449926.18	864211.203
d9	65231.31998	100735.0171	0.65	0.52	-137421.395	267884.035
d10	-128704.449	80636.44231	-1.60	0.12	-290924.047	33515.1489
d11	-209236.2671	55227.64512	-3.79	0.00	-320339.958	-98132.576
tdd	1029.899197	70.0002359	14.71	0.00	889.076887	1170.72151

Notes

Sauk Centre, MN Demand - Model 38/331



Sauk Centre, MN Energy - Model 38/331



Regression Statistics	
Multiple R	0.991
R Square	0.983
Adjusted R Square	0.978
Standard Error	105848.904
Observations	60

Dependent Variable	***energy***

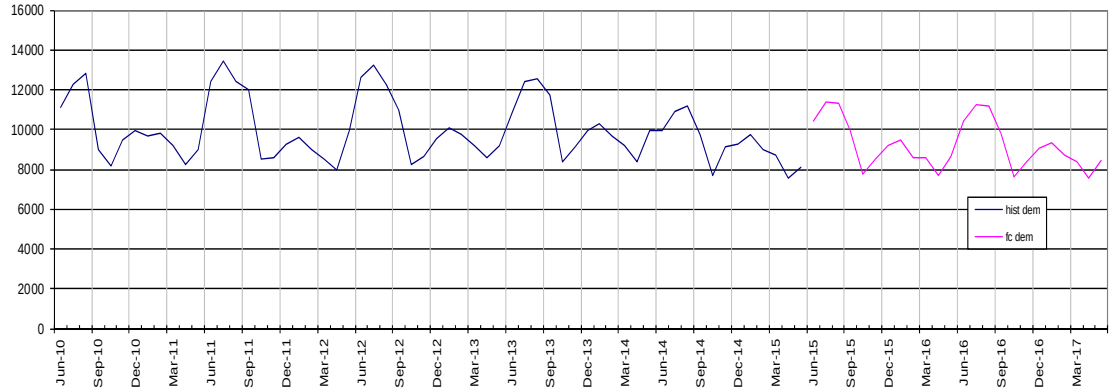
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	2.906E+13	2.0757E+12	185.2626295	6.31047E-35
Residual	45	5.0418E+11	1.1204E+10	0	0
Total	59	2.9564E+13	0	0	0

Durbin Watson	*1.48*
Pre-Shift Growth Rate	1.7%
Forecasted Growth Rate	0.1%
Last 5 Yrs Growth Rate:	-0.8%

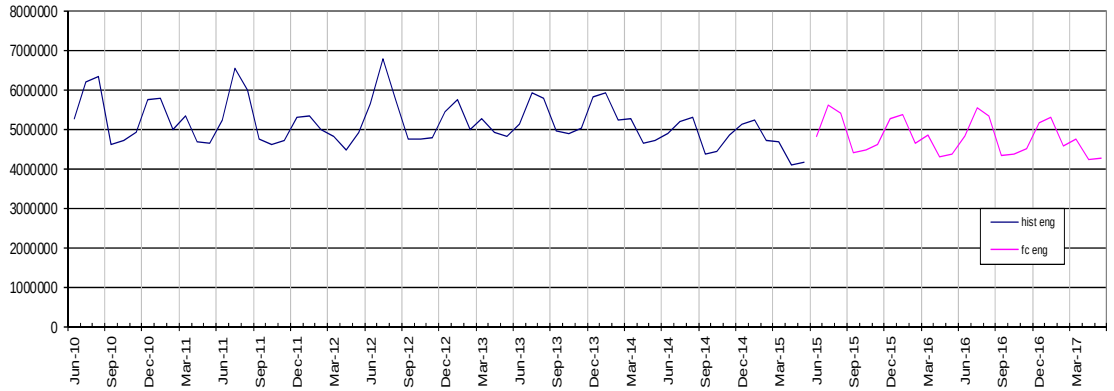
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3253790.902	323610.2373	10.05	0.00	2602006.43	3905575.38
d1	-155408.5372	90193.49716	-1.72	0.09	-337067.565	26250.4911
d2	-730207.5238	109579.579	-6.66	0.00	-950912.125	-509502.92
d3	-420637.5649	95958.9732	-4.38	0.00	-613908.858	-227366.27
d4	-667183.9161	124909.7495	-5.34	0.00	-918765.066	-415602.77
d5	-308104.9685	142282.353	-2.17	0.04	-594676.338	-21533.599
d6	-185436.767	169167.36	-1.10	0.28	-526157.32	155283.786
d7	-45874.23406	210209.0755	-0.22	0.83	-469257.045	377508.577
d8	-187804.5941	210655.9538	-0.89	0.38	-612087.465	236478.276
d9	-586107.88	165102.4174	-3.55	0.00	-918641.218	-253574.54
d10	-336546.0166	116922.7008	-2.88	0.01	-572040.425	-101051.61
d11	-337321.5576	82462.92027	-4.09	0.00	-503410.405	-171232.71
lageng1	0.275173115	0.06594585	4.17	0.00	0.14235136	0.40799488
cdd	4666.63015	510.0606729	9.15	0.00	3639.31522	5693.94508
hdd	1136.911876	114.3669284	9.94	0.00	906.565058	1367.25869

Notes

St James, MN Demand - Model 39/339



St James, MN Energy - Model 39/339



Regression Statistics	
Multiple R	0.979
R Square	0.959
Adjusted R Square	0.945
Standard Error	134152.459
Observations	60

Dependent Variable	***energy***

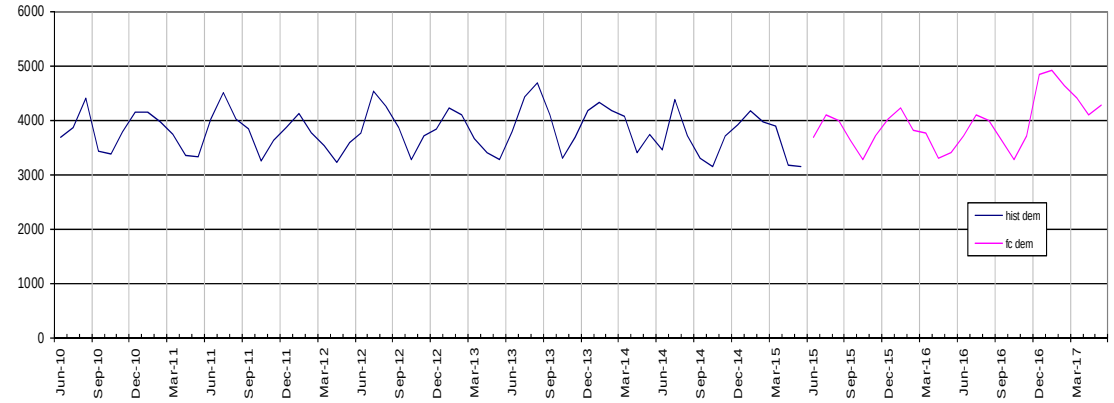
	df	*SS*	*MS*	*F*	*Significance F*
Regression	15	1.8343E+13	1.2229E+12	67.95013465	2.22098E-25
Residual	44	7.9186E+11	1.7997E+10	0	0
Total	59	1.9135E+13	0	0	0

Durbin Watson	*1.11*
Pre-Shift Growth Rate	1.8%
Forecasted Growth Rate	-1.6%
Last 5 Yrs Growth Rate:	-1.9%

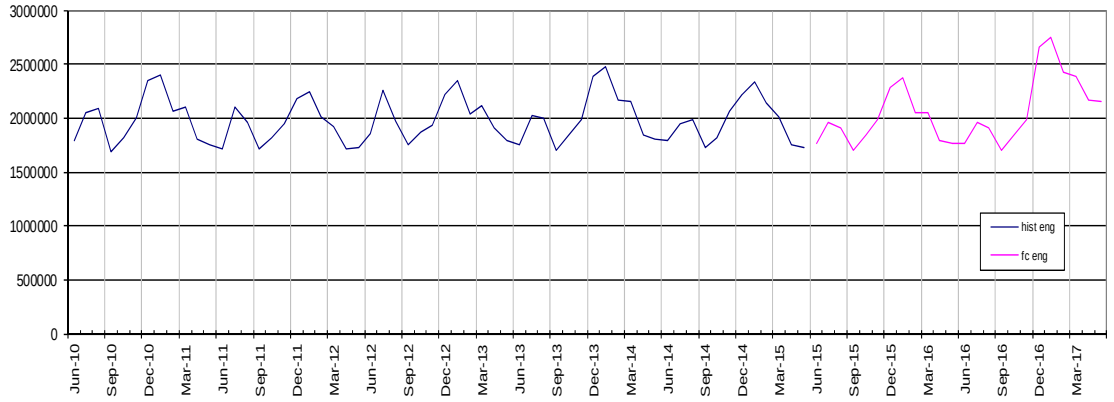
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-17808417.12	6542219.828	-2.72	0.01	-30993394.8	-4623439.4
d1	-135881.9722	97519.0042	-1.39	0.17	-332418.611	60654.6667
d2	-620955.6552	108812.4485	-5.71	0.00	-840252.736	-401658.57
d3	-13657.23823	115609.7438	-0.12	0.91	-246653.367	219338.891
d4	-201051.2109	163580.769	-1.23	0.23	-530726.588	128624.167
d5	215863.1532	190933.3385	1.13	0.26	-168937.706	600664.012
d6	458955.1063	224741.8125	2.04	0.05	6017.74489	911892.468
d7	613407.7179	258694.9911	2.37	0.02	92042.2212	1134773.21
d8	409952.3313	279136.1389	1.47	0.15	-152609.592	972514.254
d9	-142688.264	248917.6956	-0.57	0.57	-644348.916	358972.388
d10	69842.01369	162035.0576	0.43	0.67	-256718.187	396402.215
d11	-180454.6854	105447.8585	-1.71	0.09	-392970.88	32061.5094
trend	-5244.07445	1161.453273	-4.52	0.00	-7584.82972	-2903.3192
ln_lageng1	3312398.11	989105.3039	3.35	0.00	1318987.35	5305808.87
cdd	3774.736156	445.237179	8.48	0.00	2877.41958	4672.05273
hdd	940.6617762	158.9308071	5.92	0.00	620.357781	1260.96577

Notes

Staples, MN Demand - Model 40/338



Staples, MN Energy - Model 40/338



Regression Statistics	
Multiple R	0.995
R Square	0.989
Adjusted R Square	0.986
Standard Error	0.012
Observations	60

Dependent Variable	***ln_eng***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	0.62486561	0.04463326	293.0949907	2.48195E-39
Residual	45	0.00685272	0.00015228	0	0
Total	59	0.63171832	0	0	0

Durbin Watson	*1.66*
Pre-Shift Growth Rate	-0.1%
Forecasted Growth Rate	0.0%
Last 5 Yrs Growth Rate:	-0.3%

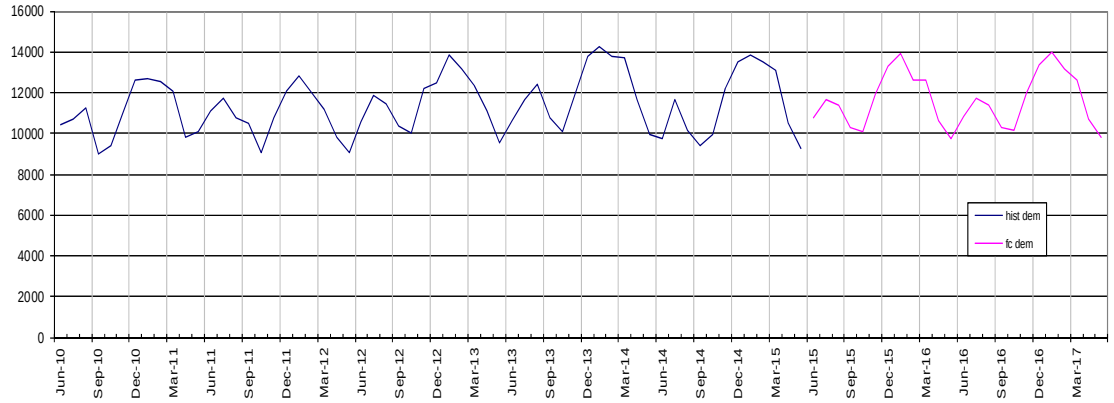
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	11.05598472	0.821024813	13.47	0.00	9.40235586	12.7096136
d1	-0.01595836	0.010627931	-1.50	0.14	-0.03736411	0.00544739
d2	-0.120103155	0.012746308	-9.42	0.00	-0.14577554	-0.0944308
d3	-0.053433653	0.010093978	-5.29	0.00	-0.07376397	-0.0331033
d4	-0.11025336	0.013949121	-7.90	0.00	-0.13834833	-0.0821584
d5	-0.061340333	0.016266395	-3.77	0.00	-0.09410253	-0.0285781
d6	-0.067059946	0.019410799	-3.45	0.00	-0.1061553	-0.0279646
d7	-0.01329426	0.024009013	-0.55	0.58	-0.0616509	0.03506237
d8	-0.030409597	0.024147834	-1.26	0.21	-0.07904583	0.01822664
d9	-0.109119887	0.018681054	-5.84	0.00	-0.14674546	-0.0714943
d10	-0.038957819	0.014065828	-2.77	0.01	-0.06728785	-0.0106278
d11	-0.048197778	0.009700724	-4.97	0.00	-0.06773604	-0.0286595
ln_lageng1	0.531776915	0.131498095	4.04	0.00	0.26692616	0.79662767
cdd	0.000673168	6.01373E-05	11.19	0.00	0.00055205	0.00079429
hdd	0.000156174	1.29102E-05	12.10	0.00	0.00013017	0.00018218

Notes

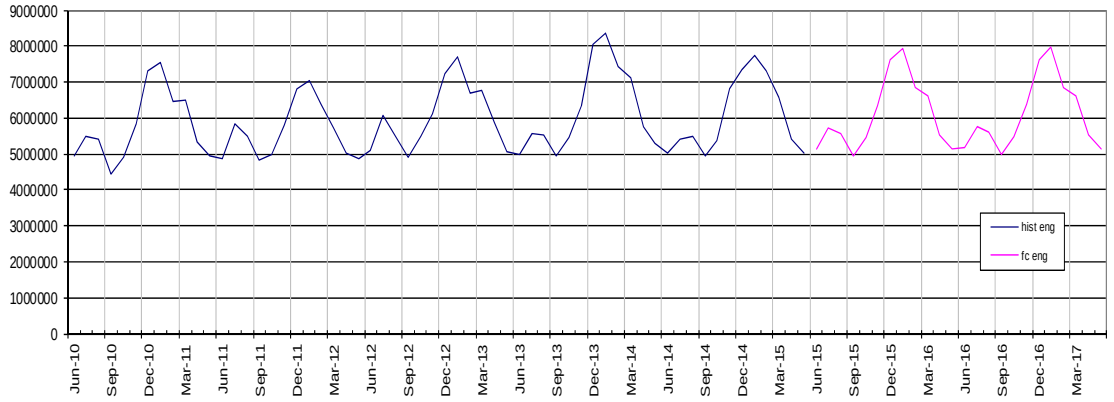
Staples will be acquiring additional service territory from Minnesota Power starting December 2016. The territory consists of a hospital (Lakewood Health System).

Added a spot load using 2010 data for demand and energy starting December 2016. Demand ranges between 656 and 1003 kW. 70% average load factor.

Wadena, MN Demand - Model 42/180



Wadena, MN Energy - Model 42/180



Regression Statistics	
Multiple R	0.993
R Square	0.986
Adjusted R Square	0.982
Standard Error	0.022
Observations	60

Dependent Variable	***ln_eng***

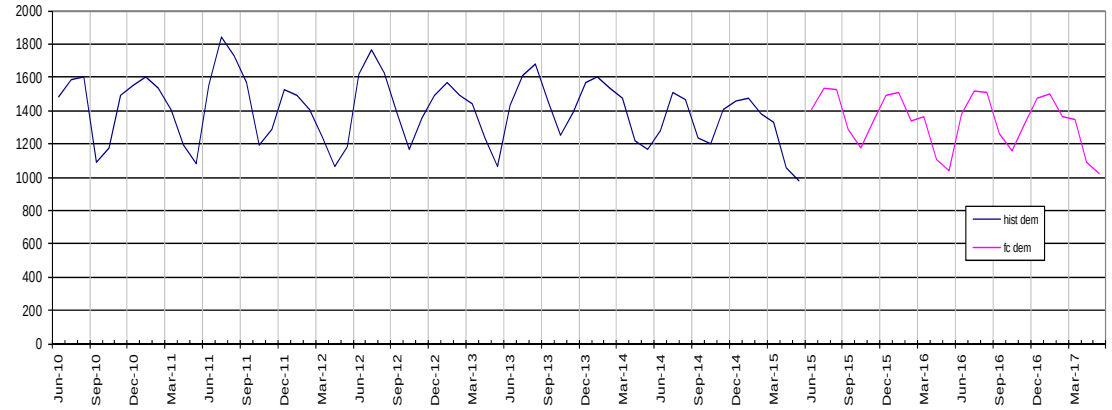
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	1.48298186	0.10592728	228.844073	5.96406E-37
Residual	45	0.02082959	0.00046288	0	0
Total	59	1.50381145	0	0	0

Durbin Watson	*1.43*
Pre-Shift Growth Rate	0.6%
Forecasted Growth Rate	0.4%
Last 5 Yrs Growth Rate:	1.0%

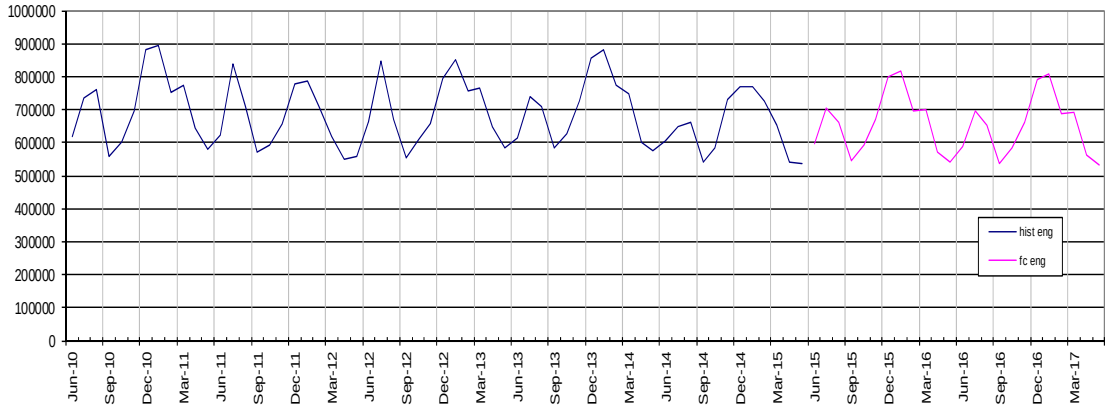
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	11.11092026	1.071224212	10.37	0.00	8.95336394	13.2684766
d1	-0.040532063	0.017475036	-2.32	0.02	-0.07572859	-0.0053355
d2	-0.126148711	0.020423757	-6.18	0.00	-0.16728427	-0.0850132
d3	-0.06187243	0.018698995	-3.31	0.00	-0.09953414	-0.0242107
d4	-0.115908559	0.024662958	-4.70	0.00	-0.16558231	-0.0662348
d5	-0.067861308	0.028129351	-2.41	0.02	-0.12451673	-0.0112059
d6	-0.006835183	0.03045352	-0.22	0.82	-0.06817172	0.05450135
d7	0.094880609	0.028539032	3.32	0.00	0.03740005	0.15236117
d8	0.040883836	0.030566283	1.34	0.19	-0.02067982	0.10244749
d9	-0.092310165	0.029382909	-3.14	0.00	-0.15149038	-0.0331299
d10	-0.043489615	0.025037337	-1.74	0.09	-0.0939174	0.00693817
d11	-0.021699245	0.017845925	-1.22	0.23	-0.05764278	0.01424429
ln_trend	0.037846294	0.00825688	4.58	0.00	0.02121608	0.0544765
ln_lageng1	0.632212785	0.16051603	3.94	0.00	0.30891691	0.95550866
tdd	0.000238931	2.29329E-05	10.42	0.00	0.00019274	0.00028512

Notes

Westbrook, MN Demand - Model 43/327



Westbrook, MN Energy - Model 43/327



Regression Statistics	
Multiple R	0.987
R Square	0.975
Adjusted R Square	0.967
Standard Error	18035.148
Observations	60

Dependent Variable	***energy***

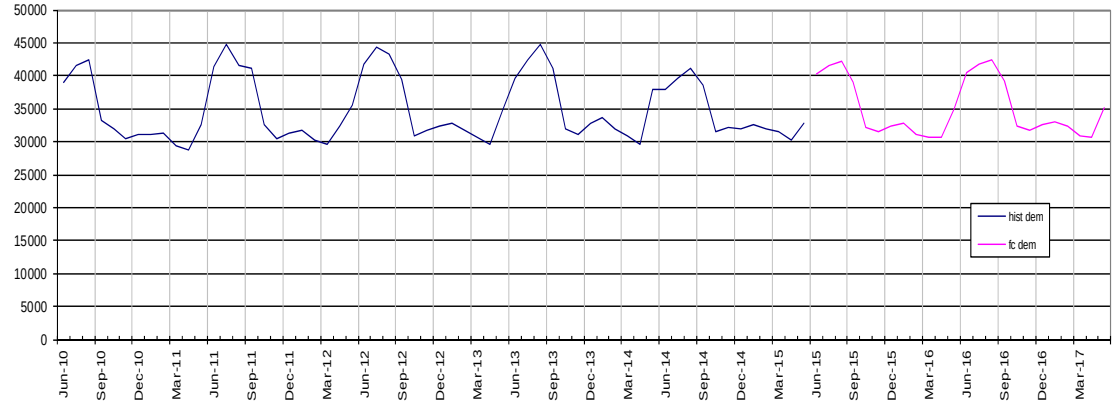
	df	*SS*	*MS*	*F*	*Significance F*
Regression	14	5.7159E+11	4.0828E+10	125.5218722	3.19861E-31
Residual	45	1.4637E+10	325266579	0	0
Total	59	5.8623E+11	0	0	0

Durbin Watson	*1.50*
Pre-Shift Growth Rate	1.5%
Forecasted Growth Rate	-1.3%
Last 5 Yrs Growth Rate:	-1.7%

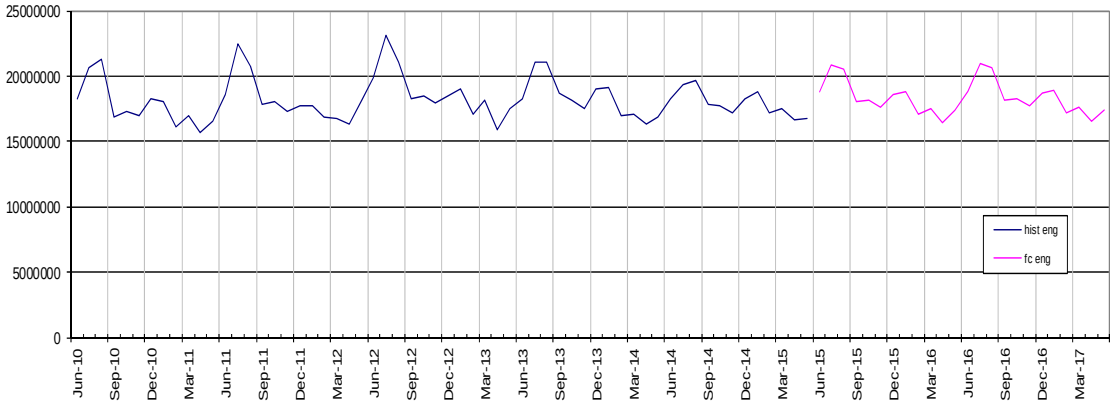
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	489597.3472	28130.38733	17.40	0.00	432939.839	546254.856
d1	-1684.075283	11555.34008	-0.15	0.88	-24957.7249	21589.5743
d2	-51798.58859	11505.1437	-4.50	0.00	-74971.1375	-28626.04
d3	11088.03669	14465.73011	0.77	0.45	-18047.4393	40223.5127
d4	-11603.35881	19644.19795	-0.59	0.56	-51168.8045	27962.0869
d5	22584.76804	24944.03817	0.91	0.37	-27655.1038	72824.6398
d6	66942.89302	29161.8193	2.30	0.03	8207.97394	125677.812
d7	122619.5173	33194.96459	3.69	0.00	55761.4266	189477.608
d8	107381.5724	31127.66944	3.45	0.00	44687.2279	170075.917
d9	24178.51733	26750.85993	0.90	0.37	-29700.4803	78057.515
d10	11471.51375	21024.4496	0.55	0.59	-30873.9014	53816.9289
d11	-15929.2488	14083.88094	-1.13	0.26	-44295.6411	12437.1435
trend	-709.8587805	138.0542701	-5.14	0.00	-987.914354	-431.80321
cdd	521.2075873	57.14108178	9.12	0.00	406.119541	636.295634
hdd	251.9425847	19.46652497	12.94	0.00	212.734991	291.150179

Notes

Worthington, MN Demand - Model 44/57



Worthington, MN Energy - Model 44/57



Regression Statistics	
Multiple R	0.971
R Square	0.942
Adjusted R Square	0.926
Standard Error	430999.863
Observations	60

Dependent Variable	***energy***

	df	*SS*	*MS*	*F*	*Significance F*
Regression	13	1.3984E+14	1.0757E+13	57.908303	4.9368E-24
Residual	46	8.545E+12	1.8576E+11	0	0
Total	59	1.4839E+14	0	0	0

Durbin Watson	*1.27*

Pre-Shift Growth Rate	2.1%
Forecasted Growth Rate	0.4%
Last 5 Yrs Growth Rate:	0.2%

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	18142347.64	218095.3532	83.19	0.00	17703344.5	18581350.8
d1	184375.1885	272608.1232	0.68	0.50	-364356.503	733106.88
d2	-1557091.623	272667.7408	-5.71	0.00	-2105943.32	-1008239.9
d3	-1094818.974	272806.0242	-4.01	0.00	-1643949.02	-545688.93
d4	-2255787.78	272997.6068	-8.26	0.00	-2805303.46	-1706272.1
d5	-1638480.592	278270.3554	-5.89	0.00	-2198609.77	-1078351.4
d6	-1363618.642	336944.9532	-4.05	0.00	-2041853.66	-685383.63
d7	-698213.4439	510985.3124	-1.37	0.18	-1726773.53	330346.643
d8	-296366.8924	418265.8231	-0.71	0.48	-1138292.33	545558.542
d9	-1180608.551	286500.7882	-4.12	0.00	-1757304.73	-603912.38
d10	-495177.596	272883.0436	-1.81	0.08	-1044462.67	54107.4816
d11	-953572.7885	272608.1232	-3.50	0.00	-1502304.48	-404841.1
trend	6860.411532	3291.809699	2.08	0.04	234.342276	13486.4808
cdd	11627.62131	1361.912249	8.54	0.00	8886.23414	14369.0085

Notes

Appendix F: Long-Term Load Forecast

2015 LONG-TERM

LOAD FORECAST REPORT

Missouri River
Energy Services

January, 2015

Table of Contents

SECTION 1:

Forecast Explanation

Purpose

The purpose of the Long-Term Forecast is to provide an accurate estimate of total energy for each of our Missouri River Energy Services' (MRES) member communities until the year 2040. This data will be used for long-term capacity needs and long-term rate planning.

Methodology

Annual data for variables believed to be useful in predicting total energy were input into a software package called MetrixND and regression models were constructed for each city. The city total energy was the dependent variable for each model. Possible independent variables included county census data for the county in which the city is located, weather data from the nearest weather station, national economic statistics, and alternate fuel prices for the state the city is located in. A number of possible models were tested for each city, and certain criteria were scrutinized in order to find a model that was statistically sound and provided a reasonable expected growth rate. Models were selected primarily based on adjusted R-square, Mean Absolute Percentage Error (MAPE), T-statistics, and Durbin-Watson statistics. The following pages contain more information on each of the potential variables and how each statistic was evaluated. In some cases where the data for the city was not available until after 1970, the regression was run using the available annual energy data.

Correlation between independent variables used in the models was checked with the correlation matrix feature found in MetrixND. An 85% level was used to identify variables that could be strongly correlated. Models with multicollinearity were revised until the only variables surpassing the 85% level were believed to be coincidentally related.

Implementation

After the models were selected, the resulting forecasted annual load for each city was exported into Excel, where the annual growth rate percents were calculated. These percentages will be applied to the results of future short-term monthly demand and energy forecasts.

Variables

Total Energy (tot_eng)

Historic annual total energy for each city between 1970 and 2012 was used for the dependent variable in each regression model. Several cities became members at later dates, and thus historic data in these instances were available starting in years later than 1970. Such cities include: Breckenridge, MN with historic data becoming available in 1974, Sauk Centre, MN with historic data becoming available in 1972, Pickstown, SD with historic data becoming available in 1987, Riverdale, ND with historic data becoming available in 1991, Marshall, MN with historic data becoming available in 1981, Pella, IA with historic data becoming available in 2000, and Melrose, MN with historic data becoming available in 1989.

County Census Data (pop, emp, wage, thh, grp, inc, ipc, avg_inc, avg_ipc, ln_pop, ln_emp, ln_wage, ln_thh, ln_grp, ln_inc, ln_ipc, ln_avg_inc, ln_avg_ipc)

County census data was obtained from the 2014 Woods & Poole State Profile, which included data starting in 1970 and continuing through 2040. Variables obtained from the census include population, employment, wage, total households, gross regional product, income, and income per capita. Income and income per capita had extensive annual fluctuations for some counties, so a 3-year moving average transformation was added for these variables. Logarithmic functions of all variables mentioned above were also considered.

Weather Data (cdd, hdd, tdd, ln_cdd, ln_hdd, ln_tdd)

Annual cooling degree-days, heating degree-days, and total degree-days for the years between 1970 and 2013 were collected from NOAA for the seven weather stations that most accurately represent our cities' weather conditions. The weather station site assigned to each MRES city is shown in the table on the next page. For the years between 2014 and 2040, it was assumed that all degree-day variables would be equal to the 30-year (1960-1990) normals published by NOAA. Logarithmic functions of all variables mentioned above were also considered.

City	State	City ID	Station Name	City	State	City ID	Station Name
Alton	IA	1	Sioux City	Ortonville	MN	37	Aberdeen
Denison	IA	2	Sioux City	Sauk Centre	MN	38	St. Cloud
Hartley	IA	4	Sioux City	St. James	MN	39	Sioux Falls
Hawarden	IA	5	Sioux City	Staples	MN	40	St. Cloud
Kimballton	IA	6	Omaha	Wadena	MN	42	St. Cloud
Lake Park	IA	7	Sioux Falls	Westbrook	MN	43	Sioux Falls
Manilla	IA	8	Omaha	Worthington	MN	44	Sioux Falls
Orange City	IA	10	Sioux City	Cavalier	ND	45	Fargo
Paullina	IA	11	Sioux City	Hillsboro	ND	46	Fargo
Primghar	IA	12	Sioux City	Lakota	ND	47	Fargo
Remsen	IA	13	Sioux City	Northwood	ND	48	Fargo
Rock Rapids	IA	14	Sioux Falls	Valley City	ND	49	Fargo
Sanborn	IA	15	Sioux Falls	Beresford	SD	50	Sioux Falls
Shelby	IA	16	Omaha	Big Stone City	SD	51	Aberdeen
Sioux Center	IA	17	Sioux Falls	Brookings	SD	52	Sioux Falls
Woodbine	IA	19	Omaha	Burke	SD	53	Huron
Adrian	MN	20	Sioux Falls	Faith	SD	54	Aberdeen
Alexandria	MN	21	St. Cloud	Flandreau	SD	55	Sioux Falls
Barnesville	MN	22	Fargo	Fort Pierre	SD	56	Huron
Benson	MN	23	St. Cloud	Pickstown	SD	57	Huron
Breckenridge	MN	25	Fargo	Pierre	SD	58	Huron
Detroit Lakes	MN	26	Fargo	Vermillion	SD	59	Sioux City
Elbow Lake	MN	27	Fargo	Watertown	SD	60	Huron
Henning	MN	29	Fargo	Winner	SD	61	Huron
Jackson	MN	30	Sioux Falls	Riverdale	ND	62	Fargo
Lake Park	MN	31	Fargo	Marshall	MN	63	Sioux Falls
Lakefield	MN	32	Sioux Falls	Atlantic	IA	64	Omaha
Luverne	MN	33	Sioux Falls	Melrose	MN	83	St. Cloud
Madison	MN	34	St. Cloud	Pella	IA	94	Omaha
Moorhead	MN	35	Fargo				

State (MN, IA, SD, & ND) and National Economic Data (grp, ln_grp)

State specific and national gross regional products were included to help estimate the cities' long-term growth due to state or national economic growth. Gross regional product data was obtained from Woods & Poole. Logarithmic functions of all variables mentioned above were also considered.

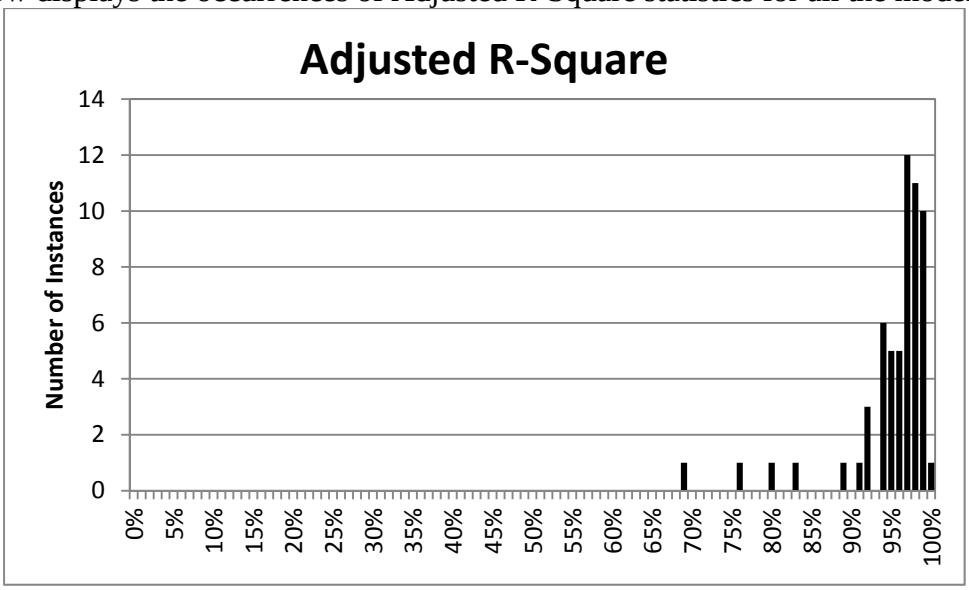
Alternate Fuel Prices (res_natgas, com_natgas, res_prop, res_oil, com_oil, ln_res_natgas, ln_com_natgas, ln_res_prop, ln_res_oil, ln_com_oil)

Prices of alternate fuels were assumed to be possible significant variables in estimating the cities' long-term electricity consumption. Some of the cities have access to natural gas while others do not, necessitating the inclusion of prices for natural gas, propane, and heating oil. In cities where natural gas is supplied, propane and heating oil were not chosen for inclusion in the model since propane and heating oil would be unlikely choices for most loads in the city. Cities not having access to natural gas could use either propane or heating oil variables in the models. However, to avoid multicollinearity problems, propane and heating oil variables could not be used simultaneously. In addition, alternate fuel prices were further divided into residential and commercial components. Logarithmic functions of all variables mentioned above were also considered.

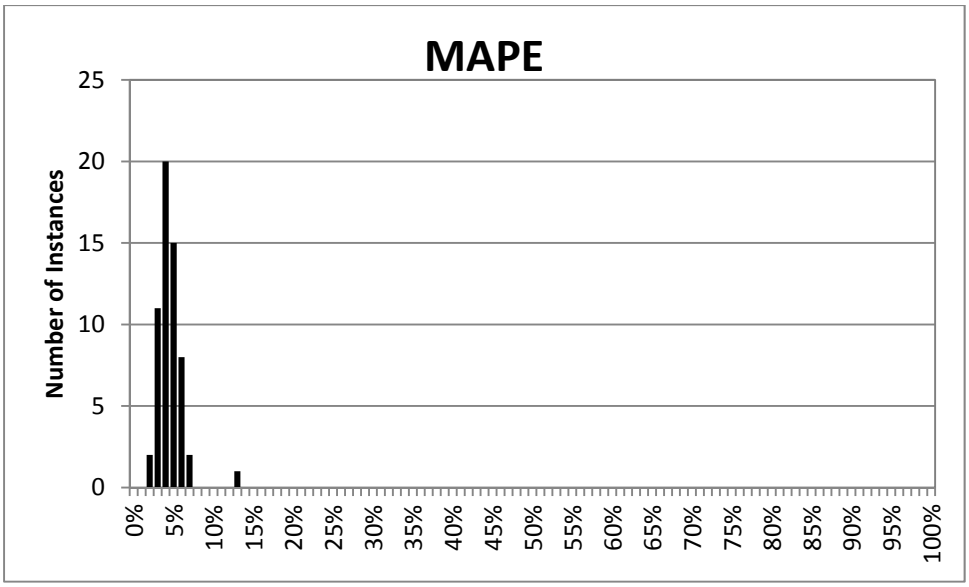
Alternate fuel prices for 1970 through 2012 were obtained from the Energy Information Administration. All alternate fuel price data was converted to 2012 dollars. Historical data by state was used for the forecast. Data for 2013 through 2040 was obtained from the EIA Annual Energy Outlook Table 3 – Energy Prices by Sector and Source for the West North Central region. This data was in 2012 dollars.

Key Statistics

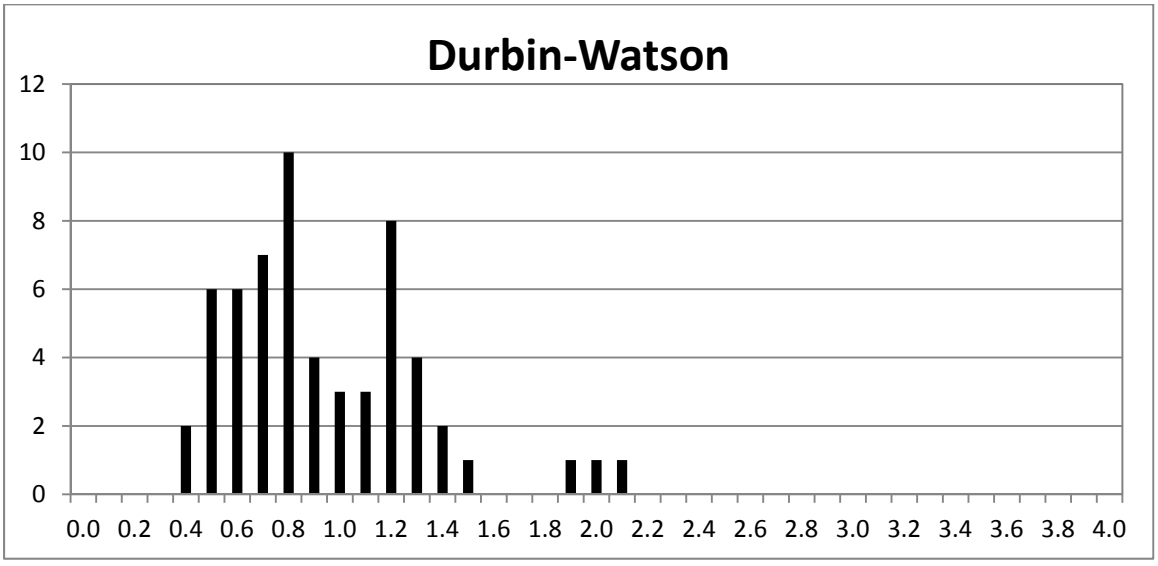
Adjusted R-square: The adjusted R-square represents the percent variation in total annual energy that is explained by the variables used in the model. Unlike standard R-square, adjusted R-square is corrected to remove bias towards models with greater number of variables. Every effort was made to maximize this statistic while keep other variables at an acceptable level. The Graph below displays the occurrences of Adjusted R-Square statistics for all the models.



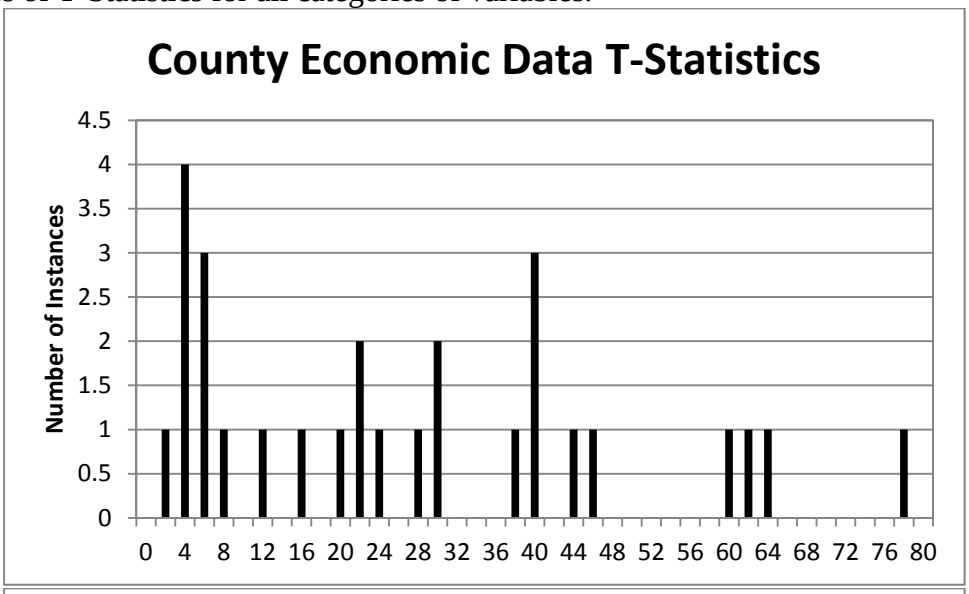
Mean Absolute Percent Error (MAPE): MAPE is the average of the absolute values of the percentage residuals. Therefore, models with lower MAPE more accurately account for past fluctuations in total electricity. When selecting models, models with a lower MAPE were chosen over those with a higher MAPE. The Graph below displays the occurrences of MAPE statistics for all the models.

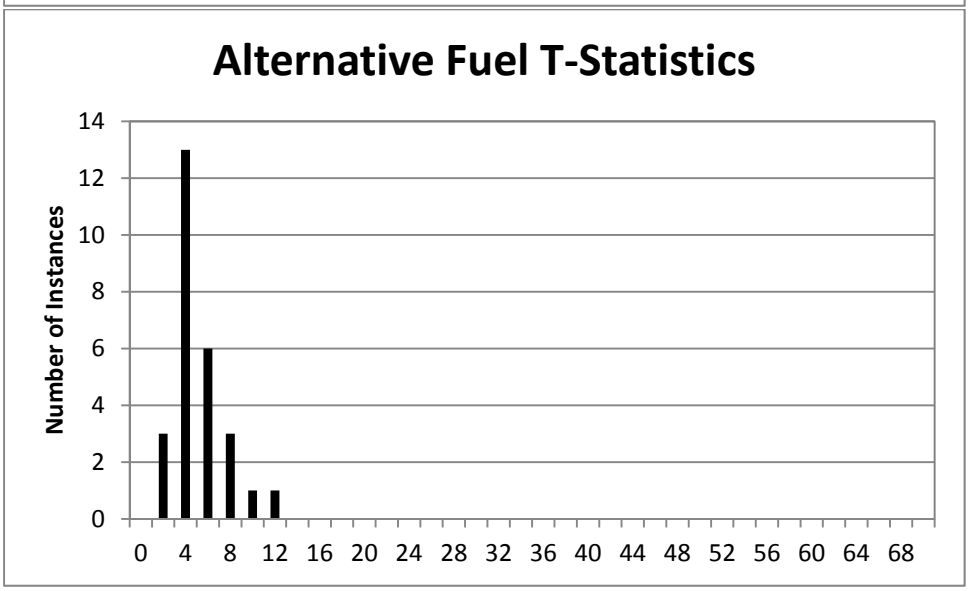


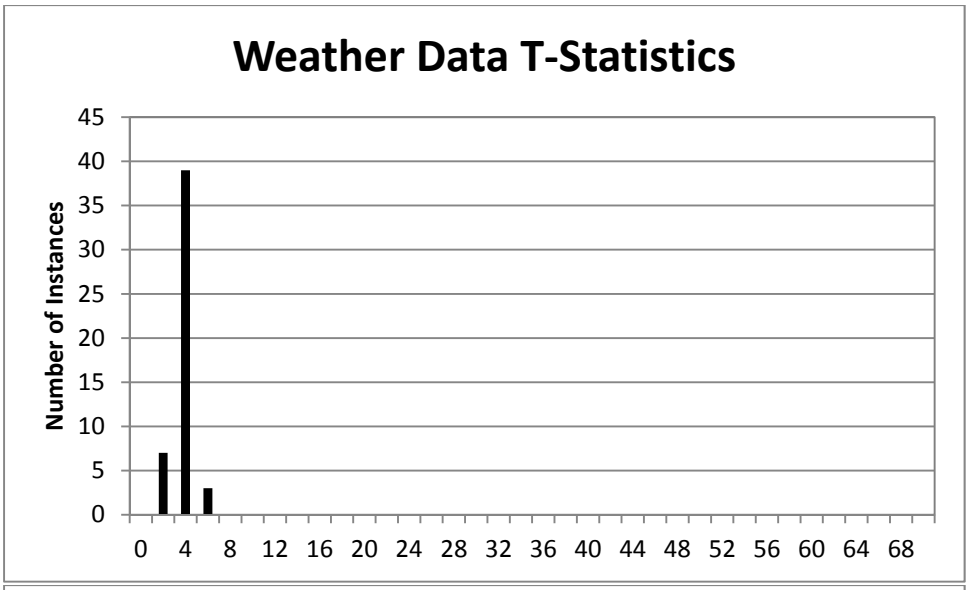
Durbin-Watson: The Durbin-Watson statistic tests for the presence of residual correlation. The range for Durbin-Watson is between 0 and 4. Values of 2 signify residuals are uncorrelated, meaning successive residuals in the time series are random rather than related. If the residuals are positively correlated, the value will be less than 2, and stronger correlation is implied as the number approaches 0. If the residuals are negatively correlated, the value of the Durbin-Watson statistic will be greater than 2, and stronger negative correlation is implied as the value approaches 4. The Durbin-Watson statistic was monitored during model selection and serial correlation was avoided when possible, but given explanatory variable limitations and trying to maintain forecast reasonability and reliability, serial correlation remained in most models. After considerable testing, attempting to remove serial correlation from the statistical models does not appear to be feasible. The Graph below displays the occurrences of Durbin-Watson statistics for all the models.

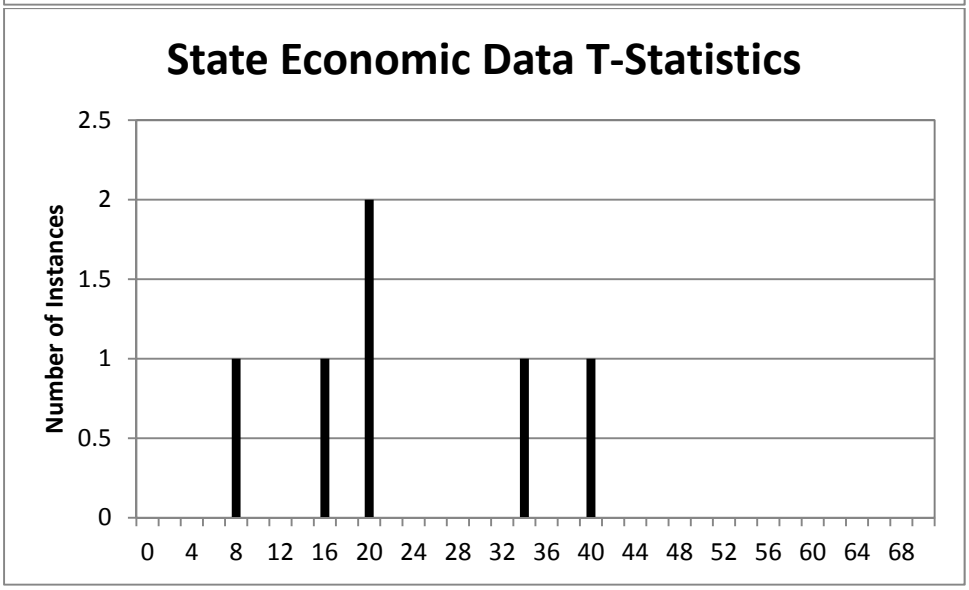


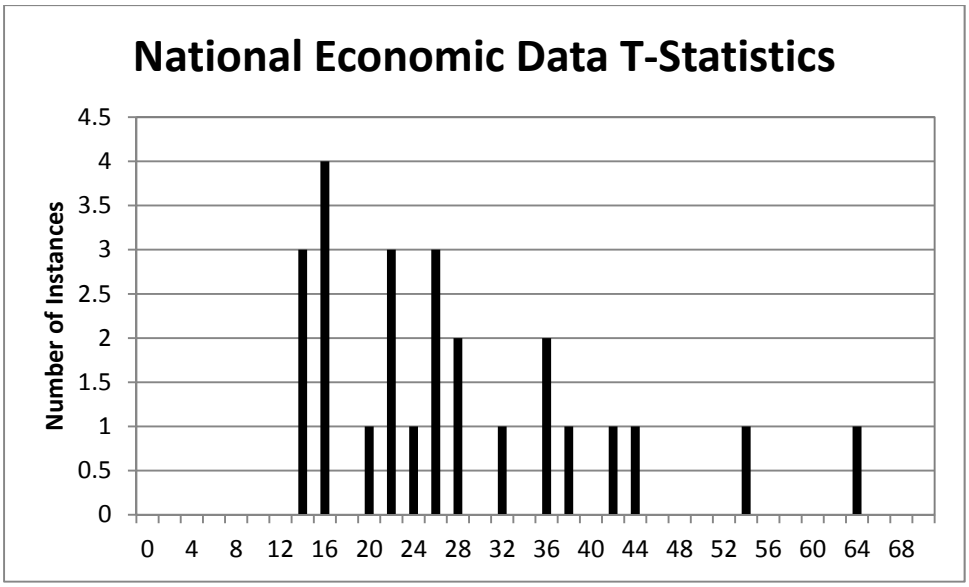
T-Statistics: The T-Statistic tests the statistical significance of each corresponding variable in predicting the variation in the dependent variable. Based upon the number of historical observations used in the regression, if the T-Statistic is greater than 2, it is at least 95% certain that the independent variable contributes to the explanation of the dependent variable. If the T-Statistic is equal to 1, it is 66% likely that the independent variable contributes to the explanation of the dependent variable. Generally, the T-Statistic had to be above 1.3 for it to remain in the model as a significant variable that positively impacted the model results. Additionally, the coefficients of all variables had to have the correct sign. The Graphs below show the occurrences of T-Statistics for all categories of variables.






Weather Data T-Statistics
Number of Instances
45
40
35
30
25
20
15
10
5
0
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68


State Economic Data T-Statistics
Number of Instances
2.5
2
1.5
1
0.5
0
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68



Spot Loads

Big Stone City, SD, Marshall, MN, Elbow Lake, MN, Jackson, MN, Madison, MN, Melrose, MN, Northwood, ND, and Brookings, SD required separate analysis of an individual load within the city. These models were chosen for spot load inclusion based on 1) if the spot load exceeded 25% of the city's total load and 2) not accounting for the spot load would reduce the forecast's accuracy and reliability.

In Big Stone City the cheese plant presently accounts for roughly half of the total electrical load of the city. Between 1970 and 2014, the cheese plant has experienced large increases and decreases in load that are unrelated to weather, local population, local economic conditions, state or national economic conditions, or prices of alternate energy sources. Certainly, this is the case with other industries in other cities, but since the cheese plant is such a large portion of the total load, and has experienced such large fluctuations in energy consumption, it had to be considered separately. The historic cheese plant load data was used as a variable for predicting total load within Big Stone City.

In Marshall, Archer Daniels Midland Company accounts for roughly half of the city's load. ADM's load is not expected to grow in the future. ADM was subtracted from the history and the forecast was done without ADM. ADM load was added to the forecasted load after the regression.

In Elbow Lake, MN a new hospital came online in February 2014. The old hospital is being torn down. A spot load of 1000 kW with a 43% average load factor was subtracted from the towns total energy since this one time increase in load would not be indicative of a long term average growth rate.

In Jackson, MN expansion by AGCO with a spot load of 1000kW with a 60% load factor which began in September 2004. This load was removed from historic data since this one time increase would not be indicative of average long term growth.

In Madison, MN expansion by Cargill with demand ranging from 490 to 972 kW with a 30% load factor was added starting September 2014. This load was removed from historic data since this one time increase would not be indicative of average long term growth.

In Melrose, MN Melrose Dairy Proteins and CentraCare Hospital are expanding. A spot load of 1000 kW with a 70% load factor starting January 2015 was added for Melrose Dairy Proteins. A spot load of 500 kW with a 50% load factor starting September 2014 was added for CentraCare Hospital. This load was removed from historic data since this one time increase would not be indicative of average long term growth.

In Northwood, MN a crushing plant is reopened in July 2014. A spot load of 800 kW in summer months and 1000 kW in winter months with a 60% load factor was added starting July 2014. This load was removed from historic data since this one time increase would not be indicative of average long term growth.

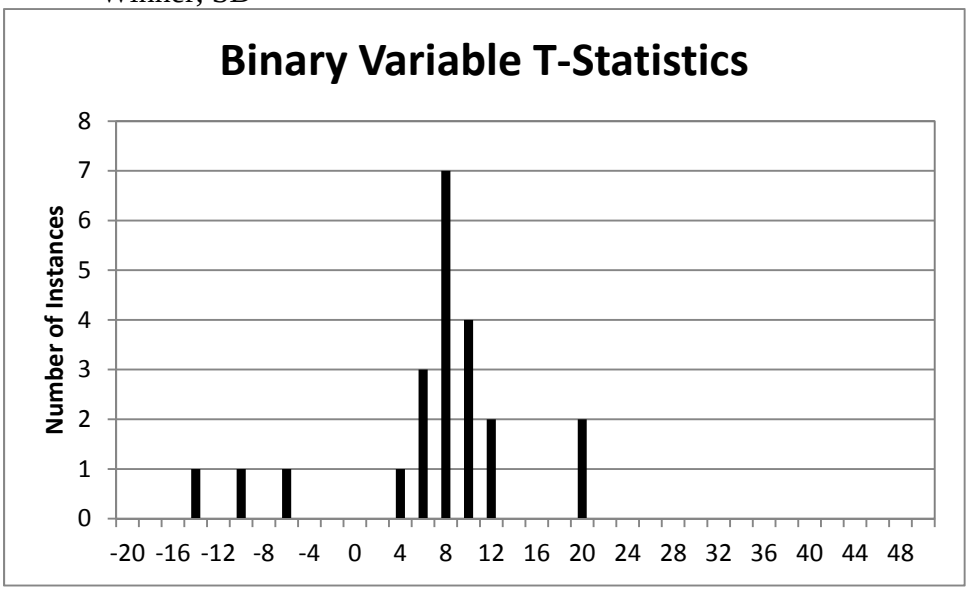
In Brookings, SD Bel Brands is expanding. A spot load with demand ranging from 1050 to 2400 kW with a 69% average load factor was added starting November 2014. This load was removed from historic data since this one time increase would not be indicative of average long term growth.

Binary Variables

Various models included a binary independent variable to explain a significant change in load growth which could not be explained with any existing explanatory variable and also would have a significant impact on the overall forecast if left unaccounted for. These variables take a value of either 0 or 1. If the change in load growth occurred in only a single year then returned to normal after that year, then the impacted year would have the only 1 value and all other years would be 0. If the change in load growth continued on indefinitely after a particular year, then all years after and including the impacted year would receive a value of 1. These variables proved to be statistically significant and greatly improved the reliability the forecasts. Models where a binary variable was introduced are as follows:

- Hartley, IA
- Hawarden, IA
- Manilla, IA
- Orange City, IA
- Shelby, IA
- Elbow Lake, MN
- Henning, MN
- Lake Park, MN
- Jackson, MN
- Madison, MN
- St. James, MN
- Staples, MN
- Melrose, MN

- Westbrook, MN
- Worthington, MN
- Cavalier, ND
- Hillsboro, ND
- Lakota, ND
- Northwood, ND
- Burke, SD
- Faith, SD
- Pierre, SD
- Winner, SD



SECTION 2:

A. Tables of Key Statistics

B. Graphs of Annual Energy And Annual Growth Rates

Statistical Output

On the following pages are the statistical models selected for each of the communities and the graphs associated with those models.

The statistical page for each model begins with a section in bold print giving an overview of the model. The Dependent Variable is total energy for the member. Estimation Begin Date is the beginning date for the historical data used in the forecast. Estimation End Date is the last year of historical data used in the forecast. Forecast Period End Date is the last year of forecasted data. All data used represents a complete year.

The next section contains data about the variables that were chosen for each model.

The t-statistic is the coefficient divided by the standard error. It is used to test the statistical significance of the variable in explaining the variation of the dependent variable. The independent variables used were chosen primarily based on the T-stat. The higher the T-stat, the more likely that particular variable is useful as a predictor of the dependent variable.

P-Value is another determinant of a variable's usefulness in predicting the dependent variable. The lower the P-Value the more likely that particular variable is useful as a predictor of the dependent variable.

The next section entitled Regression Statistics contains information on the statistics used to evaluate each model. Following are the statistics that were primarily evaluated for each model.

The R-squared measures how much of the variation in the dependent variable can be "explained" in the model. R-squared values lie between 0 and 1, with 1 indicating a perfect fit.

The Adjusted R-squared corrects the R-squared value for the number of degrees of freedom (the number of observations used to calculate a particular statistic less the number of variables included in the equation). R-squared increases with each additional independent variable in the equation, whereas Adjusted R-squared may increase or decrease depending on the overall contribution of the additional variable.

The Durbin-Watson is a test for the randomness of the errors of the equation. In a good model, the errors are randomly distributed and are approximately the same magnitude. Generally, a Durbin-Watson in the range of 1.5 to 2.5 indicates the residuals are random. The "critical value," in determining whether the residuals are non-random depends on the number of variables and observations in the model.

The F-statistic is a statistical test of the overall fit of the estimated equation. The overall fit of the equation is determined to be statistically acceptable when the F-statistic is larger than another "critical value", which again depends on the number of variables and observations in the model.

Mean Absolute Percent Error (MAPE) is the average of the absolute values of the percentage residuals. Therefore, models with lower MAPE more accurately account for past fluctuations in total electricity.

Graphs of Annual Energy and Annual Growth Rates

A graph showing total energy usage in kWh for the years 1970 through 2040 was prepared for each community. The amounts shown in the graph for 1970 through 2014 are historical loads and the amounts shown from 2015 through 2040 are forecasted loads for the community. A graph showing percentage growth rates for energy usage for the same time duration was also prepared for each community. The growth rates shown on it include both the annual growth rate as well as the 5-year moving average growth rate. These graphs are located on a page immediately after the statistical output page for each community. Additionally, a histogram showing forecasted 5-year incremental growth rates for all members is included following the individual member results.

Communities Included in the Forecast:

City	State	City ID	City	State	City ID
Alton	IA	1	Ortonville	MN	37
Denison	IA	2	Sauk Centre	MN	38
Hartley	IA	4	St. James	MN	39
Hawarden	IA	5	Staples	MN	40
Kimballton	IA	6	Wadena	MN	42
Lake Park	IA	7	Westbrook	MN	43
Manilla	IA	8	Worthington	MN	44
Orange City	IA	10	Cavalier	ND	45
Paullina	IA	11	Hillsboro	ND	46
Primghar	IA	12	Lakota	ND	47
Remsen	IA	13	Northwood	ND	48
Rock Rapids	IA	14	Valley City	ND	49
Sanborn	IA	15	Beresford	SD	50
Shelby	IA	16	Big Stone City	SD	51
Sioux Center	IA	17	Brookings	SD	52
Woodbine	IA	19	Burke	SD	53
Adrian	MN	20	Faith	SD	54
Alexandria	MN	21	Flandreau	SD	55
Barnesville	MN	22	Fort Pierre	SD	56
Benson	MN	23	Pickstown	SD	57
Breckenridge	MN	25	Pierre	SD	58
Detroit Lakes	MN	26	Vermillion	SD	59
Elbow Lake	MN	27	Watertown	SD	60
Henning	MN	29	Winner	SD	61
Jackson	MN	30	Riverdale	ND	62
Lake Park	MN	31	Marshall	MN	63
Lakefield	MN	32	Atlantic	IA	64
Luverne	MN	33	Melrose	MN	83
Madison	MN	34	Pella	IA	94
Moorhead	MN	35			

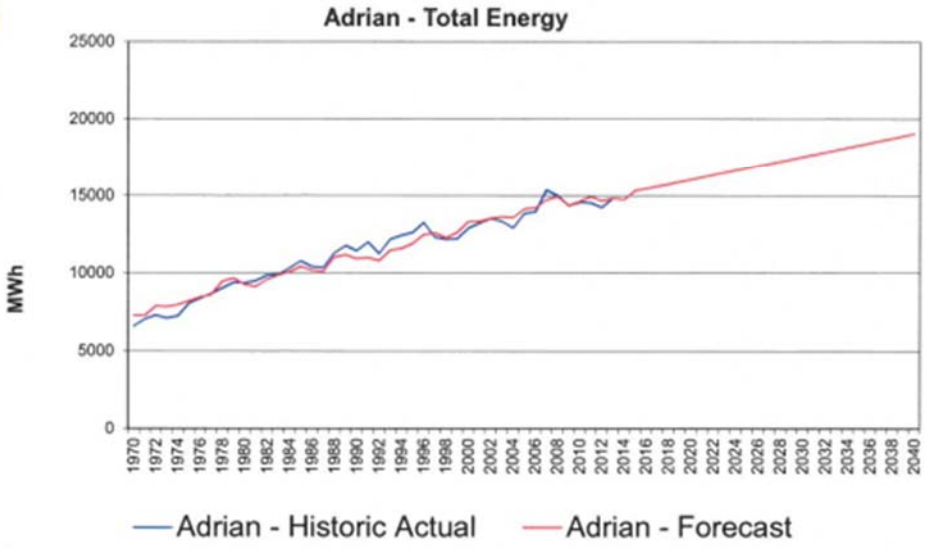
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Adrian_MN**
Dependent Variable:	**BaseData.Adrian**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

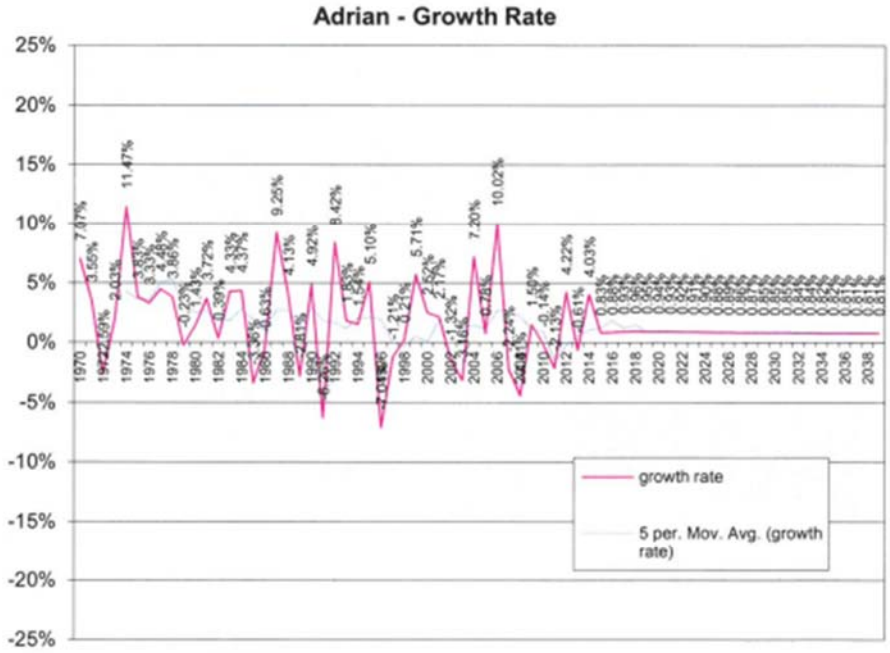
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-122028243.666	11662482.864	-10.463	0%
natl_econ.ln_grp	14649185.177	586444.356	24.980	0%
alt_fuel_mn.ln_res_oil	937937.805	493384.989	1.901	6%
station8.ln_tdd	7828882.843	2541579.997	3.080	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.965
Adjusted R-Squared	0.963
AIC	26.254
BIC	26.415
F-Statistic	381.147
Prob (F-Statistic)	0.000
Log-Likelihood	-650.57
Model Sum of Squares	265128608082839
Sum of Squared Errors	9506631573614
Mean Squared Error	231869062771.06
Std. Error of Regression	481527.84
Mean Abs. Dev. (MAD)	382726.61
Mean Abs. % Err. (MAPE)	3.56%
Durbin-Watson Statistic	0.533
Durbin-H Statistic	0.000
Ljung-Box Statistic	53.38
Prob (Ljung-Box)	0.000
Skewness	0.331
Kurtosis	2.213
Jarque-Bera	1.986
Prob (Jarque-Bera)	0.370

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	14649185.177	6.947	8.874
alt_fuel_mn.ln_res_oil	937937.805	1.081	0.088
station8.ln_tdd	7828882.843	3.923	2.678


Adrian - Total Energy
MWh
25000
20000
15000
10000
5000
0
Adrian - Historic Actual
Adrian - Forecast


Adrian - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Alexandria_MN**
Dependent Variable:	**BaseData.Alexandria**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-981365299.305	24591316.837	-39.907	0%
county14.ln_avg_inc	394954903.465	5125259.094	77.060	0%
station9.tdd	4723.767	1589.213	2.972	0%

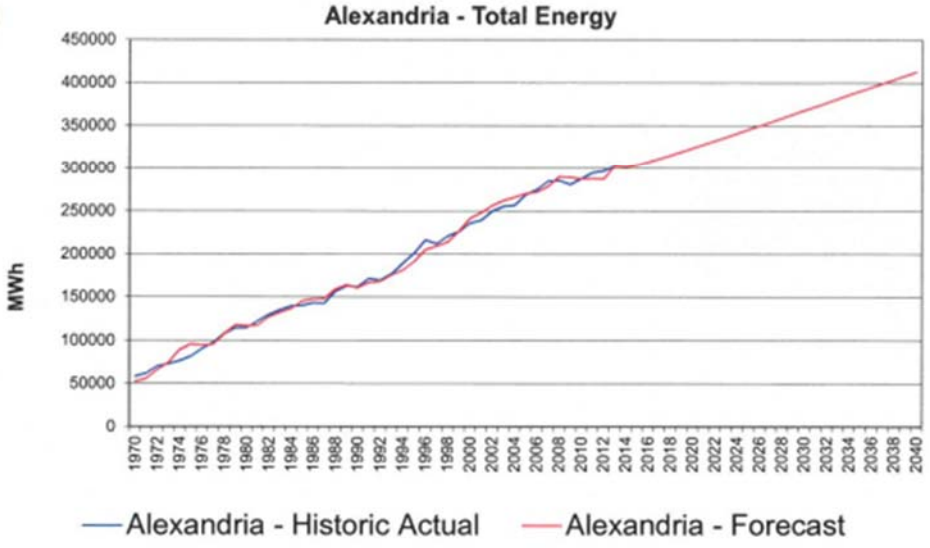
Model Statistics

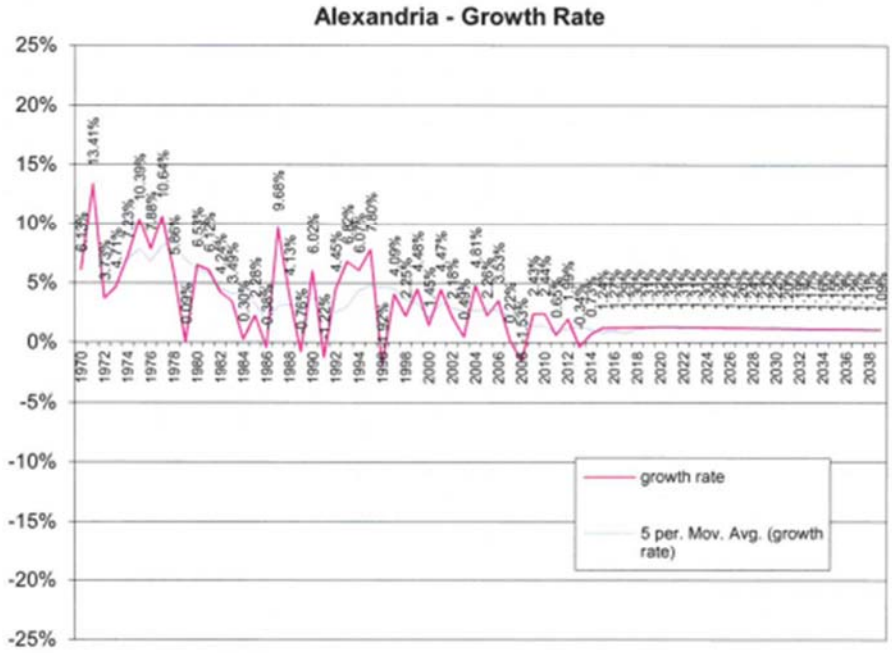
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.994
Adjusted R-Squared	0.994
AIC	31.304
BIC	31.424
F-Statistic	3539.771
Prob (F-Statistic)	0.000
Log-Likelihood	-765.18
Model Sum of Squares	261228675180632930
Sum of Squared Errors	1549761960921525
Mean Squared Error	36899094307655.34
Std. Error of Regression	6074462.47
Mean Abs. Dev. (MAD)	4822478.09
Mean Abs. % Err. (MAPE)	3.36%
Durbin-Watson Statistic	0.718
Durbin-H Statistic	0.000
Ljung-Box Statistic	22.55
Prob (Ljung-Box)	0.000
Skewness	-0.311
Kurtosis	2.592
Jarque-Bera	1.038
Prob (Jarque-Bera)	0.595

Forecast Statistics

Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county14.ln_avg_inc	394954903.465	2.842	6.098
station9.tdd	4723.767	9098.800	0.233


Alexandria - Total Energy
MWh
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034 2036 2038 2040
Alexandria - Historic Actual
Alexandria - Forecast


Alexandria - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

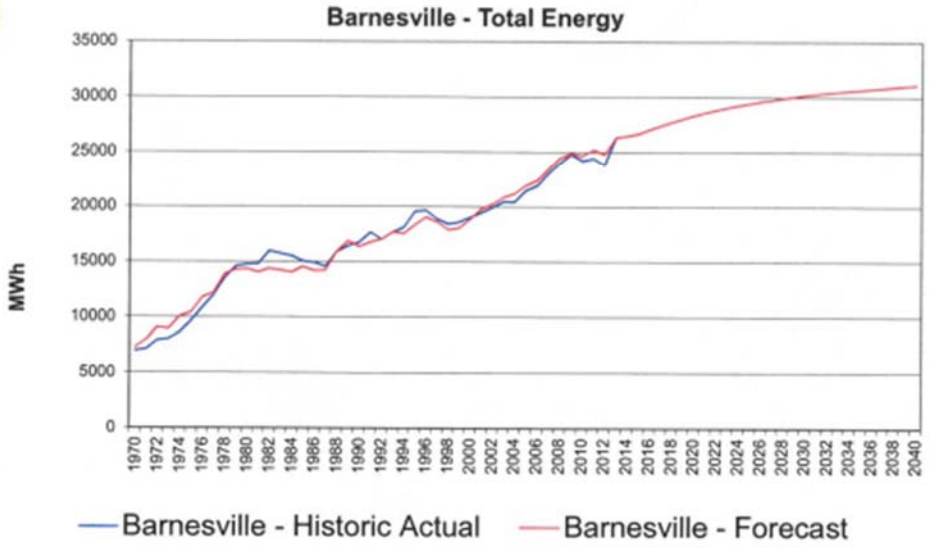
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Barnesville_MN**
Dependent Variable:	**BaseData.Barnesville**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

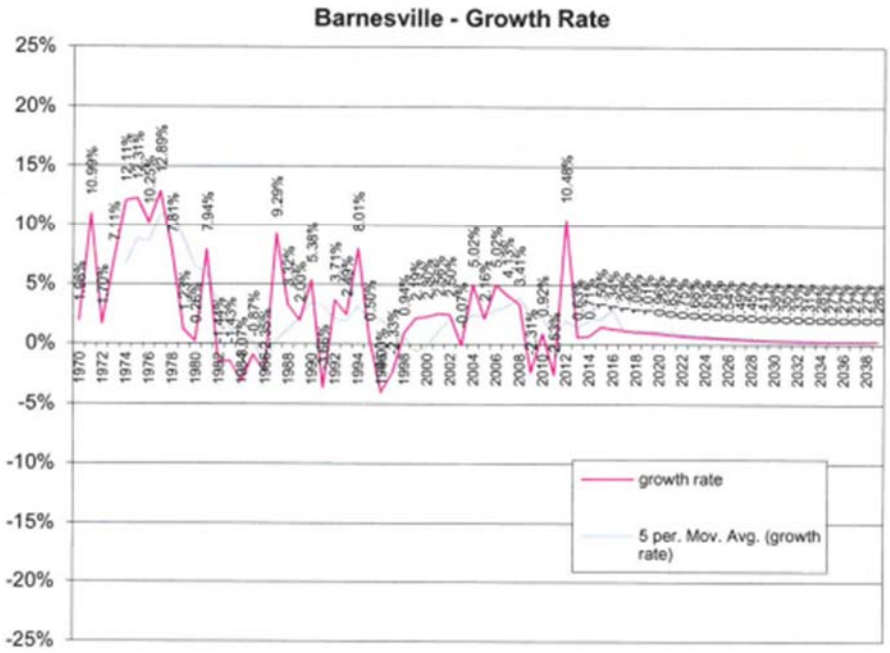
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-84180522.363	3166608.778	-26.584	0%
county8.ln_thh	77521407.647	1753412.919	44.212	0%
station3.tdd	471.478	175.275	2.690	1%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.981
Adjusted R-Squared	0.980
AIC	27.088
BIC	27.209
F-Statistic	1059.547
Prob (F-Statistic)	0.000
Log-Likelihood	-670.34
Model Sum of Squares	1154918785018965
Sum of Squared Errors	22890242189782
Mean Squared Error	545005766423.38
Std. Error of Regression	738245.06
Mean Abs. Dev. (MAD)	585469.27
Mean Abs. % Err. (MAPE)	4.15%
Durbin-Watson Statistic	0.433
Durbin-H Statistic	0.000
Ljung-Box Statistic	63.97
Prob (Ljung-Box)	0.000
Skewness	0.354
Kurtosis	2.648
Jarque-Bera	1.173
Prob (Jarque-Bera)	0.556

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county8.ln_thh	77521407.647	1.250	5.625
station3.tdd	471.478	9494.356	0.260


Barnesville - Total Energy
MWh
35000
30000
25000
20000
15000
10000
5000
0
Barnesville - Historic Actual
Barnesville - Forecast


Barnesville - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

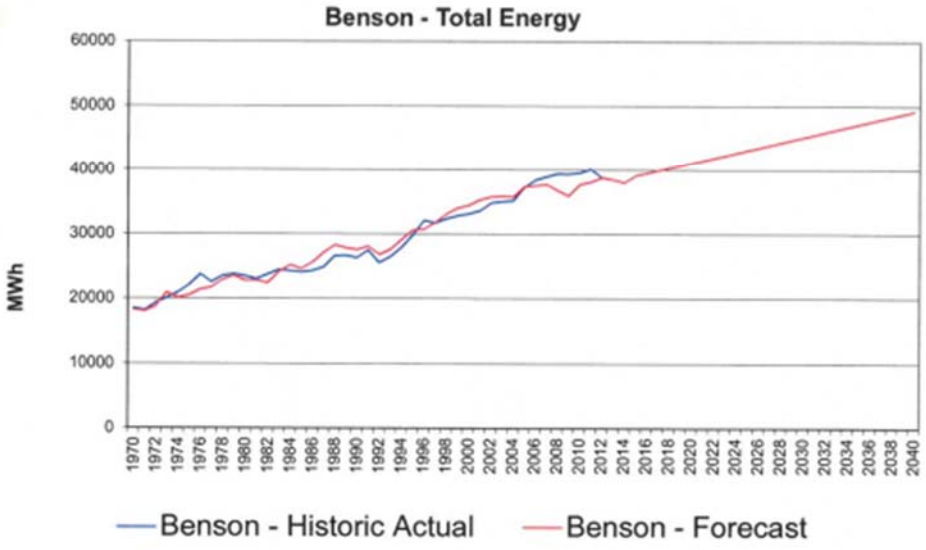
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Benson_MN**
Dependent Variable:	**BaseData.Benson**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

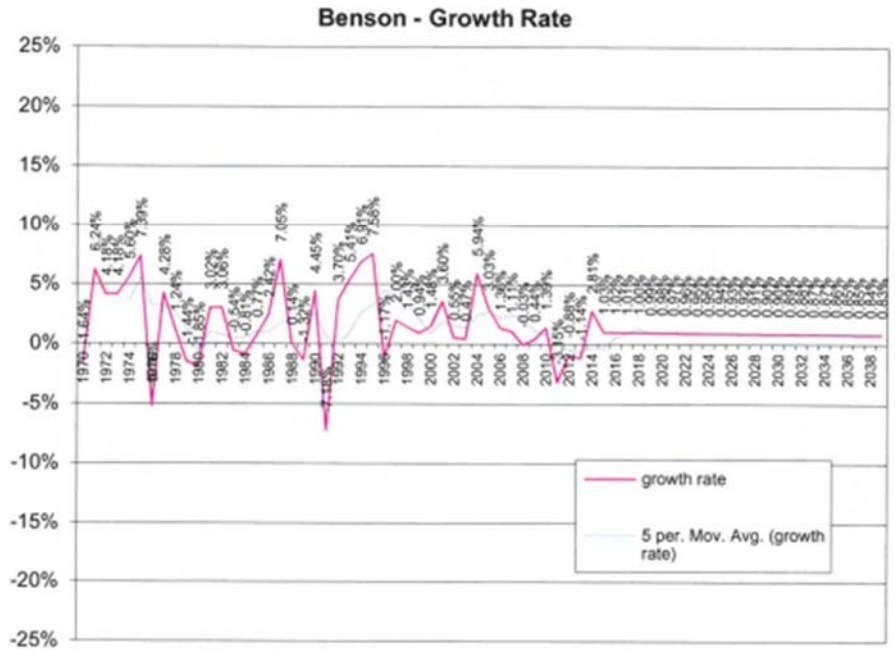
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-183888066.027	6838734.913	-26.889	0%
state_econ.ln_mn_grp	38608905.319	1160268.363	33.276	0%
station9.ln_cdd	4410092.119	1569497.741	2.810	1%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.965
Adjusted R-Squared	0.964
AIC	28.218
BIC	28.338
F-Statistic	584.242
Prob (F-Statistic)	0.000
Log-Likelihood	-695.76
Model Sum of Squares	1970496299999257
Sum of Squared Errors	70827544880374
Mean Squared Error	1686370116199.38
Std. Error of Regression	1298603.14
Mean Abs. Dev. (MAD)	1027330.07
Mean Abs. % Err. (MAPE)	3.56%
Durbin-Watson Statistic	0.493
Durbin-H Statistic	0.000
Ljung-Box Statistic	48.61
Prob (Ljung-Box)	0.000
Skewness	0.660
Kurtosis	2.888
Jarque-Bera	3.294
Prob (Jarque-Bera)	0.193

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
state_econ.ln_mn_grp	38608905.319	5.212	6.902
station9.ln_cdd	4410092.119	2.680	0.405


Benson - Total Energy
MWh
60000
50000
40000
30000
20000
10000
0
Benson - Historic Actual
Benson - Forecast


Benson - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

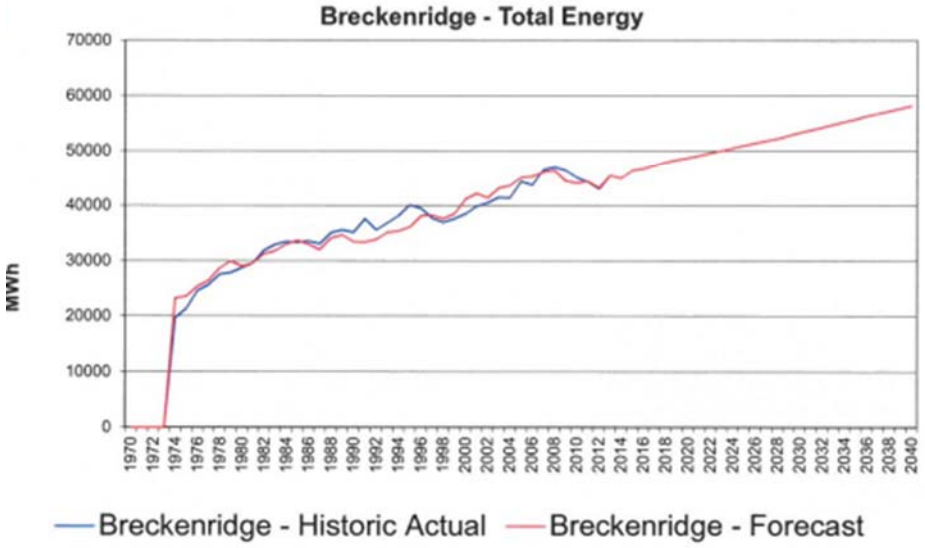
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Breckenridge_MN**
Dependent Variable:	**BaseData.Breckenridge**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1974:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

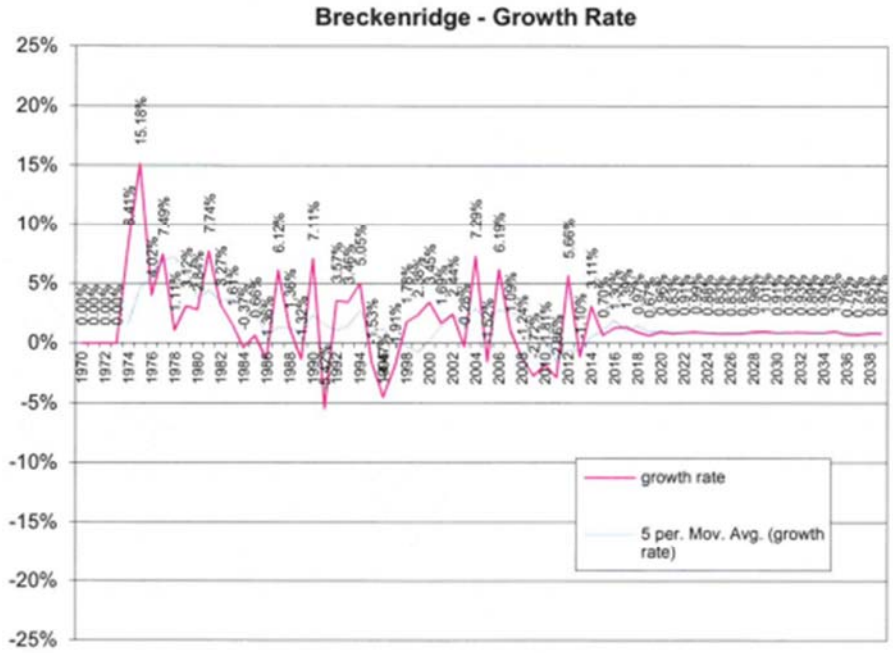
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-269109623.174	16346373.745	-16.463	0%
natl_econ.ln_grp	41528543.759	2226675.292	18.650	0%
alt_fuel_mn.ln_com_natgas	10622428.728	2642413.572	4.020	0%
station3.tdd	752.360	440.209	1.709	10%

Model Statistics	
Iterations	1
Adjusted Observations	41
Deg. of Freedom for Error	37
R-Squared	0.943
Adjusted R-Squared	0.938
AIC	28.835
BIC	29.003
F-Statistic	202.429
Prob (F-Statistic)	0.000
Log-Likelihood	-645.30
Model Sum of Squares	1846307493455405
Sum of Squared Errors	112489241875032
Mean Squared Error	3040249780406.26
Std. Error of Regression	1743631.21
Mean Abs. Dev. (MAD)	1317100.68
Mean Abs. % Err. (MAPE)	3.85%
Durbin-Watson Statistic	0.494
Durbin-H Statistic	0.000
Ljung-Box Statistic	43.22
Prob (Ljung-Box)	0.000
Skewness	0.369
Kurtosis	3.174
Jarque-Bera	0.984
Prob (Jarque-Bera)	0.611

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	41528543.759	6.972	7.905
alt_fuel_mn.ln_com_natgas	10622428.728	0.855	0.248
station3.tdd	752.360	9450.000	0.194


Breckenridge - Total Energy
MWh
70000
60000
50000
40000
30000
20000
10000
0
Breckenridge - Historic Actual
Breckenridge - Forecast


Breckenridge - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

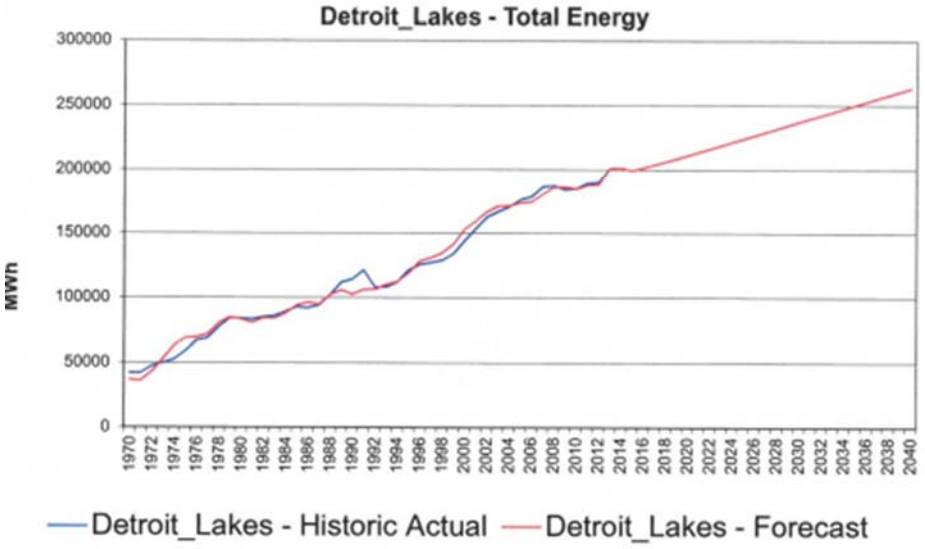
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Detroit_Lakes_MN**
Dependent Variable:	**BaseData.Detroit_Lakes**
Date:	**January 28, 2015**
Time:	**07:38 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

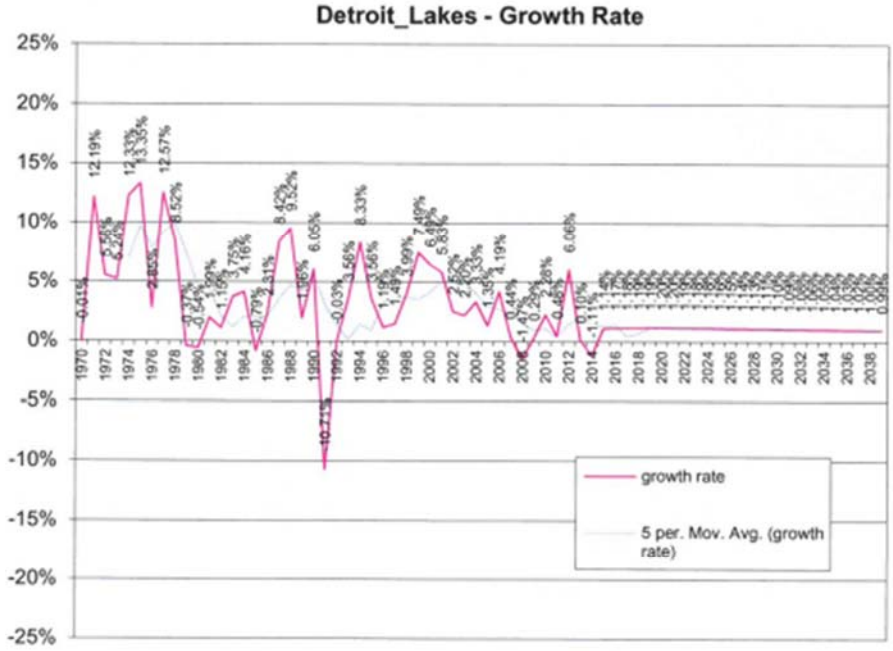
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-912829958.525	113532071.140	-8.040	0%
county4.ln_avg_inc	270099238.093	4638829.081	58.226	0%
station3.ln_tdd	69497770.626	27184857.581	2.556	1%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.989
Adjusted R-Squared	0.989
AIC	30.985
BIC	31.105
F-Statistic	1901.845
Prob (F-Statistic)	0.000
Log-Likelihood	-758.01
Model Sum of Squares	102064845860380350
Sum of Squared Errors	1126990978622423
Mean Squared Error	26833118538629.13
Std. Error of Regression	5180069.36
Mean Abs. Dev. (MAD)	3784878.24
Mean Abs. % Err. (MAPE)	4.08%
Durbin-Watson Statistic	0.538
Durbin-H Statistic	0.000
Ljung-Box Statistic	30.25
Prob (Ljung-Box)	0.000
Skewness	0.394
Kurtosis	3.935
Jarque-Bera	2.804
Prob (Jarque-Bera)	0.246

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county4.ln_avg_inc	270099238.093	2.800	6.308
station3.ln_tdd	69497770.626	3.976	2.305


Detroit_Lakes - Total Energy
MWh
300000
250000
200000
150000
100000
50000
0
Detroit_Lakes - Historic Actual
Detroit_Lakes - Forecast


Detroit_Lakes - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

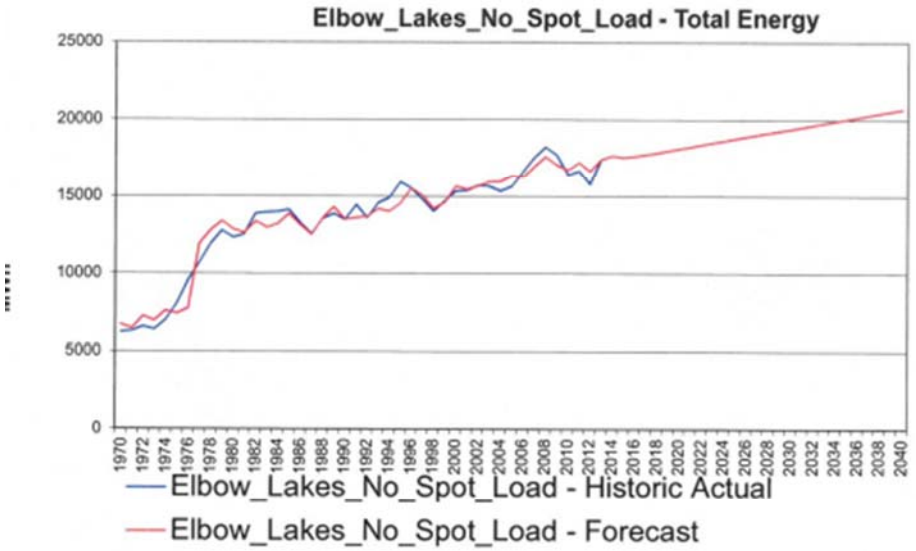
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Elbow_Lake_MN**
Dependent Variable:	**Loads_w_spot.Elbow_Lake_No_Spot**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

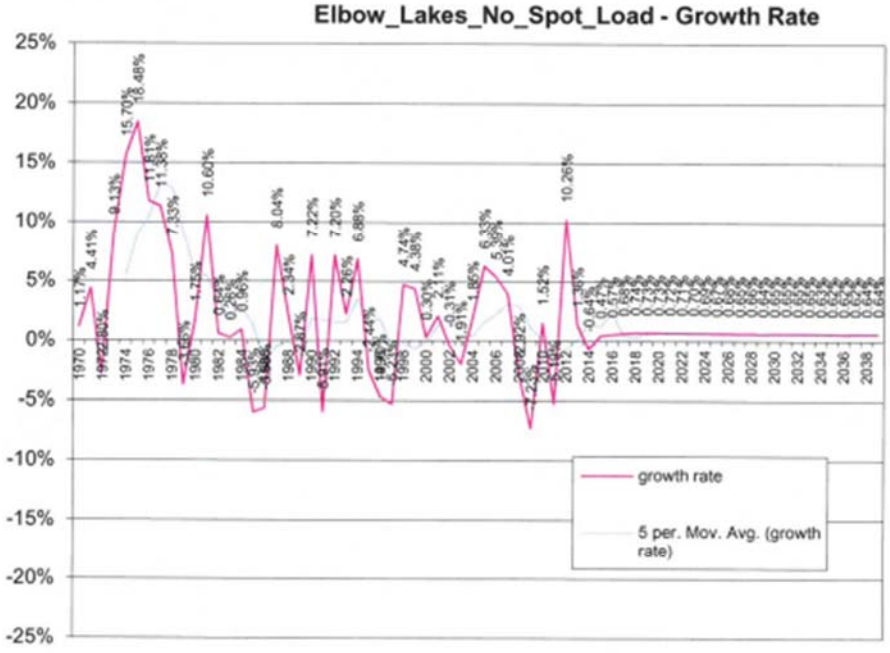
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-77793326.233	6509949.173	-11.950	0%
natl_econ.ln_grp	11563879.023	912424.998	12.674	0%
Loads_w_spot.Elbow_Lake_Binary	4095517.191	365870.200	11.194	0%
alt_fuel_mn.ln_res_oil	2049065.522	703460.394	2.913	1%
station3.hdd	605.967	158.049	3.834	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	40
R-Squared	0.963
Adjusted R-Squared	0.959
AIC	26.914
BIC	27.114
F-Statistic	257.670
Prob (F-Statistic)	0.000
Log-Likelihood	-664.41
Model Sum of Squares	453081298582443
Sum of Squared Errors	17583792719127
Mean Squared Error	439594817978.18
Std. Error of Regression	663019.47
Mean Abs. Dev. (MAD)	493229.03
Mean Abs. % Err. (MAPE)	4.09%
Durbin-Watson Statistic	1.233
Durbin-H Statistic	0.000
Ljung-Box Statistic	13.62
Prob (Ljung-Box)	0.018
Skewness	0.652
Kurtosis	3.243
Jarque-Bera	3.298
Prob (Jarque-Bera)	0.192

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	11563879.023	6.947	5.896
Loads_w_spot.Elbow_Lake_Binary	4095517.191	0.844	0.254
alt_fuel_mn.ln_res_oil	2049065.522	1.081	0.163
station3.hdd	605.967	8925.356	0.397


Elbow_Lakes_No_Spot_Load - Total Energy
25000
20000
15000
10000
5000
0
Elbow_Lakes_No_Spot_Load - Historic Actual
Elbow_Lakes_No_Spot_Load - Forecast


Elbow_Lakes_No_Spot_Load - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

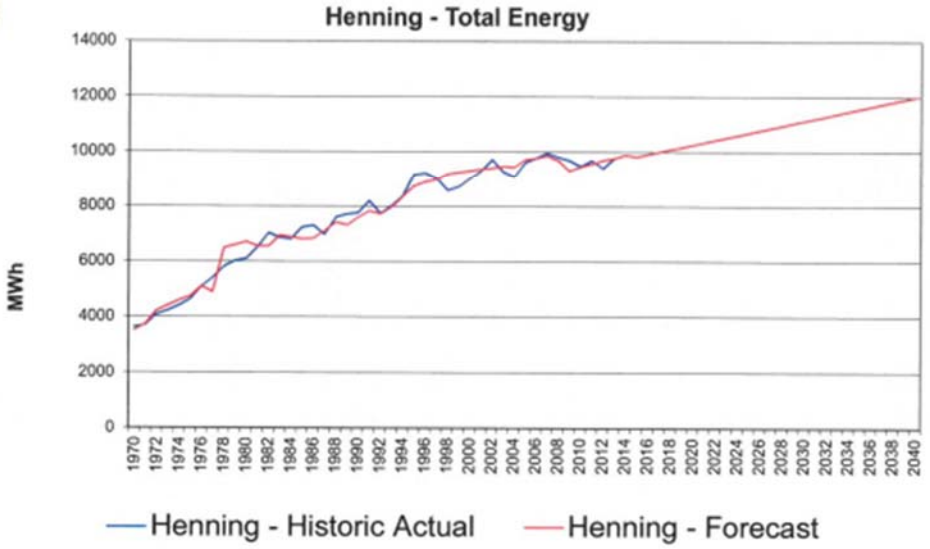
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Henning_MN**
Dependent Variable:	**BaseData.Henning**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

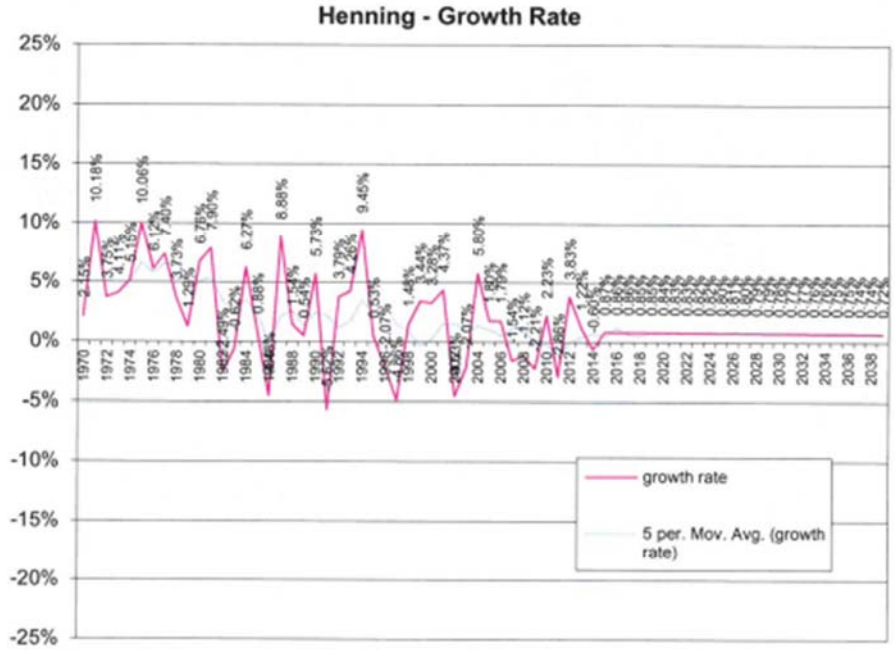
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-18697867.067	982597.483	-19.029	0%
Loads_w_spot.Henning_Binary	1408183.992	165118.574	8.528	0%
county31.ln_emp	17345353.122	738985.913	23.472	0%
station3.cdd	497.734	318.070	1.565	13%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.975
Adjusted R-Squared	0.973
AIC	25.424
BIC	25.584
F-Statistic	532.486
Prob (F-Statistic)	0.000
Log-Likelihood	-631.89
Model Sum of Squares	161441151022753
Sum of Squared Errors	4143516292089
Mean Squared Error	101061372977.79
Std. Error of Regression	317901.51
Mean Abs. Dev. (MAD)	233556.69
Mean Abs. % Err. (MAPE)	3.26%
Durbin-Watson Statistic	1.313
Durbin-H Statistic	0.000
Ljung-Box Statistic	8.37
Prob (Ljung-Box)	0.137
Skewness	-0.368
Kurtosis	2.691
Jarque-Bera	1.193
Prob (Jarque-Bera)	0.551

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
Loads_w_spot.Henning_Binary	1408183.992	0.822	0.151
county31.ln_emp	17345353.122	1.438	3.247
station3.cdd	497.734	569.000	0.037


Henning - Total Energy
MWh
14000
12000
10000
8000
6000
4000
2000
0
Henning - Historic Actual
Henning - Forecast


Henning - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

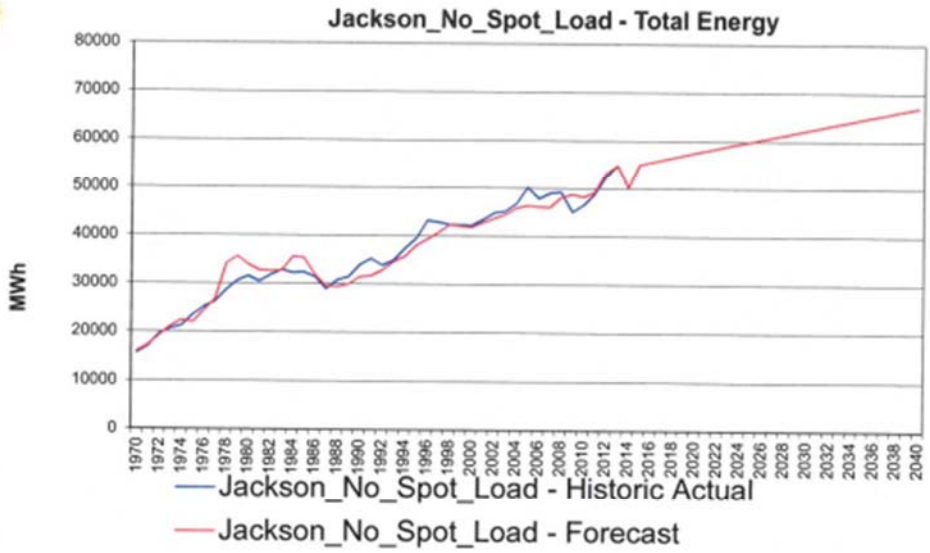
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Jackson_MN**
Dependent Variable:	**Loads_w_spot.Jackson_No_Spot**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

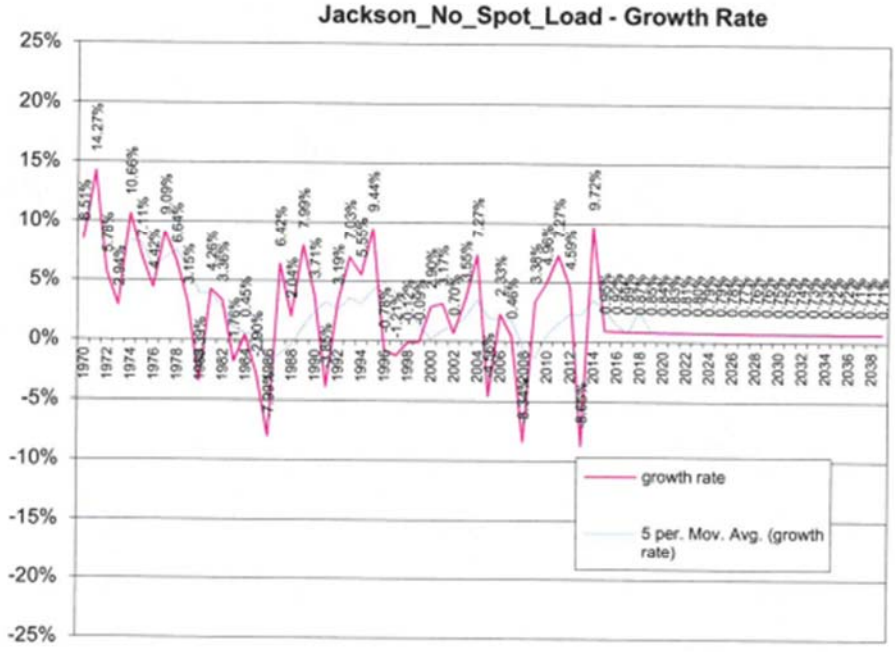
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-82981460.987	5105589.313	-16.253	0%
Loads_w_spot.Jackson_Binary	6367284.722	1053332.198	6.045	0%
county22.ln_wage	56743669.182	2749110.685	20.641	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.955
Adjusted R-Squared	0.953
AIC	29.290
BIC	29.411
F-Statistic	447.882
Prob (F-Statistic)	0.000
Log-Likelihood	-719.88
Model Sum of Squares	4413908157837978
Sum of Squared Errors	206956551311746
Mean Squared Error	4927536935993.96
Std. Error of Regression	2219805.61
Mean Abs. Dev. (MAD)	1621450.20
Mean Abs. % Err. (MAPE)	4.54%
Durbin-Watson Statistic	0.826
Durbin-H Statistic	0.000
Ljung-Box Statistic	24.05
Prob (Ljung-Box)	0.000
Skewness	-0.634
Kurtosis	3.262
Jarque-Bera	3.142
Prob (Jarque-Bera)	0.208

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
Loads_w_spot.Jackson_Binary	6367284.722	0.822	0.143
county22.ln_wage	56743669.182	2.015	3.126


Jackson_No_Spot_Load - Total Energy
MWh
80000
70000
60000
50000
40000
30000
20000
10000
0
1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034 2036 2038 2040
Jackson_No_Spot_Load - Historic Actual
Jackson_No_Spot_Load - Forecast


Jackson_No_Spot_Load - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

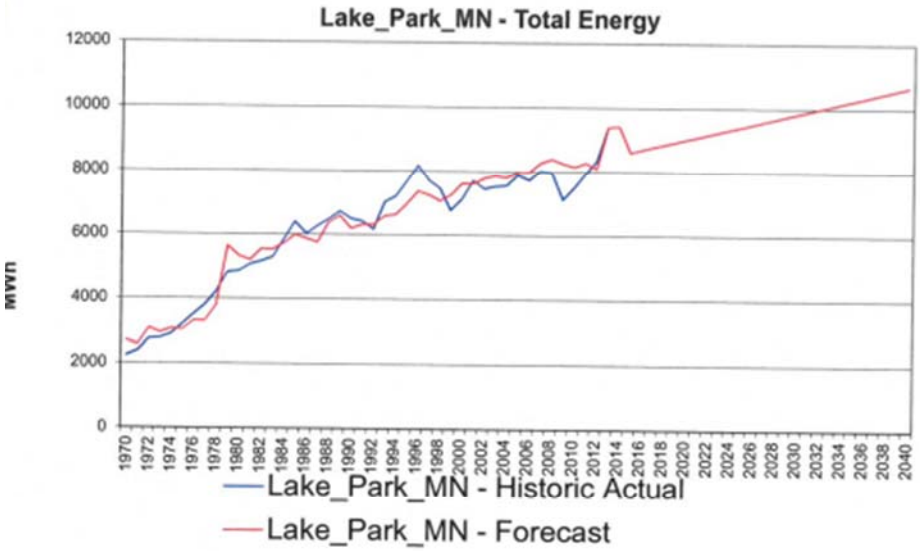
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Lake_Park_MN**
Dependent Variable:	**BaseData.Lake_Park_MN**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

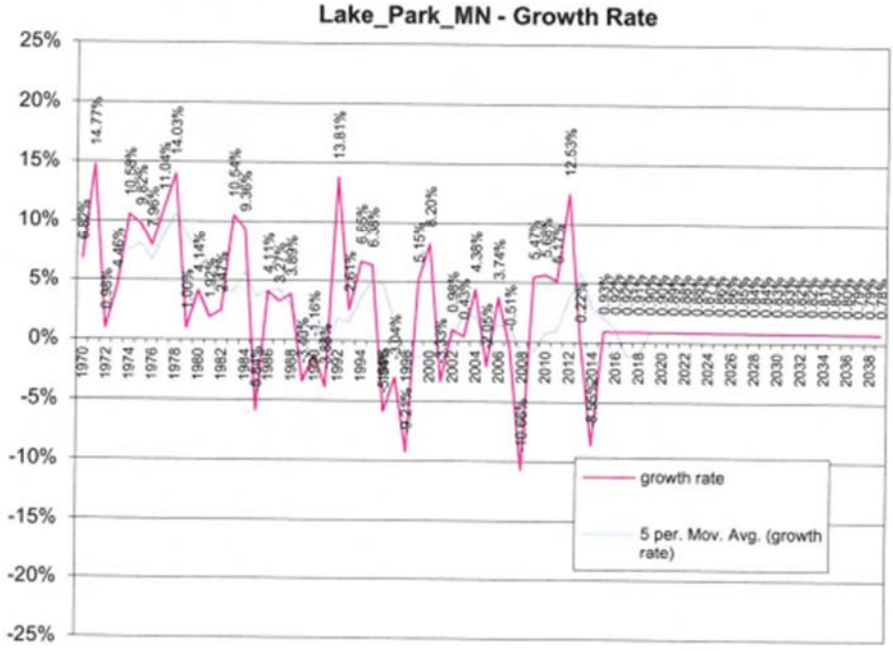
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-55505863.162	4501486.237	-12.331	0%
natl_econ.ln_grp	8335553.910	610177.784	13.661	0%
Loads_w_spot.Lake_Park_MN_Binary	1722582.622	241960.161	7.119	0%
station3.tdd	259.049	113.269	2.287	3%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.945
Adjusted R-Squared	0.941
AIC	26.189
BIC	26.349
F-Statistic	233.432
Prob (F-Statistic)	0.000
Log-Likelihood	-649.10
Model Sum of Squares	152114344518536
Sum of Squared Errors	8905789411677
Mean Squared Error	217214375894.57
Std. Error of Regression	466062.63
Mean Abs. Dev. (MAD)	376522.24
Mean Abs. % Err. (MAPE)	6.48%
Durbin-Watson Statistic	0.701
Durbin-H Statistic	0.000
Ljung-Box Statistic	24.28
Prob (Ljung-Box)	0.000
Skewness	-0.051
Kurtosis	2.586
Jarque-Bera	0.340
Prob (Jarque-Bera)	0.844

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	8335553.910	6.947	9.281
Loads_w_spot.Lake_Park_MN_Binary	1722582.622	0.800	0.221
station3.tdd	259.049	9494.356	0.394


Lake_Park_MN - Total Energy
MWh
12000
10000
8000
6000
4000
2000
0
Lake_Park_MN - Historic Actual
Lake_Park_MN - Forecast


Lake_Park_MN - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

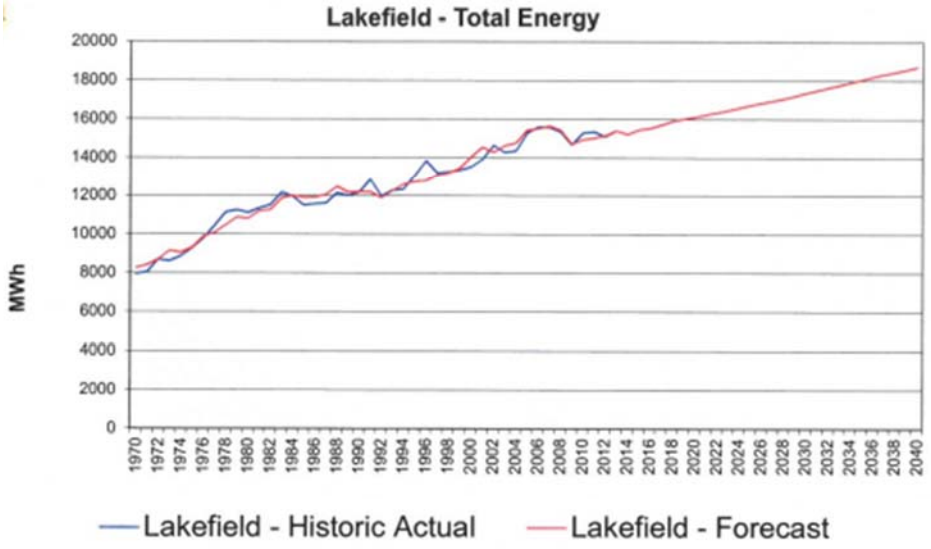
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Lakefield_MN**
Dependent Variable:	**BaseData.Lakefield**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

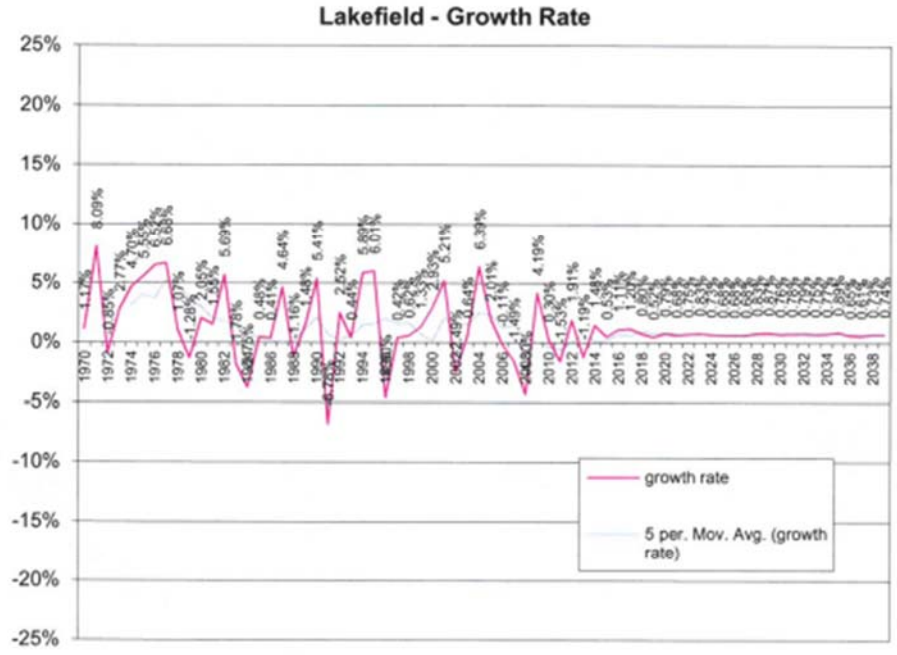
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-67631585.867	2787954.651	-24.258	0%
natl_econ.ln_grp	11044235.510	433671.048	25.467	0%
alt_fuel_mn.ln_com_natgas	3404455.912	478249.026	7.119	0%
station8.cdd	786.318	301.244	2.610	1%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.975
Adjusted R-Squared	0.973
AIC	25.664
BIC	25.825
F-Statistic	539.728
Prob (F-Statistic)	0.000
Log-Likelihood	-637.29
Model Sum of Squares	208098812625535
Sum of Squared Errors	5269351166644
Mean Squared Error	128520760162.05
Std. Error of Regression	358497.92
Mean Abs. Dev. (MAD)	267222.63
Mean Abs. % Err. (MAPE)	2.21%
Durbin-Watson Statistic	1.167
Durbin-H Statistic	0.000
Ljung-Box Statistic	9.99
Prob (Ljung-Box)	0.076
Skewness	0.633
Kurtosis	3.591
Jarque-Bera	3.664
Prob (Jarque-Bera)	0.160

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	11044235.510	6.947	6.128
alt_fuel_mn.ln_com_natgas	3404455.912	0.826	0.224
station8.cdd	786.318	784.133	0.049


Lakefield - Total Energy
MWh
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034 2036 2038 2040
Lakefield - Historic Actual
Lakefield - Forecast


Lakefield - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

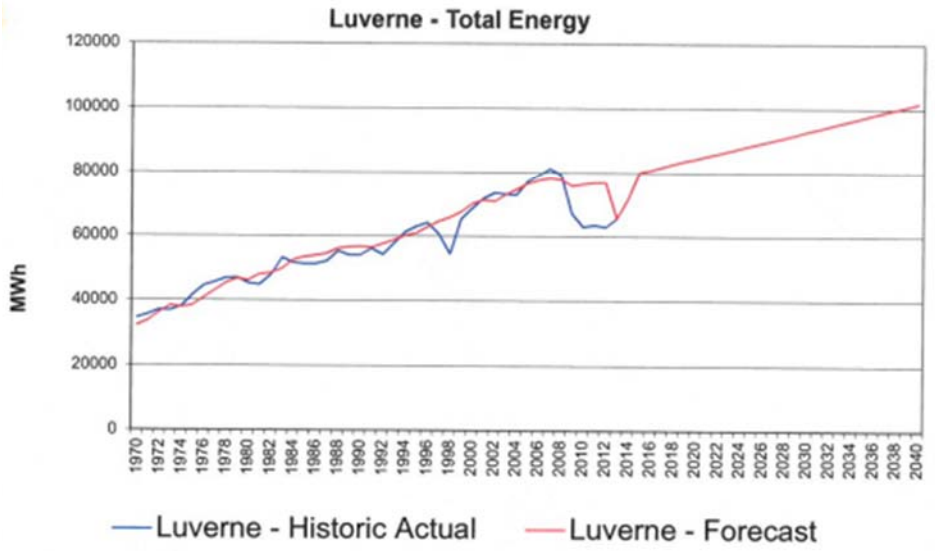
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Luverne_MN**
Dependent Variable:	**BaseData.Luverne**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

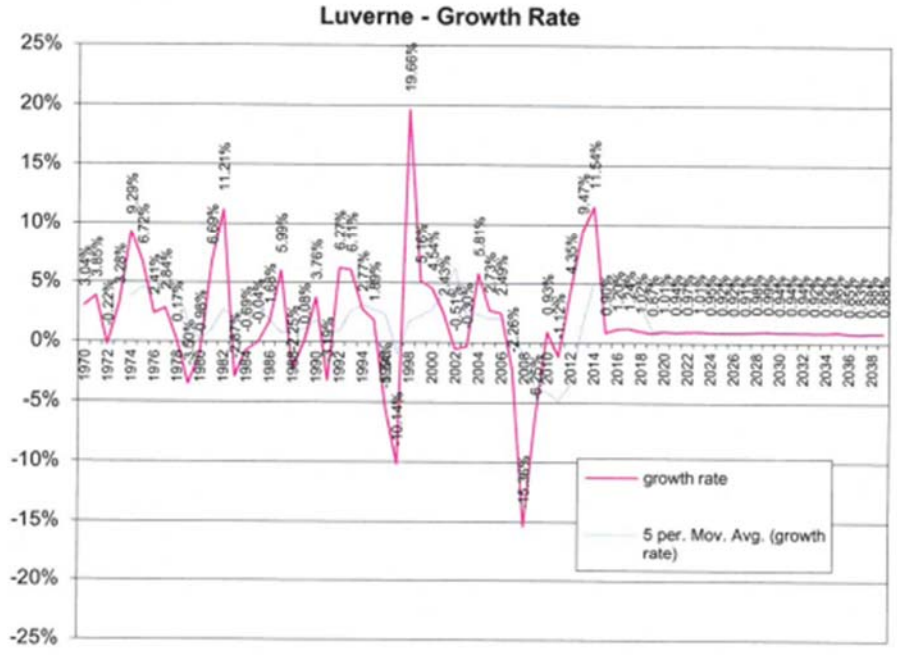
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-517787363.591	23898002.480	-21.667	0%
natl_econ.ln_grp	81935615.750	3738177.011	21.919	0%
alt_fuel_mn.ln_com_natgas	9293218.620	4114165.962	2.259	3%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.958
Adjusted R-Squared	0.956
AIC	29.952
BIC	30.072
F-Statistic	478.532
Prob (F-Statistic)	0.000
Log-Likelihood	-734.77
Model Sum of Squares	9140443066438784
Sum of Squared Errors	401121524022491
Mean Squared Error	9550512476725.96
Std. Error of Regression	3090390.34
Mean Abs. Dev. (MAD)	2224544.29
Mean Abs. % Err. (MAPE)	3.90%
Durbin-Watson Statistic	1.135
Durbin-H Statistic	0.000
Ljung-Box Statistic	5.81
Prob (Ljung-Box)	0.325
Skewness	-0.607
Kurtosis	6.819
Jarque-Bera	30.106
Prob (Jarque-Bera)	0.000

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	81935615.750	6.947	9.632
alt_fuel_mn.ln_com_natgas	9293218.620	0.826	0.130


Luverne - Total Energy
MWh
120000
100000
80000
60000
40000
20000
0
Luverne - Historic Actual
Luverne - Forecast


Luverne - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

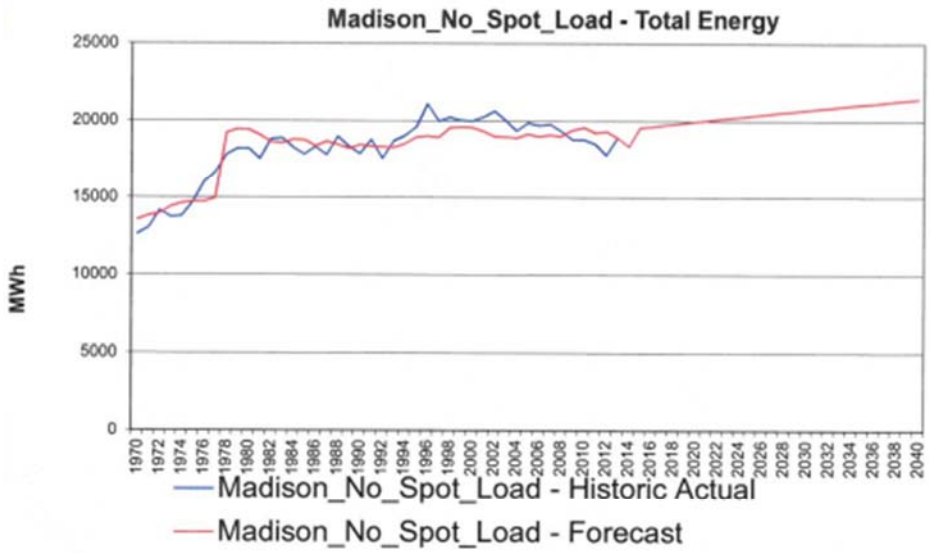
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Madison_MN**
Dependent Variable:	**Loads_w_spot.Madison_No_Spot**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

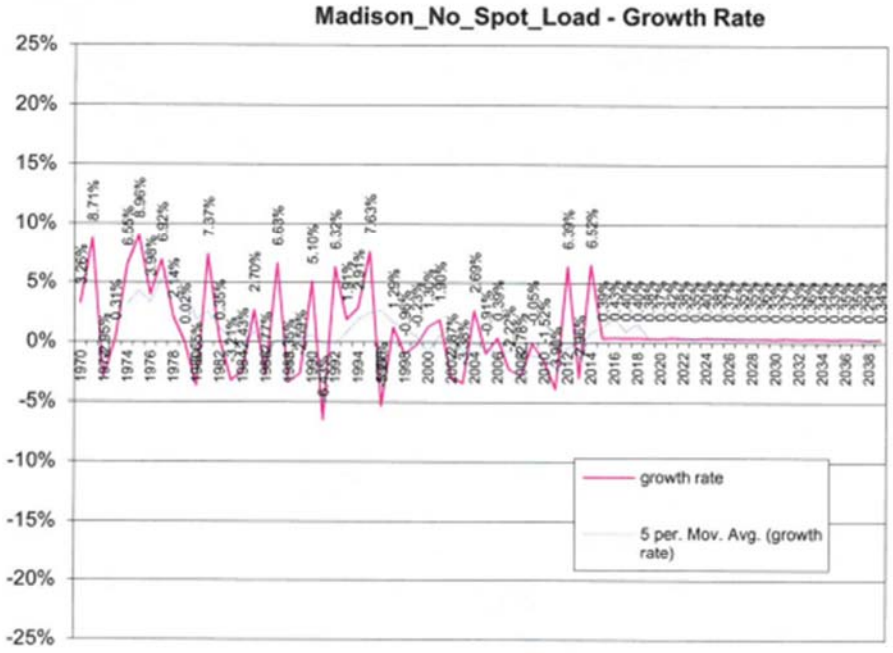
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-3942816.349	6025404.762	-0.654	52%
county23.ln_emp	27763805.685	9134474.471	3.039	0%
Loads_w_spot.Madison_Binary	4335431.696	379820.099	11.414	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	42
R-Squared	0.801
Adjusted R-Squared	0.792
AIC	27.573
BIC	27.693
F-Statistic	84.554
Prob (F-Statistic)	0.000
Log-Likelihood	-681.24
Model Sum of Squares	149566559042146
Sum of Squared Errors	37146760548218
Mean Squared Error	884446679719.48
Std. Error of Regression	940450.25
Mean Abs. Dev. (MAD)	783167.41
Mean Abs. % Err. (MAPE)	4.36%
Durbin-Watson Statistic	0.917
Durbin-H Statistic	0.000
Ljung-Box Statistic	20.54
Prob (Ljung-Box)	0.001
Skewness	0.154
Kurtosis	2.222
Jarque-Bera	1.311
Prob (Jarque-Bera)	0.519

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county23.ln_emp	27763805.685	0.668	1.021
Loads_w_spot.Madison_Binary	4335431.696	0.822	0.196


Madison_No_Spot_Load - Total Energy
MWh
25000
20000
15000
10000
5000
0
Madison_No_Spot_Load - Historic Actual
Madison_No_Spot_Load - Forecast


Madison_No_Spot_Load - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

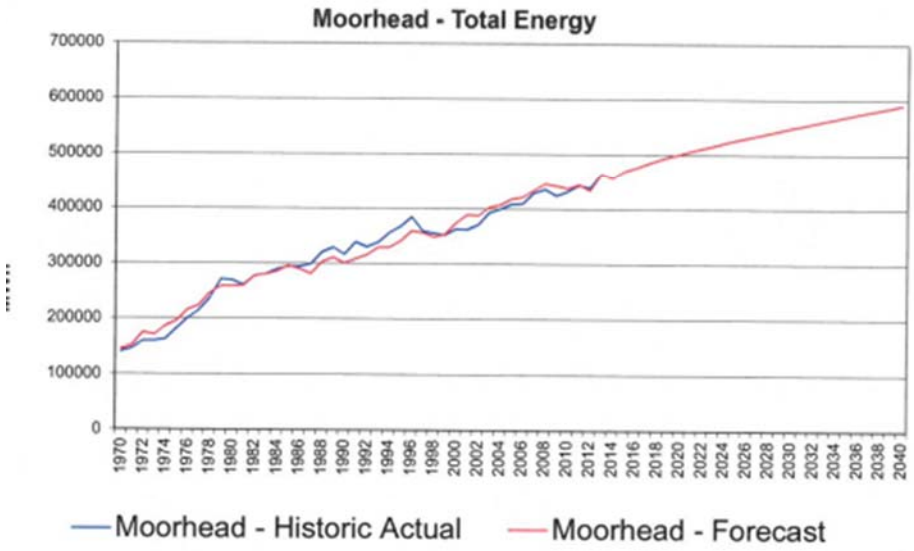
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Moorhead_MN**
Dependent Variable:	**BaseData.Moorhead**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

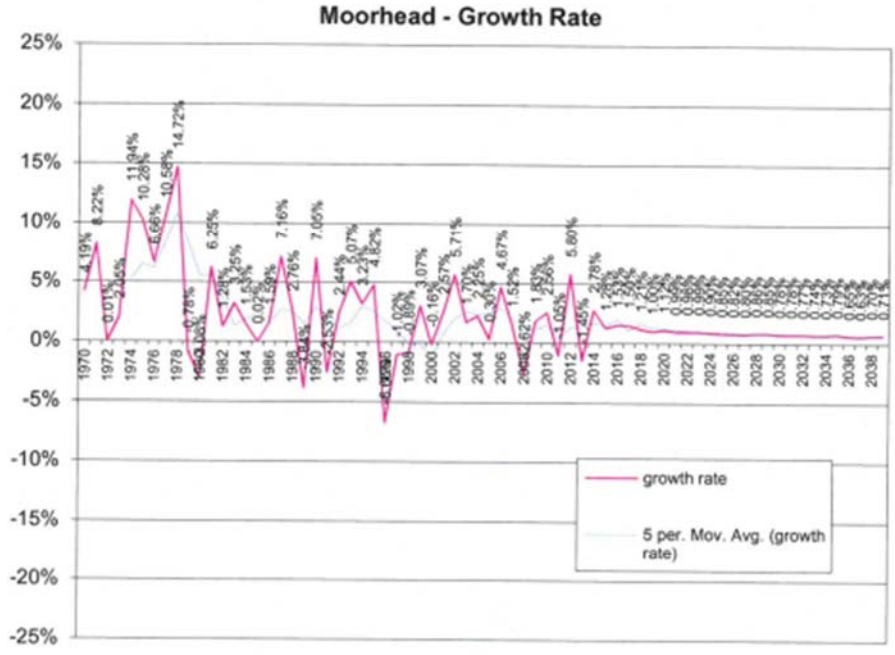
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-1119131629.286	57861420.335	-19.342	0%
county38.ln_thh	737593232.047	26106285.866	28.253	0%
alt_fuel_mn.ln_com_natgas	60806967.357	19621159.101	3.099	0%
station3.tdd	8206.405	3437.832	2.387	2%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.977
Adjusted R-Squared	0.976
AIC	33.036
BIC	33.196
F-Statistic	587.053
Prob (F-Statistic)	0.000
Log-Likelihood	-803.15
Model Sum of Squares	359910587341771260
Sum of Squared Errors	8378761997763069
Mean Squared Error	204360048725928.50
Std. Error of Regression	14295455.53
Mean Abs. Dev. (MAD)	11078311.53
Mean Abs. % Err. (MAPE)	3.82%
Durbin-Watson Statistic	0.431
Durbin-H Statistic	0.000
Ljung-Box Statistic	73.66
Prob (Ljung-Box)	0.000
Skewness	0.403
Kurtosis	2.501
Jarque-Bera	1.683
Prob (Jarque-Bera)	0.431

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county38.ln_thh	737593232.047	1.781	4.071
alt_fuel_mn.ln_com_natgas	60806967.357	0.826	0.156
station3.tdd	8206.405	9494.356	0.241


Moorhead - Total Energy
700000
600000
500000
400000
300000
200000
100000
0
Moorhead - Historic Actual
Moorhead - Forecast


Moorhead - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

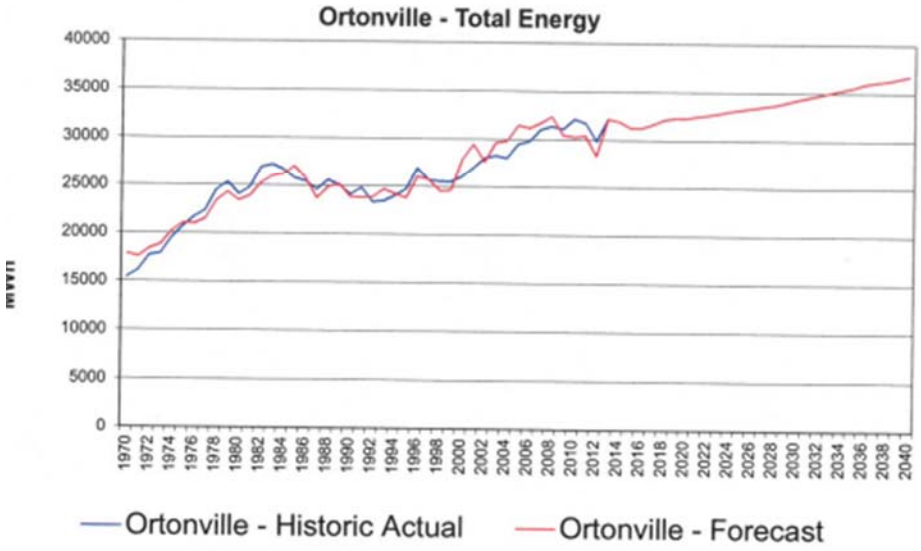
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Ortonville_MN**
Dependent Variable:	**BaseData.Ortonville**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

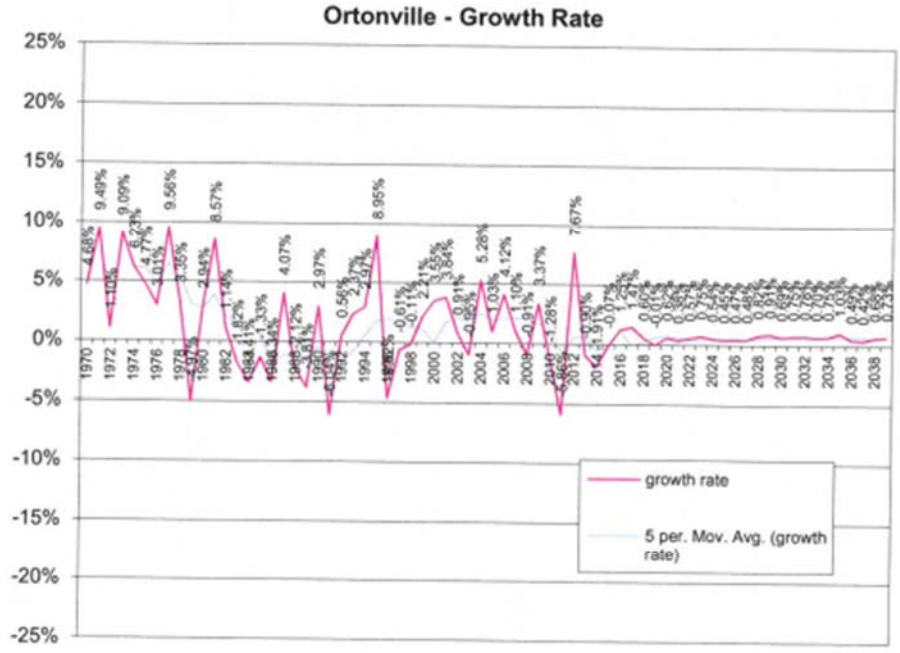
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-68445242.473	7016691.435	-9.755	0%
county5.ln_avg_ipc	16972160.380	1594141.600	10.647	0%
alt_fuel_mn.ln_com_natgas	15247196.221	1448617.166	10.525	0%
station1.tdd	826.981	290.884	2.843	1%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.923
Adjusted R-Squared	0.917
AIC	28.074
BIC	28.235
F-Statistic	163.148
Prob (F-Statistic)	0.000
Log-Likelihood	-691.52
Model Sum of Squares	700414224089442
Sum of Squared Errors	58672673706307
Mean Squared Error	1431040822105.05
Std. Error of Regression	1196261.18
Mean Abs. Dev. (MAD)	994855.35
Mean Abs. % Err. (MAPE)	4.01%
Durbin-Watson Statistic	0.740
Durbin-H Statistic	0.000
Ljung-Box Statistic	23.30
Prob (Ljung-Box)	0.000
Skewness	-0.465
Kurtosis	2.111
Jarque-Bera	3.107
Prob (Jarque-Bera)	0.212

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county5.ln_avg_ipc	16972160.380	4.366	2.889
alt_fuel_mn.ln_com_natgas	15247196.221	0.826	0.491
station1.tdd	826.981	8950.822	0.289


Ortonville - Total Energy
MWH
40000
35000
30000
25000
20000
15000
10000
5000
0
1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034 2036 2038 2040
Ortonville - Historic Actual
Ortonville - Forecast


Ortonville - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

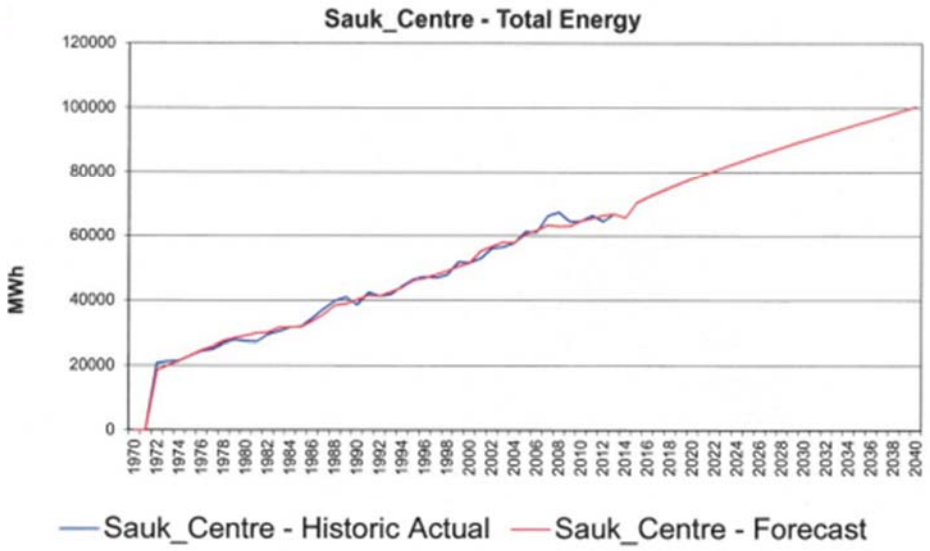
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Sauk_Centre_MN**
Dependent Variable:	**BaseData.Sauk_Centre**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1972:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

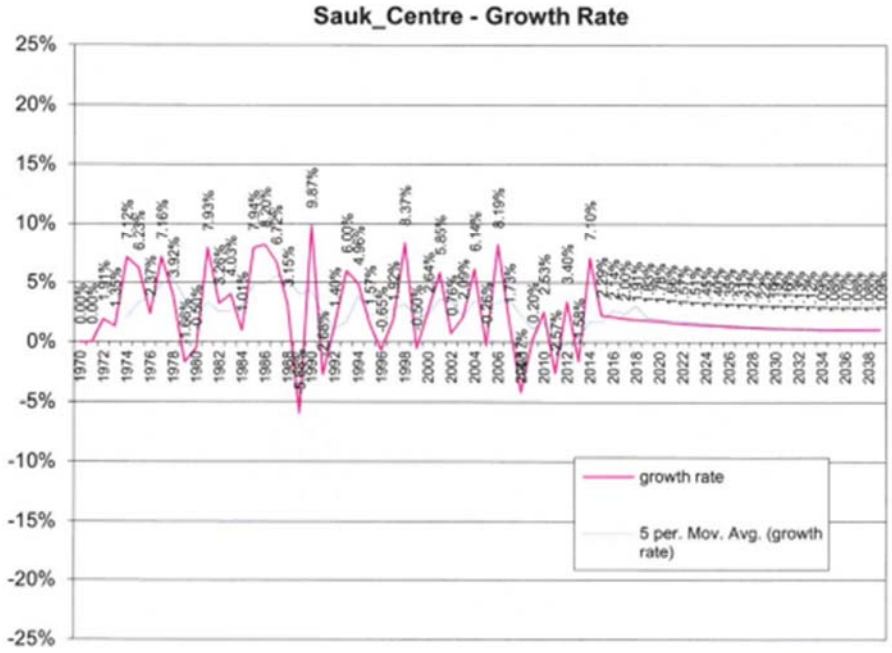
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-19815530.555	1166551.833	-16.986	0%
county40.thh	1460959.660	22912.851	63.762	0%
station9.cdd	3919.477	1756.876	2.231	3%

Model Statistics	
Iterations	1
Adjusted Observations	43
Deg. of Freedom for Error	40
R-Squared	0.991
Adjusted R-Squared	0.990
AIC	28.507
BIC	28.630
F-Statistic	2186.672
Prob (F-Statistic)	0.000
Log-Likelihood	-670.91
Model Sum of Squares	9818380454489588
Sum of Squared Errors	89802061727985
Mean Squared Error	2245051543199.62
Std. Error of Regression	1498349.61
Mean Abs. Dev. (MAD)	1102015.68
Mean Abs. % Err. (MAPE)	2.68%
Durbin-Watson Statistic	1.109
Durbin-H Statistic	0.000
Ljung-Box Statistic	12.70
Prob (Ljung-Box)	0.026
Skewness	0.489
Kurtosis	3.707
Jarque-Bera	2.608
Prob (Jarque-Bera)	0.271

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county40.thh	1460959.660	42.428	1.405
station9.cdd	3919.477	495.256	0.044


Sauk_Centre - Total Energy
MWh
120000
100000
80000
60000
40000
20000
0
Sauk_Centre - Historic Actual
Sauk_Centre - Forecast


Sauk_Centre - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

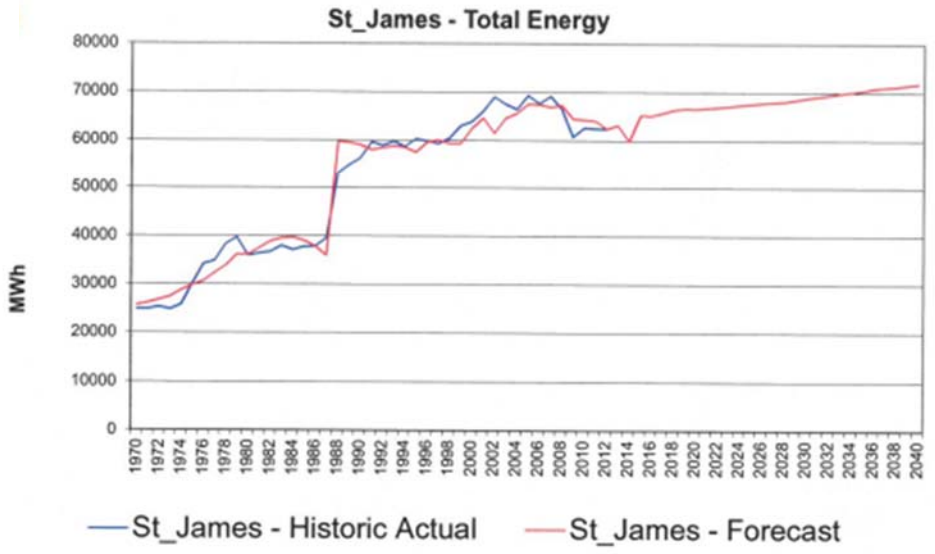
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**St_James_MN**
Dependent Variable:	**BaseData.St_James**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

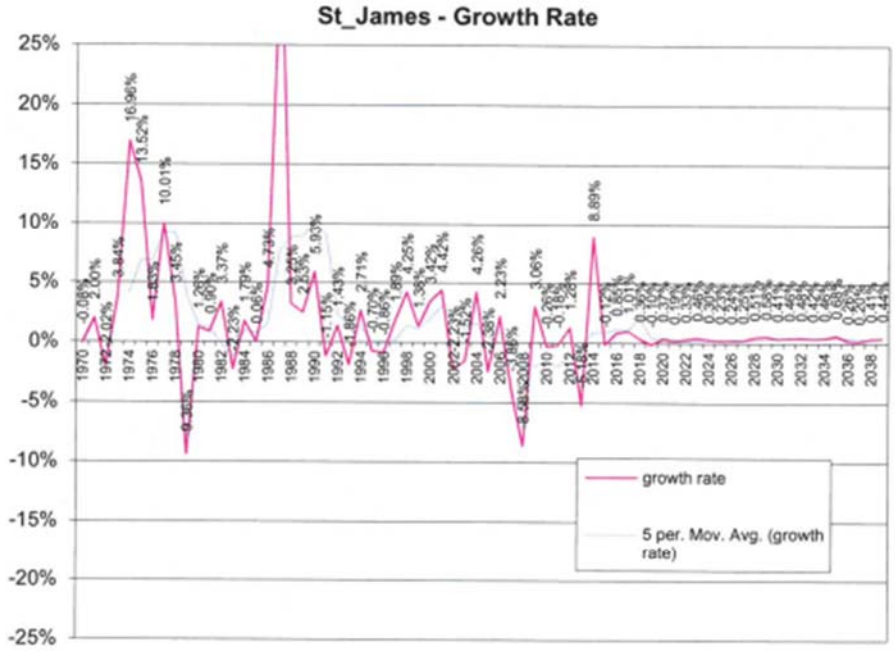
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-57113579.990	31085563.673	-1.837	7%
Loads_w_spot.StJames_Binary	23778326.399	1228050.751	19.363	0%
county47.ln_avg_ipc	16883039.520	7574557.290	2.229	3%
alt_fuel_mn.ln_com_natgas	23585044.247	3781601.802	6.237	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.967
Adjusted R-Squared	0.965
AIC	29.801
BIC	29.962
F-Statistic	401.175
Prob (F-Statistic)	0.000
Log-Likelihood	-730.38
Model Sum of Squares	9684850969193678
Sum of Squared Errors	329930059225278
Mean Squared Error	8047074615250.67
Std. Error of Regression	2836736.61
Mean Abs. Dev. (MAD)	2106446.09
Mean Abs. % Err. (MAPE)	4.54%
Durbin-Watson Statistic	1.026
Durbin-H Statistic	0.000
Ljung-Box Statistic	11.41
Prob (Ljung-Box)	0.044
Skewness	0.080
Kurtosis	3.393
Jarque-Bera	0.338
Prob (Jarque-Bera)	0.845

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
Loads_w_spot.StJames_Binary	23778326.399	0.600	0.281
county47.ln_avg_ipc	16883039.520	4.391	1.460
alt_fuel_mn.ln_com_natgas	23585044.247	0.826	0.384


St_James - Total Energy
MWh
St_James - Historic Actual
St_James - Forecast


St_James - Growth Rate
growth rate
5 per. Mov. Avg. (growth rate)

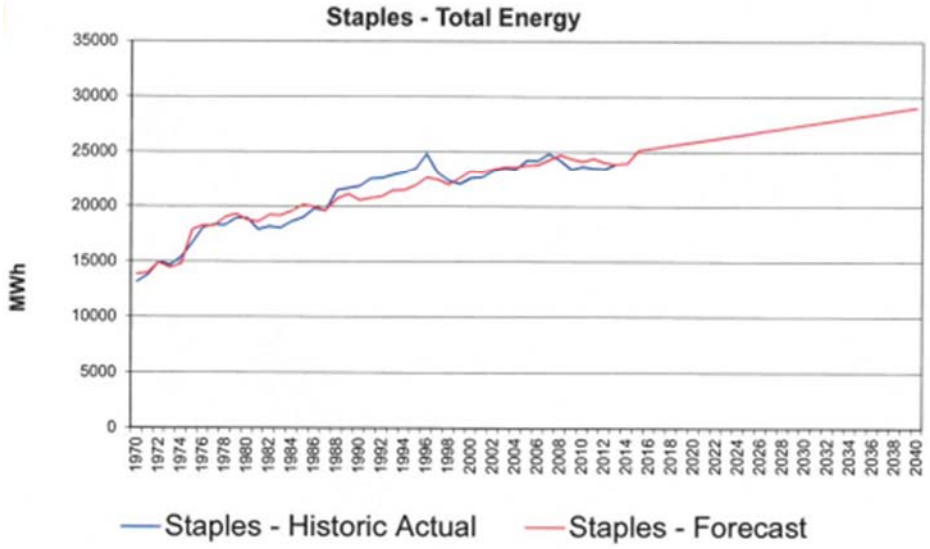
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Staples_MN**
Dependent Variable:	**BaseData.Staples**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

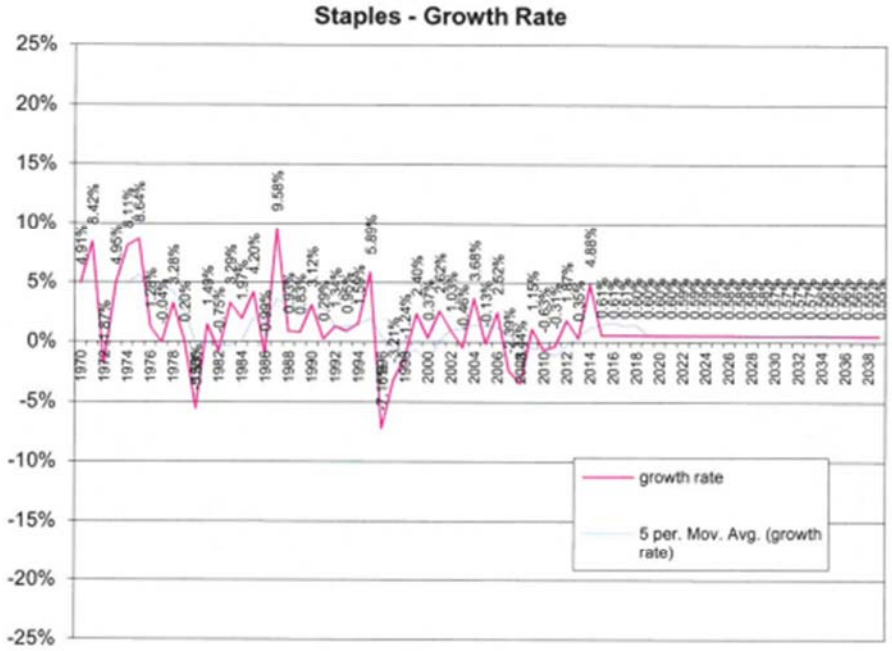
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-97401081.152	8674088.395	-11.229	0%
Loads_w_spot.Staples_Binary	2996338.062	534925.066	5.601	0%
natl_econ.ln_grp	16027561.565	1129695.582	14.188	0%
station9.hdd	495.789	239.224	2.072	4%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.922
Adjusted R-Squared	0.916
AIC	27.599
BIC	27.760
F-Statistic	160.889
Prob (F-Statistic)	0.000
Log-Likelihood	-680.83
Model Sum of Squares	429561274540990
Sum of Squared Errors	36489003397572
Mean Squared Error	889975692623.70
Std. Error of Regression	943385.23
Mean Abs. Dev. (MAD)	730418.86
Mean Abs. % Err. (MAPE)	3.47%
Durbin-Watson Statistic	0.461
Durbin-H Statistic	0.000
Ljung-Box Statistic	60.87
Prob (Ljung-Box)	0.000
Skewness	0.671
Kurtosis	2.645
Jarque-Bera	3.612
Prob (Jarque-Bera)	0.164

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
Loads_w_spot.Staples_Binary	2996338.062	0.889	0.128
natl_econ.ln_grp	16027561.565	6.947	5.335
station9.hdd	495.789	8600.889	0.204


Staples - Total Energy
MWh
35000
30000
25000
20000
15000
10000
5000
0
Staples - Historic Actual
Staples - Forecast


Staples - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

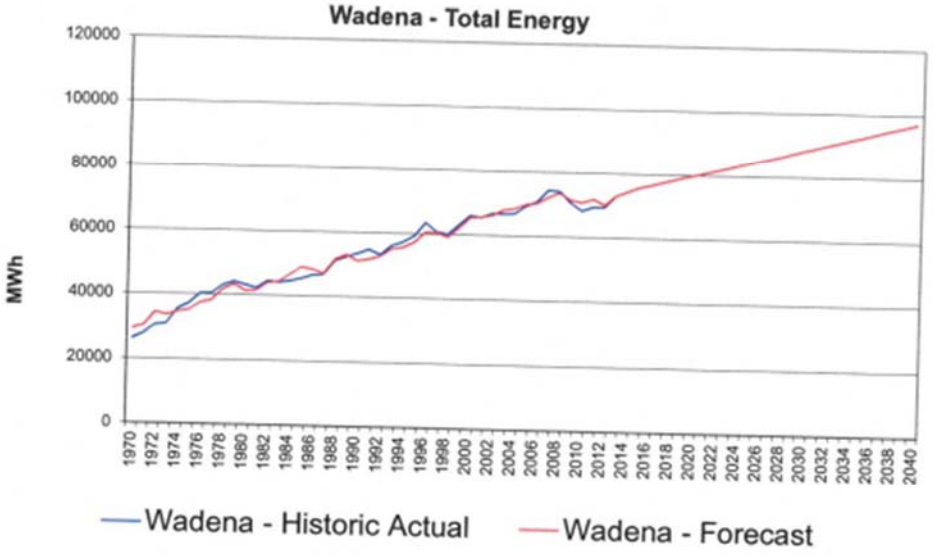
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Wadena_MN**
Dependent Variable:	**BaseData.Wadena**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

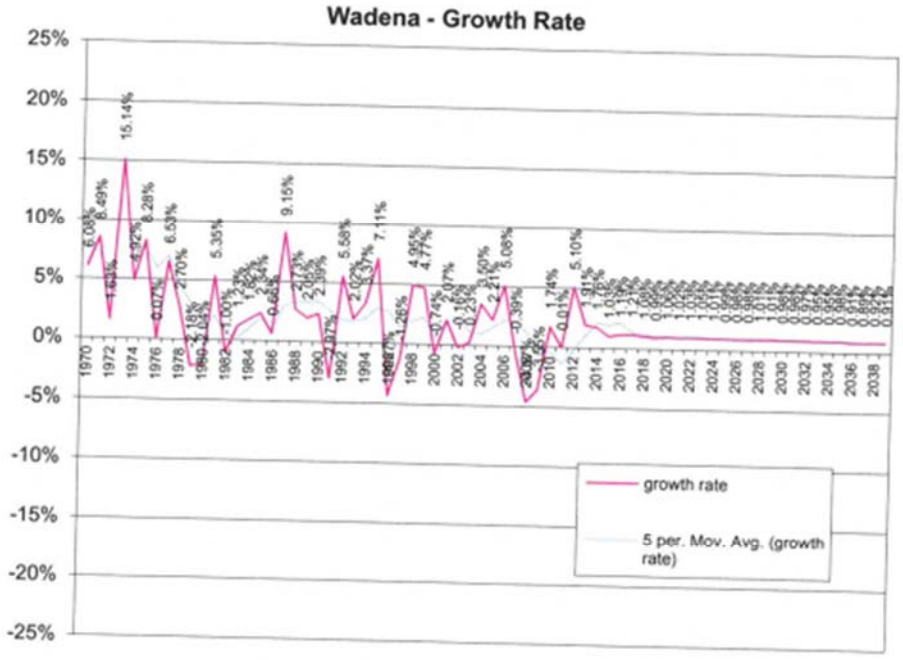
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-672987118.723	45235384.331	-14.877	0%
natl_econ.ln_grp	84486853.467	2450989.143	34.471	0%
alt_fuel_mn.ln_com_natgas	4837207.366	2507728.873	1.929	6%
station9.ln_hdd	34684729.996	9300434.828	3.729	0%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.983
Adjusted R-Squared	0.982
AIC	28.982
BIC	29.143
F-Statistic	795.665
Prob (F-Statistic)	0.000
Log-Likelihood	-711.95
Model Sum of Squares	8467667622180916
Sum of Squared Errors	145444119853984
Mean Squared Error	3547417557414.25
Std. Error of Regression	1883458.93
Mean Abs. Dev. (MAD)	1489345.31
Mean Abs. % Err. (MAPE)	3.23%
Durbin-Watson Statistic	0.602
Durbin-H Statistic	0.000
Ljung-Box Statistic	29.51
Prob (Ljung-Box)	0.000
Skewness	-0.299
Kurtosis	2.307
Jarque-Bera	1.573
Prob (Jarque-Bera)	0.455

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	84486853.467	6.947	10.796
alt_fuel_mn.ln_com_natgas	4837207.366	0.826	0.073
station9.ln_hdd	34684729.996	3.933	2.509


Wadena - Total Energy
MWh
120000
100000
80000
60000
40000
20000
0
Wadena - Historic Actual
Wadena - Forecast


Wadena - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Westbrook_MN**
Dependent Variable:	**BaseData.Westbrook**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-12501385.717	6318659.811	-1.978	5%
county11.ln_avg_inc	1965854.974	718651.823	2.735	1%
alt_fuel_mn.ln_com_natgas	1301143.347	499924.065	2.603	1%
station8.ln_tdd	3312060.720	1462140.536	2.265	3%
Loads_w_spot.Westbrook_Binary	1510788.691	184717.822	8.179	0%

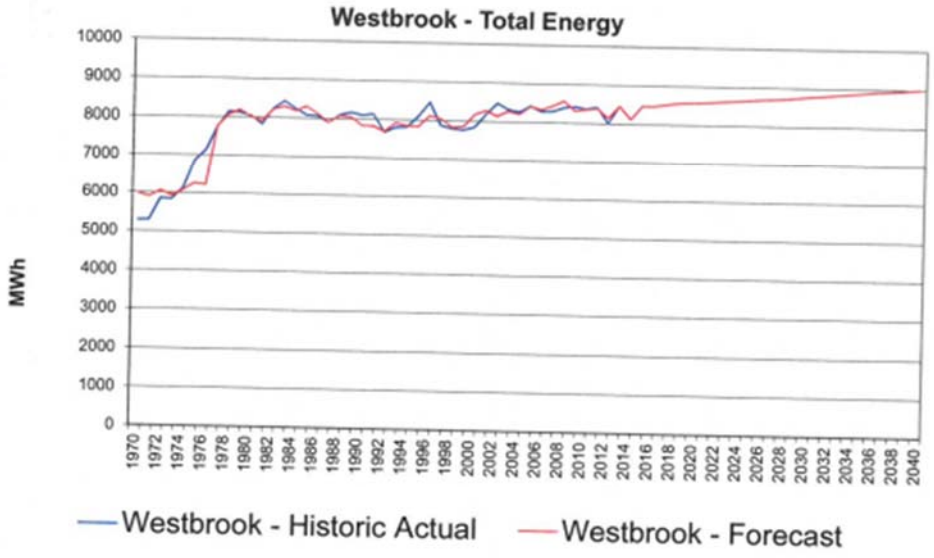
Model Statistics

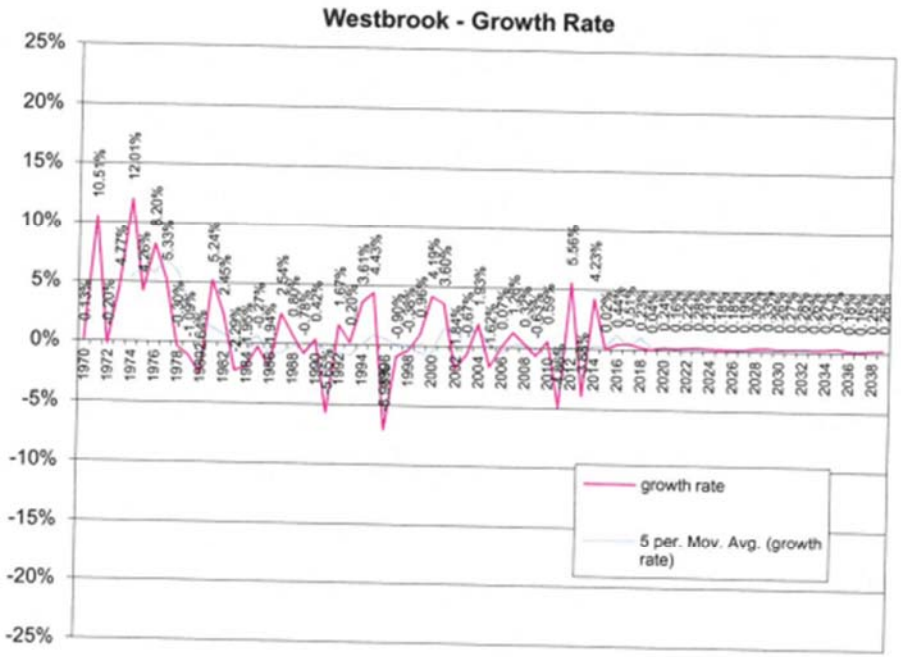
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	40
R-Squared	0.899
Adjusted R-Squared	0.888
AIC	25.174
BIC	25.375
F-Statistic	88.648
Prob (F-Statistic)	0.000
Log-Likelihood	-625.27
Model Sum of Squares	27372813554287
Sum of Squared Errors	3087800446662
Mean Squared Error	77195011166.54
Std. Error of Regression	277839.90
Mean Abs. Dev. (MAD)	170215.50
Mean Abs. % Err. (MAPE)	2.38%
Durbin-Watson Statistic	0.930
Durbin-H Statistic	0.000
Ljung-Box Statistic	20.22
Prob (Ljung-Box)	0.001
Skewness	0.634
Kurtosis	6.273
Jarque-Bera	23.098
Prob (Jarque-Bera)	0.000

Forecast Statistics

Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
county11.ln_avg_inc	1965854.974	2.528	0.636
alt_fuel_mn.ln_com_natgas	1301143.347	0.826	0.138
station8.ln_tdd	3312060.720	3.923	1.663
Loads_w_spot.Westbrook_Binary	1510788.691	0.844	0.163


Westbrook - Total Energy
MWh
Westbrook - Historic Actual
Westbrook - Forecast


Westbrook - Growth Rate
growth rate
5 per. Mov. Avg. (growth rate)

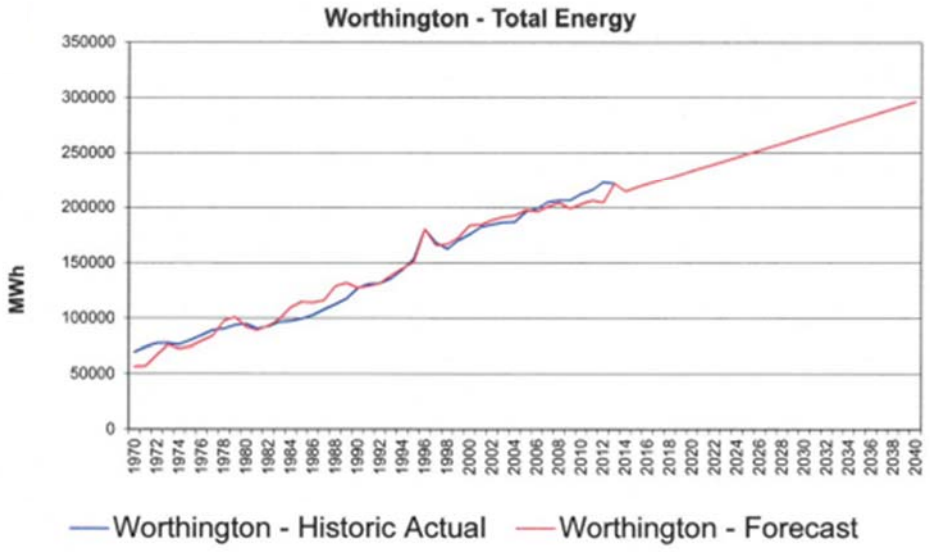
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Worthington_MN**
Dependent Variable:	**BaseData.Worthington**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1970:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

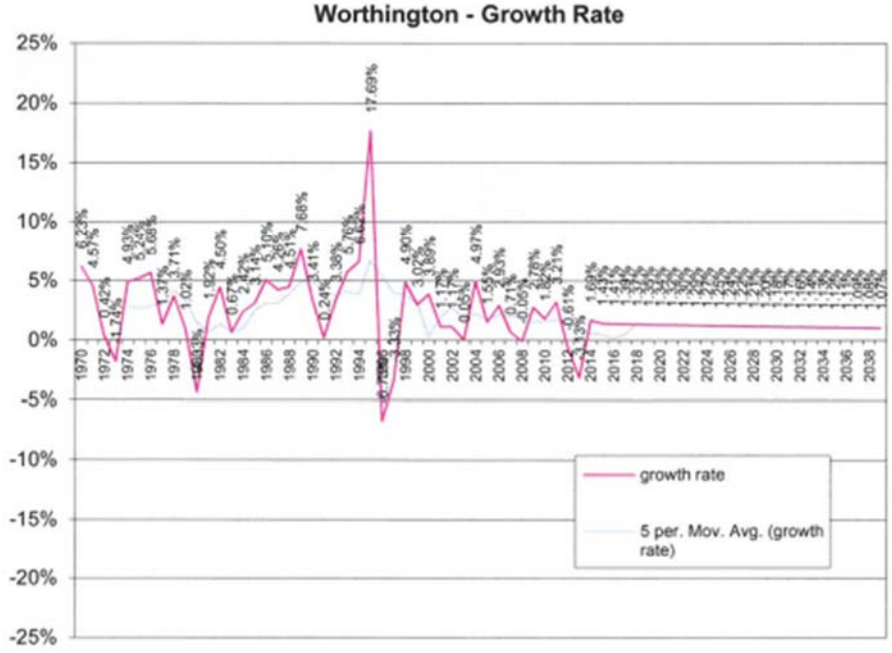
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-1791004914.488	191447333.578	-9.355	0%
Loads_w_spot.Worthington_Binary	19231640.703	8494362.287	2.264	3%
state_econ.ln_mn_grp	298631949.213	7619382.503	39.194	0%
station8.ln_tdd	95655445.830	44316056.879	2.158	4%

Model Statistics	
Iterations	1
Adjusted Observations	45
Deg. of Freedom for Error	41
R-Squared	0.977
Adjusted R-Squared	0.975
AIC	31.890
BIC	32.050
F-Statistic	571.874
Prob (F-Statistic)	0.000
Log-Likelihood	-777.37
Model Sum of Squares	111457788291652480
Sum of Squared Errors	2663624197091670
Mean Squared Error	64966443831504.13
Std. Error of Regression	8060176.41
Mean Abs. Dev. (MAD)	5917996.06
Mean Abs. % Err. (MAPE)	5.15%
Durbin-Watson Statistic	0.490
Durbin-H Statistic	0.000
Ljung-Box Statistic	46.54
Prob (Ljung-Box)	0.000
Skewness	0.060
Kurtosis	3.057
Jarque-Bera	0.033
Prob (Jarque-Bera)	0.984

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
Loads_w_spot.Worthington_Binary	19231640.703	0.022	0.003
state_econ.ln_mn_grp	298631949.213	5.212	11.031
station8.ln_tdd	95655445.830	3.923	2.660


Worthington - Total Energy
MWh
350000
300000
250000
200000
150000
100000
50000
0
Worthington - Historic Actual
Worthington - Forecast


Worthington - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

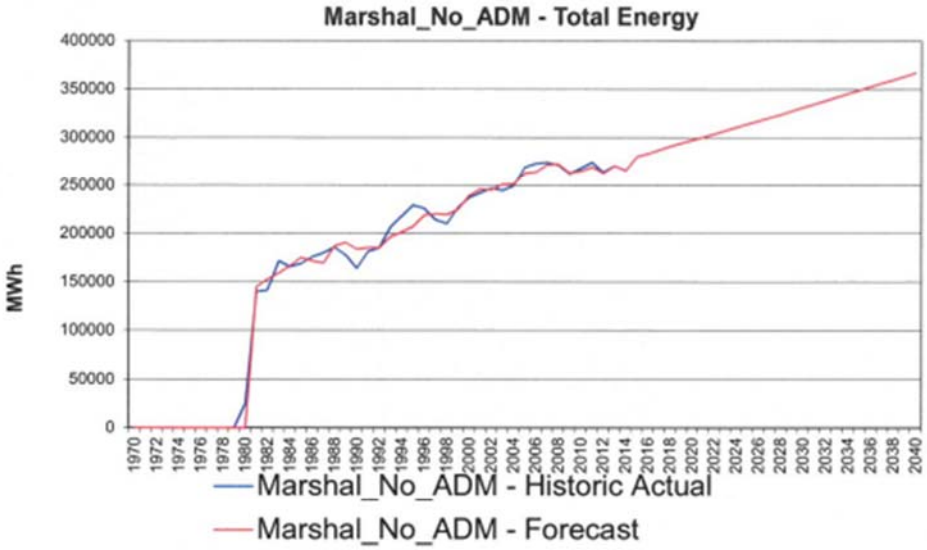
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Marshall_MN**
Dependent Variable:	**Loads_w_spot.Marshall_No_ADM**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1981:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

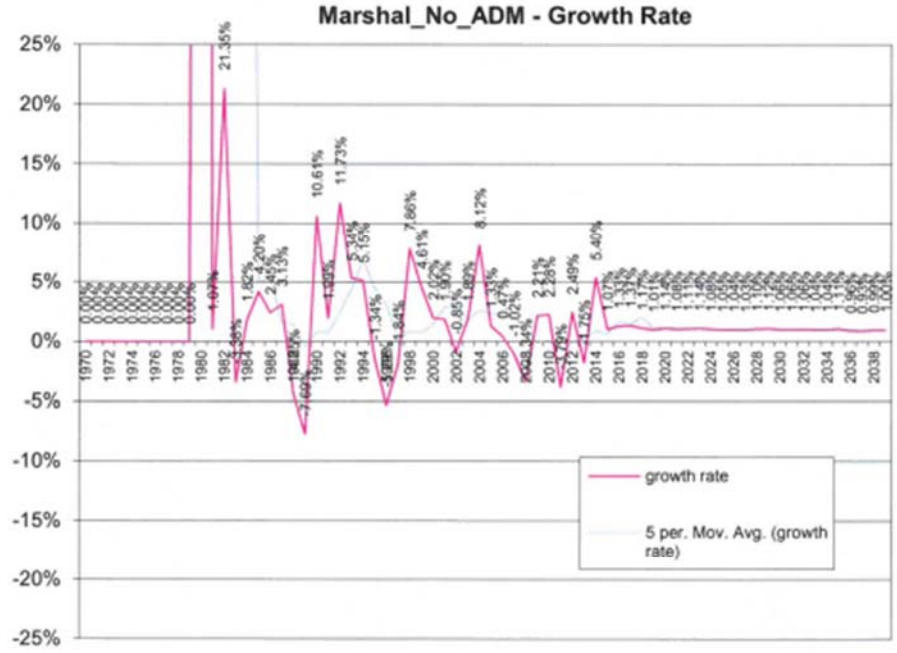
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-2172538948.955	93186366.823	-23.314	0%
natl_econ.ln_grp	331517572.129	13073187.542	25.359	0%
alt_fuel_mn.com_natgas	1554549.326	896409.439	1.734	9%
station4.tdd	6517.822	2787.574	2.338	3%

Model Statistics	
Iterations	1
Adjusted Observations	34
Deg. of Freedom for Error	30
R-Squared	0.958
Adjusted R-Squared	0.954
AIC	32.173
BIC	32.353
F-Statistic	230.918
Prob (F-Statistic)	0.000
Log-Likelihood	-591.19
Model Sum of Squares	58268530832914528
Sum of Squared Errors	2523340203257092
Mean Squared Error	84111340108569.72
Std. Error of Regression	9171223.48
Mean Abs. Dev. (MAD)	6653888.96
Mean Abs. % Err. (MAPE)	3.27%
Durbin-Watson Statistic	1.061
Durbin-H Statistic	0.000
Ljung-Box Statistic	17.06
Prob (Ljung-Box)	0.004
Skewness	0.271
Kurtosis	3.212
Jarque-Bera	0.479
Prob (Jarque-Bera)	0.787

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
natl_econ.ln_grp	331517572.129	7.016	10.562
alt_fuel_mn.com_natgas	1554549.326	7.890	0.056
station4.tdd	6517.822	8378.559	0.248


Marshal_No_ADM - Total Energy
MWh
Marshal_No_ADM - Historic Actual
Marshal_No_ADM - Forecast


Marshal_No_ADM - Growth Rate
growth rate
5 per. Mov. Avg. (growth rate)

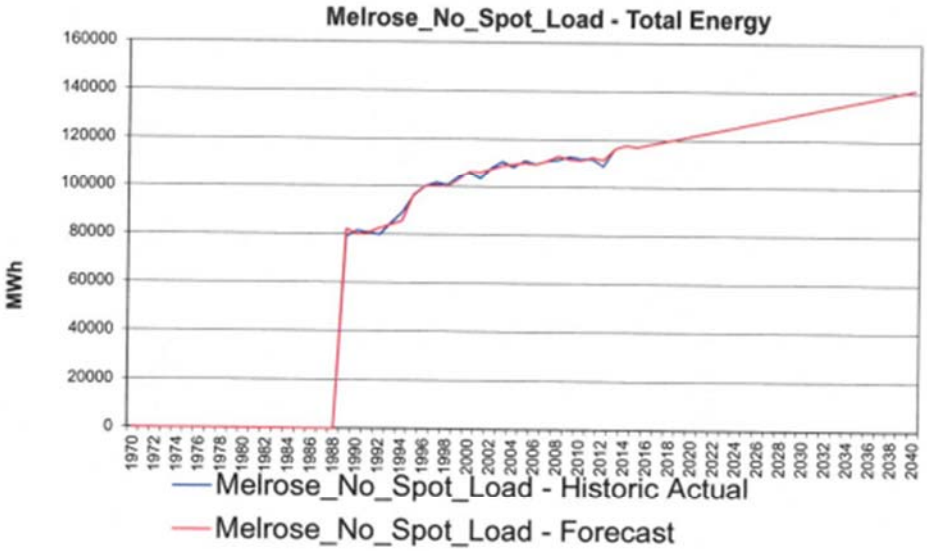
Project:	**E:\LTFC\2015\2015 Master File.NDM**
Model:	**Melrose_MN**
Dependent Variable:	**Loads_w_spot.Melrose_No_Spot**
Date:	**January 28, 2015**
Time:	**07:37 AM**
Estimation Begin Date:	**1989:1**
Estimation End Date:	**2014:1**
Forecast Period End Date:	**2040:1**

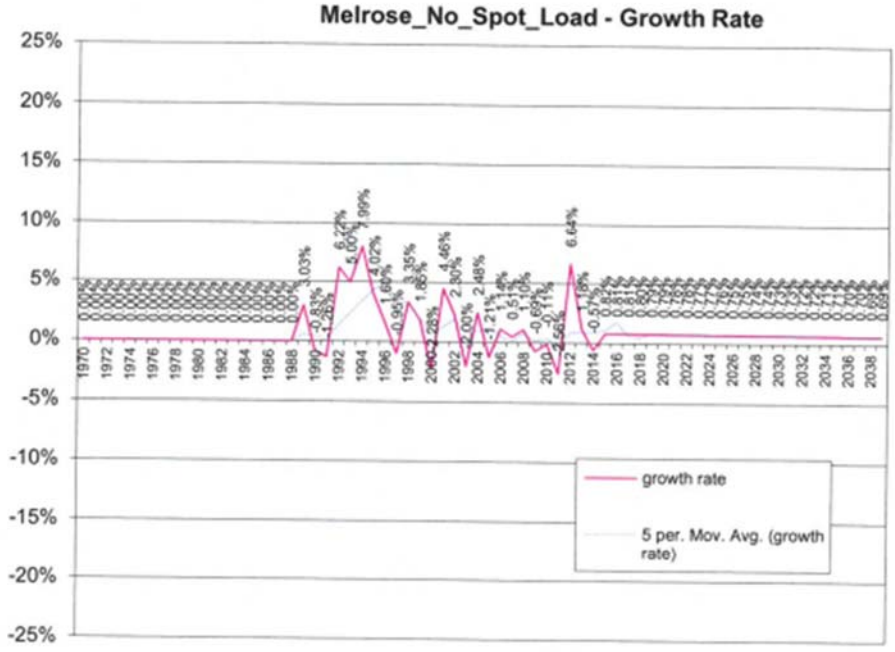
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-526525618.997	57986903.999	-9.080	0%
state_econ.ln_mn_grp	91857576.095	6146482.988	14.945	0%
station9.ln_hdd	33577740.122	10382373.231	3.234	0%
Loads_w_spot.Melrose_Binary	8968675.246	1358490.931	6.602	0%

Model Statistics	
Iterations	1
Adjusted Observations	26
Deg. of Freedom for Error	22
R-Squared	0.984
Adjusted R-Squared	0.982
AIC	28.772
BIC	28.966
F-Statistic	445.358
Prob (F-Statistic)	0.000
Log-Likelihood	-406.93
Model Sum of Squares	3633076359917102
Sum of Squared Errors	59822815126426
Mean Squared Error	2719218869383.00
Std. Error of Regression	1649005.42
Mean Abs. Dev. (MAD)	1177057.68
Mean Abs. % Err. (MAPE)	1.21%
Durbin-Watson Statistic	2.015
Durbin-H Statistic	0.000
Ljung-Box Statistic	10.59
Prob (Ljung-Box)	0.060
Skewness	-0.303
Kurtosis	2.849
Jarque-Bera	0.423
Prob (Jarque-Bera)	0.809

Forecast Statistics	
Forecast Observations	0
Mean Abs. Dev. (MAD)	0.00
Mean Abs. % Err. (MAPE)	0.00%
Avg. Forecast Error	0.00
Mean % Error	0.00%
Root Mean-Square Error	0.00
Theil's Inequality Coefficient	0.000
-- Bias Proportion	0.00%
-- Variance Proportion	0.00%
-- Covariance Proportion	0.00%

Variable	Coefficient	Mean	Elast
state_econ.ln_mn_grp	91857576.095	5.336	4.793
station9.ln_hdd	33577740.122	3.924	1.288
Loads_w_spot.Melrose_Binary	8968675.246	0.769	0.067


Melrose_No_Spot_Load - Total Energy
MWh
160000
140000
120000
100000
80000
60000
40000
20000
0
Melrose_No_Spot_Load - Historic Actual
Melrose_No_Spot_Load - Forecast


Melrose_No_Spot_Load - Growth Rate
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
growth rate
5 per. Mov. Avg. (growth rate)

Appendix G: Load Forecasts

This appendix presents this load forecasts for the MRES Members in Minnesota, along with the most recent six years of historic values. Both demand and energy are presented, in both monthly and seasonal reports for each Member.

Historic and Forecasted Monthly Loads for ADRIAN, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	1,224	1,746	-	2,970	645,765	891,000	-	1,536,765
	2	Hist.	1,055	1,746	-	2,801	483,190	811,000	-	1,294,190
	3	Hist.	867	1,690	-	2,557	476,071	744,000	-	1,220,071
	4	Hist.	702	1,397	-	2,099	270,331	710,000	-	980,331
	5	Hist.	1,159	1,397	-	2,556	450,104	623,000	-	1,073,104
	6	Hist.	1,264	1,402	-	2,666	376,540	711,000	-	1,087,540
	7	Hist.	1,234	1,572	-	2,806	563,850	739,000	-	1,302,850
	8	Hist.	1,488	1,641	-	3,129	644,146	746,000	-	1,390,146
	9	Hist.	553	1,641	-	2,194	349,194	671,000	-	1,020,194
	10	Hist.	879	1,426	-	2,305	424,029	664,000	-	1,088,029
	11	Hist.	1,490	1,447	-	2,937	522,676	704,000	-	1,226,676
	12	Hist.	1,241	1,572	-	2,813	718,403	825,000	-	1,543,403
2011	1	Hist.	1,173	1,746	-	2,919	674,496	891,000	-	1,565,496
	2	Hist.	1,279	1,746	-	3,025	506,097	811,000	-	1,317,097
	3	Hist.	1,029	1,690	-	2,719	568,321	744,000	-	1,312,321
	4	Hist.	862	1,397	-	2,259	373,698	710,000	-	1,083,698
	5	Hist.	800	1,397	-	2,197	382,899	623,000	-	1,005,899
	6	Hist.	1,398	1,402	-	2,800	364,860	711,000	-	1,075,860
	7	Hist.	1,643	1,572	-	3,215	708,315	739,000	-	1,447,315
	8	Hist.	1,449	1,641	-	3,090	502,828	746,000	-	1,248,828
	9	Hist.	1,177	1,641	-	2,818	345,650	671,000	-	1,016,650
	10	Hist.	770	1,426	-	2,196	400,965	664,000	-	1,064,965
	11	Hist.	902	1,447	-	2,349	476,132	704,000	-	1,180,132
	12	Hist.	1,177	1,572	-	2,749	582,165	825,000	-	1,407,165
2012	1	Hist.	1,110	1,746	-	2,856	548,829	891,000	-	1,439,829
	2	Hist.	1,079	1,746	-	2,825	445,369	840,000	-	1,285,369
	3	Hist.	697	1,690	-	2,387	357,211	744,000	-	1,101,211
	4	Hist.	742	1,397	-	2,139	281,131	710,000	-	991,131
	5	Hist.	723	1,397	-	2,120	377,841	623,000	-	1,000,841
	6	Hist.	1,458	1,402	-	2,860	446,490	711,000	-	1,157,490
	7	Hist.	1,581	1,572	-	3,153	757,430	739,000	-	1,496,430
	8	Hist.	1,333	1,641	-	2,974	460,249	746,000	-	1,206,249
	9	Hist.	1,060	1,641	-	2,701	339,117	671,000	-	1,010,117
	10	Hist.	770	1,426	-	2,196	442,385	664,000	-	1,106,385
	11	Hist.	1,077	1,447	-	2,524	487,551	704,000	-	1,191,551
	12	Hist.	1,151	1,572	-	2,723	593,681	825,000	-	1,418,681
2013	1	Hist.	1,169	1,746	-	2,915	626,341	891,000	-	1,517,341
	2	Hist.	1,218	1,746	-	2,964	515,376	811,000	-	1,326,376
	3	Hist.	950	1,690	-	2,640	602,427	744,000	-	1,346,427
	4	Hist.	966	1,397	-	2,363	446,378	710,000	-	1,156,378
	5	Hist.	687	1,397	-	2,084	389,773	623,000	-	1,012,773
	6	Hist.	1,136	1,402	-	2,538	344,337	711,000	-	1,055,337
	7	Hist.	1,354	1,572	-	2,926	557,701	739,000	-	1,296,701
	8	Hist.	1,472	1,641	-	3,113	515,993	746,000	-	1,261,993
	9	Hist.	1,206	1,641	-	2,847	406,083	671,000	-	1,077,083
	10	Hist.	945	1,426	-	2,371	429,658	664,000	-	1,093,658
	11	Hist.	1,175	1,447	-	2,622	576,174	704,000	-	1,280,174
	12	Hist.	1,467	1,572	-	3,039	776,683	825,000	-	1,601,683
2014	1	Hist.	1,370	1,746	-	3,116	761,000	891,000	-	1,652,000
	2	Hist.	1,385	1,746	-	3,131	682,624	811,000	-	1,493,624
	3	Hist.	1,303	1,690	-	2,993	653,588	744,000	-	1,397,588
	4	Hist.	1,080	1,397	-	2,477	394,424	710,000	-	1,104,424
	5	Hist.	866	1,397	-	2,263	408,280	623,000	-	1,031,280
	6	Hist.	1,113	1,402	-	2,515	357,866	711,000	-	1,068,866
	7	Hist.	1,092	1,572	-	2,664	423,170	739,000	-	1,162,170
	8	Hist.	1,208	1,641	-	2,849	459,384	746,000	-	1,205,384
	9	Hist.	919	1,641	-	2,560	340,730	671,000	-	1,011,730
	10	Hist.	768	1,426	-	2,194	371,026	664,000	-	1,035,026
	11	Hist.	1,254	1,447	-	2,701	625,808	704,000	-	1,329,808
	12	Hist.	1,314	1,572	-	2,886	615,555	825,000	-	1,440,555
2015	1	Hist.	1,282	1,746	-	3,028	599,812	891,000	-	1,490,812
	2	Hist.	1,129	1,746	-	2,875	566,986	811,000	-	1,377,986
	3	Hist.	1,083	1,690	-	2,773	471,101	744,000	-	1,215,101
	4	Hist.	847	1,397	-	2,244	280,620	710,000	-	990,620
	5	Hist.	595	1,397	-	1,992	322,079	623,000	-	945,079
	6	Hist.	1,118	1,402	-	2,520	350,605	711,000	-	1,061,605
	7	Hist.	1,374	1,572	-	2,946	553,832	739,000	-	1,292,832
	8	Hist.	1,090	1,641	-	2,731	421,375	746,000	-	1,167,375
	9	Hist.	1,329	1,641	-	2,970	439,217	671,000	-	1,110,217
	10	FC	960	1,426	-	2,386	485,709	664,000	-	1,149,709
	11	FC	1,321	1,447	-	2,768	594,146	704,000	-	1,298,146
	12	FC	1,366	1,572	-	2,938	718,871	825,000	-	1,543,871

Historic and Forecasted Monthly Loads for ADRIAN, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	1,244	1,746	-	2,990	653,560	891,000	-	1,544,560
	2	FC	1,047	1,746	-	2,793	478,512	839,964	-	1,318,476
	3	FC	1,078	1,690	-	2,768	562,540	744,000	-	1,306,540
	4	FC	902	1,397	-	2,299	356,302	710,000	-	1,066,302
	5	FC	732	1,397	-	2,129	375,933	623,000	-	998,933
	6	FC	1,277	1,402	-	2,679	380,322	711,000	-	1,091,322
	7	FC	1,323	1,572	-	2,895	574,218	739,000	-	1,313,218
	8	FC	1,369	1,641	-	3,010	507,734	746,000	-	1,253,734
	9	FC	1,000	1,641	-	2,641	370,860	671,000	-	1,041,860
	10	FC	885	1,426	-	2,311	442,696	664,000	-	1,106,696
	11	FC	1,187	1,447	-	2,634	545,564	704,000	-	1,249,564
	12	FC	1,308	1,572	-	2,880	676,703	825,000	-	1,501,703
2017	1	FC	1,270	1,746	-	3,016	667,370	891,000	-	1,558,370
	2	FC	1,073	1,746	-	2,819	520,213	811,000	-	1,331,213
	3	FC	1,103	1,690	-	2,793	574,219	744,000	-	1,318,219
	4	FC	923	1,397	-	2,320	365,863	710,000	-	1,075,863
	5	FC	751	1,397	-	2,148	384,877	623,000	-	1,007,877
	6	FC	1,300	1,402	-	2,702	390,103	711,000	-	1,101,103
	7	FC	1,349	1,572	-	2,921	585,955	739,000	-	1,324,955
	8	FC	1,396	1,641	-	3,037	518,949	746,000	-	1,264,949
	9	FC	1,023	1,641	-	2,664	380,195	671,000	-	1,051,195
	10	FC	906	1,426	-	2,332	452,598	664,000	-	1,116,598
	11	FC	1,210	1,447	-	2,657	556,731	704,000	-	1,260,731
	12	FC	1,333	1,572	-	2,905	690,118	825,000	-	1,515,118
2018	1	FC	1,298	1,746	-	3,044	682,142	891,000	-	1,573,142
	2	FC	1,100	1,746	-	2,846	532,846	811,000	-	1,343,846
	3	FC	1,130	1,690	-	2,820	586,712	744,000	-	1,330,712
	4	FC	944	1,397	-	2,341	376,089	710,000	-	1,086,089
	5	FC	772	1,397	-	2,169	394,445	623,000	-	1,017,445
	6	FC	1,326	1,402	-	2,728	400,565	711,000	-	1,111,565
	7	FC	1,376	1,572	-	2,948	598,508	739,000	-	1,337,508
	8	FC	1,425	1,641	-	3,066	530,946	746,000	-	1,276,946
	9	FC	1,049	1,641	-	2,690	390,180	671,000	-	1,061,180
	10	FC	929	1,426	-	2,355	463,190	664,000	-	1,127,190
	11	FC	1,235	1,447	-	2,682	568,676	704,000	-	1,272,676
	12	FC	1,360	1,572	-	2,932	704,468	825,000	-	1,529,468
2019	1	FC	1,328	1,746	-	3,074	697,513	891,000	-	1,588,513
	2	FC	1,128	1,746	-	2,874	545,993	811,000	-	1,356,993
	3	FC	1,158	1,690	-	2,848	599,712	744,000	-	1,343,712
	4	FC	967	1,397	-	2,364	386,731	710,000	-	1,096,731
	5	FC	793	1,397	-	2,190	404,401	623,000	-	1,027,401
	6	FC	1,353	1,402	-	2,755	411,450	711,000	-	1,122,450
	7	FC	1,405	1,572	-	2,977	611,571	739,000	-	1,350,571
	8	FC	1,455	1,641	-	3,096	543,431	746,000	-	1,289,431
	9	FC	1,074	1,641	-	2,715	400,571	671,000	-	1,071,571
	10	FC	952	1,426	-	2,378	474,212	664,000	-	1,138,212
	11	FC	1,261	1,447	-	2,708	581,107	704,000	-	1,285,107
	12	FC	1,389	1,572	-	2,961	719,400	825,000	-	1,544,400
2020	1	FC	1,358	1,746	-	3,104	712,834	891,000	-	1,603,834
	2	FC	1,155	1,746	-	2,901	529,205	839,964	-	1,369,169
	3	FC	1,186	1,690	-	2,876	612,668	744,000	-	1,356,668
	4	FC	990	1,397	-	2,387	397,338	710,000	-	1,107,338
	5	FC	814	1,397	-	2,211	414,324	623,000	-	1,037,324
	6	FC	1,379	1,402	-	2,781	422,302	711,000	-	1,133,302
	7	FC	1,433	1,572	-	3,005	624,592	739,000	-	1,363,592
	8	FC	1,485	1,641	-	3,126	555,874	746,000	-	1,301,874
	9	FC	1,101	1,641	-	2,742	410,927	671,000	-	1,081,927
	10	FC	974	1,426	-	2,400	485,198	664,000	-	1,149,198
	11	FC	1,287	1,447	-	2,734	593,497	704,000	-	1,297,497
	12	FC	1,418	1,572	-	2,990	734,283	825,000	-	1,559,283
2021	1	FC	1,406	1,729	-	3,135	737,462	882,000	-	1,619,462
	2	FC	1,200	1,729	-	2,929	580,471	803,000	-	1,383,471
	3	FC	1,230	1,673	-	2,903	632,866	737,000	-	1,369,866
	4	FC	1,027	1,383	-	2,410	415,181	703,000	-	1,118,181
	5	FC	849	1,383	-	2,232	430,451	617,000	-	1,047,451
	6	FC	1,420	1,388	-	2,808	440,389	704,000	-	1,144,389
	7	FC	1,479	1,556	-	3,035	644,852	732,000	-	1,376,852
	8	FC	1,531	1,625	-	3,156	575,557	739,000	-	1,314,557
	9	FC	1,143	1,625	-	2,768	428,519	664,000	-	1,092,519
	10	FC	1,012	1,412	-	2,424	503,421	657,000	-	1,160,421
	11	FC	1,328	1,433	-	2,761	613,126	697,000	-	1,310,126
	12	FC	1,462	1,556	-	3,018	757,439	817,000	-	1,574,439

Historic and Forecasted Seasonal Loads for ADRIAN, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	1,488	1,641	-	3,129	2,807,863	4,154,000	-	6,961,863
S2011	Hist.	1,643	1,641	-	3,215	2,705,517	4,154,000	-	6,859,517
S2012	Hist.	1,581	1,641	-	3,153	2,823,512	4,154,000	-	6,977,512
S2013	Hist.	1,472	1,641	-	3,113	2,643,545	4,154,000	-	6,797,545
S2014	Hist.	1,208	1,641	-	2,849	2,360,456	4,154,000	-	6,514,456
S2015	FC	1,374	1,641	-	2,970	2,572,817	4,154,000	-	6,726,817
S2016	FC	1,369	1,641	-	3,010	2,651,763	4,154,000	-	6,805,763
S2017	FC	1,396	1,641	-	3,037	2,712,677	4,154,000	-	6,866,677
S2018	FC	1,425	1,641	-	3,066	2,777,834	4,154,000	-	6,931,834
S2019	FC	1,455	1,641	-	3,096	2,845,636	4,154,000	-	6,999,636
S2020	FC	1,485	1,641	-	3,126	2,913,217	4,154,000	-	7,067,217
S2021	FC	1,531	1,625	-	3,156	3,023,189	4,113,000	-	7,136,189
W2009-10	Hist.	1,471	1,746	-	3,043	3,096,793	4,685,000	-	7,781,793
W2010-11	Hist.	1,490	1,746	-	3,025	3,363,691	4,685,000	-	8,048,691
W2011-12	Hist.	1,177	1,746	-	2,856	2,690,837	4,714,000	-	7,404,837
W2012-13	Hist.	1,218	1,746	-	2,964	3,271,754	4,685,000	-	7,956,754
W2013-14	Hist.	1,467	1,746	-	3,131	3,844,493	4,685,000	-	8,529,493
W2014-15	Hist.	1,314	1,746	-	3,028	3,159,882	4,685,000	-	7,844,882
W2015-16	FC	1,366	1,746	-	2,990	3,363,931	4,713,964	-	8,077,895
W2016-17	FC	1,308	1,746	-	3,016	3,349,932	4,685,000	-	8,034,932
W2017-18	FC	1,333	1,746	-	3,044	3,424,638	4,685,000	-	8,109,638
W2018-19	FC	1,360	1,746	-	3,074	3,503,093	4,685,000	-	8,188,093
W2019-20	FC	1,389	1,746	-	3,104	3,552,552	4,713,964	-	8,266,516
W2020-21	FC	1,418	1,729	-	3,135	3,693,760	4,654,000	-	8,347,760

Historic and Forecasted Annual Loads for ADRIAN, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	1,490	1,746	-	3,129	5,924,299	8,839,000	-	14,763,299
2011	Hist.	1,643	1,746	-	3,215	5,886,426	8,839,000	-	14,725,426
2012	Hist.	1,581	1,746	-	3,153	5,537,284	8,868,000	-	14,405,284
2013	Hist.	1,472	1,746	-	3,113	6,186,924	8,839,000	-	15,025,924
2014	Hist.	1,385	1,746	-	3,131	6,093,455	8,839,000	-	14,932,455
2015	FC	1,374	1,746	-	3,028	5,804,353	8,839,000	-	14,643,353
2016	FC	1,369	1,746	-	3,010	5,924,944	8,867,964	-	14,792,908
2017	FC	1,396	1,746	-	3,037	6,087,191	8,839,000	-	14,926,191
2018	FC	1,425	1,746	-	3,066	6,228,767	8,839,000	-	15,067,767
2019	FC	1,455	1,746	-	3,096	6,376,092	8,839,000	-	15,215,092
2020	FC	1,485	1,746	-	3,126	6,493,042	8,867,964	-	15,361,006
2021	FC	1,531	1,729	-	3,156	6,759,734	8,752,000	-	15,511,734

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for ALEXANDRIA, MN

Year	Month	Historic/ Forecast	Demand (kW)				Energy (kWh)			
			MRES	WAPA	Other	Total	MRES	WAPA	Other	Total
2010	1	Hist.	29,731	16,366	-	46,097	17,816,358	8,972,000	-	26,788,358
	2	Hist.	28,369	15,898	-	44,267	15,050,603	8,559,000	-	23,609,603
	3	Hist.	25,223	15,960	-	41,183	16,166,450	7,760,000	-	23,926,450
	4	Hist.	23,858	14,464	-	38,322	13,844,059	7,923,000	-	21,767,059
	5	Hist.	33,471	14,437	-	47,908	16,265,618	7,328,000	-	23,593,618
	6	Hist.	34,653	16,238	-	50,891	16,706,916	7,464,000	-	24,170,916
	7	Hist.	37,367	14,988	-	52,355	19,795,172	7,538,000	-	27,333,172
	8	Hist.	40,171	14,940	-	55,111	19,198,718	8,093,000	-	27,291,718
	9	Hist.	28,221	15,444	-	43,665	14,042,395	7,868,000	-	21,910,395
	10	Hist.	25,242	16,471	-	41,713	14,812,600	8,251,000	-	23,063,600
	11	Hist.	29,920	14,739	-	44,659	15,720,814	8,055,000	-	23,775,814
	12	Hist.	30,252	15,380	-	45,632	18,558,671	8,468,000	-	27,026,671
2011	1	Hist.	28,982	16,366	-	45,348	18,468,312	8,972,000	-	27,440,312
	2	Hist.	29,739	15,898	-	45,637	15,640,550	8,559,000	-	24,199,550
	3	Hist.	28,402	15,960	-	44,362	17,539,355	7,760,000	-	25,299,355
	4	Hist.	24,965	14,464	-	39,429	14,431,536	7,923,000	-	22,354,536
	5	Hist.	26,497	14,437	-	40,934	15,466,480	7,328,000	-	22,794,480
	6	Hist.	40,832	16,238	-	57,070	16,863,469	7,464,000	-	24,327,469
	7	Hist.	45,530	14,988	-	60,518	22,418,465	7,538,000	-	29,956,465
	8	Hist.	41,196	14,940	-	56,136	19,650,546	8,093,000	-	27,743,546
	9	Hist.	37,574	15,444	-	53,018	15,648,584	7,868,000	-	23,516,584
	10	Hist.	27,252	16,471	-	43,723	15,277,166	8,251,000	-	23,528,166
	11	Hist.	28,252	14,739	-	42,991	15,664,961	8,055,000	-	23,719,961
	12	Hist.	30,384	15,380	-	45,764	17,568,504	8,468,000	-	26,036,504
2012	1	Hist.	31,040	16,366	-	47,406	17,672,328	8,972,000	-	26,644,328
	2	Hist.	28,495	15,898	-	44,393	15,452,266	8,865,000	-	24,317,266
	3	Hist.	24,504	15,960	-	40,464	16,291,098	7,760,000	-	24,051,098
	4	Hist.	25,051	14,464	-	39,515	14,336,982	7,923,000	-	22,259,982
	5	Hist.	31,759	14,437	-	46,196	16,274,000	7,328,000	-	23,602,000
	6	Hist.	37,667	16,238	-	53,905	18,014,288	7,464,000	-	25,478,288
	7	Hist.	46,033	14,988	-	61,021	23,561,250	7,538,000	-	31,099,250
	8	Hist.	43,064	14,940	-	58,004	19,110,414	8,093,000	-	27,203,414
	9	Hist.	33,525	15,444	-	48,969	15,510,152	7,868,000	-	23,378,152
	10	Hist.	23,410	16,471	-	39,881	15,761,678	8,251,000	-	24,012,678
	11	Hist.	29,066	14,739	-	43,805	16,069,236	8,055,000	-	24,124,236
	12	Hist.	30,423	15,380	-	45,803	18,237,592	8,468,000	-	26,705,592
2013	1	Hist.	32,563	16,366	-	48,929	19,068,184	8,972,000	-	28,040,184
	2	Hist.	30,421	15,898	-	46,319	16,136,598	8,559,000	-	24,695,598
	3	Hist.	27,797	15,960	-	43,757	18,097,203	7,760,000	-	25,857,203
	4	Hist.	27,300	14,464	-	41,764	15,914,942	7,923,000	-	23,837,942
	5	Hist.	29,969	14,437	-	44,406	16,423,968	7,328,000	-	23,751,968
	6	Hist.	35,053	16,238	-	51,291	17,137,552	7,464,000	-	24,601,552
	7	Hist.	44,330	14,988	-	59,318	20,868,212	7,538,000	-	28,406,212
	8	Hist.	46,012	14,940	-	60,952	19,985,090	8,093,000	-	28,078,090
	9	Hist.	36,575	15,444	-	52,019	16,317,672	7,868,000	-	24,185,672
	10	Hist.	24,784	16,471	-	41,255	15,992,398	8,251,000	-	24,243,398
	11	Hist.	29,735	14,739	-	44,474	16,574,966	8,055,000	-	24,629,966
	12	Hist.	34,220	15,380	-	49,600	20,175,640	8,468,000	-	28,643,640
2014	1	Hist.	33,792	16,366	-	50,158	20,106,424	8,972,000	-	29,078,424
	2	Hist.	30,884	15,898	-	46,782	17,440,166	8,559,000	-	25,999,166
	3	Hist.	29,216	15,960	-	45,176	18,551,536	7,760,000	-	26,311,536
	4	Hist.	28,461	14,464	-	42,925	15,499,646	7,923,000	-	23,422,646
	5	Hist.	33,986	14,437	-	48,423	16,735,440	7,328,000	-	24,063,440
	6	Hist.	32,159	16,238	-	48,397	17,852,784	7,464,000	-	25,316,784
	7	Hist.	45,109	14,988	-	60,097	19,518,500	7,538,000	-	27,056,500
	8	Hist.	37,101	14,940	-	52,041	19,062,210	8,093,000	-	27,155,210
	9	Hist.	30,697	15,444	-	46,141	15,833,160	7,868,000	-	23,701,160
	10	Hist.	23,907	16,471	-	40,378	15,228,035	8,251,000	-	23,479,035
	11	Hist.	31,360	14,739	-	46,099	17,324,806	8,055,000	-	25,379,806
	12	Hist.	31,802	15,380	-	47,182	18,491,384	8,468,000	-	26,959,384
2015	1	Hist.	31,725	16,366	-	48,091	18,631,315	8,972,000	-	27,603,315
	2	Hist.	32,151	15,898	-	48,049	17,219,746	8,559,000	-	25,778,746
	3	Hist.	28,787	15,960	-	44,747	17,143,524	7,760,000	-	24,903,524
	4	Hist.	26,577	14,464	-	41,041	14,536,116	7,923,000	-	22,459,116
	5	Hist.	29,128	14,437	-	43,565	15,499,923	7,328,000	-	22,827,923
	6	Hist.	35,497	16,238	-	51,735	17,561,506	7,464,000	-	25,025,506
	7	Hist.	42,556	14,988	-	57,544	21,036,221	7,538,000	-	28,574,221
	8	Hist.	39,761	14,940	-	54,701	18,596,314	8,093,000	-	26,689,314
	9	Hist.	41,168	15,444	-	56,612	16,957,957	7,868,000	-	24,825,957
	10	FC	27,034	16,471	-	43,505	16,668,028	8,251,000	-	24,919,028
	11	FC	31,361	14,739	-	46,100	17,267,412	8,055,000	-	25,322,412
	12	FC	33,993	15,380	-	49,373	20,031,252	8,468,000	-	28,499,252

Historic and Forecasted Monthly Loads for ALEXANDRIA, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	33,690	16,366	-	50,056	19,890,811	8,972,000	-	28,862,811
	2	FC	30,408	15,898	-	46,306	16,771,327	8,864,678	-	25,636,005
	3	FC	29,778	15,960	-	45,738	18,542,694	7,760,000	-	26,302,694
	4	FC	28,485	14,464	-	42,949	15,906,910	7,923,000	-	23,829,910
	5	FC	32,426	14,437	-	46,863	17,156,625	7,328,000	-	24,484,625
	6	FC	38,157	16,238	-	54,395	18,332,811	7,464,000	-	25,796,811
	7	FC	43,177	14,988	-	58,165	20,969,333	7,538,000	-	28,507,333
	8	FC	41,809	14,940	-	56,749	19,511,516	8,093,000	-	27,604,516
	9	FC	35,449	15,444	-	50,893	16,464,923	7,868,000	-	24,332,923
	10	FC	27,810	16,471	-	44,281	16,844,981	8,251,000	-	25,095,981
	11	FC	32,741	14,739	-	47,480	17,722,958	8,055,000	-	25,777,958
	12	FC	34,791	15,380	-	50,171	20,297,271	8,468,000	-	28,765,271
2017	1	FC	35,365	16,366	-	51,731	20,683,648	8,972,000	-	29,655,648
	2	FC	32,035	15,898	-	47,933	17,811,318	8,559,000	-	26,370,318
	3	FC	30,883	15,960	-	46,843	19,072,153	7,760,000	-	26,832,153
	4	FC	29,553	14,464	-	44,017	16,398,809	7,923,000	-	24,321,809
	5	FC	33,544	14,437	-	47,981	17,662,798	7,328,000	-	24,990,798
	6	FC	39,371	16,238	-	55,609	18,849,526	7,464,000	-	26,313,526
	7	FC	44,438	14,988	-	59,426	21,526,725	7,538,000	-	29,064,725
	8	FC	42,536	14,940	-	57,476	19,865,706	8,093,000	-	27,958,706
	9	FC	36,102	15,444	-	51,546	16,777,435	7,868,000	-	24,645,435
	10	FC	28,380	16,471	-	44,851	17,167,348	8,251,000	-	25,418,348
	11	FC	33,351	14,739	-	48,090	18,053,914	8,055,000	-	26,108,914
	12	FC	35,435	15,380	-	50,815	20,666,368	8,468,000	-	29,134,368
2018	1	FC	36,040	16,366	-	52,406	21,069,915	8,972,000	-	30,041,915
	2	FC	32,660	15,898	-	48,558	18,155,032	8,559,000	-	26,714,032
	3	FC	31,494	15,960	-	47,454	19,421,495	7,760,000	-	27,181,495
	4	FC	30,127	14,464	-	44,591	16,715,834	7,923,000	-	24,638,834
	5	FC	34,168	14,437	-	48,605	17,988,208	7,328,000	-	25,316,208
	6	FC	40,095	16,238	-	56,333	19,192,057	7,464,000	-	26,656,057
	7	FC	45,211	14,988	-	60,199	21,904,777	7,538,000	-	29,442,777
	8	FC	43,284	14,940	-	58,224	20,229,718	8,093,000	-	28,322,718
	9	FC	36,774	15,444	-	52,218	17,098,613	7,868,000	-	24,966,613
	10	FC	28,965	16,471	-	45,436	17,498,655	8,251,000	-	25,749,655
	11	FC	33,978	14,739	-	48,717	18,394,048	8,055,000	-	26,449,048
	12	FC	36,096	15,380	-	51,476	21,045,701	8,468,000	-	29,513,701
2019	1	FC	36,728	16,366	-	53,094	21,464,805	8,972,000	-	30,436,805
	2	FC	33,299	15,898	-	49,197	18,506,422	8,559,000	-	27,065,422
	3	FC	32,118	15,960	-	48,078	19,778,638	7,760,000	-	27,538,638
	4	FC	30,713	14,464	-	45,177	17,039,939	7,923,000	-	24,962,939
	5	FC	34,807	14,437	-	49,244	18,320,883	7,328,000	-	25,648,883
	6	FC	40,835	16,238	-	57,073	19,542,235	7,464,000	-	27,006,235
	7	FC	46,001	14,988	-	60,989	22,291,269	7,538,000	-	29,829,269
	8	FC	44,049	14,940	-	58,989	20,601,859	8,093,000	-	28,694,859
	9	FC	37,461	15,444	-	52,905	17,426,962	7,868,000	-	25,294,962
	10	FC	29,564	16,471	-	46,035	17,837,359	8,251,000	-	26,088,359
	11	FC	34,617	14,739	-	49,356	18,741,777	8,055,000	-	26,796,777
	12	FC	36,773	15,380	-	52,153	21,433,505	8,468,000	-	29,901,505
2020	1	FC	37,432	16,366	-	53,798	21,867,917	8,972,000	-	30,839,917
	2	FC	33,951	15,898	-	49,849	18,549,665	8,864,678	-	27,414,343
	3	FC	32,756	15,960	-	48,716	20,143,215	7,760,000	-	27,903,215
	4	FC	31,313	14,464	-	45,777	17,370,790	7,923,000	-	25,293,790
	5	FC	35,460	14,437	-	49,897	18,660,485	7,328,000	-	25,988,485
	6	FC	41,592	16,238	-	57,830	19,899,702	7,464,000	-	27,363,702
	7	FC	46,807	14,988	-	61,795	22,685,807	7,538,000	-	30,223,807
	8	FC	44,829	14,940	-	59,769	20,981,746	8,093,000	-	29,074,746
	9	FC	38,161	15,444	-	53,605	17,762,146	7,868,000	-	25,630,146
	10	FC	30,175	16,471	-	46,646	18,183,113	8,251,000	-	26,434,113
	11	FC	35,272	14,739	-	50,011	19,096,745	8,055,000	-	27,151,745
	12	FC	37,464	15,380	-	52,844	21,829,381	8,468,000	-	30,297,381
2021	1	FC	38,317	16,202	-	54,519	22,370,932	8,882,000	-	31,252,932
	2	FC	34,778	15,739	-	50,517	19,318,832	8,473,000	-	27,791,832
	3	FC	33,569	15,800	-	49,369	20,594,641	7,682,000	-	28,276,641
	4	FC	32,071	14,319	-	46,390	17,788,935	7,844,000	-	25,632,935
	5	FC	36,272	14,293	-	50,565	19,081,340	7,255,000	-	26,336,340
	6	FC	42,528	16,076	-	58,604	20,340,798	7,389,000	-	27,729,798
	7	FC	47,783	14,838	-	62,621	23,164,621	7,463,000	-	30,627,621
	8	FC	45,776	14,791	-	60,567	21,451,846	8,012,000	-	29,463,846
	9	FC	39,032	15,290	-	54,322	18,184,700	7,789,000	-	25,973,700
	10	FC	30,966	16,306	-	47,272	18,620,550	8,168,000	-	26,788,550
	11	FC	36,088	14,592	-	50,680	19,541,490	7,974,000	-	27,515,490
	12	FC	38,325	15,226	-	53,551	22,319,876	8,383,000	-	30,702,876

Historic and Forecasted Seasonal Loads for ALEXANDRIA, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	40,171	16,471	-	55,111	100,821,419	46,542,000	-	147,363,419
S2011	Hist.	45,530	16,471	-	60,518	105,324,710	46,542,000	-	151,866,710
S2012	Hist.	46,033	16,471	-	61,021	108,231,782	46,542,000	-	154,773,782
S2013	Hist.	46,012	16,471	-	60,952	106,724,892	46,542,000	-	153,266,892
S2014	Hist.	45,109	16,471	-	60,097	104,230,129	46,542,000	-	150,772,129
S2015	FC	42,556	16,471	-	57,544	106,319,949	46,542,000	-	152,861,949
S2016	FC	43,177	16,471	-	58,165	109,280,189	46,542,000	-	155,822,189
S2017	FC	44,438	16,471	-	59,426	111,849,538	46,542,000	-	158,391,538
S2018	FC	45,211	16,471	-	60,199	113,912,028	46,542,000	-	160,454,028
S2019	FC	46,001	16,471	-	60,989	116,020,567	46,542,000	-	162,562,567
S2020	FC	46,807	16,471	-	61,795	118,172,999	46,542,000	-	164,714,999
S2021	FC	47,783	16,306	-	62,621	120,843,855	46,076,000	-	166,919,855
W2009-10	Hist.	32,115	16,366	-	47,495	95,617,578	49,737,000	-	145,354,578
W2010-11	Hist.	30,252	16,366	-	45,637	100,359,238	49,737,000	-	150,096,238
W2011-12	Hist.	31,040	16,366	-	47,406	96,986,139	50,043,000	-	147,029,139
W2012-13	Hist.	32,563	16,366	-	48,929	103,523,755	49,737,000	-	153,260,755
W2013-14	Hist.	34,220	16,366	-	50,158	108,348,378	49,737,000	-	158,085,378
W2014-15	Hist.	32,151	16,366	-	48,091	103,346,891	49,737,000	-	153,083,891
W2015-16	FC	33,993	16,366	-	50,056	108,410,406	50,042,678	-	158,453,084
W2016-17	FC	35,365	16,366	-	51,731	111,986,157	49,737,000	-	161,723,157
W2017-18	FC	36,040	16,366	-	52,406	114,082,558	49,737,000	-	163,819,558
W2018-19	FC	36,728	16,366	-	53,094	116,229,553	49,737,000	-	165,966,553
W2019-20	FC	37,432	16,366	-	53,798	118,106,869	50,042,678	-	168,149,547
W2020-21	FC	38,317	16,202	-	54,519	120,999,466	49,404,000	-	170,403,466

Historic and Forecasted Annual Loads for ALEXANDRIA, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	40,171	16,471	-	55,111	197,978,374	96,279,000	-	294,257,374
2011	Hist.	45,530	16,471	-	60,518	204,637,928	96,279,000	-	300,916,928
2012	Hist.	46,033	16,471	-	61,021	206,291,284	96,585,000	-	302,876,284
2013	Hist.	46,012	16,471	-	60,952	212,692,425	96,279,000	-	308,971,425
2014	Hist.	45,109	16,471	-	60,097	211,644,091	96,279,000	-	307,923,091
2015	FC	42,556	16,471	-	57,544	211,149,314	96,279,000	-	307,428,314
2016	FC	43,177	16,471	-	58,165	218,412,160	96,584,678	-	314,996,838
2017	FC	44,438	16,471	-	59,426	224,535,748	96,279,000	-	320,814,748
2018	FC	45,211	16,471	-	60,199	228,714,053	96,279,000	-	324,993,053
2019	FC	46,001	16,471	-	60,989	232,985,653	96,279,000	-	329,264,653
2020	FC	46,807	16,471	-	61,795	237,030,712	96,584,678	-	333,615,390
2021	FC	47,783	16,306	-	62,621	242,778,561	95,314,000	-	338,092,561

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for BARNESVILLE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	3,285	2,216	-	5,501	1,875,619	1,262,000	-	3,137,619
	2	Hist.	3,151	2,140	-	5,291	1,566,564	1,130,000	-	2,696,564
	3	Hist.	2,830	2,173	-	5,003	1,216,744	1,037,000	-	2,253,744
	4	Hist.	1,990	1,826	-	3,816	585,054	970,000	-	1,555,054
	5	Hist.	1,370	1,874	-	3,244	741,436	878,000	-	1,619,436
	6	Hist.	1,769	1,739	-	3,508	576,795	864,000	-	1,440,795
	7	Hist.	2,037	1,810	-	3,847	967,012	802,000	-	1,769,012
	8	Hist.	2,502	1,859	-	4,361	920,534	902,000	-	1,822,534
	9	Hist.	962	1,909	-	2,871	565,285	841,000	-	1,406,285
	10	Hist.	2,042	1,881	-	3,923	787,130	885,000	-	1,672,130
	11	Hist.	2,938	1,926	-	4,864	1,253,048	1,053,000	-	2,306,048
	12	Hist.	3,194	2,171	-	5,365	1,905,388	1,173,000	-	3,078,388
2011	1	Hist.	3,181	2,216	-	5,397	1,902,268	1,262,000	-	3,164,268
	2	Hist.	3,077	2,140	-	5,217	1,528,704	1,130,000	-	2,658,704
	3	Hist.	2,708	2,173	-	4,881	1,570,138	1,037,000	-	2,607,138
	4	Hist.	2,202	1,826	-	4,028	960,581	970,000	-	1,930,581
	5	Hist.	1,774	1,874	-	3,648	691,384	878,000	-	1,569,384
	6	Hist.	2,293	1,739	-	4,032	592,538	864,000	-	1,456,538
	7	Hist.	2,550	1,810	-	4,360	1,097,300	802,000	-	1,899,300
	8	Hist.	2,152	1,859	-	4,011	821,924	902,000	-	1,723,924
	9	Hist.	1,529	1,909	-	3,438	603,716	841,000	-	1,444,716
	10	Hist.	1,717	1,881	-	3,598	729,120	885,000	-	1,614,120
	11	Hist.	2,788	1,926	-	4,714	1,114,358	1,053,000	-	2,167,358
	12	Hist.	2,793	2,171	-	4,964	1,539,121	1,173,000	-	2,712,121
2012	1	Hist.	3,175	2,216	-	5,391	1,597,828	1,262,000	-	2,859,828
	2	Hist.	3,086	2,140	-	5,226	1,398,885	1,170,000	-	2,568,885
	3	Hist.	2,661	2,173	-	4,834	998,098	1,037,000	-	2,035,098
	4	Hist.	2,190	1,826	-	4,016	694,943	970,000	-	1,664,943
	5	Hist.	1,301	1,874	-	3,175	573,938	878,000	-	1,451,938
	6	Hist.	1,623	1,739	-	3,362	681,918	864,000	-	1,545,918
	7	Hist.	2,463	1,810	-	4,273	1,210,496	802,000	-	2,012,496
	8	Hist.	2,212	1,859	-	4,071	760,647	902,000	-	1,662,647
	9	Hist.	1,350	1,909	-	3,259	574,342	841,000	-	1,415,342
	10	Hist.	1,761	1,881	-	3,642	929,760	885,000	-	1,814,760
	11	Hist.	3,075	1,926	-	5,001	1,246,374	1,053,000	-	2,299,374
	12	Hist.	3,313	2,171	-	5,484	1,822,408	1,173,000	-	2,995,408
2013	1	Hist.	3,220	2,216	-	5,436	1,941,238	1,262,000	-	3,203,238
	2	Hist.	3,366	2,140	-	5,506	1,647,731	1,130,000	-	2,777,731
	3	Hist.	2,824	2,173	-	4,997	1,724,406	1,037,000	-	2,761,406
	4	Hist.	2,945	1,826	-	4,771	1,249,921	970,000	-	2,219,921
	5	Hist.	2,039	1,874	-	3,913	728,025	878,000	-	1,606,025
	6	Hist.	1,999	1,739	-	3,738	654,372	864,000	-	1,518,372
	7	Hist.	2,314	1,810	-	4,124	988,700	802,000	-	1,790,700
	8	Hist.	2,603	1,859	-	4,462	892,040	902,000	-	1,794,040
	9	Hist.	2,012	1,909	-	3,921	630,335	841,000	-	1,471,335
	10	Hist.	2,076	1,881	-	3,957	980,376	885,000	-	1,865,376
	11	Hist.	3,082	1,926	-	5,008	1,456,078	1,053,000	-	2,509,078
	12	Hist.	3,482	2,171	-	5,653	2,238,529	1,173,000	-	3,411,529
2014	1	Hist.	3,502	2,216	-	5,718	2,218,351	1,262,000	-	3,480,351
	2	Hist.	3,530	2,140	-	5,670	2,005,471	1,130,000	-	3,135,471
	3	Hist.	3,379	2,173	-	5,552	1,845,344	1,037,000	-	2,882,344
	4	Hist.	3,091	1,826	-	4,917	1,133,683	970,000	-	2,103,683
	5	Hist.	1,852	1,874	-	3,726	879,198	878,000	-	1,757,198
	6	Hist.	1,555	1,739	-	3,294	636,379	864,000	-	1,500,379
	7	Hist.	2,188	1,810	-	3,998	852,381	802,000	-	1,654,381
	8	Hist.	1,616	1,859	-	3,475	770,876	902,000	-	1,672,876
	9	Hist.	1,155	1,909	-	3,064	597,637	841,000	-	1,438,637
	10	Hist.	2,212	1,881	-	4,093	846,746	885,000	-	1,731,746
	11	Hist.	3,441	1,926	-	5,367	1,678,962	1,053,000	-	2,731,962
	12	Hist.	3,296	2,171	-	5,467	1,838,609	1,173,000	-	3,011,609
2015	1	Hist.	3,475	2,216	-	5,691	1,859,800	1,262,000	-	3,121,800
	2	Hist.	3,617	2,140	-	5,757	1,872,471	1,130,000	-	3,002,471
	3	Hist.	3,305	2,173	-	5,478	1,382,627	1,037,000	-	2,419,627
	4	Hist.	2,087	1,826	-	3,913	783,099	970,000	-	1,753,099
	5	Hist.	1,652	1,874	-	3,526	689,934	878,000	-	1,567,934
	6	Hist.	1,563	1,739	-	3,302	639,461	864,000	-	1,503,461
	7	Hist.	2,332	1,810	-	4,142	975,615	802,000	-	1,777,615
	8	Hist.	2,217	1,859	-	4,076	785,671	902,000	-	1,687,671
	9	Hist.	2,163	1,909	-	4,072	675,462	841,000	-	1,516,462
	10	FC	2,273	1,881	-	4,154	1,058,243	885,000	-	1,943,243
	11	FC	3,301	1,926	-	5,227	1,442,187	1,053,000	-	2,495,187
	12	FC	3,472	2,171	-	5,643	1,997,659	1,173,000	-	3,170,659

Historic and Forecasted Monthly Loads for BARNESVILLE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	3,654	2,216	-	5,870	2,103,527	1,262,000	-	3,365,527
	2	FC	3,241	2,140	-	5,381	1,689,679	1,170,357	-	2,860,036
	3	FC	3,070	2,173	-	5,243	1,554,145	1,037,000	-	2,591,145
	4	FC	2,577	1,826	-	4,403	1,000,256	970,000	-	1,970,256
	5	FC	1,807	1,874	-	3,681	753,668	878,000	-	1,631,668
	6	FC	1,964	1,739	-	3,703	687,550	864,000	-	1,551,550
	7	FC	2,283	1,810	-	4,093	1,012,861	802,000	-	1,814,861
	8	FC	2,306	1,859	-	4,165	882,010	902,000	-	1,784,010
	9	FC	1,566	1,909	-	3,475	681,394	841,000	-	1,522,394
	10	FC	2,240	1,881	-	4,121	986,225	885,000	-	1,871,225
	11	FC	3,373	1,926	-	5,299	1,497,597	1,053,000	-	2,550,597
	12	FC	3,588	2,171	-	5,759	2,079,282	1,173,000	-	3,252,282
2017	1	FC	3,733	2,216	-	5,949	2,149,225	1,262,000	-	3,411,225
	2	FC	3,314	2,140	-	5,454	1,770,703	1,130,000	-	2,900,703
	3	FC	3,141	2,173	-	5,314	1,589,368	1,037,000	-	2,626,368
	4	FC	2,636	1,826	-	4,462	1,027,145	970,000	-	1,997,145
	5	FC	1,858	1,874	-	3,732	775,980	878,000	-	1,653,980
	6	FC	2,014	1,739	-	3,753	708,784	864,000	-	1,572,784
	7	FC	2,339	1,810	-	4,149	1,037,575	802,000	-	1,839,575
	8	FC	2,363	1,859	-	4,222	906,371	902,000	-	1,808,371
	9	FC	1,613	1,909	-	3,522	702,224	841,000	-	1,543,224
	10	FC	2,297	1,881	-	4,178	1,011,741	885,000	-	1,896,741
	11	FC	3,445	1,926	-	5,371	1,532,287	1,053,000	-	2,585,287
	12	FC	3,665	2,171	-	5,836	2,123,415	1,173,000	-	3,296,415
2018	1	FC	3,806	2,216	-	6,022	2,190,776	1,262,000	-	3,452,776
	2	FC	3,380	2,140	-	5,520	1,806,066	1,130,000	-	2,936,066
	3	FC	3,205	2,173	-	5,378	1,621,393	1,037,000	-	2,658,393
	4	FC	2,691	1,826	-	4,517	1,051,593	970,000	-	2,021,593
	5	FC	1,903	1,874	-	3,777	796,266	878,000	-	1,674,266
	6	FC	2,060	1,739	-	3,799	728,090	864,000	-	1,592,090
	7	FC	2,389	1,810	-	4,199	1,060,046	802,000	-	1,862,046
	8	FC	2,414	1,859	-	4,273	928,520	902,000	-	1,830,520
	9	FC	1,657	1,909	-	3,566	721,164	841,000	-	1,562,164
	10	FC	2,348	1,881	-	4,229	1,034,941	885,000	-	1,919,941
	11	FC	3,510	1,926	-	5,436	1,563,827	1,053,000	-	2,616,827
	12	FC	3,737	2,171	-	5,908	2,163,542	1,173,000	-	3,336,542
2019	1	FC	3,873	2,216	-	6,089	2,228,986	1,262,000	-	3,490,986
	2	FC	3,442	2,140	-	5,582	1,838,584	1,130,000	-	2,968,584
	3	FC	3,265	2,173	-	5,438	1,650,843	1,037,000	-	2,687,843
	4	FC	2,742	1,826	-	4,568	1,074,076	970,000	-	2,044,076
	5	FC	1,945	1,874	-	3,819	814,922	878,000	-	1,692,922
	6	FC	2,102	1,739	-	3,841	745,844	864,000	-	1,609,844
	7	FC	2,436	1,810	-	4,246	1,080,710	802,000	-	1,882,710
	8	FC	2,462	1,859	-	4,321	948,890	902,000	-	1,850,890
	9	FC	1,696	1,909	-	3,605	738,581	841,000	-	1,579,581
	10	FC	2,395	1,881	-	4,276	1,056,275	885,000	-	1,941,275
	11	FC	3,570	1,926	-	5,496	1,592,833	1,053,000	-	2,645,833
	12	FC	3,801	2,171	-	5,972	2,200,443	1,173,000	-	3,373,443
2020	1	FC	3,936	2,216	-	6,152	2,264,971	1,262,000	-	3,526,971
	2	FC	3,499	2,140	-	5,639	1,827,077	1,170,357	-	2,997,434
	3	FC	3,321	2,173	-	5,494	1,678,578	1,037,000	-	2,715,578
	4	FC	2,788	1,826	-	4,614	1,095,249	970,000	-	2,065,249
	5	FC	1,985	1,874	-	3,859	832,491	878,000	-	1,710,491
	6	FC	2,142	1,739	-	3,881	762,564	864,000	-	1,626,564
	7	FC	2,480	1,810	-	4,290	1,100,171	802,000	-	1,902,171
	8	FC	2,506	1,859	-	4,365	968,072	902,000	-	1,870,072
	9	FC	1,734	1,909	-	3,643	754,983	841,000	-	1,595,983
	10	FC	2,439	1,881	-	4,320	1,076,368	885,000	-	1,961,368
	11	FC	3,627	1,926	-	5,553	1,620,149	1,053,000	-	2,673,149
	12	FC	3,863	2,171	-	6,034	2,235,195	1,173,000	-	3,408,195
2021	1	FC	4,018	2,194	-	6,212	2,312,864	1,249,000	-	3,561,864
	2	FC	3,575	2,119	-	5,694	1,909,904	1,119,000	-	3,028,904
	3	FC	3,397	2,151	-	5,548	1,715,472	1,027,000	-	2,742,472
	4	FC	2,852	1,808	-	4,660	1,125,884	960,000	-	2,085,884
	5	FC	2,042	1,855	-	3,897	858,645	869,000	-	1,727,645
	6	FC	2,198	1,722	-	3,920	787,907	855,000	-	1,642,907
	7	FC	2,540	1,792	-	4,332	1,127,085	794,000	-	1,921,085
	8	FC	2,569	1,840	-	4,409	995,764	893,000	-	1,888,764
	9	FC	1,789	1,890	-	3,679	778,981	833,000	-	1,611,981
	10	FC	2,501	1,862	-	4,363	1,104,928	876,000	-	1,980,928
	11	FC	3,700	1,907	-	5,607	1,657,687	1,042,000	-	2,699,687
	12	FC	3,945	2,149	-	6,094	2,280,870	1,161,000	-	3,441,870

Historic and Forecasted Seasonal Loads for BARNESVILLE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	2,502	1,909	-	4,361	4,558,192	5,172,000	-	9,730,192
S2011	Hist.	2,550	1,909	-	4,360	4,535,982	5,172,000	-	9,707,982
S2012	Hist.	2,463	1,909	-	4,273	4,731,101	5,172,000	-	9,903,101
S2013	Hist.	2,603	1,909	-	4,462	4,873,848	5,172,000	-	10,045,848
S2014	Hist.	2,212	1,909	-	4,093	4,583,217	5,172,000	-	9,755,217
S2015	FC	2,332	1,909	-	4,154	4,824,386	5,172,000	-	9,996,386
S2016	FC	2,306	1,909	-	4,165	5,003,708	5,172,000	-	10,175,708
S2017	FC	2,363	1,909	-	4,222	5,142,675	5,172,000	-	10,314,675
S2018	FC	2,414	1,909	-	4,273	5,269,027	5,172,000	-	10,441,027
S2019	FC	2,462	1,909	-	4,321	5,385,222	5,172,000	-	10,557,222
S2020	FC	2,506	1,909	-	4,365	5,494,649	5,172,000	-	10,666,649
S2021	FC	2,569	1,890	-	4,409	5,653,310	5,120,000	-	10,773,310
W2009-10	Hist.	3,594	2,216	-	5,765	8,196,989	6,625,000	-	14,821,989
W2010-11	Hist.	3,194	2,216	-	5,397	9,120,127	6,625,000	-	15,745,127
W2011-12	Hist.	3,175	2,216	-	5,391	7,343,233	6,665,000	-	14,008,233
W2012-13	Hist.	3,366	2,216	-	5,506	9,632,078	6,625,000	-	16,257,078
W2013-14	Hist.	3,530	2,216	-	5,718	10,897,456	6,625,000	-	17,522,456
W2014-15	Hist.	3,617	2,216	-	5,757	9,415,568	6,625,000	-	16,040,568
W2015-16	FC	3,654	2,216	-	5,870	9,787,453	6,665,357	-	16,452,810
W2016-17	FC	3,733	2,216	-	5,949	10,113,320	6,625,000	-	16,738,320
W2017-18	FC	3,806	2,216	-	6,022	10,325,530	6,625,000	-	16,950,530
W2018-19	FC	3,873	2,216	-	6,089	10,519,858	6,625,000	-	17,144,858
W2019-20	FC	3,936	2,216	-	6,152	10,659,151	6,665,357	-	17,324,508
W2020-21	FC	4,018	2,194	-	6,212	10,919,468	6,581,000	-	17,500,468

Historic and Forecasted Annual Loads for BARNESVILLE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	3,285	2,216	-	5,501	12,960,609	11,797,000	-	24,757,609
2011	Hist.	3,181	2,216	-	5,397	13,151,152	11,797,000	-	24,948,152
2012	Hist.	3,313	2,216	-	5,484	12,489,637	11,837,000	-	24,326,637
2013	Hist.	3,482	2,216	-	5,653	15,131,751	11,797,000	-	26,928,751
2014	Hist.	3,530	2,216	-	5,718	15,303,637	11,797,000	-	27,100,637
2015	FC	3,617	2,216	-	5,757	14,162,229	11,797,000	-	25,959,229
2016	FC	3,654	2,216	-	5,870	14,928,194	11,837,357	-	26,765,551
2017	FC	3,733	2,216	-	5,949	15,334,818	11,797,000	-	27,131,818
2018	FC	3,806	2,216	-	6,022	15,666,224	11,797,000	-	27,463,224
2019	FC	3,873	2,216	-	6,089	15,970,987	11,797,000	-	27,767,987
2020	FC	3,936	2,216	-	6,152	16,215,868	11,837,357	-	28,053,225
2021	FC	4,018	2,194	-	6,212	16,655,991	11,678,000	-	28,333,991

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for BENSON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	2,778	4,303	-	7,081	1,805,032	2,259,000	-	4,064,032
	2	Hist.	2,153	4,342	-	6,495	1,268,930	2,261,000	-	3,529,930
	3	Hist.	1,880	4,187	-	6,067	1,292,505	2,035,000	-	3,327,505
	4	Hist.	1,137	3,903	-	5,040	646,718	2,035,000	-	2,681,718
	5	Hist.	2,179	4,786	-	6,965	671,054	2,277,000	-	2,948,054
	6	Hist.	1,513	5,792	-	7,305	712,243	2,315,000	-	3,027,243
	7	Hist.	2,835	5,060	-	7,895	1,321,961	2,266,000	-	3,587,961
	8	Hist.	2,145	5,756	-	7,901	1,235,577	2,498,000	-	3,733,577
	9	Hist.	116	5,353	-	5,469	251,814	2,458,000	-	2,709,814
	10	Hist.	682	4,715	-	5,397	731,799	2,230,000	-	2,961,799
	11	Hist.	2,611	3,972	-	6,583	1,304,195	2,019,000	-	3,323,195
	12	Hist.	2,737	4,303	-	7,040	1,856,930	2,216,000	-	4,072,930
2011	1	Hist.	2,569	4,303	-	6,872	1,831,065	2,259,000	-	4,090,065
	2	Hist.	2,647	4,342	-	6,989	1,243,022	2,261,000	-	3,504,022
	3	Hist.	2,182	4,187	-	6,369	1,565,476	2,035,000	-	3,600,476
	4	Hist.	1,387	3,903	-	5,290	923,291	2,035,000	-	2,958,291
	5	Hist.	438	4,786	-	5,224	547,667	2,277,000	-	2,824,667
	6	Hist.	1,904	5,792	-	7,696	755,631	2,315,000	-	3,070,631
	7	Hist.	3,471	5,060	-	8,531	1,758,641	2,266,000	-	4,024,641
	8	Hist.	1,587	5,756	-	7,343	1,070,769	2,498,000	-	3,568,769
	9	Hist.	2,019	5,353	-	7,372	431,952	2,458,000	-	2,889,952
	10	Hist.	745	4,715	-	5,460	803,285	2,230,000	-	3,033,285
	11	Hist.	1,880	3,972	-	5,852	1,242,719	2,019,000	-	3,261,719
	12	Hist.	2,166	4,303	-	6,469	1,455,322	2,216,000	-	3,671,322
2012	1	Hist.	2,465	4,303	-	6,768	1,526,312	2,259,000	-	3,785,312
	2	Hist.	2,030	4,342	-	6,372	1,120,094	2,342,000	-	3,462,094
	3	Hist.	1,820	4,187	-	6,007	1,144,158	2,035,000	-	3,179,158
	4	Hist.	1,396	3,903	-	5,299	775,202	2,035,000	-	2,810,202
	5	Hist.	1,572	4,786	-	6,358	632,478	2,277,000	-	2,909,478
	6	Hist.	1,647	5,792	-	7,439	1,065,975	2,315,000	-	3,380,975
	7	Hist.	3,165	5,060	-	8,225	1,818,916	2,266,000	-	4,084,916
	8	Hist.	1,949	5,756	-	7,705	762,548	2,498,000	-	3,260,548
	9	Hist.	1,158	5,353	-	6,511	241,133	2,458,000	-	2,699,133
	10	Hist.	350	4,715	-	5,065	660,342	2,230,000	-	2,890,342
	11	Hist.	1,977	3,972	-	5,949	1,075,162	2,019,000	-	3,094,162
	12	Hist.	2,246	4,303	-	6,549	1,420,438	2,216,000	-	3,636,438
2013	1	Hist.	2,440	4,303	-	6,743	1,520,130	2,259,000	-	3,779,130
	2	Hist.	2,255	4,342	-	6,597	1,040,136	2,261,000	-	3,301,136
	3	Hist.	1,819	4,187	-	6,006	1,362,164	2,035,000	-	3,397,164
	4	Hist.	1,387	3,903	-	5,290	914,564	2,035,000	-	2,949,564
	5	Hist.	315	4,786	-	5,101	446,257	2,277,000	-	2,723,257
	6	Hist.	1,164	5,792	-	6,956	573,396	2,315,000	-	2,888,396
	7	Hist.	2,689	5,060	-	7,749	1,235,642	2,266,000	-	3,501,642
	8	Hist.	2,343	5,756	-	8,099	937,314	2,498,000	-	3,435,314
	9	Hist.	1,584	5,353	-	6,937	385,535	2,458,000	-	2,843,535
	10	Hist.	487	4,715	-	5,202	648,749	2,230,000	-	2,878,749
	11	Hist.	2,105	3,972	-	6,077	1,219,418	2,019,000	-	3,238,418
	12	Hist.	2,552	4,303	-	6,855	1,690,334	2,216,000	-	3,906,334
2014	1	Hist.	2,907	4,303	-	7,210	1,797,315	2,259,000	-	4,056,315
	2	Hist.	2,287	4,342	-	6,629	1,336,341	2,261,000	-	3,597,341
	3	Hist.	2,108	4,187	-	6,295	1,413,219	2,035,000	-	3,448,219
	4	Hist.	1,533	3,903	-	5,436	840,197	2,035,000	-	2,875,197
	5	Hist.	1,411	4,786	-	6,197	513,932	2,277,000	-	2,790,932
	6	Hist.	440	5,792	-	6,232	707,957	2,315,000	-	3,022,957
	7	Hist.	2,368	5,060	-	7,428	914,962	2,266,000	-	3,180,962
	8	Hist.	879	5,756	-	6,635	699,391	2,498,000	-	3,197,391
	9	Hist.	184	5,353	-	5,537	158,679	2,458,000	-	2,616,679
	10	Hist.	78	4,715	-	4,793	475,016	2,230,000	-	2,705,016
	11	Hist.	2,202	3,972	-	6,174	1,268,383	2,019,000	-	3,287,383
	12	Hist.	2,290	4,303	-	6,593	1,394,851	2,216,000	-	3,610,851
2015	1	Hist.	2,315	4,303	-	6,618	1,438,217	2,259,000	-	3,697,217
	2	Hist.	2,037	4,342	-	6,379	1,158,230	2,261,000	-	3,419,230
	3	Hist.	1,941	4,187	-	6,128	1,133,590	2,035,000	-	3,168,590
	4	Hist.	1,207	3,903	-	5,110	575,857	2,035,000	-	2,610,857
	5	Hist.	138	4,786	-	4,924	226,150	2,277,000	-	2,503,150
	6	Hist.	621	5,792	-	6,413	569,183	2,315,000	-	2,884,183
	7	Hist.	1,991	5,060	-	7,051	1,148,738	2,266,000	-	3,414,738
	8	Hist.	1,249	5,756	-	7,005	589,644	2,498,000	-	3,087,644
	9	Hist.	1,671	5,353	-	7,024	399,206	2,458,000	-	2,857,206
	10	FC	589	4,715	-	5,304	742,794	2,230,000	-	2,972,794
	11	FC	2,134	3,972	-	6,106	1,232,727	2,019,000	-	3,251,727
	12	FC	2,522	4,303	-	6,825	1,651,608	2,216,000	-	3,867,608

Historic and Forecasted Monthly Loads for BENSON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	2,565	4,303	-	6,868	1,636,737	2,259,000	-	3,895,737
	2	FC	1,995	4,342	-	6,337	1,077,849	2,341,750	-	3,419,599
	3	FC	1,927	4,187	-	6,114	1,297,771	2,035,000	-	3,332,771
	4	FC	1,350	3,903	-	5,253	788,071	2,035,000	-	2,823,071
	5	FC	721	4,786	-	5,507	466,119	2,277,000	-	2,743,119
	6	FC	1,105	5,792	-	6,897	675,980	2,315,000	-	2,990,980
	7	FC	2,103	5,060	-	7,163	1,033,954	2,266,000	-	3,299,954
	8	FC	956	5,756	-	6,712	573,570	2,498,000	-	3,071,570
	9	FC	580	5,353	-	5,933	132,802	2,458,000	-	2,590,802
	10	FC	331	4,715	-	5,046	589,381	2,230,000	-	2,819,381
	11	FC	2,079	3,972	-	6,051	1,185,452	2,019,000	-	3,204,452
	12	FC	2,399	4,303	-	6,702	1,562,600	2,216,000	-	3,778,600
2017	1	FC	2,636	4,303	-	6,939	1,677,220	2,259,000	-	3,936,220
	2	FC	2,061	4,342	-	6,403	1,196,835	2,261,000	-	3,457,835
	3	FC	1,991	4,187	-	6,178	1,332,438	2,035,000	-	3,367,438
	4	FC	1,405	3,903	-	5,308	817,538	2,035,000	-	2,852,538
	5	FC	779	4,786	-	5,565	494,849	2,277,000	-	2,771,849
	6	FC	1,178	5,792	-	6,970	707,251	2,315,000	-	3,022,251
	7	FC	2,179	5,060	-	7,239	1,068,361	2,266,000	-	3,334,361
	8	FC	1,027	5,756	-	6,783	605,723	2,498,000	-	3,103,723
	9	FC	642	5,353	-	5,995	160,037	2,458,000	-	2,618,037
	10	FC	384	4,715	-	5,099	618,875	2,230,000	-	2,848,875
	11	FC	2,142	3,972	-	6,114	1,218,804	2,019,000	-	3,237,804
	12	FC	2,469	4,303	-	6,772	1,601,875	2,216,000	-	3,817,875
2018	1	FC	2,707	4,303	-	7,010	1,717,720	2,259,000	-	3,976,720
	2	FC	2,127	4,342	-	6,469	1,232,503	2,261,000	-	3,493,503
	3	FC	2,055	4,187	-	6,242	1,367,118	2,035,000	-	3,402,118
	4	FC	1,460	3,903	-	5,363	847,017	2,035,000	-	2,882,017
	5	FC	837	4,786	-	5,623	523,590	2,277,000	-	2,800,590
	6	FC	1,250	5,792	-	7,042	738,535	2,315,000	-	3,053,535
	7	FC	2,253	5,060	-	7,313	1,102,783	2,266,000	-	3,368,783
	8	FC	1,097	5,756	-	6,853	637,890	2,498,000	-	3,135,890
	9	FC	704	5,353	-	6,057	187,283	2,458,000	-	2,645,283
	10	FC	438	4,715	-	5,153	648,379	2,230,000	-	2,878,379
	11	FC	2,205	3,972	-	6,177	1,252,171	2,019,000	-	3,271,171
	12	FC	2,539	4,303	-	6,842	1,641,165	2,216,000	-	3,857,165
2019	1	FC	2,779	4,303	-	7,082	1,758,236	2,259,000	-	4,017,236
	2	FC	2,193	4,342	-	6,535	1,268,184	2,261,000	-	3,529,184
	3	FC	2,119	4,187	-	6,306	1,401,813	2,035,000	-	3,436,813
	4	FC	1,515	3,903	-	5,418	876,506	2,035,000	-	2,911,506
	5	FC	895	4,786	-	5,681	552,344	2,277,000	-	2,829,344
	6	FC	1,322	5,792	-	7,114	769,832	2,315,000	-	3,084,832
	7	FC	2,328	5,060	-	7,388	1,137,218	2,266,000	-	3,403,218
	8	FC	1,167	5,756	-	6,923	670,068	2,498,000	-	3,168,068
	9	FC	767	5,353	-	6,120	214,540	2,458,000	-	2,672,540
	10	FC	490	4,715	-	5,205	677,895	2,230,000	-	2,907,895
	11	FC	2,268	3,972	-	6,240	1,285,550	2,019,000	-	3,304,550
	12	FC	2,609	4,303	-	6,912	1,680,471	2,216,000	-	3,896,471
2020	1	FC	2,850	4,303	-	7,153	1,798,767	2,259,000	-	4,057,767
	2	FC	2,260	4,342	-	6,602	1,220,544	2,341,750	-	3,562,294
	3	FC	2,183	4,187	-	6,370	1,436,520	2,035,000	-	3,471,520
	4	FC	1,570	3,903	-	5,473	906,008	2,035,000	-	2,941,008
	5	FC	953	4,786	-	5,739	581,107	2,277,000	-	2,858,107
	6	FC	1,394	5,792	-	7,186	801,140	2,315,000	-	3,116,140
	7	FC	2,402	5,060	-	7,462	1,171,666	2,266,000	-	3,437,666
	8	FC	1,237	5,756	-	6,993	702,259	2,498,000	-	3,200,259
	9	FC	829	5,353	-	6,182	241,807	2,458,000	-	2,699,807
	10	FC	544	4,715	-	5,259	707,423	2,230,000	-	2,937,423
	11	FC	2,331	3,972	-	6,303	1,318,941	2,019,000	-	3,337,941
	12	FC	2,678	4,303	-	6,981	1,719,791	2,216,000	-	3,935,791
2021	1	FC	2,966	4,260	-	7,226	1,863,050	2,236,000	-	4,099,050
	2	FC	2,371	4,299	-	6,670	1,363,323	2,238,000	-	3,601,323
	3	FC	2,290	4,145	-	6,435	1,491,881	2,015,000	-	3,506,881
	4	FC	1,665	3,864	-	5,529	956,160	2,015,000	-	2,971,160
	5	FC	1,060	4,738	-	5,798	633,618	2,254,000	-	2,887,618
	6	FC	1,526	5,734	-	7,260	856,195	2,292,000	-	3,148,195
	7	FC	2,530	5,009	-	7,539	1,229,863	2,243,000	-	3,472,863
	8	FC	1,368	5,698	-	7,066	760,262	2,473,000	-	3,233,262
	9	FC	947	5,299	-	6,246	294,885	2,433,000	-	2,727,885
	10	FC	645	4,668	-	5,313	759,666	2,208,000	-	2,967,666
	11	FC	2,436	3,932	-	6,368	1,372,985	1,999,000	-	3,371,985
	12	FC	2,793	4,260	-	7,053	1,781,831	2,194,000	-	3,975,831

Historic and Forecasted Seasonal Loads for BENSON, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	2,835	5,792	-	7,901	4,924,448	14,044,000	-	18,968,448
S2011	Hist.	3,471	5,792	-	8,531	5,367,945	14,044,000	-	19,411,945
S2012	Hist.	3,165	5,792	-	8,225	5,181,392	14,044,000	-	19,225,392
S2013	Hist.	2,689	5,792	-	8,099	4,226,893	14,044,000	-	18,270,893
S2014	Hist.	2,368	5,792	-	7,428	3,469,937	14,044,000	-	17,513,937
S2015	FC	1,991	5,792	-	7,051	3,675,715	14,044,000	-	17,719,715
S2016	FC	2,103	5,792	-	7,163	3,471,806	14,044,000	-	17,515,806
S2017	FC	2,179	5,792	-	7,239	3,655,096	14,044,000	-	17,699,096
S2018	FC	2,253	5,792	-	7,313	3,838,460	14,044,000	-	17,882,460
S2019	FC	2,328	5,792	-	7,388	4,021,897	14,044,000	-	18,065,897
S2020	FC	2,402	5,792	-	7,462	4,205,402	14,044,000	-	18,249,402
S2021	FC	2,530	5,734	-	7,539	4,534,489	13,903,000	-	18,437,489
W2009-10	Hist.	2,905	4,342	-	7,208	7,975,422	12,825,000	-	20,800,422
W2010-11	Hist.	2,737	4,342	-	7,040	8,723,979	12,825,000	-	21,548,979
W2011-12	Hist.	2,465	4,342	-	6,768	7,263,807	12,906,000	-	20,169,807
W2012-13	Hist.	2,440	4,342	-	6,743	7,332,594	12,825,000	-	20,157,594
W2013-14	Hist.	2,907	4,342	-	7,210	8,296,824	12,825,000	-	21,121,824
W2014-15	Hist.	2,315	4,342	-	6,618	6,969,128	12,825,000	-	19,794,128
W2015-16	FC	2,565	4,342	-	6,868	7,684,763	12,905,750	-	20,590,513
W2016-17	FC	2,636	4,342	-	6,939	7,772,083	12,825,000	-	20,597,083
W2017-18	FC	2,707	4,342	-	7,010	7,985,037	12,825,000	-	20,810,037
W2018-19	FC	2,779	4,342	-	7,082	8,198,075	12,825,000	-	21,023,075
W2019-20	FC	2,850	4,342	-	7,153	8,327,860	12,905,750	-	21,233,610
W2020-21	FC	2,966	4,303	-	7,226	8,713,146	12,739,000	-	21,452,146

Historic and Forecasted Annual Loads for BENSON, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	2,835	5,792	-	7,901	13,098,758	26,869,000	-	39,967,758
2011	Hist.	3,471	5,792	-	8,531	13,628,840	26,869,000	-	40,497,840
2012	Hist.	3,165	5,792	-	8,225	12,242,758	26,950,000	-	39,192,758
2013	Hist.	2,689	5,792	-	8,099	11,973,639	26,869,000	-	38,842,639
2014	Hist.	2,907	5,792	-	7,428	11,520,243	26,869,000	-	38,389,243
2015	FC	2,522	5,792	-	7,051	10,865,944	26,869,000	-	37,734,944
2016	FC	2,565	5,792	-	7,163	11,020,286	26,949,750	-	37,970,036
2017	FC	2,636	5,792	-	7,239	11,499,806	26,869,000	-	38,368,806
2018	FC	2,707	5,792	-	7,313	11,896,154	26,869,000	-	38,765,154
2019	FC	2,779	5,792	-	7,388	12,292,657	26,869,000	-	39,161,657
2020	FC	2,850	5,792	-	7,462	12,605,973	26,949,750	-	39,555,723
2021	FC	2,966	5,734	-	7,539	13,363,719	26,600,000	-	39,963,719

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for BRECKENRIDGE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	4,103	4,785	-	8,888	2,538,864	2,807,000	-	5,345,864
	2	Hist.	4,742	4,648	-	9,390	1,814,088	2,725,000	-	4,539,088
	3	Hist.	2,557	4,746	-	7,303	1,673,743	2,337,000	-	4,010,743
	4	Hist.	1,915	4,251	-	6,166	570,288	2,348,000	-	2,918,288
	5	Hist.	1,588	4,669	-	6,257	914,258	2,193,000	-	3,107,258
	6	Hist.	2,798	4,372	-	7,170	1,079,112	2,144,000	-	3,223,112
	7	Hist.	2,544	5,499	-	8,043	1,725,138	2,235,000	-	3,960,138
	8	Hist.	2,819	5,502	-	8,321	1,441,974	2,340,000	-	3,781,974
	9	Hist.	1,026	4,457	-	5,483	635,901	2,184,000	-	2,819,901
	10	Hist.	1,154	5,018	-	6,172	518,948	2,593,000	-	3,111,948
	11	Hist.	3,424	4,532	-	7,956	1,727,333	2,147,000	-	3,874,333
	12	Hist.	3,610	4,749	-	8,359	2,254,753	2,848,000	-	5,102,753
2011	1	Hist.	4,021	4,785	-	8,806	2,530,162	2,807,000	-	5,337,162
	2	Hist.	3,652	4,648	-	8,300	1,696,377	2,725,000	-	4,421,377
	3	Hist.	2,623	4,746	-	7,369	1,925,202	2,337,000	-	4,262,202
	4	Hist.	2,110	4,251	-	6,361	918,470	2,348,000	-	3,266,470
	5	Hist.	1,262	4,669	-	5,931	686,949	2,193,000	-	2,879,949
	6	Hist.	3,528	4,372	-	7,900	946,650	2,144,000	-	3,090,650
	7	Hist.	3,117	5,499	-	8,616	1,735,531	2,235,000	-	3,970,531
	8	Hist.	2,258	5,502	-	7,760	1,318,262	2,340,000	-	3,658,262
	9	Hist.	2,430	4,457	-	6,887	806,919	2,184,000	-	2,990,919
	10	Hist.	979	5,018	-	5,997	524,443	2,593,000	-	3,117,443
	11	Hist.	3,141	4,532	-	7,673	1,468,364	2,147,000	-	3,615,364
	12	Hist.	3,463	4,749	-	8,212	1,434,484	2,848,000	-	4,282,484
2012	1	Hist.	3,974	4,785	-	8,759	1,753,428	2,807,000	-	4,560,428
	2	Hist.	3,661	4,648	-	8,309	1,193,974	2,822,000	-	4,015,974
	3	Hist.	2,391	4,746	-	7,137	1,113,631	2,337,000	-	3,450,631
	4	Hist.	1,860	4,251	-	6,111	497,388	2,348,000	-	2,845,388
	5	Hist.	1,792	4,669	-	6,461	707,714	2,193,000	-	2,900,714
	6	Hist.	2,768	4,372	-	7,140	1,124,989	2,144,000	-	3,268,989
	7	Hist.	3,026	5,499	-	8,525	1,940,958	2,235,000	-	4,175,958
	8	Hist.	1,949	5,502	-	7,451	1,120,571	2,340,000	-	3,460,571
	9	Hist.	1,953	4,457	-	6,410	813,998	2,184,000	-	2,997,998
	10	Hist.	1,135	5,018	-	6,153	690,442	2,593,000	-	3,283,442
	11	Hist.	3,328	4,532	-	7,860	1,730,320	2,147,000	-	3,877,320
	12	Hist.	3,513	4,749	-	8,262	1,915,634	2,848,000	-	4,763,634
2013	1	Hist.	3,913	4,785	-	8,698	2,226,967	2,807,000	-	5,033,967
	2	Hist.	3,720	4,648	-	8,368	1,571,086	2,725,000	-	4,296,086
	3	Hist.	2,627	4,746	-	7,373	1,954,700	2,337,000	-	4,291,700
	4	Hist.	2,233	4,251	-	6,484	1,191,348	2,348,000	-	3,539,348
	5	Hist.	1,428	4,669	-	6,097	772,772	2,193,000	-	2,965,772
	6	Hist.	2,863	4,372	-	7,235	926,075	2,144,000	-	3,070,075
	7	Hist.	2,649	5,499	-	8,148	1,405,675	2,235,000	-	3,640,675
	8	Hist.	2,720	5,502	-	8,222	1,328,575	2,340,000	-	3,668,575
	9	Hist.	3,155	4,457	-	7,612	851,472	2,184,000	-	3,035,472
	10	Hist.	1,846	5,018	-	6,864	775,581	2,593,000	-	3,368,581
	11	Hist.	3,499	4,532	-	8,031	1,989,115	2,147,000	-	4,136,115
	12	Hist.	4,642	4,749	-	9,391	2,249,365	2,848,000	-	5,097,365
2014	1	Hist.	4,191	4,785	-	8,976	2,416,440	2,807,000	-	5,223,440
	2	Hist.	3,785	4,648	-	8,433	1,923,386	2,725,000	-	4,648,386
	3	Hist.	2,845	4,746	-	7,591	1,955,863	2,337,000	-	4,292,863
	4	Hist.	3,075	4,251	-	7,326	916,022	2,348,000	-	3,264,022
	5	Hist.	2,183	4,669	-	6,852	928,284	2,193,000	-	3,121,284
	6	Hist.	2,095	4,372	-	6,467	918,344	2,144,000	-	3,062,344
	7	Hist.	2,375	5,499	-	7,874	1,045,710	2,235,000	-	3,280,710
	8	Hist.	1,390	5,502	-	6,892	968,493	2,340,000	-	3,308,493
	9	Hist.	2,004	4,457	-	6,461	754,094	2,184,000	-	2,938,094
	10	Hist.	2,280	5,018	-	7,298	698,914	2,593,000	-	3,291,914
	11	Hist.	3,798	4,532	-	8,330	2,261,354	2,147,000	-	4,408,354
	12	Hist.	3,693	4,749	-	8,442	1,935,498	2,848,000	-	4,783,498
2015	1	Hist.	4,563	4,785	-	9,348	1,973,131	2,807,000	-	4,780,131
	2	Hist.	3,661	4,648	-	8,309	1,801,295	2,725,000	-	4,526,295
	3	Hist.	3,399	4,746	-	8,145	1,366,495	2,337,000	-	3,703,495
	4	Hist.	1,527	4,251	-	5,778	524,453	2,348,000	-	2,872,453
	5	Hist.	706	4,669	-	5,375	520,914	2,193,000	-	2,713,914
	6	Hist.	2,223	4,372	-	6,595	759,888	2,144,000	-	2,903,888
	7	Hist.	2,108	5,499	-	7,607	1,204,852	2,235,000	-	3,439,852
	8	Hist.	2,053	5,502	-	7,555	916,440	2,340,000	-	3,256,440
	9	Hist.	3,153	4,457	-	7,610	837,710	2,184,000	-	3,021,710
	10	FC	1,392	5,018	-	6,410	723,064	2,593,000	-	3,316,064
	11	FC	3,508	4,532	-	8,040	1,849,930	2,147,000	-	3,996,930
	12	FC	3,806	4,749	-	8,555	2,036,572	2,848,000	-	4,884,572

Historic and Forecasted Monthly Loads for BRECKENRIDGE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	4,262	4,785	-	9,047	2,261,679	2,807,000	-	5,068,679
	2	FC	3,276	4,648	-	7,924	1,461,567	2,822,321	-	4,283,888
	3	FC	2,684	4,746	-	7,430	1,625,355	2,337,000	-	3,962,355
	4	FC	2,032	4,251	-	6,283	753,903	2,348,000	-	3,101,903
	5	FC	1,399	4,669	-	6,068	698,342	2,193,000	-	2,891,342
	6	FC	2,755	4,372	-	7,127	988,121	2,144,000	-	3,132,121
	7	FC	2,613	5,499	-	8,112	1,510,705	2,235,000	-	3,745,705
	8	FC	2,199	5,502	-	7,701	1,230,399	2,340,000	-	3,570,399
	9	FC	2,156	4,457	-	6,613	818,989	2,184,000	-	3,002,989
	10	FC	1,648	5,018	-	6,666	740,951	2,593,000	-	3,333,951
	11	FC	3,528	4,532	-	8,060	1,879,834	2,147,000	-	4,026,834
	12	FC	3,882	4,749	-	8,631	2,020,144	2,848,000	-	4,868,144
2017	1	FC	4,383	4,785	-	9,168	2,329,359	2,807,000	-	5,136,359
	2	FC	3,381	4,648	-	8,029	1,620,629	2,725,000	-	4,345,629
	3	FC	2,784	4,746	-	7,530	1,678,344	2,337,000	-	4,015,344
	4	FC	2,116	4,251	-	6,367	795,683	2,348,000	-	3,143,683
	5	FC	1,481	4,669	-	6,150	737,288	2,193,000	-	2,930,288
	6	FC	2,850	4,372	-	7,222	1,030,178	2,144,000	-	3,174,178
	7	FC	2,723	5,499	-	8,222	1,560,812	2,235,000	-	3,795,812
	8	FC	2,303	5,502	-	7,805	1,278,282	2,340,000	-	3,618,282
	9	FC	2,244	4,457	-	6,701	859,385	2,184,000	-	3,043,385
	10	FC	1,738	5,018	-	6,756	785,896	2,593,000	-	3,378,896
	11	FC	3,636	4,532	-	8,168	1,933,556	2,147,000	-	4,080,556
	12	FC	3,997	4,749	-	8,746	2,085,234	2,848,000	-	4,933,234
2018	1	FC	4,513	4,785	-	9,298	2,402,532	2,807,000	-	5,209,532
	2	FC	3,496	4,648	-	8,144	1,682,752	2,725,000	-	4,407,752
	3	FC	2,892	4,746	-	7,638	1,735,634	2,337,000	-	4,072,634
	4	FC	2,207	4,251	-	6,458	840,853	2,348,000	-	3,188,853
	5	FC	1,569	4,669	-	6,238	779,396	2,193,000	-	2,972,396
	6	FC	2,953	4,372	-	7,325	1,075,648	2,144,000	-	3,219,648
	7	FC	2,840	5,499	-	8,339	1,614,986	2,235,000	-	3,849,986
	8	FC	2,414	5,502	-	7,916	1,330,050	2,340,000	-	3,670,050
	9	FC	2,340	4,457	-	6,797	903,060	2,184,000	-	3,087,060
	10	FC	1,835	5,018	-	6,853	834,489	2,593,000	-	3,427,489
	11	FC	3,752	4,532	-	8,284	1,991,636	2,147,000	-	4,138,636
	12	FC	4,121	4,749	-	8,870	2,155,606	2,848,000	-	5,003,606
2019	1	FC	4,605	4,785	-	9,390	2,454,202	2,807,000	-	5,261,202
	2	FC	3,576	4,648	-	8,224	1,726,617	2,725,000	-	4,451,617
	3	FC	2,968	4,746	-	7,714	1,776,088	2,337,000	-	4,113,088
	4	FC	2,272	4,251	-	6,523	872,750	2,348,000	-	3,220,750
	5	FC	1,632	4,669	-	6,301	809,129	2,193,000	-	3,002,129
	6	FC	3,026	4,372	-	7,398	1,107,756	2,144,000	-	3,251,756
	7	FC	2,923	5,499	-	8,422	1,653,240	2,235,000	-	3,888,240
	8	FC	2,494	5,502	-	7,996	1,366,605	2,340,000	-	3,706,605
	9	FC	2,408	4,457	-	6,865	933,901	2,184,000	-	3,117,901
	10	FC	1,904	5,018	-	6,922	868,802	2,593,000	-	3,461,802
	11	FC	3,835	4,532	-	8,367	2,032,649	2,147,000	-	4,179,649
	12	FC	4,210	4,749	-	8,959	2,205,299	2,848,000	-	5,053,299
2020	1	FC	4,669	4,785	-	9,454	2,490,483	2,807,000	-	5,297,483
	2	FC	3,633	4,648	-	8,281	1,655,817	2,822,321	-	4,478,138
	3	FC	3,021	4,746	-	7,767	1,804,494	2,337,000	-	4,141,494
	4	FC	2,316	4,251	-	6,567	895,148	2,348,000	-	3,243,148
	5	FC	1,676	4,669	-	6,345	830,007	2,193,000	-	3,023,007
	6	FC	3,077	4,372	-	7,449	1,130,301	2,144,000	-	3,274,301
	7	FC	2,981	5,499	-	8,480	1,680,101	2,235,000	-	3,915,101
	8	FC	2,549	5,502	-	8,051	1,392,274	2,340,000	-	3,732,274
	9	FC	2,456	4,457	-	6,913	955,556	2,184,000	-	3,139,556
	10	FC	1,952	5,018	-	6,970	892,896	2,593,000	-	3,485,896
	11	FC	3,892	4,532	-	8,424	2,061,448	2,147,000	-	4,208,448
	12	FC	4,271	4,749	-	9,020	2,240,192	2,848,000	-	5,088,192
2021	1	FC	4,812	4,737	-	9,549	2,571,529	2,779,000	-	5,350,529
	2	FC	3,763	4,602	-	8,365	1,829,597	2,698,000	-	4,527,597
	3	FC	3,146	4,699	-	7,845	1,869,074	2,314,000	-	4,183,074
	4	FC	2,426	4,208	-	6,634	951,145	2,325,000	-	3,276,145
	5	FC	1,787	4,622	-	6,409	882,791	2,171,000	-	3,053,791
	6	FC	3,196	4,328	-	7,524	1,184,423	2,123,000	-	3,307,423
	7	FC	3,122	5,444	-	8,566	1,741,429	2,213,000	-	3,954,429
	8	FC	2,685	5,447	-	8,132	1,452,943	2,317,000	-	3,769,943
	9	FC	2,571	4,412	-	6,983	1,009,451	2,162,000	-	3,171,451
	10	FC	2,073	4,968	-	7,041	954,449	2,567,000	-	3,521,449
	11	FC	4,021	4,487	-	8,508	2,124,498	2,126,000	-	4,250,498
	12	FC	4,409	4,702	-	9,111	2,319,254	2,820,000	-	5,139,254

Historic and Forecasted Seasonal Loads for BRECKENRIDGE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	2,819	5,502	-	8,321	6,315,331	13,689,000	-	20,004,331
S2011	Hist.	3,528	5,502	-	8,616	6,018,754	13,689,000	-	19,707,754
S2012	Hist.	3,026	5,502	-	8,525	6,398,672	13,689,000	-	20,087,672
S2013	Hist.	3,155	5,502	-	8,222	6,060,150	13,689,000	-	19,749,150
S2014	Hist.	2,375	5,502	-	7,874	5,313,839	13,689,000	-	19,002,839
S2015	FC	3,153	5,502	-	7,610	4,962,868	13,689,000	-	18,651,868
S2016	FC	2,755	5,502	-	8,112	5,987,507	13,689,000	-	19,676,507
S2017	FC	2,850	5,502	-	8,222	6,251,841	13,689,000	-	19,940,841
S2018	FC	2,953	5,502	-	8,339	6,537,629	13,689,000	-	20,226,629
S2019	FC	3,026	5,502	-	8,422	6,739,433	13,689,000	-	20,428,433
S2020	FC	3,077	5,502	-	8,480	6,881,135	13,689,000	-	20,570,135
S2021	FC	3,196	5,447	-	8,566	7,225,486	13,553,000	-	20,778,486
W2009-10	Hist.	4,742	4,785	-	9,390	10,789,041	15,212,000	-	26,001,041
W2010-11	Hist.	4,021	4,785	-	8,806	11,052,297	15,212,000	-	26,264,297
W2011-12	Hist.	3,974	4,785	-	8,759	7,461,269	15,309,000	-	22,770,269
W2012-13	Hist.	3,913	4,785	-	8,698	10,590,055	15,212,000	-	25,802,055
W2013-14	Hist.	4,642	4,785	-	9,391	11,450,191	15,212,000	-	26,662,191
W2014-15	Hist.	4,563	4,785	-	9,348	9,862,226	15,212,000	-	25,074,226
W2015-16	FC	4,262	4,785	-	9,047	9,989,006	15,309,321	-	25,298,327
W2016-17	FC	4,383	4,785	-	9,168	10,323,993	15,212,000	-	25,535,993
W2017-18	FC	4,513	4,785	-	9,298	10,680,561	15,212,000	-	25,892,561
W2018-19	FC	4,605	4,785	-	9,390	10,976,899	15,212,000	-	26,188,899
W2019-20	FC	4,669	4,785	-	9,454	11,083,890	15,309,321	-	26,393,211
W2020-21	FC	4,812	4,749	-	9,549	11,522,985	15,111,000	-	26,633,985

Historic and Forecasted Annual Loads for BRECKENRIDGE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	4,742	5,502	-	9,390	16,894,400	28,901,000	-	45,795,400
2011	Hist.	4,021	5,502	-	8,806	15,991,813	28,901,000	-	44,892,813
2012	Hist.	3,974	5,502	-	8,759	14,603,047	28,998,000	-	43,601,047
2013	Hist.	4,642	5,502	-	9,391	17,242,731	28,901,000	-	46,143,731
2014	Hist.	4,191	5,502	-	8,976	16,722,402	28,901,000	-	45,623,402
2015	FC	4,563	5,502	-	9,348	14,514,744	28,901,000	-	43,415,744
2016	FC	4,262	5,502	-	9,047	15,989,989	28,998,321	-	44,988,310
2017	FC	4,383	5,502	-	9,168	16,694,646	28,901,000	-	45,595,646
2018	FC	4,513	5,502	-	9,298	17,346,642	28,901,000	-	46,247,642
2019	FC	4,605	5,502	-	9,390	17,807,038	28,901,000	-	46,708,038
2020	FC	4,669	5,502	-	9,454	18,028,717	28,998,321	-	47,027,038
2021	FC	4,812	5,447	-	9,549	18,890,583	28,615,000	-	47,505,583

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for DETROIT LAKES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	24,881	12,148	-	37,029	13,464,609	6,443,000	-	19,907,609
	2	Hist.	21,796	12,006	-	33,802	10,709,050	6,314,000	-	17,023,050
	3	Hist.	18,096	11,220	-	29,316	9,747,701	5,746,000	-	15,493,701
	4	Hist.	13,569	10,686	-	24,255	7,119,795	5,658,000	-	12,777,795
	5	Hist.	15,264	10,346	-	25,610	8,422,858	5,377,000	-	13,799,858
	6	Hist.	17,017	11,484	-	28,501	8,221,606	5,548,000	-	13,769,606
	7	Hist.	19,700	12,187	-	31,887	10,684,449	5,642,000	-	16,326,449
	8	Hist.	21,957	11,685	-	33,642	10,735,317	5,667,000	-	16,402,317
	9	Hist.	13,130	11,934	-	25,064	7,387,092	5,642,000	-	13,029,092
	10	Hist.	16,956	10,026	-	26,982	8,671,031	5,202,000	-	13,873,031
	11	Hist.	19,445	11,150	-	30,595	10,245,741	5,917,000	-	16,162,741
	12	Hist.	21,223	12,202	-	33,425	13,518,665	6,499,000	-	20,017,665
2011	1	Hist.	21,899	12,148	-	34,047	14,267,595	6,443,000	-	20,710,595
	2	Hist.	21,697	12,006	-	33,703	11,275,458	6,314,000	-	17,589,458
	3	Hist.	21,496	11,220	-	32,716	11,861,667	5,746,000	-	17,607,667
	4	Hist.	15,813	10,686	-	26,499	8,579,627	5,658,000	-	14,237,627
	5	Hist.	15,512	10,346	-	25,858	8,203,065	5,377,000	-	13,580,065
	6	Hist.	22,373	11,484	-	33,857	8,504,427	5,548,000	-	14,052,427
	7	Hist.	23,775	12,187	-	35,962	11,854,525	5,642,000	-	17,496,525
	8	Hist.	23,489	11,685	-	35,174	10,851,309	5,667,000	-	16,518,309
	9	Hist.	19,173	11,934	-	31,107	7,512,854	5,642,000	-	13,154,854
	10	Hist.	15,761	10,026	-	25,787	8,730,798	5,202,000	-	13,932,798
	11	Hist.	17,618	11,150	-	28,768	9,711,349	5,917,000	-	15,628,349
	12	Hist.	20,266	12,202	-	32,468	11,564,684	6,499,000	-	18,063,684
2012	1	Hist.	22,294	12,148	-	34,442	12,594,298	6,443,000	-	19,037,298
	2	Hist.	19,966	12,006	-	31,972	10,665,637	6,540,000	-	17,205,637
	3	Hist.	19,365	11,220	-	30,585	9,679,219	5,746,000	-	15,425,219
	4	Hist.	15,993	10,686	-	26,679	7,834,433	5,658,000	-	13,492,433
	5	Hist.	15,894	10,346	-	26,240	8,355,111	5,377,000	-	13,732,111
	6	Hist.	18,702	11,484	-	30,186	9,271,892	5,548,000	-	14,819,892
	7	Hist.	25,026	12,187	-	37,213	13,010,500	5,642,000	-	18,652,500
	8	Hist.	23,795	11,685	-	35,480	10,790,250	5,667,000	-	16,457,250
	9	Hist.	16,478	11,934	-	28,412	8,038,706	5,642,000	-	13,680,706
	10	Hist.	17,380	10,026	-	27,406	9,855,498	5,202,000	-	15,057,498
	11	Hist.	19,074	11,150	-	30,224	10,539,968	5,917,000	-	16,456,968
	12	Hist.	21,707	12,202	-	33,909	12,986,388	6,499,000	-	19,485,388
2013	1	Hist.	23,862	12,148	-	36,010	14,516,792	6,443,000	-	20,959,792
	2	Hist.	23,537	12,006	-	35,543	11,688,072	6,314,000	-	18,002,072
	3	Hist.	20,615	11,220	-	31,835	12,413,461	5,746,000	-	18,159,461
	4	Hist.	20,248	10,686	-	30,934	10,247,193	5,658,000	-	15,905,193
	5	Hist.	17,113	10,346	-	27,459	8,976,708	5,377,000	-	14,353,708
	6	Hist.	19,921	11,484	-	31,405	9,212,931	5,548,000	-	14,760,931
	7	Hist.	23,656	12,187	-	35,843	11,516,432	5,642,000	-	17,158,432
	8	Hist.	24,935	11,685	-	36,620	11,510,908	5,667,000	-	17,177,908
	9	Hist.	20,703	11,934	-	32,637	8,591,240	5,642,000	-	14,233,240
	10	Hist.	19,222	10,026	-	29,248	10,233,240	5,202,000	-	15,435,240
	11	Hist.	21,641	11,150	-	32,791	11,457,166	5,917,000	-	17,374,166
	12	Hist.	23,274	12,202	-	35,476	15,343,900	6,499,000	-	21,842,900
2014	1	Hist.	26,331	12,148	-	38,479	16,068,103	6,443,000	-	22,511,103
	2	Hist.	24,227	12,006	-	36,233	13,576,046	6,314,000	-	19,890,046
	3	Hist.	24,347	11,220	-	35,567	13,088,435	5,746,000	-	18,834,435
	4	Hist.	20,847	10,686	-	31,533	9,826,878	5,658,000	-	15,484,878
	5	Hist.	20,153	10,346	-	30,499	9,647,174	5,377,000	-	15,024,174
	6	Hist.	18,817	11,484	-	30,301	9,244,771	5,548,000	-	14,792,771
	7	Hist.	23,416	12,187	-	35,603	10,445,986	5,642,000	-	16,087,986
	8	Hist.	21,183	11,685	-	32,868	10,685,599	5,667,000	-	16,352,599
	9	Hist.	14,721	11,934	-	26,655	8,077,128	5,642,000	-	13,719,128
	10	Hist.	18,542	10,026	-	28,568	9,363,562	5,202,000	-	14,565,562
	11	Hist.	22,457	11,150	-	33,607	12,452,888	5,917,000	-	18,369,888
	12	Hist.	23,143	12,202	-	35,345	13,437,382	6,499,000	-	19,936,382
2015	1	Hist.	24,163	12,148	-	36,311	14,334,645	6,443,000	-	20,777,645
	2	Hist.	23,867	12,006	-	35,873	13,380,438	6,314,000	-	19,694,438
	3	Hist.	23,584	11,220	-	34,804	11,550,055	5,746,000	-	17,296,055
	4	Hist.	17,779	10,686	-	28,465	8,706,083	5,658,000	-	14,364,083
	5	Hist.	16,896	10,346	-	27,242	8,727,001	5,377,000	-	14,104,001
	6	Hist.	17,553	11,484	-	29,037	9,202,937	5,548,000	-	14,750,937
	7	Hist.	22,254	12,187	-	34,441	11,584,513	5,642,000	-	17,226,513
	8	Hist.	24,848	11,685	-	36,533	10,909,849	5,667,000	-	16,576,849
	9	Hist.	22,193	11,934	-	34,127	9,018,692	5,642,000	-	14,660,692
	10	FC	20,241	10,026	-	30,267	10,998,703	5,202,000	-	16,200,703
	11	FC	22,480	11,150	-	33,630	12,153,671	5,917,000	-	18,070,671
	12	FC	24,589	12,202	-	36,791	15,049,208	6,499,000	-	21,548,208

Historic and Forecasted Monthly Loads for DETROIT LAKES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	26,109	12,148	-	38,257	15,747,887	6,443,000	-	22,190,887
	2	FC	23,443	12,006	-	35,449	12,889,794	6,539,500	-	19,429,294
	3	FC	23,751	11,220	-	34,971	12,715,368	5,746,000	-	18,461,368
	4	FC	19,488	10,686	-	30,174	9,748,058	5,658,000	-	15,406,058
	5	FC	18,405	10,346	-	28,751	9,467,336	5,377,000	-	14,844,336
	6	FC	21,888	11,484	-	33,372	10,118,495	5,548,000	-	15,666,495
	7	FC	25,335	12,187	-	37,522	12,565,196	5,642,000	-	18,207,196
	8	FC	26,246	11,685	-	37,931	12,421,764	5,667,000	-	18,088,764
	9	FC	20,352	11,934	-	32,286	9,658,830	5,642,000	-	15,300,830
	10	FC	21,114	10,026	-	31,140	11,185,200	5,202,000	-	16,387,200
	11	FC	23,318	11,150	-	34,468	12,561,279	5,917,000	-	18,478,279
	12	FC	25,496	12,202	-	37,698	15,332,456	6,499,000	-	21,831,456
2017	1	FC	27,333	12,148	-	39,481	16,354,418	6,443,000	-	22,797,418
	2	FC	24,635	12,006	-	36,641	13,674,602	6,314,000	-	19,988,602
	3	FC	24,937	11,220	-	36,157	13,278,175	5,746,000	-	19,024,175
	4	FC	20,618	10,686	-	31,304	10,264,080	5,658,000	-	15,922,080
	5	FC	19,518	10,346	-	29,864	9,987,853	5,377,000	-	15,364,853
	6	FC	23,055	11,484	-	34,539	10,637,510	5,548,000	-	16,185,510
	7	FC	25,777	12,187	-	37,964	12,779,489	5,642,000	-	18,421,489
	8	FC	26,693	11,685	-	38,378	12,634,686	5,667,000	-	18,301,686
	9	FC	20,733	11,934	-	32,667	9,839,251	5,642,000	-	15,481,251
	10	FC	21,480	10,026	-	31,506	11,378,118	5,202,000	-	16,580,118
	11	FC	23,724	11,150	-	34,874	12,778,833	5,917,000	-	18,695,833
	12	FC	25,939	12,202	-	38,141	15,589,305	6,499,000	-	22,088,305
2018	1	FC	27,803	12,148	-	39,951	16,625,641	6,443,000	-	23,068,641
	2	FC	25,071	12,006	-	37,077	13,912,659	6,314,000	-	20,226,659
	3	FC	25,369	11,220	-	36,589	13,504,648	5,746,000	-	19,250,648
	4	FC	20,991	10,686	-	31,677	10,453,943	5,658,000	-	16,111,943
	5	FC	19,874	10,346	-	30,220	10,171,040	5,377,000	-	15,548,040
	6	FC	23,467	11,484	-	34,951	10,830,439	5,548,000	-	16,378,439
	7	FC	26,229	12,187	-	38,416	12,998,816	5,642,000	-	18,640,816
	8	FC	27,150	11,685	-	38,835	12,852,610	5,667,000	-	18,519,610
	9	FC	21,122	11,934	-	33,056	10,023,911	5,642,000	-	15,665,911
	10	FC	21,855	10,026	-	31,881	11,575,568	5,202,000	-	16,777,568
	11	FC	24,138	11,150	-	35,288	13,001,498	5,917,000	-	18,918,498
	12	FC	26,393	12,202	-	38,595	15,852,189	6,499,000	-	22,351,189
2019	1	FC	28,282	12,148	-	40,430	16,902,007	6,443,000	-	23,345,007
	2	FC	25,516	12,006	-	37,522	14,155,231	6,314,000	-	20,469,231
	3	FC	25,807	11,220	-	37,027	13,735,414	5,746,000	-	19,481,414
	4	FC	21,371	10,686	-	32,057	10,647,408	5,658,000	-	16,305,408
	5	FC	20,236	10,346	-	30,582	10,357,702	5,377,000	-	15,734,702
	6	FC	23,886	11,484	-	35,370	11,027,025	5,548,000	-	16,575,025
	7	FC	26,690	12,187	-	38,877	13,222,302	5,642,000	-	18,864,302
	8	FC	27,615	11,685	-	39,300	13,074,666	5,667,000	-	18,741,666
	9	FC	21,519	11,934	-	33,453	10,212,073	5,642,000	-	15,854,073
	10	FC	22,238	10,026	-	32,264	11,776,763	5,202,000	-	16,978,763
	11	FC	24,563	11,150	-	35,713	13,228,387	5,917,000	-	19,145,387
	12	FC	26,857	12,202	-	39,059	16,120,058	6,499,000	-	22,619,058
2020	1	FC	28,769	12,148	-	40,917	17,183,348	6,443,000	-	23,626,348
	2	FC	25,969	12,006	-	37,975	14,169,452	6,539,500	-	20,708,952
	3	FC	26,254	11,220	-	37,474	13,970,334	5,746,000	-	19,716,334
	4	FC	21,758	10,686	-	32,444	10,844,353	5,658,000	-	16,502,353
	5	FC	20,606	10,346	-	30,952	10,547,722	5,377,000	-	15,924,722
	6	FC	24,313	11,484	-	35,797	11,227,150	5,548,000	-	16,775,150
	7	FC	27,159	12,187	-	39,346	13,449,809	5,642,000	-	19,091,809
	8	FC	28,089	11,685	-	39,774	13,300,718	5,667,000	-	18,967,718
	9	FC	21,924	11,934	-	33,858	10,403,621	5,642,000	-	16,045,621
	10	FC	22,627	10,026	-	32,653	11,981,578	5,202,000	-	17,183,578
	11	FC	24,993	11,150	-	36,143	13,459,357	5,917,000	-	19,376,357
	12	FC	27,327	12,202	-	39,529	16,392,747	6,499,000	-	22,891,747
2021	1	FC	29,389	12,027	-	41,416	17,534,928	6,379,000	-	23,913,928
	2	FC	26,552	11,886	-	38,438	14,717,801	6,251,000	-	20,968,801
	3	FC	26,823	11,108	-	37,931	14,267,578	5,689,000	-	19,956,578
	4	FC	22,261	10,579	-	32,840	11,103,058	5,601,000	-	16,704,058
	5	FC	21,087	10,243	-	31,330	10,796,302	5,323,000	-	16,119,302
	6	FC	24,864	11,369	-	36,233	11,487,017	5,493,000	-	16,980,017
	7	FC	27,761	12,065	-	39,826	13,738,500	5,586,000	-	19,324,500
	8	FC	28,691	11,568	-	40,259	13,588,963	5,610,000	-	19,198,963
	9	FC	22,456	11,815	-	34,271	10,655,815	5,586,000	-	16,241,815
	10	FC	23,125	9,926	-	33,051	12,243,109	5,150,000	-	17,393,109
	11	FC	25,545	11,039	-	36,584	13,754,658	5,858,000	-	19,612,658
	12	FC	27,932	12,080	-	40,012	16,736,580	6,434,000	-	23,170,580

Historic and Forecasted Seasonal Loads for DETROIT LAKES, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	21,957	12,187	-	33,642	54,122,353	33,078,000	-	87,200,353
S2011	Hist.	23,775	12,187	-	35,962	55,656,978	33,078,000	-	88,734,978
S2012	Hist.	25,026	12,187	-	37,213	59,321,957	33,078,000	-	92,399,957
S2013	Hist.	24,935	12,187	-	36,620	60,041,459	33,078,000	-	93,119,459
S2014	Hist.	23,416	12,187	-	35,603	57,464,220	33,078,000	-	90,542,220
S2015	FC	24,848	12,187	-	36,533	60,441,695	33,078,000	-	93,519,695
S2016	FC	26,246	12,187	-	37,931	65,416,821	33,078,000	-	98,494,821
S2017	FC	26,693	12,187	-	38,378	67,256,907	33,078,000	-	100,334,907
S2018	FC	27,150	12,187	-	38,835	68,452,384	33,078,000	-	101,530,384
S2019	FC	27,615	12,187	-	39,300	69,670,531	33,078,000	-	102,748,531
S2020	FC	28,089	12,187	-	39,774	70,910,598	33,078,000	-	103,988,598
S2021	FC	28,691	12,065	-	40,259	72,509,706	32,748,000	-	105,257,706
W2009-10	Hist.	24,881	12,202	-	37,029	62,832,307	36,577,000	-	99,409,307
W2010-11	Hist.	21,899	12,202	-	34,047	69,748,753	36,577,000	-	106,325,753
W2011-12	Hist.	22,294	12,202	-	34,442	62,049,620	36,803,000	-	98,852,620
W2012-13	Hist.	23,862	12,202	-	36,010	72,391,874	36,577,000	-	108,968,874
W2013-14	Hist.	26,331	12,202	-	38,479	79,360,528	36,577,000	-	115,937,528
W2014-15	Hist.	24,163	12,202	-	36,311	73,861,491	36,577,000	-	110,438,491
W2015-16	FC	26,109	12,202	-	38,257	78,303,986	36,802,500	-	115,106,486
W2016-17	FC	27,333	12,202	-	39,481	81,465,010	36,577,000	-	118,042,010
W2017-18	FC	27,803	12,202	-	39,951	82,865,029	36,577,000	-	119,442,029
W2018-19	FC	28,282	12,202	-	40,430	84,293,747	36,577,000	-	120,870,747
W2019-20	FC	28,769	12,202	-	40,917	85,515,932	36,802,500	-	122,318,432
W2020-21	FC	29,389	12,202	-	41,416	87,475,469	36,336,000	-	123,811,469

Historic and Forecasted Annual Loads for DETROIT LAKES, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	24,881	12,202	-	37,029	118,927,914	69,655,000	-	188,582,914
2011	Hist.	23,775	12,202	-	35,962	122,917,358	69,655,000	-	192,572,358
2012	Hist.	25,026	12,202	-	37,213	123,621,900	69,881,000	-	193,502,900
2013	Hist.	24,935	12,202	-	36,620	135,708,043	69,655,000	-	205,363,043
2014	Hist.	26,331	12,202	-	38,479	135,913,952	69,655,000	-	205,568,952
2015	FC	24,848	12,202	-	36,791	135,615,795	69,655,000	-	205,270,795
2016	FC	26,246	12,202	-	38,257	144,411,663	69,880,500	-	214,292,163
2017	FC	27,333	12,202	-	39,481	149,196,320	69,655,000	-	218,851,320
2018	FC	27,803	12,202	-	39,951	151,802,962	69,655,000	-	221,457,962
2019	FC	28,282	12,202	-	40,430	154,459,036	69,655,000	-	224,114,036
2020	FC	28,769	12,202	-	40,917	156,930,189	69,880,500	-	226,810,689
2021	FC	29,389	12,080	-	41,416	160,624,309	68,960,000	-	229,584,309

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for ELBOW LAKE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	1,518	1,927	-	3,445	1,073,481	982,000	-	2,055,481
	2	Hist.	1,328	1,906	-	3,234	747,701	1,024,000	-	1,771,701
	3	Hist.	952	1,940	-	2,892	723,419	797,000	-	1,520,419
	4	Hist.	655	1,604	-	2,259	360,766	692,000	-	1,052,766
	5	Hist.	547	1,761	-	2,308	336,068	732,000	-	1,068,068
	6	Hist.	730	1,747	-	2,477	297,816	700,000	-	997,816
	7	Hist.	821	1,774	-	2,595	445,161	748,000	-	1,193,161
	8	Hist.	1,208	1,761	-	2,969	521,837	711,000	-	1,232,837
	9	Hist.	633	1,678	-	2,311	346,596	652,000	-	998,596
	10	Hist.	953	1,795	-	2,748	419,379	776,000	-	1,195,379
	11	Hist.	1,052	1,878	-	2,930	882,952	704,000	-	1,586,952
	12	Hist.	1,387	1,922	-	3,309	978,237	1,077,000	-	2,055,237
2011	1	Hist.	1,394	1,927	-	3,321	1,150,546	982,000	-	2,132,546
	2	Hist.	1,918	1,906	-	3,824	755,891	1,024,000	-	1,779,891
	3	Hist.	1,154	1,940	-	3,094	942,350	797,000	-	1,739,350
	4	Hist.	826	1,604	-	2,430	580,053	692,000	-	1,272,053
	5	Hist.	698	1,761	-	2,459	311,223	732,000	-	1,043,223
	6	Hist.	1,142	1,747	-	2,889	319,160	700,000	-	1,019,160
	7	Hist.	1,245	1,774	-	3,019	536,982	748,000	-	1,284,982
	8	Hist.	1,036	1,761	-	2,797	486,897	711,000	-	1,197,897
	9	Hist.	752	1,678	-	2,430	329,064	652,000	-	981,064
	10	Hist.	718	1,795	-	2,513	448,411	776,000	-	1,224,411
	11	Hist.	1,006	1,878	-	2,884	803,396	704,000	-	1,507,396
	12	Hist.	1,317	1,922	-	3,239	706,886	1,077,000	-	1,783,886
2012	1	Hist.	1,463	1,927	-	3,390	911,345	982,000	-	1,893,345
	2	Hist.	1,328	1,906	-	3,234	603,021	1,061,000	-	1,664,021
	3	Hist.	1,057	1,940	-	2,997	516,461	797,000	-	1,313,461
	4	Hist.	761	1,604	-	2,365	400,400	692,000	-	1,092,400
	5	Hist.	485	1,761	-	2,246	239,374	732,000	-	971,374
	6	Hist.	652	1,747	-	2,399	326,088	700,000	-	1,026,088
	7	Hist.	1,052	1,774	-	2,826	562,907	748,000	-	1,310,907
	8	Hist.	938	1,761	-	2,699	390,598	711,000	-	1,101,598
	9	Hist.	567	1,678	-	2,245	330,761	652,000	-	982,761
	10	Hist.	1,102	1,795	-	2,897	556,081	776,000	-	1,332,081
	11	Hist.	1,011	1,878	-	2,889	794,969	704,000	-	1,498,969
	12	Hist.	1,174	1,922	-	3,096	811,524	1,077,000	-	1,888,524
2013	1	Hist.	1,577	1,927	-	3,504	1,158,871	982,000	-	2,140,871
	2	Hist.	1,559	1,906	-	3,465	797,660	1,024,000	-	1,821,660
	3	Hist.	1,200	1,940	-	3,140	1,003,635	797,000	-	1,800,635
	4	Hist.	1,089	1,604	-	2,693	741,962	692,000	-	1,433,962
	5	Hist.	556	1,761	-	2,317	319,607	732,000	-	1,051,607
	6	Hist.	656	1,747	-	2,403	308,502	700,000	-	1,008,502
	7	Hist.	1,192	1,774	-	2,966	449,174	748,000	-	1,197,174
	8	Hist.	1,161	1,761	-	2,922	459,398	711,000	-	1,170,398
	9	Hist.	549	1,678	-	2,227	304,530	652,000	-	956,530
	10	Hist.	938	1,795	-	2,733	539,648	776,000	-	1,315,648
	11	Hist.	1,155	1,878	-	3,033	1,012,387	704,000	-	1,716,387
	12	Hist.	1,608	1,922	-	3,530	1,078,127	1,077,000	-	2,155,127
2014	1	Hist.	1,930	1,927	-	3,857	1,264,973	982,000	-	2,246,973
	2	Hist.	1,676	1,906	-	3,582	1,060,489	1,024,000	-	2,084,489
	3	Hist.	1,899	1,940	-	3,839	1,166,690	797,000	-	1,963,690
	4	Hist.	1,490	1,604	-	3,094	865,421	692,000	-	1,557,421
	5	Hist.	1,341	1,761	-	3,102	586,560	732,000	-	1,318,560
	6	Hist.	876	1,747	-	2,623	516,306	700,000	-	1,216,306
	7	Hist.	1,161	1,774	-	2,935	542,362	748,000	-	1,290,362
	8	Hist.	880	1,761	-	2,641	535,914	711,000	-	1,246,914
	9	Hist.	864	1,678	-	2,542	443,603	652,000	-	1,095,603
	10	Hist.	1,236	1,795	-	3,031	633,374	776,000	-	1,409,374
	11	Hist.	1,853	1,878	-	3,731	1,400,689	704,000	-	2,104,689
	12	Hist.	2,088	1,922	-	4,010	1,118,603	1,077,000	-	2,195,603
2015	1	Hist.	2,309	1,927	-	4,236	1,420,298	982,000	-	2,402,298
	2	Hist.	2,350	1,906	-	4,256	1,272,161	1,024,000	-	2,296,161
	3	Hist.	2,031	1,940	-	3,971	1,053,756	797,000	-	1,850,756
	4	Hist.	1,469	1,604	-	3,073	649,786	692,000	-	1,341,786
	5	Hist.	770	1,761	-	2,531	367,379	732,000	-	1,099,379
	6	Hist.	701	1,747	-	2,448	386,962	700,000	-	1,086,962
	7	Hist.	1,216	1,774	-	2,990	492,334	748,000	-	1,240,334
	8	Hist.	1,163	1,761	-	2,924	452,715	711,000	-	1,163,715
	9	Hist.	880	1,678	-	2,558	444,357	652,000	-	1,096,357
	10	FC	1,877	1,795	-	3,672	901,440	776,000	-	1,677,440
	11	FC	2,248	1,878	-	4,126	1,348,498	704,000	-	2,052,498
	12	FC	2,547	1,922	-	4,469	1,332,792	1,077,000	-	2,409,792

Historic and Forecasted Monthly Loads for ELBOW LAKE, MN

Year	Month	Historic/ Forecast	Demand (kW)				Energy (kWh)			
			MRES	WAPA	Other	Total	MRES	WAPA	Other	Total
2016	1	FC	2,256	1,927	-	4,183	1,497,299	982,000	-	2,479,299
	2	FC	2,102	1,906	-	4,008	1,108,347	1,060,571	-	2,168,918
	3	FC	1,862	1,940	-	3,802	1,144,071	797,000	-	1,941,071
	4	FC	1,399	1,604	-	3,003	785,395	692,000	-	1,477,395
	5	FC	995	1,761	-	2,756	464,738	732,000	-	1,196,738
	6	FC	1,082	1,747	-	2,829	469,854	700,000	-	1,169,854
	7	FC	1,360	1,774	-	3,134	627,365	748,000	-	1,375,365
	8	FC	1,355	1,761	-	3,116	613,553	711,000	-	1,324,553
	9	FC	974	1,678	-	2,652	480,379	652,000	-	1,132,379
	10	FC	1,364	1,795	-	3,159	696,238	776,000	-	1,472,238
	11	FC	1,615	1,878	-	3,493	1,192,213	704,000	-	1,896,213
	12	FC	2,033	1,922	-	3,955	1,250,182	1,077,000	-	2,327,182
2017	1	FC	2,280	1,927	-	4,207	1,511,574	982,000	-	2,493,574
	2	FC	2,126	1,906	-	4,032	1,159,066	1,024,000	-	2,183,066
	3	FC	1,884	1,940	-	3,824	1,155,254	797,000	-	1,952,254
	4	FC	1,416	1,604	-	3,020	793,929	692,000	-	1,485,929
	5	FC	1,011	1,761	-	2,772	471,692	732,000	-	1,203,692
	6	FC	1,098	1,747	-	2,845	476,649	700,000	-	1,176,649
	7	FC	1,379	1,774	-	3,153	635,335	748,000	-	1,383,335
	8	FC	1,372	1,761	-	3,133	621,225	711,000	-	1,332,225
	9	FC	989	1,678	-	2,667	486,950	652,000	-	1,138,950
	10	FC	1,383	1,795	-	3,178	704,763	776,000	-	1,480,763
	11	FC	1,635	1,878	-	3,513	1,203,118	704,000	-	1,907,118
	12	FC	2,056	1,922	-	3,978	1,263,620	1,077,000	-	2,340,620
2018	1	FC	2,309	1,927	-	4,236	1,528,766	982,000	-	2,510,766
	2	FC	2,153	1,906	-	4,059	1,174,165	1,024,000	-	2,198,165
	3	FC	1,910	1,940	-	3,850	1,168,721	797,000	-	1,965,721
	4	FC	1,437	1,604	-	3,041	804,205	692,000	-	1,496,205
	5	FC	1,031	1,761	-	2,792	480,068	732,000	-	1,212,068
	6	FC	1,118	1,747	-	2,865	484,832	700,000	-	1,184,832
	7	FC	1,400	1,774	-	3,174	644,932	748,000	-	1,392,932
	8	FC	1,394	1,761	-	3,155	630,465	711,000	-	1,341,465
	9	FC	1,008	1,678	-	2,686	494,862	652,000	-	1,146,862
	10	FC	1,405	1,795	-	3,200	715,029	776,000	-	1,491,029
	11	FC	1,660	1,878	-	3,538	1,216,253	704,000	-	1,920,253
	12	FC	2,083	1,922	-	4,005	1,279,803	1,077,000	-	2,356,803
2019	1	FC	2,341	1,927	-	4,268	1,547,760	982,000	-	2,529,760
	2	FC	2,184	1,906	-	4,090	1,190,849	1,024,000	-	2,214,849
	3	FC	1,939	1,940	-	3,879	1,183,603	797,000	-	1,980,603
	4	FC	1,461	1,604	-	3,065	815,558	692,000	-	1,507,558
	5	FC	1,051	1,761	-	2,812	489,322	732,000	-	1,221,322
	6	FC	1,140	1,747	-	2,887	493,873	700,000	-	1,193,873
	7	FC	1,424	1,774	-	3,198	655,537	748,000	-	1,403,537
	8	FC	1,418	1,761	-	3,179	640,676	711,000	-	1,351,676
	9	FC	1,028	1,678	-	2,706	503,606	652,000	-	1,155,606
	10	FC	1,429	1,795	-	3,224	726,372	776,000	-	1,502,372
	11	FC	1,686	1,878	-	3,564	1,230,764	704,000	-	1,934,764
	12	FC	2,113	1,922	-	4,035	1,297,684	1,077,000	-	2,374,684
2020	1	FC	2,373	1,927	-	4,300	1,566,564	982,000	-	2,548,564
	2	FC	2,214	1,906	-	4,120	1,169,184	1,060,571	-	2,229,755
	3	FC	1,968	1,940	-	3,908	1,198,332	797,000	-	1,995,332
	4	FC	1,484	1,604	-	3,088	826,798	692,000	-	1,518,798
	5	FC	1,072	1,761	-	2,833	498,483	732,000	-	1,230,483
	6	FC	1,162	1,747	-	2,909	502,823	700,000	-	1,202,823
	7	FC	1,448	1,774	-	3,222	666,034	748,000	-	1,414,034
	8	FC	1,442	1,761	-	3,203	650,782	711,000	-	1,361,782
	9	FC	1,048	1,678	-	2,726	512,261	652,000	-	1,164,261
	10	FC	1,453	1,795	-	3,248	737,602	776,000	-	1,513,602
	11	FC	1,713	1,878	-	3,591	1,245,130	704,000	-	1,949,130
	12	FC	2,143	1,922	-	4,065	1,315,384	1,077,000	-	2,392,384
2021	1	FC	2,425	1,908	-	4,333	1,595,823	972,000	-	2,567,823
	2	FC	2,264	1,887	-	4,151	1,234,334	1,014,000	-	2,248,334
	3	FC	2,017	1,921	-	3,938	1,221,428	789,000	-	2,010,428
	4	FC	1,523	1,588	-	3,111	845,355	685,000	-	1,530,355
	5	FC	1,113	1,743	-	2,856	514,959	725,000	-	1,239,959
	6	FC	1,201	1,730	-	2,931	519,087	693,000	-	1,212,087
	7	FC	1,491	1,756	-	3,247	683,848	741,000	-	1,424,848
	8	FC	1,485	1,743	-	3,228	668,205	704,000	-	1,372,205
	9	FC	1,087	1,661	-	2,748	528,231	645,000	-	1,173,231
	10	FC	1,496	1,777	-	3,273	757,191	768,000	-	1,525,191
	11	FC	1,760	1,859	-	3,619	1,266,816	697,000	-	1,963,816
	12	FC	2,193	1,903	-	4,096	1,344,583	1,066,000	-	2,410,583

Historic and Forecasted Seasonal Loads for ELBOW LAKE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	1,208	1,795	-	2,969	2,366,857	4,319,000	-	6,685,857
S2011	Hist.	1,245	1,795	-	3,019	2,431,737	4,319,000	-	6,750,737
S2012	Hist.	1,102	1,795	-	2,897	2,405,809	4,319,000	-	6,724,809
S2013	Hist.	1,192	1,795	-	2,966	2,380,859	4,319,000	-	6,699,859
S2014	Hist.	1,341	1,795	-	3,102	3,258,119	4,319,000	-	7,577,119
S2015	FC	1,877	1,795	-	3,672	3,045,187	4,319,000	-	7,364,187
S2016	FC	1,364	1,795	-	3,159	3,352,127	4,319,000	-	7,671,127
S2017	FC	1,383	1,795	-	3,178	3,396,614	4,319,000	-	7,715,614
S2018	FC	1,405	1,795	-	3,200	3,450,188	4,319,000	-	7,769,188
S2019	FC	1,429	1,795	-	3,224	3,509,386	4,319,000	-	7,828,386
S2020	FC	1,453	1,795	-	3,248	3,567,985	4,319,000	-	7,886,985
S2021	FC	1,496	1,777	-	3,273	3,671,521	4,276,000	-	7,947,521
W2009-10	Hist.	1,518	1,940	-	3,445	4,722,121	5,276,000	-	9,998,121
W2010-11	Hist.	1,918	1,940	-	3,824	5,290,029	5,276,000	-	10,566,029
W2011-12	Hist.	1,463	1,940	-	3,390	3,941,509	5,313,000	-	9,254,509
W2012-13	Hist.	1,577	1,940	-	3,504	5,308,621	5,276,000	-	10,584,621
W2013-14	Hist.	1,930	1,940	-	3,857	6,448,087	5,276,000	-	11,724,087
W2014-15	Hist.	2,350	1,940	-	4,256	6,915,293	5,276,000	-	12,191,293
W2015-16	FC	2,547	1,940	-	4,469	7,216,402	5,312,571	-	12,528,973
W2016-17	FC	2,280	1,940	-	4,207	7,062,218	5,276,000	-	12,338,218
W2017-18	FC	2,309	1,940	-	4,236	7,142,595	5,276,000	-	12,418,595
W2018-19	FC	2,341	1,940	-	4,268	7,233,826	5,276,000	-	12,509,826
W2019-20	FC	2,373	1,940	-	4,300	7,289,326	5,312,571	-	12,601,897
W2020-21	FC	2,425	1,922	-	4,333	7,457,454	5,241,000	-	12,698,454

Historic and Forecasted Annual Loads for ELBOW LAKE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	1,518	1,940	-	3,445	7,133,413	9,595,000	-	16,728,413
2011	Hist.	1,918	1,940	-	3,824	7,370,859	9,595,000	-	16,965,859
2012	Hist.	1,463	1,940	-	3,390	6,443,529	9,632,000	-	16,075,529
2013	Hist.	1,608	1,940	-	3,530	8,173,501	9,595,000	-	17,768,501
2014	Hist.	2,088	1,940	-	4,010	10,134,984	9,595,000	-	19,729,984
2015	FC	2,547	1,940	-	4,469	10,122,478	9,595,000	-	19,717,478
2016	FC	2,256	1,940	-	4,183	10,329,634	9,631,571	-	19,961,205
2017	FC	2,280	1,940	-	4,207	10,483,175	9,595,000	-	20,078,175
2018	FC	2,309	1,940	-	4,236	10,622,101	9,595,000	-	20,217,101
2019	FC	2,341	1,940	-	4,268	10,775,604	9,595,000	-	20,370,604
2020	FC	2,373	1,940	-	4,300	10,889,377	9,631,571	-	20,520,948
2021	FC	2,425	1,921	-	4,333	11,179,860	9,499,000	-	20,678,860

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for HENNING, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	989	1,018	-	2,007	545,574	527,000	-	1,072,574
	2	Hist.	929	1,039	-	1,968	357,098	542,000	-	899,098
	3	Hist.	623	1,054	-	1,677	392,676	447,000	-	839,676
	4	Hist.	499	960	-	1,459	222,847	449,000	-	671,847
	5	Hist.	639	778	-	1,417	377,047	328,000	-	705,047
	6	Hist.	750	732	-	1,482	368,137	300,000	-	668,137
	7	Hist.	848	750	-	1,598	388,152	388,000	-	776,152
	8	Hist.	985	757	-	1,742	514,395	267,000	-	781,395
	9	Hist.	538	776	-	1,314	310,967	328,000	-	638,967
	10	Hist.	679	828	-	1,507	376,459	331,000	-	707,459
	11	Hist.	777	966	-	1,743	448,803	420,000	-	868,803
	12	Hist.	911	1,077	-	1,988	544,476	511,000	-	1,055,476
2011	1	Hist.	1,016	1,018	-	2,034	569,167	527,000	-	1,096,167
	2	Hist.	1,097	1,039	-	2,136	399,027	542,000	-	941,027
	3	Hist.	851	1,054	-	1,905	490,227	447,000	-	937,227
	4	Hist.	635	960	-	1,595	313,340	449,000	-	762,340
	5	Hist.	748	778	-	1,526	363,176	328,000	-	691,176
	6	Hist.	1,018	732	-	1,750	374,562	300,000	-	674,562
	7	Hist.	1,119	750	-	1,869	452,783	388,000	-	840,783
	8	Hist.	948	757	-	1,705	492,486	267,000	-	759,486
	9	Hist.	745	776	-	1,521	350,509	328,000	-	678,509
	10	Hist.	616	828	-	1,444	387,924	331,000	-	718,924
	11	Hist.	676	966	-	1,642	401,769	420,000	-	821,769
	12	Hist.	725	1,077	-	1,802	456,602	511,000	-	967,602
2012	1	Hist.	999	1,018	-	2,017	483,959	527,000	-	1,010,959
	2	Hist.	871	1,039	-	1,910	339,384	561,000	-	900,384
	3	Hist.	706	1,054	-	1,760	349,024	447,000	-	796,024
	4	Hist.	521	960	-	1,481	245,408	449,000	-	694,408
	5	Hist.	559	778	-	1,337	335,953	328,000	-	663,953
	6	Hist.	873	732	-	1,605	385,436	300,000	-	685,436
	7	Hist.	1,112	750	-	1,862	484,113	388,000	-	872,113
	8	Hist.	967	757	-	1,724	488,356	267,000	-	755,356
	9	Hist.	740	776	-	1,516	323,262	328,000	-	651,262
	10	Hist.	713	828	-	1,541	424,207	331,000	-	755,207
	11	Hist.	769	966	-	1,735	415,233	420,000	-	835,233
	12	Hist.	832	1,077	-	1,909	477,786	511,000	-	988,786
2013	1	Hist.	1,064	1,018	-	2,082	542,340	527,000	-	1,069,340
	2	Hist.	931	1,039	-	1,970	374,411	542,000	-	916,411
	3	Hist.	763	1,054	-	1,817	491,170	447,000	-	938,170
	4	Hist.	711	960	-	1,671	364,708	449,000	-	813,708
	5	Hist.	701	778	-	1,479	366,413	328,000	-	694,413
	6	Hist.	878	732	-	1,610	362,591	300,000	-	662,591
	7	Hist.	1,042	750	-	1,792	382,581	388,000	-	770,581
	8	Hist.	1,139	757	-	1,896	506,124	267,000	-	773,124
	9	Hist.	877	776	-	1,653	325,800	328,000	-	653,800
	10	Hist.	758	828	-	1,586	403,900	331,000	-	734,900
	11	Hist.	854	966	-	1,820	455,846	420,000	-	875,846
	12	Hist.	914	1,077	-	1,991	571,704	511,000	-	1,082,704
2014	1	Hist.	1,067	1,018	-	2,085	603,260	527,000	-	1,130,260
	2	Hist.	1,087	1,039	-	2,126	463,252	542,000	-	1,005,252
	3	Hist.	941	1,054	-	1,995	529,244	447,000	-	976,244
	4	Hist.	717	960	-	1,677	349,478	449,000	-	798,478
	5	Hist.	780	778	-	1,558	409,564	328,000	-	737,564
	6	Hist.	752	732	-	1,484	393,051	300,000	-	693,051
	7	Hist.	1,051	750	-	1,801	354,659	388,000	-	742,659
	8	Hist.	786	757	-	1,543	475,665	267,000	-	742,665
	9	Hist.	593	776	-	1,369	323,262	328,000	-	651,262
	10	Hist.	693	828	-	1,521	388,670	331,000	-	719,670
	11	Hist.	889	966	-	1,855	496,459	420,000	-	916,459
	12	Hist.	904	1,077	-	1,981	485,401	511,000	-	996,401
2015	1	Hist.	1,079	1,018	-	2,097	523,036	527,000	-	1,050,036
	2	Hist.	1,033	1,039	-	2,072	433,623	542,000	-	975,623
	3	Hist.	902	1,054	-	1,956	428,533	447,000	-	875,533
	4	Hist.	620	960	-	1,580	273,854	449,000	-	722,854
	5	Hist.	598	778	-	1,376	328,969	328,000	-	656,969
	6	Hist.	662	732	-	1,394	360,744	300,000	-	660,744
	7	Hist.	942	750	-	1,692	388,401	388,000	-	776,401
	8	Hist.	1,035	757	-	1,792	484,207	267,000	-	751,207
	9	Hist.	930	776	-	1,706	382,375	328,000	-	710,375
	10	FC	707	828	-	1,535	412,433	331,000	-	743,433
	11	FC	799	966	-	1,765	442,272	420,000	-	862,272
	12	FC	859	1,077	-	1,936	519,543	511,000	-	1,030,543

Historic and Forecasted Monthly Loads for HENNING, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	1,069	1,018	-	2,087	557,733	527,000	-	1,084,733
	2	FC	913	1,039	-	1,952	370,923	561,357	-	932,280
	3	FC	818	1,054	-	1,872	451,625	447,000	-	898,625
	4	FC	621	960	-	1,581	300,139	449,000	-	749,139
	5	FC	667	778	-	1,445	357,291	328,000	-	685,291
	6	FC	848	732	-	1,580	377,567	300,000	-	677,567
	7	FC	1,011	750	-	1,761	403,698	388,000	-	791,698
	8	FC	957	757	-	1,714	495,027	267,000	-	762,027
	9	FC	706	776	-	1,482	334,535	328,000	-	662,535
	10	FC	722	828	-	1,550	412,149	331,000	-	743,149
	11	FC	803	966	-	1,769	449,978	420,000	-	869,978
	12	FC	873	1,077	-	1,950	516,995	511,000	-	1,027,995
2017	1	FC	1,087	1,018	-	2,105	567,302	527,000	-	1,094,302
	2	FC	929	1,039	-	1,968	399,398	542,000	-	941,398
	3	FC	835	1,054	-	1,889	459,556	447,000	-	906,556
	4	FC	635	960	-	1,595	306,779	449,000	-	755,779
	5	FC	679	778	-	1,457	363,335	328,000	-	691,335
	6	FC	863	732	-	1,595	383,533	300,000	-	683,533
	7	FC	1,026	750	-	1,776	410,685	388,000	-	798,685
	8	FC	971	757	-	1,728	501,711	267,000	-	768,711
	9	FC	719	776	-	1,495	340,382	328,000	-	668,382
	10	FC	736	828	-	1,564	418,694	331,000	-	749,694
	11	FC	819	966	-	1,785	457,651	420,000	-	877,651
	12	FC	891	1,077	-	1,968	526,068	511,000	-	1,037,068
2018	1	FC	1,106	1,018	-	2,124	576,925	527,000	-	1,103,925
	2	FC	947	1,039	-	1,986	407,709	542,000	-	949,709
	3	FC	851	1,054	-	1,905	467,532	447,000	-	914,532
	4	FC	649	960	-	1,609	313,457	449,000	-	762,457
	5	FC	692	778	-	1,470	369,413	328,000	-	697,413
	6	FC	876	732	-	1,608	389,532	300,000	-	689,532
	7	FC	1,042	750	-	1,792	417,709	388,000	-	805,709
	8	FC	987	757	-	1,744	508,431	267,000	-	775,431
	9	FC	733	776	-	1,509	346,261	328,000	-	674,261
	10	FC	750	828	-	1,578	425,275	331,000	-	756,275
	11	FC	835	966	-	1,801	465,368	420,000	-	885,368
	12	FC	908	1,077	-	1,985	535,192	511,000	-	1,046,192
2019	1	FC	1,124	1,018	-	2,142	586,530	527,000	-	1,113,530
	2	FC	965	1,039	-	2,004	416,006	542,000	-	958,006
	3	FC	868	1,054	-	1,922	475,493	447,000	-	922,493
	4	FC	663	960	-	1,623	320,123	449,000	-	769,123
	5	FC	704	778	-	1,482	375,479	328,000	-	703,479
	6	FC	890	732	-	1,622	395,520	300,000	-	695,520
	7	FC	1,058	750	-	1,808	424,720	388,000	-	812,720
	8	FC	1,001	757	-	1,758	515,139	267,000	-	782,139
	9	FC	745	776	-	1,521	352,131	328,000	-	680,131
	10	FC	764	828	-	1,592	431,844	331,000	-	762,844
	11	FC	851	966	-	1,817	473,070	420,000	-	893,070
	12	FC	925	1,077	-	2,002	544,299	511,000	-	1,055,299
2020	1	FC	1,143	1,018	-	2,161	596,139	527,000	-	1,123,139
	2	FC	982	1,039	-	2,021	404,096	561,357	-	965,453
	3	FC	885	1,054	-	1,939	483,458	447,000	-	930,458
	4	FC	677	960	-	1,637	326,792	449,000	-	775,792
	5	FC	718	778	-	1,496	381,548	328,000	-	709,548
	6	FC	904	732	-	1,636	401,512	300,000	-	701,512
	7	FC	1,073	750	-	1,823	431,734	388,000	-	819,734
	8	FC	1,017	757	-	1,774	521,850	267,000	-	788,850
	9	FC	759	776	-	1,535	358,001	328,000	-	686,001
	10	FC	777	828	-	1,605	438,415	331,000	-	769,415
	11	FC	867	966	-	1,833	480,776	420,000	-	900,776
	12	FC	943	1,077	-	2,020	553,410	511,000	-	1,064,410
2021	1	FC	1,171	1,008	-	2,179	611,015	522,000	-	1,133,015
	2	FC	1,010	1,029	-	2,039	437,865	537,000	-	974,865
	3	FC	913	1,043	-	1,956	495,636	443,000	-	938,636
	4	FC	701	950	-	1,651	337,668	445,000	-	782,668
	5	FC	739	770	-	1,509	390,778	325,000	-	715,778
	6	FC	925	725	-	1,650	410,664	297,000	-	707,664
	7	FC	1,096	743	-	1,839	442,959	384,000	-	826,959
	8	FC	1,040	749	-	1,789	531,726	264,000	-	795,726
	9	FC	780	768	-	1,548	367,033	325,000	-	692,033
	10	FC	799	820	-	1,619	448,151	328,000	-	776,151
	11	FC	893	956	-	1,849	492,694	416,000	-	908,694
	12	FC	971	1,066	-	2,037	567,785	506,000	-	1,073,785

Historic and Forecasted Seasonal Loads for HENNING, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	985	828	-	1,742	2,335,157	1,942,000	-	4,277,157
S2011	Hist.	1,119	828	-	1,869	2,421,440	1,942,000	-	4,363,440
S2012	Hist.	1,112	828	-	1,862	2,441,327	1,942,000	-	4,383,327
S2013	Hist.	1,139	828	-	1,896	2,347,409	1,942,000	-	4,289,409
S2014	Hist.	1,051	828	-	1,801	2,344,871	1,942,000	-	4,286,871
S2015	FC	1,035	828	-	1,792	2,357,129	1,942,000	-	4,299,129
S2016	FC	1,011	828	-	1,761	2,380,267	1,942,000	-	4,322,267
S2017	FC	1,026	828	-	1,776	2,418,340	1,942,000	-	4,360,340
S2018	FC	1,042	828	-	1,792	2,456,621	1,942,000	-	4,398,621
S2019	FC	1,058	828	-	1,808	2,494,833	1,942,000	-	4,436,833
S2020	FC	1,073	828	-	1,823	2,533,060	1,942,000	-	4,475,060
S2021	FC	1,096	820	-	1,839	2,591,311	1,923,000	-	4,514,311
W2009-10	Hist.	989	1,077	-	2,030	2,468,268	2,896,000	-	5,364,268
W2010-11	Hist.	1,097	1,077	-	2,136	2,765,040	2,896,000	-	5,661,040
W2011-12	Hist.	999	1,077	-	2,017	2,276,146	2,915,000	-	5,191,146
W2012-13	Hist.	1,064	1,077	-	2,082	2,665,648	2,896,000	-	5,561,648
W2013-14	Hist.	1,087	1,077	-	2,126	2,972,784	2,896,000	-	5,868,784
W2014-15	Hist.	1,079	1,077	-	2,097	2,640,906	2,896,000	-	5,536,906
W2015-16	FC	1,069	1,077	-	2,087	2,642,235	2,915,357	-	5,557,592
W2016-17	FC	1,087	1,077	-	2,105	2,700,008	2,896,000	-	5,596,008
W2017-18	FC	1,106	1,077	-	2,124	2,749,342	2,896,000	-	5,645,342
W2018-19	FC	1,124	1,077	-	2,142	2,798,712	2,896,000	-	5,694,712
W2019-20	FC	1,143	1,077	-	2,161	2,827,854	2,915,357	-	5,743,211
W2020-21	FC	1,171	1,077	-	2,179	2,916,370	2,878,000	-	5,794,370

Historic and Forecasted Annual Loads for HENNING, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	989	1,077	-	2,007	4,846,631	4,838,000	-	9,684,631
2011	Hist.	1,119	1,077	-	2,136	5,051,572	4,838,000	-	9,889,572
2012	Hist.	1,112	1,077	-	2,017	4,752,121	4,857,000	-	9,609,121
2013	Hist.	1,139	1,077	-	2,082	5,147,588	4,838,000	-	9,985,588
2014	Hist.	1,087	1,077	-	2,126	5,271,965	4,838,000	-	10,109,965
2015	FC	1,079	1,077	-	2,097	4,977,990	4,838,000	-	9,815,990
2016	FC	1,069	1,077	-	2,087	5,027,660	4,857,357	-	9,885,017
2017	FC	1,087	1,077	-	2,105	5,135,094	4,838,000	-	9,973,094
2018	FC	1,106	1,077	-	2,124	5,222,804	4,838,000	-	10,060,804
2019	FC	1,124	1,077	-	2,142	5,310,354	4,838,000	-	10,148,354
2020	FC	1,143	1,077	-	2,161	5,377,731	4,857,357	-	10,235,088
2021	FC	1,171	1,066	-	2,179	5,533,974	4,792,000	-	10,325,974

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for JACKSON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	4,026	4,227	-	8,253	2,435,285	2,003,000	-	4,438,285
	2	Hist.	3,895	4,088	-	7,983	1,858,375	2,171,000	-	4,029,375
	3	Hist.	3,598	4,035	-	7,633	2,036,970	1,950,000	-	3,986,970
	4	Hist.	2,998	4,018	-	7,016	1,413,835	1,895,000	-	3,308,835
	5	Hist.	4,473	4,606	-	9,079	1,335,441	2,073,000	-	3,408,441
	6	Hist.	4,021	5,057	-	9,078	1,579,740	2,020,000	-	3,599,740
	7	Hist.	5,437	4,905	-	10,342	2,318,371	1,973,000	-	4,291,371
	8	Hist.	5,072	5,123	-	10,195	2,423,487	2,211,000	-	4,634,487
	9	Hist.	2,346	5,211	-	7,557	1,294,385	2,133,000	-	3,427,385
	10	Hist.	1,766	5,674	-	7,440	1,158,868	2,628,000	-	3,786,868
	11	Hist.	3,895	3,969	-	7,864	2,065,929	1,961,000	-	4,026,929
	12	Hist.	3,901	4,194	-	8,095	2,383,263	2,062,000	-	4,445,263
2011	1	Hist.	4,112	4,227	-	8,339	2,592,620	2,003,000	-	4,595,620
	2	Hist.	4,003	4,088	-	8,091	1,859,524	2,171,000	-	4,030,524
	3	Hist.	3,728	4,035	-	7,763	2,174,272	1,950,000	-	4,124,272
	4	Hist.	3,274	4,018	-	7,292	1,711,224	1,895,000	-	3,606,224
	5	Hist.	3,617	4,606	-	8,223	1,376,489	2,073,000	-	3,449,489
	6	Hist.	5,265	5,057	-	10,322	1,775,576	2,020,000	-	3,795,576
	7	Hist.	6,604	4,905	-	11,509	2,920,887	1,973,000	-	4,893,887
	8	Hist.	5,811	5,123	-	10,934	2,527,779	2,211,000	-	4,738,779
	9	Hist.	5,089	5,211	-	10,300	1,635,218	2,133,000	-	3,768,218
	10	Hist.	2,161	5,674	-	7,835	1,464,719	2,628,000	-	4,092,719
	11	Hist.	3,791	3,969	-	7,760	2,169,760	1,961,000	-	4,130,760
	12	Hist.	4,315	4,194	-	8,509	2,414,485	2,062,000	-	4,476,485
2012	1	Hist.	4,235	4,227	-	8,462	2,704,547	2,003,000	-	4,707,547
	2	Hist.	3,939	4,088	-	8,027	2,074,440	2,249,000	-	4,323,440
	3	Hist.	3,462	4,035	-	7,497	2,170,332	1,950,000	-	4,120,332
	4	Hist.	3,414	4,018	-	7,432	1,832,569	1,895,000	-	3,727,569
	5	Hist.	4,181	4,606	-	8,787	1,985,100	2,073,000	-	4,058,100
	6	Hist.	5,618	5,057	-	10,675	2,306,155	2,020,000	-	4,326,155
	7	Hist.	6,559	4,905	-	11,464	3,451,176	1,973,000	-	5,424,176
	8	Hist.	5,948	5,123	-	11,071	2,763,439	2,211,000	-	4,974,439
	9	Hist.	5,089	5,211	-	10,300	2,106,574	2,133,000	-	4,239,574
	10	Hist.	2,241	5,674	-	7,915	1,828,899	2,628,000	-	4,456,899
	11	Hist.	4,454	3,969	-	8,423	2,345,683	1,961,000	-	4,306,683
	12	Hist.	4,430	4,194	-	8,624	2,641,518	2,062,000	-	4,703,518
2013	1	Hist.	4,811	4,227	-	9,038	3,093,740	2,003,000	-	5,096,740
	2	Hist.	4,823	4,088	-	8,911	2,419,126	2,171,000	-	4,590,126
	3	Hist.	4,286	4,035	-	8,321	2,759,845	1,950,000	-	4,709,845
	4	Hist.	3,983	4,018	-	8,001	2,420,035	1,895,000	-	4,315,035
	5	Hist.	4,092	4,606	-	8,698	2,152,395	2,073,000	-	4,225,395
	6	Hist.	4,779	5,057	-	9,836	2,298,677	2,020,000	-	4,318,677
	7	Hist.	6,134	4,905	-	11,039	3,030,342	1,973,000	-	5,003,342
	8	Hist.	6,677	5,123	-	11,800	2,816,157	2,211,000	-	5,027,157
	9	Hist.	5,632	5,211	-	10,843	2,273,998	2,133,000	-	4,406,998
	10	Hist.	2,658	5,674	-	8,332	1,921,708	2,628,000	-	4,549,708
	11	Hist.	4,888	3,969	-	8,857	2,712,972	1,961,000	-	4,673,972
	12	Hist.	5,253	4,194	-	9,447	2,875,908	2,062,000	-	4,937,908
2014	1	Hist.	5,148	4,227	-	9,375	3,234,653	2,003,000	-	5,237,653
	2	Hist.	5,165	4,088	-	9,253	2,608,461	2,171,000	-	4,779,461
	3	Hist.	4,663	4,035	-	8,698	2,832,990	1,950,000	-	4,782,990
	4	Hist.	4,153	4,018	-	8,171	2,283,047	1,895,000	-	4,178,047
	5	Hist.	4,488	4,606	-	9,094	2,068,382	2,073,000	-	4,141,382
	6	Hist.	3,785	5,057	-	8,842	2,214,827	2,020,000	-	4,234,827
	7	Hist.	5,557	4,905	-	10,462	2,419,402	1,973,000	-	4,392,402
	8	Hist.	5,327	5,123	-	10,450	2,509,025	2,211,000	-	4,720,025
	9	Hist.	3,499	5,211	-	8,710	1,604,072	2,133,000	-	3,737,072
	10	Hist.	2,603	5,674	-	8,277	1,230,369	2,628,000	-	3,858,369
	11	Hist.	4,818	3,969	-	8,787	2,306,170	1,961,000	-	4,267,170
	12	Hist.	4,514	4,194	-	8,708	2,378,839	2,062,000	-	4,440,839
2015	1	Hist.	4,948	4,227	-	9,175	2,806,894	2,003,000	-	4,809,894
	2	Hist.	4,997	4,088	-	9,085	2,423,377	2,171,000	-	4,594,377
	3	Hist.	4,597	4,035	-	8,632	2,436,069	1,950,000	-	4,386,069
	4	Hist.	3,664	4,018	-	7,682	1,682,482	1,895,000	-	3,577,482
	5	Hist.	2,743	4,606	-	7,349	1,232,371	2,073,000	-	3,305,371
	6	Hist.	4,404	5,057	-	9,461	1,984,410	2,020,000	-	4,004,410
	7	Hist.	5,851	4,905	-	10,756	2,904,480	1,973,000	-	4,877,480
	8	Hist.	5,040	5,123	-	10,163	2,302,765	2,211,000	-	4,513,765
	9	Hist.	4,035	5,211	-	9,246	1,843,804	2,133,000	-	3,976,804
	10	FC	4,155	5,674	-	9,829	2,503,638	2,628,000	-	5,131,638
	11	FC	6,365	3,969	-	10,334	3,270,451	1,961,000	-	5,231,451
	12	FC	6,381	4,194	-	10,575	3,435,359	2,062,000	-	5,497,359

Historic and Forecasted Monthly Loads for JACKSON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	4,580	4,227	-	8,807	2,849,156	2,003,000	-	4,852,156
	2	FC	4,231	4,088	-	8,319	2,154,857	2,248,535	-	4,403,392
	3	FC	4,123	4,035	-	8,158	2,464,016	1,950,000	-	4,414,016
	4	FC	3,707	4,018	-	7,725	1,986,942	1,895,000	-	3,881,942
	5	FC	3,818	4,606	-	8,424	1,755,725	2,073,000	-	3,828,725
	6	FC	4,578	5,057	-	9,635	2,002,657	2,020,000	-	4,022,657
	7	FC	5,645	4,905	-	10,550	2,640,856	1,973,000	-	4,613,856
	8	FC	5,300	5,123	-	10,423	2,406,334	2,211,000	-	4,617,334
	9	FC	3,958	5,211	-	9,169	1,655,942	2,133,000	-	3,788,942
	10	FC	2,152	5,674	-	7,826	1,452,126	2,628,000	-	4,080,126
	11	FC	4,297	3,969	-	8,266	2,285,937	1,961,000	-	4,246,937
	12	FC	4,472	4,194	-	8,666	2,536,868	2,062,000	-	4,598,868
2017	1	FC	4,663	4,227	-	8,890	2,894,382	2,003,000	-	4,897,382
	2	FC	4,309	4,088	-	8,397	2,276,044	2,171,000	-	4,447,044
	3	FC	4,199	4,035	-	8,234	2,505,195	1,950,000	-	4,455,195
	4	FC	3,779	4,018	-	7,797	2,023,210	1,895,000	-	3,918,210
	5	FC	3,898	4,606	-	8,504	1,791,557	2,073,000	-	3,864,557
	6	FC	4,669	5,057	-	9,726	2,040,257	2,020,000	-	4,060,257
	7	FC	5,743	4,905	-	10,648	2,683,881	1,973,000	-	4,656,881
	8	FC	5,397	5,123	-	10,520	2,449,461	2,211,000	-	4,660,461
	9	FC	4,044	5,211	-	9,255	1,691,426	2,133,000	-	3,824,426
	10	FC	2,225	5,674	-	7,899	1,490,435	2,628,000	-	4,118,435
	11	FC	4,374	3,969	-	8,343	2,325,583	1,961,000	-	4,286,583
	12	FC	4,553	4,194	-	8,747	2,579,781	2,062,000	-	4,641,781
2018	1	FC	4,743	4,227	-	8,970	2,938,698	2,003,000	-	4,941,698
	2	FC	4,385	4,088	-	8,473	2,316,386	2,171,000	-	4,487,386
	3	FC	4,275	4,035	-	8,310	2,545,548	1,950,000	-	4,495,548
	4	FC	3,850	4,018	-	7,868	2,058,749	1,895,000	-	3,953,749
	5	FC	3,974	4,606	-	8,580	1,826,668	2,073,000	-	3,899,668
	6	FC	4,756	5,057	-	9,813	2,077,101	2,020,000	-	4,097,101
	7	FC	5,840	4,905	-	10,745	2,726,040	1,973,000	-	4,699,040
	8	FC	5,492	5,123	-	10,615	2,491,722	2,211,000	-	4,702,722
	9	FC	4,128	5,211	-	9,339	1,726,195	2,133,000	-	3,859,195
	10	FC	2,297	5,674	-	7,971	1,527,972	2,628,000	-	4,155,972
	11	FC	4,450	3,969	-	8,419	2,364,432	1,961,000	-	4,325,432
	12	FC	4,633	4,194	-	8,827	2,621,831	2,062,000	-	4,683,831
2019	1	FC	4,823	4,227	-	9,050	2,982,332	2,003,000	-	4,985,332
	2	FC	4,459	4,088	-	8,547	2,356,107	2,171,000	-	4,527,107
	3	FC	4,348	4,035	-	8,383	2,585,278	1,950,000	-	4,535,278
	4	FC	3,920	4,018	-	7,938	2,093,742	1,895,000	-	3,988,742
	5	FC	4,051	4,606	-	8,657	1,861,238	2,073,000	-	3,934,238
	6	FC	4,843	5,057	-	9,900	2,113,378	2,020,000	-	4,133,378
	7	FC	5,935	4,905	-	10,840	2,767,552	1,973,000	-	4,740,552
	8	FC	5,586	5,123	-	10,709	2,533,330	2,211,000	-	4,744,330
	9	FC	4,211	5,211	-	9,422	1,760,430	2,133,000	-	3,893,430
	10	FC	2,368	5,674	-	8,042	1,564,931	2,628,000	-	4,192,931
	11	FC	4,524	3,969	-	8,493	2,402,682	1,961,000	-	4,363,682
	12	FC	4,710	4,194	-	8,904	2,663,234	2,062,000	-	4,725,234
2020	1	FC	4,901	4,227	-	9,128	3,025,467	2,003,000	-	5,028,467
	2	FC	4,534	4,088	-	8,622	2,315,356	2,248,535	-	4,563,891
	3	FC	4,420	4,035	-	8,455	2,624,552	1,950,000	-	4,574,552
	4	FC	3,989	4,018	-	8,007	2,128,333	1,895,000	-	4,023,333
	5	FC	4,126	4,606	-	8,732	1,895,412	2,073,000	-	3,968,412
	6	FC	4,930	5,057	-	9,987	2,149,239	2,020,000	-	4,169,239
	7	FC	6,029	4,905	-	10,934	2,808,586	1,973,000	-	4,781,586
	8	FC	5,680	5,123	-	10,803	2,574,462	2,211,000	-	4,785,462
	9	FC	4,293	5,211	-	9,504	1,794,272	2,133,000	-	3,927,272
	10	FC	2,439	5,674	-	8,113	1,601,467	2,628,000	-	4,229,467
	11	FC	4,598	3,969	-	8,567	2,440,494	1,961,000	-	4,401,494
	12	FC	4,787	4,194	-	8,981	2,704,162	2,062,000	-	4,766,162
2021	1	FC	5,023	4,185	-	9,208	3,088,836	1,983,000	-	5,071,836
	2	FC	4,649	4,047	-	8,696	2,456,973	2,149,000	-	4,605,973
	3	FC	4,534	3,995	-	8,529	2,683,067	1,931,000	-	4,614,067
	4	FC	4,098	3,978	-	8,076	2,182,208	1,876,000	-	4,058,208
	5	FC	4,248	4,560	-	8,808	1,950,938	2,052,000	-	4,002,938
	6	FC	5,067	5,006	-	10,073	2,205,404	2,000,000	-	4,205,404
	7	FC	6,172	4,856	-	11,028	2,869,876	1,953,000	-	4,822,876
	8	FC	5,825	5,072	-	10,897	2,637,913	2,189,000	-	4,826,913
	9	FC	4,427	5,159	-	9,586	1,849,469	2,112,000	-	3,961,469
	10	FC	2,567	5,617	-	8,184	1,664,492	2,602,000	-	4,266,492
	11	FC	4,712	3,929	-	8,641	2,498,592	1,941,000	-	4,439,592
	12	FC	4,907	4,152	-	9,059	2,766,378	2,041,000	-	4,807,378

Historic and Forecasted Seasonal Loads for JACKSON, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	5,437	5,674	-	10,342	10,110,292	13,038,000	-	23,148,292
S2011	Hist.	6,604	5,674	-	11,509	11,700,668	13,038,000	-	24,738,668
S2012	Hist.	6,559	5,674	-	11,464	14,441,343	13,038,000	-	27,479,343
S2013	Hist.	6,677	5,674	-	11,800	14,493,277	13,038,000	-	27,531,277
S2014	Hist.	5,557	5,674	-	10,462	12,046,077	13,038,000	-	25,084,077
S2015	FC	5,851	5,674	-	10,756	12,771,468	13,038,000	-	25,809,468
S2016	FC	5,645	5,674	-	10,550	11,913,640	13,038,000	-	24,951,640
S2017	FC	5,743	5,674	-	10,648	12,147,017	13,038,000	-	25,185,017
S2018	FC	5,840	5,674	-	10,745	12,375,698	13,038,000	-	25,413,698
S2019	FC	5,935	5,674	-	10,840	12,600,859	13,038,000	-	25,638,859
S2020	FC	6,029	5,674	-	10,934	12,823,438	13,038,000	-	25,861,438
S2021	FC	6,172	5,617	-	11,028	13,178,092	12,908,000	-	26,086,092
W2009-10	Hist.	4,026	4,227	-	8,253	11,537,447	12,042,000	-	23,579,447
W2010-11	Hist.	4,112	4,227	-	8,339	12,786,832	12,042,000	-	24,828,832
W2011-12	Hist.	4,315	4,227	-	8,509	13,366,133	12,120,000	-	25,486,133
W2012-13	Hist.	4,823	4,227	-	9,038	15,679,947	12,042,000	-	27,721,947
W2013-14	Hist.	5,253	4,227	-	9,447	16,548,031	12,042,000	-	28,590,031
W2014-15	Hist.	4,997	4,227	-	9,175	14,033,831	12,042,000	-	26,075,831
W2015-16	FC	6,381	4,227	-	10,575	16,160,781	12,119,535	-	28,280,316
W2016-17	FC	4,663	4,227	-	8,890	14,521,636	12,042,000	-	26,563,636
W2017-18	FC	4,743	4,227	-	8,970	14,764,745	12,042,000	-	26,806,745
W2018-19	FC	4,823	4,227	-	9,050	15,003,722	12,042,000	-	27,045,722
W2019-20	FC	4,901	4,227	-	9,128	15,159,624	12,119,535	-	27,279,159
W2020-21	FC	5,023	4,194	-	9,208	15,555,740	11,962,000	-	27,517,740

Historic and Forecasted Annual Loads for JACKSON, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	5,437	5,674	-	10,342	22,303,949	25,080,000	-	47,383,949
2011	Hist.	6,604	5,674	-	11,509	24,622,553	25,080,000	-	49,702,553
2012	Hist.	6,559	5,674	-	11,464	28,210,432	25,158,000	-	53,368,432
2013	Hist.	6,677	5,674	-	11,800	30,774,903	25,080,000	-	55,854,903
2014	Hist.	5,557	5,674	-	10,462	27,690,237	25,080,000	-	52,770,237
2015	FC	6,381	5,674	-	10,756	28,826,100	25,080,000	-	53,906,100
2016	FC	5,645	5,674	-	10,550	26,191,416	25,157,535	-	51,348,951
2017	FC	5,743	5,674	-	10,648	26,751,212	25,080,000	-	51,831,212
2018	FC	5,840	5,674	-	10,745	27,221,342	25,080,000	-	52,301,342
2019	FC	5,935	5,674	-	10,840	27,684,234	25,080,000	-	52,764,234
2020	FC	6,029	5,674	-	10,934	28,061,802	25,157,535	-	53,219,337
2021	FC	6,172	5,617	-	11,028	28,854,146	24,829,000	-	53,683,146

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for LAKE PARK, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	870	720	-	1,590	457,362	385,000	-	842,362
	2	Hist.	748	740	-	1,488	359,106	359,000	-	718,106
	3	Hist.	639	734	-	1,373	319,109	334,000	-	653,109
	4	Hist.	287	760	-	1,047	220,084	286,000	-	506,084
	5	Hist.	680	521	-	1,201	292,834	252,000	-	544,834
	6	Hist.	514	548	-	1,062	220,101	260,000	-	480,101
	7	Hist.	634	572	-	1,206	320,336	250,000	-	570,336
	8	Hist.	757	568	-	1,325	350,041	267,000	-	617,041
	9	Hist.	488	575	-	1,063	239,390	261,000	-	500,390
	10	Hist.	631	577	-	1,208	295,680	285,000	-	580,680
	11	Hist.	863	685	-	1,548	467,212	270,000	-	737,212
	12	Hist.	982	743	-	1,725	548,333	392,000	-	940,333
2011	1	Hist.	1,098	720	-	1,818	589,331	385,000	-	974,331
	2	Hist.	1,065	740	-	1,805	459,297	359,000	-	818,297
	3	Hist.	852	734	-	1,586	470,097	334,000	-	804,097
	4	Hist.	436	760	-	1,196	337,609	286,000	-	623,609
	5	Hist.	627	521	-	1,148	286,832	252,000	-	538,832
	6	Hist.	783	548	-	1,331	243,044	260,000	-	503,044
	7	Hist.	849	572	-	1,421	407,139	250,000	-	657,139
	8	Hist.	717	568	-	1,285	326,968	267,000	-	593,968
	9	Hist.	616	575	-	1,191	245,382	261,000	-	506,382
	10	Hist.	590	577	-	1,167	276,157	285,000	-	561,157
	11	Hist.	671	685	-	1,356	426,874	270,000	-	696,874
	12	Hist.	851	743	-	1,594	452,001	392,000	-	844,001
2012	1	Hist.	1,117	720	-	1,837	516,007	385,000	-	901,007
	2	Hist.	952	740	-	1,692	441,558	372,000	-	813,558
	3	Hist.	798	734	-	1,532	347,469	334,000	-	681,469
	4	Hist.	381	760	-	1,141	285,800	286,000	-	571,800
	5	Hist.	503	521	-	1,024	272,154	252,000	-	524,154
	6	Hist.	597	548	-	1,145	273,971	260,000	-	533,971
	7	Hist.	929	572	-	1,501	468,842	250,000	-	718,842
	8	Hist.	919	568	-	1,487	391,900	267,000	-	658,900
	9	Hist.	662	575	-	1,237	345,694	261,000	-	606,694
	10	Hist.	763	577	-	1,340	428,987	285,000	-	713,987
	11	Hist.	873	685	-	1,558	544,458	270,000	-	814,458
	12	Hist.	1,106	743	-	1,849	627,167	392,000	-	1,019,167
2013	1	Hist.	1,371	720	-	2,091	719,072	385,000	-	1,104,072
	2	Hist.	1,215	740	-	1,955	568,482	359,000	-	927,482
	3	Hist.	1,108	734	-	1,842	602,993	334,000	-	936,993
	4	Hist.	860	760	-	1,620	515,940	286,000	-	801,940
	5	Hist.	787	521	-	1,308	375,378	252,000	-	627,378
	6	Hist.	763	548	-	1,311	334,890	260,000	-	594,890
	7	Hist.	950	572	-	1,522	446,843	250,000	-	696,843
	8	Hist.	974	568	-	1,542	418,976	267,000	-	685,976
	9	Hist.	801	575	-	1,376	318,619	261,000	-	579,619
	10	Hist.	843	577	-	1,420	410,373	285,000	-	695,373
	11	Hist.	1,055	685	-	1,740	598,608	270,000	-	868,608
	12	Hist.	1,283	743	-	2,026	738,853	392,000	-	1,130,853
2014	1	Hist.	1,579	720	-	2,299	813,835	385,000	-	1,198,835
	2	Hist.	1,386	740	-	2,126	690,321	359,000	-	1,049,321
	3	Hist.	1,227	734	-	1,961	633,453	334,000	-	967,453
	4	Hist.	965	760	-	1,725	433,022	286,000	-	719,022
	5	Hist.	755	521	-	1,276	395,685	252,000	-	647,685
	6	Hist.	735	548	-	1,283	367,042	260,000	-	627,042
	7	Hist.	945	572	-	1,517	399,461	250,000	-	649,461
	8	Hist.	770	568	-	1,338	400,361	267,000	-	667,361
	9	Hist.	490	575	-	1,065	308,465	261,000	-	569,465
	10	Hist.	793	577	-	1,370	337,608	285,000	-	622,608
	11	Hist.	1,204	685	-	1,889	667,989	270,000	-	937,989
	12	Hist.	1,259	743	-	2,002	623,783	392,000	-	1,015,783
2015	1	Hist.	1,425	720	-	2,145	686,543	385,000	-	1,071,543
	2	Hist.	1,340	740	-	2,080	674,691	359,000	-	1,033,691
	3	Hist.	1,250	734	-	1,984	493,946	334,000	-	827,946
	4	Hist.	541	760	-	1,301	342,298	286,000	-	628,298
	5	Hist.	662	521	-	1,183	338,799	252,000	-	590,799
	6	Hist.	632	548	-	1,180	338,924	260,000	-	598,924
	7	Hist.	857	572	-	1,429	435,832	250,000	-	685,832
	8	Hist.	923	568	-	1,491	379,089	267,000	-	646,089
	9	Hist.	873	575	-	1,448	332,794	261,000	-	593,794
	10	FC	854	577	-	1,431	437,296	285,000	-	722,296
	11	FC	1,061	685	-	1,746	603,712	270,000	-	873,712
	12	FC	1,294	743	-	2,037	701,469	392,000	-	1,093,469

Historic and Forecasted Monthly Loads for LAKE PARK, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	1,508	720	-	2,228	763,881	385,000	-	1,148,881
	2	FC	1,213	740	-	1,953	593,221	371,821	-	965,042
	3	FC	1,121	734	-	1,855	546,804	334,000	-	880,804
	4	FC	673	760	-	1,433	407,515	286,000	-	693,515
	5	FC	721	521	-	1,242	361,854	252,000	-	613,854
	6	FC	800	548	-	1,348	344,478	260,000	-	604,478
	7	FC	985	572	-	1,557	466,807	250,000	-	716,807
	8	FC	961	568	-	1,529	441,530	267,000	-	708,530
	9	FC	734	575	-	1,309	352,378	261,000	-	613,378
	10	FC	882	577	-	1,459	427,255	285,000	-	712,255
	11	FC	1,093	685	-	1,778	622,941	270,000	-	892,941
	12	FC	1,284	743	-	2,027	700,453	392,000	-	1,092,453
2017	1	FC	1,529	720	-	2,249	774,645	385,000	-	1,159,645
	2	FC	1,232	740	-	1,972	615,666	359,000	-	974,666
	3	FC	1,139	734	-	1,873	555,072	334,000	-	889,072
	4	FC	687	760	-	1,447	414,034	286,000	-	700,034
	5	FC	734	521	-	1,255	367,623	252,000	-	619,623
	6	FC	813	548	-	1,361	350,164	260,000	-	610,164
	7	FC	999	572	-	1,571	473,526	250,000	-	723,526
	8	FC	975	568	-	1,543	448,179	267,000	-	715,179
	9	FC	745	575	-	1,320	358,147	261,000	-	619,147
	10	FC	895	577	-	1,472	433,946	285,000	-	718,946
	11	FC	1,110	685	-	1,795	631,294	270,000	-	901,294
	12	FC	1,303	743	-	2,046	710,698	392,000	-	1,102,698
2018	1	FC	1,549	720	-	2,269	785,422	385,000	-	1,170,422
	2	FC	1,249	740	-	1,989	624,739	359,000	-	983,739
	3	FC	1,156	734	-	1,890	563,350	334,000	-	897,350
	4	FC	700	760	-	1,460	420,561	286,000	-	706,561
	5	FC	745	521	-	1,266	373,400	252,000	-	625,400
	6	FC	825	548	-	1,373	355,858	260,000	-	615,858
	7	FC	1,014	572	-	1,586	480,255	250,000	-	730,255
	8	FC	990	568	-	1,558	454,838	267,000	-	721,838
	9	FC	758	575	-	1,333	363,924	261,000	-	624,924
	10	FC	909	577	-	1,486	440,646	285,000	-	725,646
	11	FC	1,126	685	-	1,811	639,659	270,000	-	909,659
	12	FC	1,322	743	-	2,065	720,956	392,000	-	1,112,956
2019	1	FC	1,570	720	-	2,290	796,215	385,000	-	1,181,215
	2	FC	1,268	740	-	2,008	633,824	359,000	-	992,824
	3	FC	1,173	734	-	1,907	571,640	334,000	-	905,640
	4	FC	714	760	-	1,474	427,098	286,000	-	713,098
	5	FC	756	521	-	1,277	379,185	252,000	-	631,185
	6	FC	839	548	-	1,387	361,560	260,000	-	621,560
	7	FC	1,028	572	-	1,600	486,992	250,000	-	736,992
	8	FC	1,003	568	-	1,571	461,506	267,000	-	728,506
	9	FC	770	575	-	1,345	369,709	261,000	-	630,709
	10	FC	923	577	-	1,500	447,356	285,000	-	732,356
	11	FC	1,143	685	-	1,828	648,036	270,000	-	918,036
	12	FC	1,341	743	-	2,084	731,229	392,000	-	1,123,229
2020	1	FC	1,591	720	-	2,311	807,022	385,000	-	1,192,022
	2	FC	1,287	740	-	2,027	629,537	371,821	-	1,001,358
	3	FC	1,191	734	-	1,925	579,942	334,000	-	913,942
	4	FC	727	760	-	1,487	433,643	286,000	-	719,643
	5	FC	768	521	-	1,289	384,979	252,000	-	636,979
	6	FC	851	548	-	1,399	367,270	260,000	-	627,270
	7	FC	1,043	572	-	1,615	493,739	250,000	-	743,739
	8	FC	1,018	568	-	1,586	468,183	267,000	-	735,183
	9	FC	783	575	-	1,358	375,501	261,000	-	636,501
	10	FC	937	577	-	1,514	454,075	285,000	-	739,075
	11	FC	1,160	685	-	1,845	656,423	270,000	-	926,423
	12	FC	1,360	743	-	2,103	741,517	392,000	-	1,133,517
2021	1	FC	1,619	713	-	2,332	822,021	381,000	-	1,203,021
	2	FC	1,312	733	-	2,045	656,208	355,000	-	1,011,208
	3	FC	1,216	727	-	1,943	591,386	331,000	-	922,386
	4	FC	749	752	-	1,501	443,330	283,000	-	726,330
	5	FC	786	516	-	1,302	393,912	249,000	-	642,912
	6	FC	869	543	-	1,412	376,119	257,000	-	633,119
	7	FC	1,064	566	-	1,630	502,583	248,000	-	750,583
	8	FC	1,039	562	-	1,601	478,002	264,000	-	742,002
	9	FC	801	569	-	1,370	384,433	258,000	-	642,433
	10	FC	957	571	-	1,528	463,936	282,000	-	745,936
	11	FC	1,184	678	-	1,862	667,954	267,000	-	934,954
	12	FC	1,386	736	-	2,122	755,994	388,000	-	1,143,994

Historic and Forecasted Seasonal Loads for LAKE PARK, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	757	577	-	1,325	1,718,382	1,575,000	-	3,293,382
S2011	Hist.	849	577	-	1,421	1,785,522	1,575,000	-	3,360,522
S2012	Hist.	929	577	-	1,501	2,181,548	1,575,000	-	3,756,548
S2013	Hist.	974	577	-	1,542	2,305,079	1,575,000	-	3,880,079
S2014	Hist.	945	577	-	1,517	2,208,622	1,575,000	-	3,783,622
S2015	FC	923	577	-	1,491	2,262,734	1,575,000	-	3,837,734
S2016	FC	985	577	-	1,557	2,394,302	1,575,000	-	3,969,302
S2017	FC	999	577	-	1,571	2,431,585	1,575,000	-	4,006,585
S2018	FC	1,014	577	-	1,586	2,468,921	1,575,000	-	4,043,921
S2019	FC	1,028	577	-	1,600	2,506,308	1,575,000	-	4,081,308
S2020	FC	1,043	577	-	1,615	2,543,747	1,575,000	-	4,118,747
S2021	FC	1,064	571	-	1,630	2,598,985	1,558,000	-	4,156,985
W2009-10	Hist.	935	760	-	1,678	2,111,966	2,026,000	-	4,137,966
W2010-11	Hist.	1,098	760	-	1,818	2,871,879	2,026,000	-	4,897,879
W2011-12	Hist.	1,117	760	-	1,837	2,469,709	2,039,000	-	4,508,709
W2012-13	Hist.	1,371	760	-	2,091	3,578,112	2,026,000	-	5,604,112
W2013-14	Hist.	1,579	760	-	2,299	3,908,092	2,026,000	-	5,934,092
W2014-15	Hist.	1,425	760	-	2,145	3,489,250	2,026,000	-	5,515,250
W2015-16	FC	1,508	760	-	2,228	3,616,602	2,038,821	-	5,655,423
W2016-17	FC	1,529	760	-	2,249	3,682,811	2,026,000	-	5,708,811
W2017-18	FC	1,549	760	-	2,269	3,736,064	2,026,000	-	5,762,064
W2018-19	FC	1,570	760	-	2,290	3,789,392	2,026,000	-	5,815,392
W2019-20	FC	1,591	760	-	2,311	3,829,409	2,038,821	-	5,868,230
W2020-21	FC	1,619	752	-	2,332	3,910,885	2,012,000	-	5,922,885

Historic and Forecasted Annual Loads for LAKE PARK, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	982	760	-	1,725	4,089,588	3,601,000	-	7,690,588
2011	Hist.	1,098	760	-	1,818	4,520,731	3,601,000	-	8,121,731
2012	Hist.	1,117	760	-	1,849	4,944,007	3,614,000	-	8,558,007
2013	Hist.	1,371	760	-	2,091	6,049,027	3,601,000	-	9,650,027
2014	Hist.	1,579	760	-	2,299	6,071,025	3,601,000	-	9,672,025
2015	FC	1,425	760	-	2,145	5,765,393	3,601,000	-	9,366,393
2016	FC	1,508	760	-	2,228	6,029,117	3,613,821	-	9,642,938
2017	FC	1,529	760	-	2,249	6,132,994	3,601,000	-	9,733,994
2018	FC	1,549	760	-	2,269	6,223,608	3,601,000	-	9,824,608
2019	FC	1,570	760	-	2,290	6,314,350	3,601,000	-	9,915,350
2020	FC	1,591	760	-	2,311	6,391,831	3,613,821	-	10,005,652
2021	FC	1,619	752	-	2,332	6,535,878	3,563,000	-	10,098,878

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for LAKEFIELD, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	1,048	1,863	-	2,911	436,945	995,000	-	1,431,945
	2	Hist.	545	1,944	-	2,489	175,648	1,054,000	-	1,229,648
	3	Hist.	426	1,880	-	2,306	353,059	885,000	-	1,238,059
	4	Hist.	308	1,770	-	2,078	101,956	934,000	-	1,035,956
	5	Hist.	1,622	1,560	-	3,182	391,866	761,000	-	1,152,866
	6	Hist.	907	2,366	-	3,273	375,695	881,000	-	1,256,695
	7	Hist.	1,453	2,221	-	3,674	655,824	892,000	-	1,547,824
	8	Hist.	1,608	2,111	-	3,719	784,399	860,000	-	1,644,399
	9	Hist.	72	2,330	-	2,402	156,034	922,000	-	1,078,034
	10	Hist.	551	1,737	-	2,288	256,673	890,000	-	1,146,673
	11	Hist.	840	1,779	-	2,619	302,386	925,000	-	1,227,386
	12	Hist.	858	1,923	-	2,781	540,881	928,000	-	1,468,881
2011	1	Hist.	788	1,863	-	2,651	464,860	995,000	-	1,459,860
	2	Hist.	647	1,944	-	2,591	184,063	1,054,000	-	1,238,063
	3	Hist.	507	1,880	-	2,387	419,230	885,000	-	1,304,230
	4	Hist.	404	1,770	-	2,174	182,982	934,000	-	1,116,982
	5	Hist.	731	1,560	-	2,291	342,331	761,000	-	1,103,331
	6	Hist.	1,195	2,366	-	3,561	393,403	881,000	-	1,274,403
	7	Hist.	1,911	2,221	-	4,132	870,213	892,000	-	1,762,213
	8	Hist.	1,839	2,111	-	3,950	637,388	860,000	-	1,497,388
	9	Hist.	748	2,330	-	3,078	200,456	922,000	-	1,122,456
	10	Hist.	413	1,737	-	2,150	241,225	890,000	-	1,131,225
	11	Hist.	605	1,779	-	2,384	236,317	925,000	-	1,161,317
	12	Hist.	763	1,923	-	2,686	392,792	928,000	-	1,320,792
2012	1	Hist.	699	1,863	-	2,562	349,827	995,000	-	1,344,827
	2	Hist.	420	1,944	-	2,364	112,887	1,092,000	-	1,204,887
	3	Hist.	377	1,880	-	2,257	237,609	885,000	-	1,122,609
	4	Hist.	286	1,770	-	2,056	89,763	934,000	-	1,023,763
	5	Hist.	840	1,560	-	2,400	369,876	761,000	-	1,130,876
	6	Hist.	1,166	2,366	-	3,532	483,631	881,000	-	1,364,631
	7	Hist.	1,717	2,221	-	3,938	859,880	892,000	-	1,751,880
	8	Hist.	1,410	2,111	-	3,521	565,468	860,000	-	1,425,468
	9	Hist.	985	2,330	-	3,315	240,232	922,000	-	1,162,232
	10	Hist.	477	1,737	-	2,214	327,404	890,000	-	1,217,404
	11	Hist.	612	1,779	-	2,391	242,023	925,000	-	1,167,023
	12	Hist.	749	1,923	-	2,672	405,341	928,000	-	1,333,341
2013	1	Hist.	806	1,863	-	2,669	420,677	995,000	-	1,415,677
	2	Hist.	596	1,944	-	2,540	183,810	1,054,000	-	1,237,810
	3	Hist.	457	1,880	-	2,337	401,496	885,000	-	1,286,496
	4	Hist.	524	1,770	-	2,294	211,766	934,000	-	1,145,766
	5	Hist.	762	1,560	-	2,322	347,048	761,000	-	1,108,048
	6	Hist.	822	2,366	-	3,188	338,924	881,000	-	1,219,924
	7	Hist.	1,505	2,221	-	3,726	622,170	892,000	-	1,514,170
	8	Hist.	1,760	2,111	-	3,871	607,532	860,000	-	1,467,532
	9	Hist.	1,269	2,330	-	3,599	284,579	922,000	-	1,206,579
	10	Hist.	640	1,737	-	2,377	337,443	890,000	-	1,227,443
	11	Hist.	710	1,779	-	2,489	339,537	925,000	-	1,264,537
	12	Hist.	885	1,923	-	2,808	525,491	928,000	-	1,453,491
2014	1	Hist.	1,089	1,863	-	2,952	491,995	995,000	-	1,486,995
	2	Hist.	651	1,944	-	2,595	236,759	1,054,000	-	1,290,759
	3	Hist.	612	1,880	-	2,492	396,967	885,000	-	1,281,967
	4	Hist.	373	1,770	-	2,143	150,311	934,000	-	1,084,311
	5	Hist.	913	1,560	-	2,473	330,642	761,000	-	1,091,642
	6	Hist.	488	2,366	-	2,854	365,990	881,000	-	1,246,990
	7	Hist.	947	2,221	-	3,168	453,501	892,000	-	1,345,501
	8	Hist.	1,190	2,111	-	3,301	528,031	860,000	-	1,388,031
	9	Hist.	490	2,330	-	2,820	210,987	922,000	-	1,132,987
	10	Hist.	518	1,737	-	2,255	291,595	890,000	-	1,181,595
	11	Hist.	961	1,779	-	2,740	465,236	925,000	-	1,390,236
	12	Hist.	936	1,923	-	2,859	509,688	928,000	-	1,437,688
2015	1	Hist.	893	1,863	-	2,756	344,484	995,000	-	1,339,484
	2	Hist.	504	1,944	-	2,448	181,466	1,054,000	-	1,235,466
	3	Hist.	413	1,880	-	2,293	248,211	885,000	-	1,133,211
	4	Hist.	204	1,770	-	1,974	44,601	934,000	-	978,601
	5	Hist.	508	1,560	-	2,068	246,055	761,000	-	1,007,055
	6	Hist.	601	2,366	-	2,967	331,855	881,000	-	1,212,855
	7	Hist.	1,186	2,221	-	3,407	568,652	892,000	-	1,460,652
	8	Hist.	973	2,111	-	3,084	464,211	860,000	-	1,324,211
	9	Hist.	954	2,330	-	3,284	283,589	922,000	-	1,205,589
	10	FC	495	1,737	-	2,232	289,310	890,000	-	1,179,310
	11	FC	783	1,779	-	2,562	317,448	925,000	-	1,242,448
	12	FC	854	1,923	-	2,777	486,560	928,000	-	1,414,560

Historic and Forecasted Monthly Loads for LAKEFIELD, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	841	1,863	-	2,704	408,806	995,000	-	1,403,806
	2	FC	407	1,944	-	2,351	105,355	1,091,642	-	1,196,997
	3	FC	489	1,880	-	2,369	348,502	885,000	-	1,233,502
	4	FC	336	1,770	-	2,106	124,487	934,000	-	1,058,487
	5	FC	708	1,560	-	2,268	308,465	761,000	-	1,069,465
	6	FC	818	2,366	-	3,184	359,655	881,000	-	1,240,655
	7	FC	1,279	2,221	-	3,500	594,817	892,000	-	1,486,817
	8	FC	1,410	2,111	-	3,521	566,304	860,000	-	1,426,304
	9	FC	637	2,330	-	2,967	205,618	922,000	-	1,127,618
	10	FC	518	1,737	-	2,255	290,835	890,000	-	1,180,835
	11	FC	722	1,779	-	2,501	305,333	925,000	-	1,230,333
	12	FC	834	1,923	-	2,757	472,170	928,000	-	1,400,170
2017	1	FC	872	1,863	-	2,735	424,804	995,000	-	1,419,804
	2	FC	433	1,944	-	2,377	157,929	1,054,000	-	1,211,929
	3	FC	516	1,880	-	2,396	362,563	885,000	-	1,247,563
	4	FC	360	1,770	-	2,130	136,615	934,000	-	1,070,615
	5	FC	734	1,560	-	2,294	320,654	761,000	-	1,081,654
	6	FC	856	2,366	-	3,222	373,793	881,000	-	1,254,793
	7	FC	1,319	2,221	-	3,540	611,704	892,000	-	1,503,704
	8	FC	1,450	2,111	-	3,561	582,504	860,000	-	1,442,504
	9	FC	671	2,330	-	3,001	218,512	922,000	-	1,140,512
	10	FC	544	1,737	-	2,281	304,311	890,000	-	1,194,311
	11	FC	750	1,779	-	2,529	319,372	925,000	-	1,244,372
	12	FC	865	1,923	-	2,788	488,103	928,000	-	1,416,103
2018	1	FC	906	1,863	-	2,769	442,261	995,000	-	1,437,261
	2	FC	462	1,944	-	2,406	172,909	1,054,000	-	1,226,909
	3	FC	546	1,880	-	2,426	377,906	885,000	-	1,262,906
	4	FC	387	1,770	-	2,157	149,849	934,000	-	1,083,849
	5	FC	762	1,560	-	2,322	333,954	761,000	-	1,094,954
	6	FC	895	2,366	-	3,261	389,222	881,000	-	1,270,222
	7	FC	1,362	2,221	-	3,583	630,129	892,000	-	1,522,129
	8	FC	1,493	2,111	-	3,604	600,182	860,000	-	1,460,182
	9	FC	708	2,330	-	3,038	232,582	922,000	-	1,154,582
	10	FC	572	1,737	-	2,309	319,015	890,000	-	1,209,015
	11	FC	782	1,779	-	2,561	334,693	925,000	-	1,259,693
	12	FC	900	1,923	-	2,823	505,489	928,000	-	1,433,489
2019	1	FC	928	1,863	-	2,791	453,991	995,000	-	1,448,991
	2	FC	482	1,944	-	2,426	182,975	1,054,000	-	1,236,975
	3	FC	566	1,880	-	2,446	388,217	885,000	-	1,273,217
	4	FC	405	1,770	-	2,175	158,742	934,000	-	1,092,742
	5	FC	780	1,560	-	2,340	342,891	761,000	-	1,103,891
	6	FC	922	2,366	-	3,288	399,589	881,000	-	1,280,589
	7	FC	1,391	2,221	-	3,612	642,511	892,000	-	1,534,511
	8	FC	1,523	2,111	-	3,634	612,061	860,000	-	1,472,061
	9	FC	733	2,330	-	3,063	242,037	922,000	-	1,164,037
	10	FC	591	1,737	-	2,328	328,896	890,000	-	1,218,896
	11	FC	803	1,779	-	2,582	344,987	925,000	-	1,269,987
	12	FC	923	1,923	-	2,846	517,172	928,000	-	1,445,172
2020	1	FC	943	1,863	-	2,806	461,623	995,000	-	1,456,623
	2	FC	495	1,944	-	2,439	150,677	1,091,642	-	1,242,319
	3	FC	579	1,880	-	2,459	394,924	885,000	-	1,279,924
	4	FC	416	1,770	-	2,186	164,528	934,000	-	1,098,528
	5	FC	793	1,560	-	2,353	348,706	761,000	-	1,109,706
	6	FC	939	2,366	-	3,305	406,335	881,000	-	1,287,335
	7	FC	1,411	2,221	-	3,632	650,567	892,000	-	1,542,567
	8	FC	1,542	2,111	-	3,653	619,789	860,000	-	1,479,789
	9	FC	749	2,330	-	3,079	248,188	922,000	-	1,170,188
	10	FC	604	1,737	-	2,341	335,325	890,000	-	1,225,325
	11	FC	816	1,779	-	2,595	351,685	925,000	-	1,276,685
	12	FC	937	1,923	-	2,860	524,773	928,000	-	1,452,773
2021	1	FC	986	1,844	-	2,830	483,706	985,000	-	1,468,706
	2	FC	535	1,925	-	2,460	210,970	1,043,000	-	1,253,970
	3	FC	618	1,861	-	2,479	414,550	876,000	-	1,290,550
	4	FC	452	1,752	-	2,204	182,733	925,000	-	1,107,733
	5	FC	829	1,544	-	2,373	365,924	753,000	-	1,118,924
	6	FC	991	2,342	-	3,333	426,019	872,000	-	1,298,019
	7	FC	1,462	2,199	-	3,661	672,271	883,000	-	1,555,271
	8	FC	1,592	2,090	-	3,682	640,989	851,000	-	1,491,989
	9	FC	798	2,307	-	3,105	266,957	913,000	-	1,179,957
	10	FC	640	1,720	-	2,360	354,521	881,000	-	1,235,521
	11	FC	856	1,761	-	2,617	371,296	916,000	-	1,287,296
	12	FC	980	1,904	-	2,884	545,777	919,000	-	1,464,777

Historic and Forecasted Seasonal Loads for LAKEFIELD, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	1,622	2,366	-	3,719	2,620,491	5,206,000	-	7,826,491
S2011	Hist.	1,911	2,366	-	4,132	2,685,016	5,206,000	-	7,891,016
S2012	Hist.	1,717	2,366	-	3,938	2,846,491	5,206,000	-	8,052,491
S2013	Hist.	1,760	2,366	-	3,871	2,537,696	5,206,000	-	7,743,696
S2014	Hist.	1,190	2,366	-	3,301	2,180,746	5,206,000	-	7,386,746
S2015	FC	1,186	2,366	-	3,407	2,183,672	5,206,000	-	7,389,672
S2016	FC	1,410	2,366	-	3,521	2,325,694	5,206,000	-	7,531,694
S2017	FC	1,450	2,366	-	3,561	2,411,478	5,206,000	-	7,617,478
S2018	FC	1,493	2,366	-	3,604	2,505,084	5,206,000	-	7,711,084
S2019	FC	1,523	2,366	-	3,634	2,567,985	5,206,000	-	7,773,985
S2020	FC	1,542	2,366	-	3,653	2,608,910	5,206,000	-	7,814,910
S2021	FC	1,592	2,342	-	3,682	2,726,681	5,153,000	-	7,879,681
W2009-10	Hist.	1,088	1,944	-	3,011	2,010,911	5,721,000	-	7,731,911
W2010-11	Hist.	858	1,944	-	2,781	2,094,402	5,721,000	-	7,815,402
W2011-12	Hist.	763	1,944	-	2,686	1,419,195	5,759,000	-	7,178,195
W2012-13	Hist.	806	1,944	-	2,672	1,865,113	5,721,000	-	7,586,113
W2013-14	Hist.	1,089	1,944	-	2,952	2,141,060	5,721,000	-	7,862,060
W2014-15	Hist.	961	1,944	-	2,859	1,793,686	5,721,000	-	7,514,686
W2015-16	FC	854	1,944	-	2,777	1,791,158	5,758,642	-	7,549,800
W2016-17	FC	872	1,944	-	2,757	1,859,414	5,721,000	-	7,580,414
W2017-18	FC	906	1,944	-	2,788	1,950,400	5,721,000	-	7,671,400
W2018-19	FC	928	1,944	-	2,823	2,024,107	5,721,000	-	7,745,107
W2019-20	FC	943	1,944	-	2,846	2,033,911	5,758,642	-	7,792,553
W2020-21	FC	986	1,925	-	2,860	2,168,417	5,682,000	-	7,850,417

Historic and Forecasted Annual Loads for LAKEFIELD, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	1,622	2,366	-	3,719	4,531,366	10,927,000	-	15,458,366
2011	Hist.	1,911	2,366	-	4,132	4,565,260	10,927,000	-	15,492,260
2012	Hist.	1,717	2,366	-	3,938	4,283,941	10,965,000	-	15,248,941
2013	Hist.	1,760	2,366	-	3,871	4,620,473	10,927,000	-	15,547,473
2014	Hist.	1,190	2,366	-	3,301	4,431,702	10,927,000	-	15,358,702
2015	FC	1,186	2,366	-	3,407	3,806,442	10,927,000	-	14,733,442
2016	FC	1,410	2,366	-	3,521	4,090,347	10,964,642	-	15,054,989
2017	FC	1,450	2,366	-	3,561	4,300,864	10,927,000	-	15,227,864
2018	FC	1,493	2,366	-	3,604	4,488,191	10,927,000	-	15,415,191
2019	FC	1,523	2,366	-	3,634	4,614,069	10,927,000	-	15,541,069
2020	FC	1,542	2,366	-	3,653	4,657,120	10,964,642	-	15,621,762
2021	FC	1,592	2,342	-	3,682	4,935,713	10,817,000	-	15,752,713

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for LUVERNE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	5,143	8,073	-	13,216	3,895,185	3,983,000	-	7,878,185
	2	Hist.	4,649	7,895	-	12,544	2,224,868	4,470,000	-	6,694,868
	3	Hist.	4,259	7,220	-	11,479	2,733,274	3,827,000	-	6,560,274
	4	Hist.	2,781	7,141	-	9,922	1,747,168	3,759,000	-	5,506,168
	5	Hist.	4,362	7,583	-	11,945	2,361,213	3,742,000	-	6,103,213
	6	Hist.	5,111	7,983	-	13,094	2,833,360	3,817,000	-	6,650,360
	7	Hist.	5,712	7,782	-	13,494	4,219,010	3,543,000	-	7,762,010
	8	Hist.	6,065	8,192	-	14,257	3,896,148	4,060,000	-	7,956,148
	9	Hist.	3,364	7,976	-	11,340	2,036,210	3,977,000	-	6,013,210
	10	Hist.	1,477	8,760	-	10,237	1,139,550	4,681,000	-	5,820,550
	11	Hist.	4,113	7,636	-	11,749	2,581,910	3,850,000	-	6,431,910
	12	Hist.	4,570	8,049	-	12,619	3,714,049	4,081,000	-	7,795,049
2011	1	Hist.	4,694	8,073	-	12,767	3,896,940	3,983,000	-	7,879,940
	2	Hist.	5,034	7,895	-	12,929	2,295,150	4,470,000	-	6,765,150
	3	Hist.	5,093	7,220	-	12,313	3,158,773	3,827,000	-	6,985,773
	4	Hist.	3,145	7,141	-	10,286	2,253,420	3,759,000	-	6,012,420
	5	Hist.	3,078	7,583	-	10,661	2,052,260	3,742,000	-	5,794,260
	6	Hist.	5,432	7,983	-	13,415	2,636,000	3,817,000	-	6,453,000
	7	Hist.	7,145	7,782	-	14,927	4,854,590	3,543,000	-	8,397,590
	8	Hist.	5,979	8,192	-	14,171	3,394,862	4,060,000	-	7,454,862
	9	Hist.	5,611	7,976	-	13,587	2,069,380	3,977,000	-	6,046,380
	10	Hist.	1,541	8,760	-	10,301	1,255,110	4,681,000	-	5,936,110
	11	Hist.	3,343	7,636	-	10,979	2,417,360	3,850,000	-	6,267,360
	12	Hist.	4,228	8,049	-	12,277	3,181,095	4,081,000	-	7,262,095
2012	1	Hist.	4,715	8,073	-	12,788	3,460,380	3,983,000	-	7,443,380
	2	Hist.	4,478	7,895	-	12,373	2,181,730	4,630,000	-	6,811,730
	3	Hist.	4,301	7,220	-	11,521	2,560,908	3,827,000	-	6,387,908
	4	Hist.	2,909	7,141	-	10,050	1,988,060	3,759,000	-	5,747,060
	5	Hist.	2,693	7,583	-	10,276	1,512,980	3,742,000	-	5,254,980
	6	Hist.	7,316	7,983	-	15,299	2,872,240	3,817,000	-	6,689,240
	7	Hist.	7,937	7,782	-	15,719	4,592,800	3,543,000	-	8,135,800
	8	Hist.	6,322	8,192	-	14,514	3,127,610	4,060,000	-	7,187,610
	9	Hist.	5,590	7,976	-	13,566	2,058,680	3,977,000	-	6,035,680
	10	Hist.	1,091	8,760	-	9,851	949,689	4,681,000	-	5,630,689
	11	Hist.	2,208	7,636	-	9,844	1,349,270	3,850,000	-	5,199,270
	12	Hist.	2,794	8,049	-	10,843	2,044,600	4,081,000	-	6,125,600
2013	1	Hist.	3,838	8,073	-	11,911	2,578,700	3,983,000	-	6,561,700
	2	Hist.	3,879	7,895	-	11,774	1,402,770	4,470,000	-	5,872,770
	3	Hist.	4,387	7,220	-	11,607	3,012,207	3,827,000	-	6,839,207
	4	Hist.	3,616	7,141	-	10,757	1,885,340	3,759,000	-	5,644,340
	5	Hist.	5,176	7,583	-	12,759	1,936,700	3,742,000	-	5,678,700
	6	Hist.	4,769	7,983	-	12,752	2,563,606	3,817,000	-	6,380,606
	7	Hist.	7,916	7,782	-	15,698	3,524,580	3,543,000	-	7,067,580
	8	Hist.	6,857	8,192	-	15,049	2,590,989	4,060,000	-	6,650,989
	9	Hist.	4,477	7,976	-	12,453	1,195,269	3,977,000	-	5,172,269
	10	Hist.	4,002	8,760	-	12,762	966,210	4,681,000	-	5,647,210
	11	Hist.	7,323	7,636	-	14,959	3,530,286	3,850,000	-	7,380,286
	12	Hist.	6,132	8,049	-	14,181	4,533,590	4,081,000	-	8,614,590
2014	1	Hist.	6,855	8,073	-	14,928	4,834,260	3,983,000	-	8,817,260
	2	Hist.	6,789	7,895	-	14,684	3,158,340	4,470,000	-	7,628,340
	3	Hist.	6,120	7,220	-	13,340	3,649,770	3,827,000	-	7,476,770
	4	Hist.	4,750	7,141	-	11,891	1,712,000	3,759,000	-	5,471,000
	5	Hist.	6,267	7,583	-	13,850	2,680,350	3,742,000	-	6,422,350
	6	Hist.	7,808	7,983	-	15,791	3,648,971	3,817,000	-	7,465,971
	7	Hist.	7,466	7,782	-	15,248	4,264,031	3,543,000	-	7,807,031
	8	Hist.	7,648	8,192	-	15,840	4,261,810	4,060,000	-	8,321,810
	9	Hist.	7,730	7,976	-	15,706	2,793,770	3,977,000	-	6,770,770
	10	Hist.	4,943	8,760	-	13,703	2,244,860	4,681,000	-	6,925,860
	11	Hist.	8,521	7,636	-	16,157	4,471,530	3,850,000	-	8,321,530
	12	Hist.	8,465	8,049	-	16,514	5,836,088	4,081,000	-	9,917,088
2015	1	Hist.	8,846	8,073	-	16,919	4,969,080	3,983,000	-	8,952,080
	2	Hist.	5,955	7,895	-	13,850	3,001,350	4,470,000	-	7,471,350
	3	Hist.	5,928	7,220	-	13,148	3,367,182	3,827,000	-	7,194,182
	4	Hist.	3,509	7,141	-	10,650	2,361,490	3,759,000	-	6,120,490
	5	Hist.	3,720	7,583	-	11,303	2,689,980	3,742,000	-	6,431,980
	6	Hist.	5,989	7,983	-	13,972	3,240,641	3,817,000	-	7,057,641
	7	Hist.	10,077	7,782	-	17,859	4,966,940	3,543,000	-	8,509,940
	8	Hist.	9,382	8,192	-	17,574	3,649,770	4,060,000	-	7,709,770
	9	Hist.	7,366	7,976	-	15,342	2,967,704	3,977,000	-	6,944,704
	10	FC	4,173	8,760	-	12,933	1,779,499	4,681,000	-	6,460,499
	11	FC	6,627	7,636	-	14,263	3,058,422	3,850,000	-	6,908,422
	12	FC	6,985	8,049	-	15,034	3,845,024	4,081,000	-	7,926,024

Historic and Forecasted Monthly Loads for LUVERNE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	9,124	8,073	-	17,197	5,079,553	3,983,000	-	9,062,553
	2	FC	4,952	7,895	-	12,847	2,493,892	4,629,642	-	7,123,534
	3	FC	5,101	7,220	-	12,321	3,585,945	3,827,000	-	7,412,945
	4	FC	4,113	7,141	-	11,254	2,332,861	3,759,000	-	6,091,861
	5	FC	3,973	7,583	-	11,556	2,744,450	3,742,000	-	6,486,450
	6	FC	8,062	7,983	-	16,045	3,596,390	3,817,000	-	7,413,390
	7	FC	8,985	7,782	-	16,767	4,765,597	3,543,000	-	8,308,597
	8	FC	8,345	8,192	-	16,537	4,436,756	4,060,000	-	8,496,756
	9	FC	8,075	7,976	-	16,051	2,992,418	3,977,000	-	6,969,418
	10	FC	6,146	8,760	-	14,906	1,808,276	4,681,000	-	6,489,276
	11	FC	6,599	7,636	-	14,235	3,908,628	3,850,000	-	7,758,628
	12	FC	7,808	8,049	-	15,857	5,967,860	4,081,000	-	10,048,860
2017	1	FC	9,337	8,073	-	17,410	5,191,729	3,983,000	-	9,174,729
	2	FC	5,112	7,895	-	13,007	2,754,144	4,470,000	-	7,224,144
	3	FC	5,255	7,220	-	12,475	3,678,180	3,827,000	-	7,505,180
	4	FC	4,253	7,141	-	11,394	2,409,176	3,759,000	-	6,168,176
	5	FC	4,118	7,583	-	11,701	2,825,489	3,742,000	-	6,567,489
	6	FC	8,263	7,983	-	16,246	3,688,623	3,817,000	-	7,505,623
	7	FC	9,192	7,782	-	16,974	4,868,349	3,543,000	-	8,411,349
	8	FC	8,550	8,192	-	16,742	4,542,202	4,060,000	-	8,602,202
	9	FC	8,274	7,976	-	16,250	3,079,454	3,977,000	-	7,056,454
	10	FC	6,332	8,760	-	15,092	1,890,138	4,681,000	-	6,571,138
	11	FC	6,775	7,636	-	14,411	4,005,035	3,850,000	-	7,855,035
	12	FC	8,006	8,049	-	16,055	6,091,963	4,081,000	-	10,172,963
2018	1	FC	9,560	8,073	-	17,633	5,308,960	3,983,000	-	9,291,960
	2	FC	5,282	7,895	-	13,177	2,847,609	4,470,000	-	7,317,609
	3	FC	5,415	7,220	-	12,635	3,774,573	3,827,000	-	7,601,573
	4	FC	4,401	7,141	-	11,542	2,488,929	3,759,000	-	6,247,929
	5	FC	4,270	7,583	-	11,853	2,910,180	3,742,000	-	6,652,180
	6	FC	8,471	7,983	-	16,454	3,785,012	3,817,000	-	7,602,012
	7	FC	9,410	7,782	-	17,192	4,975,732	3,543,000	-	8,518,732
	8	FC	8,764	8,192	-	16,956	4,652,401	4,060,000	-	8,712,401
	9	FC	8,483	7,976	-	16,459	3,170,411	3,977,000	-	7,147,411
	10	FC	6,527	8,760	-	15,287	1,975,689	4,681,000	-	6,656,689
	11	FC	6,961	7,636	-	14,597	4,105,785	3,850,000	-	7,955,785
	12	FC	8,211	8,049	-	16,260	6,221,657	4,081,000	-	10,302,657
2019	1	FC	9,747	8,073	-	17,820	5,406,742	3,983,000	-	9,389,742
	2	FC	5,422	7,895	-	13,317	2,925,568	4,470,000	-	7,395,568
	3	FC	5,550	7,220	-	12,770	3,854,971	3,827,000	-	7,681,971
	4	FC	4,524	7,141	-	11,665	2,555,450	3,759,000	-	6,314,450
	5	FC	4,397	7,583	-	11,980	2,980,819	3,742,000	-	6,722,819
	6	FC	8,645	7,983	-	16,628	3,865,408	3,817,000	-	7,682,408
	7	FC	9,590	7,782	-	17,372	5,065,299	3,543,000	-	8,608,299
	8	FC	8,944	8,192	-	17,136	4,744,317	4,060,000	-	8,804,317
	9	FC	8,657	7,976	-	16,633	3,246,278	3,977,000	-	7,223,278
	10	FC	6,690	8,760	-	15,450	2,047,046	4,681,000	-	6,728,046
	11	FC	7,116	7,636	-	14,752	4,189,819	3,850,000	-	8,039,819
	12	FC	8,383	8,049	-	16,432	6,329,835	4,081,000	-	10,410,835
2020	1	FC	9,906	8,073	-	17,979	5,490,624	3,983,000	-	9,473,624
	2	FC	5,542	7,895	-	13,437	2,821,627	4,629,642	-	7,451,269
	3	FC	5,666	7,220	-	12,886	3,923,944	3,827,000	-	7,750,944
	4	FC	4,630	7,141	-	11,771	2,612,516	3,759,000	-	6,371,516
	5	FC	4,505	7,583	-	12,088	3,041,417	3,742,000	-	6,783,417
	6	FC	8,793	7,983	-	16,776	3,934,378	3,817,000	-	7,751,378
	7	FC	9,747	7,782	-	17,529	5,142,134	3,543,000	-	8,685,134
	8	FC	9,097	8,192	-	17,289	4,823,166	4,060,000	-	8,883,166
	9	FC	8,806	7,976	-	16,782	3,311,361	3,977,000	-	7,288,361
	10	FC	6,829	8,760	-	15,589	2,108,260	4,681,000	-	6,789,260
	11	FC	7,248	7,636	-	14,884	4,261,910	3,850,000	-	8,111,910
	12	FC	8,531	8,049	-	16,580	6,422,635	4,081,000	-	10,503,635
2021	1	FC	10,179	7,992	-	18,171	5,631,476	3,943,000	-	9,574,476
	2	FC	5,767	7,816	-	13,583	3,118,769	4,425,000	-	7,543,769
	3	FC	5,876	7,148	-	13,024	4,045,226	3,789,000	-	7,834,226
	4	FC	4,829	7,070	-	11,899	2,719,881	3,721,000	-	6,440,881
	5	FC	4,713	7,507	-	12,220	3,151,842	3,705,000	-	6,856,842
	6	FC	9,053	7,903	-	16,956	4,055,657	3,779,000	-	7,834,657
	7	FC	10,011	7,704	-	17,715	5,269,399	3,508,000	-	8,777,399
	8	FC	9,365	8,110	-	17,475	4,959,206	4,019,000	-	8,978,206
	9	FC	9,066	7,896	-	16,962	3,430,238	3,937,000	-	7,367,238
	10	FC	7,087	8,672	-	15,759	2,230,104	4,634,000	-	6,864,104
	11	FC	7,485	7,560	-	15,045	4,386,837	3,812,000	-	8,198,837
	12	FC	8,789	7,969	-	16,758	6,574,983	4,040,000	-	10,614,983

Historic and Forecasted Seasonal Loads for LUVERNE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	6,065	8,760	-	14,257	16,485,491	23,820,000	-	40,305,491
S2011	Hist.	7,145	8,760	-	14,927	16,262,202	23,820,000	-	40,082,202
S2012	Hist.	7,937	8,760	-	15,719	15,113,999	23,820,000	-	38,933,999
S2013	Hist.	7,916	8,760	-	15,698	12,777,354	23,820,000	-	36,597,354
S2014	Hist.	7,808	8,760	-	15,840	19,893,792	23,820,000	-	43,713,792
S2015	FC	10,077	8,760	-	17,859	19,294,534	23,820,000	-	43,114,534
S2016	FC	8,985	8,760	-	16,767	20,343,887	23,820,000	-	44,163,887
S2017	FC	9,192	8,760	-	16,974	20,894,255	23,820,000	-	44,714,255
S2018	FC	9,410	8,760	-	17,192	21,469,425	23,820,000	-	45,289,425
S2019	FC	9,590	8,760	-	17,372	21,949,167	23,820,000	-	45,769,167
S2020	FC	9,747	8,760	-	17,529	22,360,716	23,820,000	-	46,180,716
S2021	FC	10,011	8,672	-	17,715	23,096,446	23,582,000	-	46,678,446
W2009-10	Hist.	5,143	8,073	-	13,216	16,718,672	23,970,000	-	40,688,672
W2010-11	Hist.	5,093	8,073	-	12,929	17,900,242	23,970,000	-	41,870,242
W2011-12	Hist.	4,715	8,073	-	12,788	15,789,533	24,130,000	-	39,919,533
W2012-13	Hist.	4,387	8,073	-	11,911	12,272,887	23,970,000	-	36,242,887
W2013-14	Hist.	7,323	8,073	-	14,959	21,418,246	23,970,000	-	45,388,246
W2014-15	Hist.	8,846	8,073	-	16,919	24,006,720	23,970,000	-	47,976,720
W2015-16	FC	9,124	8,073	-	17,197	20,395,697	24,129,642	-	44,525,339
W2016-17	FC	9,337	8,073	-	17,410	23,909,717	23,970,000	-	47,879,717
W2017-18	FC	9,560	8,073	-	17,633	24,517,069	23,970,000	-	48,487,069
W2018-19	FC	9,747	8,073	-	17,820	25,070,173	23,970,000	-	49,040,173
W2019-20	FC	9,906	8,073	-	17,979	25,368,365	24,129,642	-	49,498,007
W2020-21	FC	10,179	8,049	-	18,171	26,199,897	23,809,000	-	50,008,897

Historic and Forecasted Annual Loads for LUVERNE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	6,065	8,760	-	14,257	33,381,945	47,790,000	-	81,171,945
2011	Hist.	7,145	8,760	-	14,927	33,464,940	47,790,000	-	81,254,940
2012	Hist.	7,937	8,760	-	15,719	28,698,947	47,950,000	-	76,648,947
2013	Hist.	7,916	8,760	-	15,698	29,720,247	47,790,000	-	77,510,247
2014	Hist.	8,521	8,760	-	16,514	43,555,780	47,790,000	-	91,345,780
2015	FC	10,077	8,760	-	17,859	39,897,082	47,790,000	-	87,687,082
2016	FC	9,124	8,760	-	17,197	43,712,626	47,949,642	-	91,662,268
2017	FC	9,337	8,760	-	17,410	45,024,482	47,790,000	-	92,814,482
2018	FC	9,560	8,760	-	17,633	46,216,938	47,790,000	-	94,006,938
2019	FC	9,747	8,760	-	17,820	47,211,552	47,790,000	-	95,001,552
2020	FC	9,906	8,760	-	17,979	47,893,972	47,949,642	-	95,843,614
2021	FC	10,179	8,672	-	18,171	49,573,618	47,312,000	-	96,885,618

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for MADISON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	1,507	2,088	-	3,595	880,423	1,088,000	-	1,968,423
	2	Hist.	1,373	1,911	-	3,284	705,886	968,000	-	1,673,886
	3	Hist.	1,050	1,961	-	3,011	693,537	879,000	-	1,572,537
	4	Hist.	861	1,844	-	2,705	430,414	850,000	-	1,280,414
	5	Hist.	-	3,287	-	3,287	-	1,359,980	-	1,359,980
	6	Hist.	-	3,626	-	3,626	-	1,454,226	-	1,454,226
	7	Hist.	522	3,565	-	4,087	411,587	1,443,000	-	1,854,587
	8	Hist.	392	3,645	-	4,037	281,699	1,569,000	-	1,850,699
	9	Hist.	-	2,647	-	2,647	-	1,238,683	-	1,238,683
	10	Hist.	-	2,534	-	2,534	-	1,333,627	-	1,333,627
	11	Hist.	1,338	1,825	-	3,163	587,616	924,000	-	1,511,616
	12	Hist.	1,520	1,945	-	3,465	997,996	944,000	-	1,941,996
2011	1	Hist.	1,511	2,088	-	3,599	876,301	1,088,000	-	1,964,301
	2	Hist.	1,462	1,911	-	3,373	678,734	968,000	-	1,646,734
	3	Hist.	1,231	1,961	-	3,192	819,160	879,000	-	1,698,160
	4	Hist.	808	1,844	-	2,652	565,382	850,000	-	1,415,382
	5	Hist.	-	2,475	-	2,475	-	1,279,028	-	1,279,028
	6	Hist.	-	3,849	-	3,849	-	1,385,666	-	1,385,666
	7	Hist.	893	3,565	-	4,458	528,136	1,443,000	-	1,971,136
	8	Hist.	407	3,645	-	4,052	72,211	1,569,000	-	1,641,211
	9	Hist.	-	3,640	-	3,640	-	1,269,982	-	1,269,982
	10	Hist.	-	2,626	-	2,626	-	1,318,618	-	1,318,618
	11	Hist.	1,026	1,825	-	2,851	518,222	924,000	-	1,442,222
	12	Hist.	1,197	1,945	-	3,142	770,667	944,000	-	1,714,667
2012	1	Hist.	1,145	2,088	-	3,233	604,503	1,088,000	-	1,692,503
	2	Hist.	1,269	1,911	-	3,180	533,356	1,002,000	-	1,535,356
	3	Hist.	658	1,961	-	2,619	466,545	879,000	-	1,345,545
	4	Hist.	788	1,844	-	2,632	369,422	850,000	-	1,219,422
	5	Hist.	-	3,036	-	3,036	-	1,239,615	-	1,239,615
	6	Hist.	-	3,493	-	3,493	-	1,484,710	-	1,484,710
	7	Hist.	790	3,565	-	4,355	544,110	1,443,000	-	1,987,110
	8	Hist.	279	3,645	-	3,924	-	1,550,739	-	1,550,739
	9	Hist.	-	3,393	-	3,393	-	1,306,342	-	1,306,342
	10	Hist.	-	2,519	-	2,519	-	1,337,496	-	1,337,496
	11	Hist.	1,141	1,825	-	2,966	541,802	924,000	-	1,465,802
	12	Hist.	1,245	1,945	-	3,190	873,168	944,000	-	1,817,168
2013	1	Hist.	1,476	2,088	-	3,564	799,455	1,088,000	-	1,887,455
	2	Hist.	1,532	1,911	-	3,443	709,062	968,000	-	1,677,062
	3	Hist.	1,153	1,961	-	3,114	831,528	879,000	-	1,710,528
	4	Hist.	884	1,844	-	2,728	606,032	850,000	-	1,456,032
	5	Hist.	-	2,471	-	2,471	-	1,269,866	-	1,269,866
	6	Hist.	-	3,405	-	3,405	-	1,370,277	-	1,370,277
	7	Hist.	429	3,565	-	3,994	282,973	1,443,000	-	1,725,973
	8	Hist.	437	3,645	-	4,082	78,651	1,569,000	-	1,647,651
	9	Hist.	-	3,899	-	3,899	-	1,359,207	-	1,359,207
	10	Hist.	-	2,830	-	2,830	-	1,407,151	-	1,407,151
	11	Hist.	1,316	1,825	-	3,141	687,617	924,000	-	1,611,617
	12	Hist.	1,769	1,945	-	3,714	1,108,528	944,000	-	2,052,528
2014	1	Hist.	1,638	2,088	-	3,726	953,397	1,088,000	-	2,041,397
	2	Hist.	1,731	1,911	-	3,642	866,264	968,000	-	1,834,264
	3	Hist.	1,288	1,961	-	3,249	789,630	879,000	-	1,668,630
	4	Hist.	996	1,844	-	2,840	527,529	850,000	-	1,377,529
	5	Hist.	-	3,338	-	3,338	-	1,334,821	-	1,334,821
	6	Hist.	-	3,090	-	3,090	-	1,412,448	-	1,412,448
	7	Hist.	225	3,565	-	3,790	162,119	1,443,000	-	1,605,119
	8	Hist.	-	3,489	-	3,489	36,744	1,569,000	-	1,605,744
	9	Hist.	-	2,750	-	2,750	-	1,302,637	-	1,302,637
	10	Hist.	-	2,892	-	2,892	-	1,374,572	-	1,374,572
	11	Hist.	1,919	1,825	-	3,744	910,042	924,000	-	1,834,042
	12	Hist.	1,892	1,945	-	3,837	1,047,692	944,000	-	1,991,692
2015	1	Hist.	1,620	2,088	-	3,708	785,471	1,088,000	-	1,873,471
	2	Hist.	1,545	1,911	-	3,456	794,709	968,000	-	1,762,709
	3	Hist.	1,301	1,961	-	3,262	682,911	879,000	-	1,561,911
	4	Hist.	706	1,844	-	2,550	403,734	850,000	-	1,253,734
	5	Hist.	-	2,503	-	2,503	-	1,233,778	-	1,233,778
	6	Hist.	-	3,488	-	3,488	-	1,426,841	-	1,426,841
	7	Hist.	329	3,565	-	3,894	281,497	1,443,000	-	1,724,497
	8	Hist.	140	3,645	-	3,785	-	1,549,180	-	1,549,180
	9	Hist.	-	3,576	-	3,576	-	1,461,697	-	1,461,697
	10	FC	-	3,611	-	3,611	-	1,577,539	-	1,577,539
	11	FC	2,323	1,825	-	4,148	864,719	924,000	-	1,788,719
	12	FC	2,547	1,945	-	4,492	1,191,181	944,000	-	2,135,181

Historic and Forecasted Monthly Loads for MADISON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	1,523	2,088	-	3,611	826,875	1,088,000	-	1,914,875
	2	FC	1,311	1,911	-	3,222	636,419	1,002,571	-	1,638,990
	3	FC	1,088	1,961	-	3,049	698,728	879,000	-	1,577,728
	4	FC	796	1,844	-	2,640	473,752	850,000	-	1,323,752
	5	FC	-	2,727	-	2,727	-	1,271,577	-	1,271,577
	6	FC	-	3,476	-	3,476	-	1,422,094	-	1,422,094
	7	FC	474	3,565	-	4,039	340,405	1,443,000	-	1,783,405
	8	FC	202	3,645	-	3,847	64,537	1,569,000	-	1,633,537
	9	FC	-	3,218	-	3,218	-	1,302,897	-	1,302,897
	10	FC	-	2,726	-	2,726	-	1,380,239	-	1,380,239
	11	FC	1,353	1,825	-	3,178	653,193	924,000	-	1,577,193
	12	FC	1,571	1,945	-	3,516	987,786	944,000	-	1,931,786
2017	1	FC	1,538	2,088	-	3,626	835,414	1,088,000	-	1,923,414
	2	FC	1,326	1,911	-	3,237	680,042	968,000	-	1,648,042
	3	FC	1,101	1,961	-	3,062	705,759	879,000	-	1,584,759
	4	FC	807	1,844	-	2,651	479,676	850,000	-	1,329,676
	5	FC	-	2,738	-	2,738	-	1,277,090	-	1,277,090
	6	FC	-	3,491	-	3,491	-	1,428,260	-	1,428,260
	7	FC	491	3,565	-	4,056	348,450	1,443,000	-	1,791,450
	8	FC	219	3,645	-	3,864	71,960	1,569,000	-	1,640,960
	9	FC	-	3,232	-	3,232	-	1,308,546	-	1,308,546
	10	FC	-	2,737	-	2,737	-	1,386,224	-	1,386,224
	11	FC	1,368	1,825	-	3,193	660,232	924,000	-	1,584,232
	12	FC	1,587	1,945	-	3,532	996,366	944,000	-	1,940,366
2018	1	FC	1,553	2,088	-	3,641	843,408	1,088,000	-	1,931,408
	2	FC	1,340	1,911	-	3,251	686,901	968,000	-	1,654,901
	3	FC	1,114	1,961	-	3,075	712,343	879,000	-	1,591,343
	4	FC	819	1,844	-	2,663	485,223	850,000	-	1,335,223
	5	FC	-	2,749	-	2,749	-	1,282,253	-	1,282,253
	6	FC	-	3,505	-	3,505	-	1,434,034	-	1,434,034
	7	FC	508	3,565	-	4,073	355,984	1,443,000	-	1,798,984
	8	FC	236	3,645	-	3,881	78,911	1,569,000	-	1,647,911
	9	FC	-	3,245	-	3,245	-	1,313,836	-	1,313,836
	10	FC	-	2,749	-	2,749	-	1,391,827	-	1,391,827
	11	FC	1,381	1,825	-	3,206	666,824	924,000	-	1,590,824
	12	FC	1,601	1,945	-	3,546	1,004,402	944,000	-	1,948,402
2019	1	FC	1,569	2,088	-	3,657	851,352	1,088,000	-	1,939,352
	2	FC	1,353	1,911	-	3,264	693,713	968,000	-	1,661,713
	3	FC	1,127	1,961	-	3,088	718,884	879,000	-	1,597,884
	4	FC	830	1,844	-	2,674	490,733	850,000	-	1,340,733
	5	FC	-	2,760	-	2,760	-	1,287,382	-	1,287,382
	6	FC	-	3,519	-	3,519	-	1,439,770	-	1,439,770
	7	FC	525	3,565	-	4,090	363,468	1,443,000	-	1,806,468
	8	FC	252	3,645	-	3,897	85,817	1,569,000	-	1,654,817
	9	FC	-	3,258	-	3,258	-	1,319,091	-	1,319,091
	10	FC	-	2,760	-	2,760	-	1,397,395	-	1,397,395
	11	FC	1,394	1,825	-	3,219	673,371	924,000	-	1,597,371
	12	FC	1,616	1,945	-	3,561	1,012,384	944,000	-	1,956,384
2020	1	FC	1,582	2,088	-	3,670	859,004	1,088,000	-	1,947,004
	2	FC	1,366	1,911	-	3,277	663,978	1,002,571	-	1,666,549
	3	FC	1,139	1,961	-	3,100	725,186	879,000	-	1,604,186
	4	FC	840	1,844	-	2,684	496,043	850,000	-	1,346,043
	5	FC	-	2,771	-	2,771	-	1,292,323	-	1,292,323
	6	FC	-	3,533	-	3,533	-	1,445,296	-	1,445,296
	7	FC	542	3,565	-	4,107	370,678	1,443,000	-	1,813,678
	8	FC	268	3,645	-	3,913	92,469	1,569,000	-	1,661,469
	9	FC	-	3,271	-	3,271	-	1,324,155	-	1,324,155
	10	FC	-	2,770	-	2,770	-	1,402,758	-	1,402,758
	11	FC	1,407	1,825	-	3,232	679,680	924,000	-	1,603,680
	12	FC	1,630	1,945	-	3,575	1,020,074	944,000	-	1,964,074
2021	1	FC	1,619	2,067	-	3,686	877,922	1,077,000	-	1,954,922
	2	FC	1,399	1,892	-	3,291	717,096	958,000	-	1,675,096
	3	FC	1,172	1,941	-	3,113	740,703	870,000	-	1,610,703
	4	FC	869	1,826	-	2,695	509,555	842,000	-	1,351,555
	5	FC	-	2,781	-	2,781	-	1,297,081	-	1,297,081
	6	FC	-	3,546	-	3,546	-	1,450,616	-	1,450,616
	7	FC	595	3,529	-	4,124	392,321	1,429,000	-	1,821,321
	8	FC	320	3,609	-	3,929	115,674	1,553,000	-	1,668,674
	9	FC	-	3,283	-	3,283	-	1,329,029	-	1,329,029
	10	FC	-	2,780	-	2,780	-	1,407,922	-	1,407,922
	11	FC	1,439	1,807	-	3,246	695,203	915,000	-	1,610,203
	12	FC	1,663	1,926	-	3,589	1,036,928	935,000	-	1,971,928

Historic and Forecasted Seasonal Loads for MADISON, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	522	3,645	-	4,087	693,286	8,398,516	-	9,091,802
S2011	Hist.	893	3,849	-	4,458	600,347	8,265,294	-	8,865,641
S2012	Hist.	790	3,645	-	4,355	544,110	8,361,902	-	8,906,012
S2013	Hist.	437	3,899	-	4,082	361,624	8,418,501	-	8,780,125
S2014	Hist.	225	3,565	-	3,790	198,863	8,436,478	-	8,635,341
S2015	FC	329	3,645	-	3,894	281,497	8,692,035	-	8,973,532
S2016	FC	474	3,645	-	4,039	404,942	8,388,807	-	8,793,749
S2017	FC	491	3,645	-	4,056	420,410	8,412,120	-	8,832,530
S2018	FC	508	3,645	-	4,073	434,895	8,433,950	-	8,868,845
S2019	FC	525	3,645	-	4,090	449,285	8,455,638	-	8,904,923
S2020	FC	542	3,645	-	4,107	463,147	8,476,532	-	8,939,679
S2021	FC	595	3,609	-	4,124	507,995	8,466,648	-	8,974,643
W2009-10	Hist.	1,874	2,088	-	3,819	4,444,215	5,653,000	-	10,097,215
W2010-11	Hist.	1,520	2,088	-	3,599	4,525,189	5,653,000	-	10,178,189
W2011-12	Hist.	1,269	2,088	-	3,233	3,262,715	5,687,000	-	8,949,715
W2012-13	Hist.	1,532	2,088	-	3,564	4,361,047	5,653,000	-	10,014,047
W2013-14	Hist.	1,769	2,088	-	3,726	4,932,965	5,653,000	-	10,585,965
W2014-15	Hist.	1,919	2,088	-	3,837	4,624,559	5,653,000	-	10,277,559
W2015-16	FC	2,547	2,088	-	4,492	4,691,674	5,687,571	-	10,379,245
W2016-17	FC	1,571	2,088	-	3,626	4,341,870	5,653,000	-	9,994,870
W2017-18	FC	1,587	2,088	-	3,641	4,384,473	5,653,000	-	10,037,473
W2018-19	FC	1,601	2,088	-	3,657	4,425,908	5,653,000	-	10,078,908
W2019-20	FC	1,616	2,088	-	3,670	4,429,966	5,687,571	-	10,117,537
W2020-21	FC	1,630	2,067	-	3,686	4,545,030	5,615,000	-	10,160,030

Historic and Forecasted Annual Loads for MADISON, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	1,520	3,645	-	4,087	4,989,158	14,051,516	-	19,040,674
2011	Hist.	1,511	3,849	-	4,458	4,828,813	13,918,294	-	18,747,107
2012	Hist.	1,269	3,645	-	4,355	3,932,906	14,048,902	-	17,981,808
2013	Hist.	1,769	3,899	-	4,082	5,103,846	14,071,501	-	19,175,347
2014	Hist.	1,919	3,565	-	3,837	5,293,417	14,089,478	-	19,382,895
2015	FC	2,547	3,645	-	4,492	5,004,222	14,345,035	-	19,349,257
2016	FC	1,571	3,645	-	4,039	4,681,695	14,076,378	-	18,758,073
2017	FC	1,587	3,645	-	4,056	4,777,899	14,065,120	-	18,843,019
2018	FC	1,601	3,645	-	4,073	4,833,996	14,086,950	-	18,920,946
2019	FC	1,616	3,645	-	4,090	4,889,722	14,108,638	-	18,998,360
2020	FC	1,630	3,645	-	4,107	4,907,112	14,164,103	-	19,071,215
2021	FC	1,663	3,609	-	4,124	5,085,402	14,063,648	-	19,149,050

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for MARSHALL, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	9,678	14,232	56,979	80,889	7,063,909	8,818,000	37,812,796	53,694,705
	2	Hist.	9,519	14,232	56,606	80,357	5,632,583	8,688,000	34,137,030	48,457,613
	3	Hist.	9,233	13,911	55,162	78,306	7,209,078	8,012,000	36,214,682	51,435,760
	4	Hist.	8,949	13,222	52,837	75,008	4,995,050	8,696,000	32,658,355	46,349,405
	5	Hist.	2,639	20,791	56,221	79,651	2,117,149	12,795,000	35,758,544	50,670,693
	6	Hist.	1,750	22,228	59,735	83,713	708,431	13,850,000	36,289,262	50,847,693
	7	Hist.	7,873	22,366	59,735	89,974	5,893,388	12,508,000	36,299,860	54,701,248
	8	Hist.	6,881	22,366	57,811	87,058	5,832,866	13,124,000	37,406,738	56,363,604
	9	Hist.	4,161	22,366	52,530	79,057	4,094,220	12,591,000	32,972,636	49,657,856
	10	Hist.	7,170	19,263	52,205	78,638	5,016,705	11,784,000	33,159,198	49,959,903
	11	Hist.	12,895	14,232	53,318	80,445	8,197,989	9,215,000	34,227,969	51,640,958
	12	Hist.	13,524	14,232	54,538	82,294	9,430,297	9,181,000	36,552,306	55,163,603
2011	1	Hist.	14,413	14,232	56,263	84,908	10,283,768	8,818,000	37,487,404	56,589,172
	2	Hist.	14,302	14,232	56,047	84,581	8,129,150	8,688,000	33,046,892	49,864,042
	3	Hist.	13,837	13,911	54,508	82,256	9,781,743	8,012,000	34,910,972	52,704,715
	4	Hist.	13,282	13,222	52,061	78,565	8,248,852	8,696,000	33,295,137	50,239,989
	5	Hist.	5,399	20,791	51,804	77,994	4,288,060	12,795,000	33,754,347	50,837,407
	6	Hist.	6,812	22,228	57,403	86,443	3,342,969	13,850,000	34,016,827	51,209,796
	7	Hist.	7,151	22,366	59,735	89,252	5,526,890	12,508,000	36,443,366	54,478,256
	8	Hist.	6,644	22,366	58,728	87,738	5,130,815	13,124,000	36,909,879	55,164,694
	9	Hist.	5,744	22,366	56,937	85,047	4,040,211	12,591,000	33,657,329	50,288,540
	10	Hist.	6,527	19,263	52,181	77,971	5,081,407	11,784,000	34,084,328	50,949,735
	11	Hist.	11,709	14,232	52,242	78,183	7,394,137	9,215,000	33,452,408	50,061,545
	12	Hist.	12,852	14,232	54,512	81,596	8,547,180	9,181,000	35,675,030	53,403,210
2012	1	Hist.	12,943	14,232	54,692	81,867	8,906,323	8,818,000	35,650,047	53,374,370
	2	Hist.	12,702	14,232	54,212	81,146	7,454,390	8,998,000	33,130,501	49,582,891
	3	Hist.	12,141	13,911	52,444	78,496	9,082,177	8,012,000	34,359,100	51,453,277
	4	Hist.	11,958	13,222	50,679	75,859	7,418,534	8,696,000	32,444,561	48,559,095
	5	Hist.	4,358	20,791	50,980	76,129	3,949,926	12,795,000	33,893,085	50,638,011
	6	Hist.	5,619	22,228	56,410	84,257	3,222,741	13,850,000	34,594,985	51,667,726
	7	Hist.	5,089	22,366	58,639	86,094	5,563,108	12,508,000	38,484,904	56,556,012
	8	Hist.	3,788	22,366	59,336	85,490	3,316,908	13,124,000	37,250,529	53,691,437
	9	Hist.	2,514	22,366	56,506	81,386	2,079,605	12,591,000	33,286,473	47,957,078
	10	Hist.	4,200	19,263	53,190	76,653	3,789,514	11,784,000	35,250,701	50,824,215
	11	Hist.	9,439	14,232	53,382	77,053	6,054,155	9,215,000	34,437,002	49,706,157
	12	Hist.	10,061	14,232	54,767	79,060	7,088,211	9,181,000	36,658,443	52,927,654
2013	1	Hist.	10,495	14,232	55,732	80,459	7,713,676	8,818,000	37,222,570	53,754,246
	2	Hist.	10,520	14,232	55,786	80,538	6,206,807	8,688,000	33,576,660	48,471,467
	3	Hist.	10,159	13,911	54,253	78,323	8,129,047	8,012,000	36,311,145	52,452,192
	4	Hist.	10,248	13,222	52,882	76,352	6,621,701	8,696,000	34,517,234	49,834,935
	5	Hist.	2,416	20,791	52,700	75,907	2,551,786	12,795,000	34,800,598	50,147,384
	6	Hist.	3,491	22,228	58,362	84,081	1,671,720	13,850,000	35,245,786	50,767,506
	7	Hist.	3,146	22,366	59,203	84,715	3,884,981	12,508,000	37,941,073	54,334,054
	8	Hist.	2,904	22,366	59,735	85,005	2,800,966	13,124,000	37,590,522	53,515,488
	9	Hist.	2,153	22,366	57,999	82,518	2,203,740	12,591,000	34,944,787	49,739,527
	10	Hist.	3,044	19,263	52,706	75,013	2,869,831	11,784,000	34,573,793	49,227,624
	11	Hist.	8,661	14,232	53,782	76,675	5,652,133	9,215,000	34,924,807	49,791,940
	12	Hist.	10,373	14,232	57,743	82,348	7,002,570	9,181,000	37,970,069	54,153,639
2014	1	Hist.	10,233	14,232	57,418	81,883	7,481,507	8,818,000	38,218,263	54,517,770
	2	Hist.	10,745	14,232	58,605	83,582	6,023,213	8,688,000	34,534,624	49,245,837
	3	Hist.	9,598	13,911	55,190	78,699	7,278,388	8,012,000	35,837,685	51,128,073
	4	Hist.	9,914	13,222	54,287	77,423	5,653,807	8,696,000	33,698,524	48,048,331
	5	Hist.	1,658	20,791	53,117	75,566	1,193,929	12,795,000	33,090,911	47,079,840
	6	Hist.	3,212	22,228	56,200	81,640	1,967,614	13,850,000	34,943,466	50,761,080
	7	Hist.	3,397	22,366	56,902	82,665	4,153,917	12,508,000	36,674,253	53,336,170
	8	Hist.	2,686	22,366	58,884	83,936	3,047,359	13,124,000	37,919,861	54,091,220
	9	Hist.	1,698	22,366	56,584	80,648	1,960,759	12,591,000	34,175,761	48,727,520
	10	Hist.	3,007	19,263	52,301	74,571	3,128,607	11,784,000	34,946,373	49,858,980
	11	Hist.	9,980	14,232	56,402	80,614	6,020,501	9,215,000	35,509,099	50,744,600
	12	Hist.	9,885	14,232	56,185	80,302	6,320,447	9,181,000	36,115,553	51,617,000
2015	1	Hist.	10,595	14,232	57,506	82,333	7,267,838	8,818,000	37,230,970	53,316,808
	2	Hist.	9,937	14,232	58,751	82,920	5,949,313	8,688,000	35,586,623	50,223,936
	3	Hist.	10,013	13,911	58,143	82,067	6,971,956	8,012,000	36,362,068	51,346,024
	4	Hist.	8,891	13,222	53,769	75,882	5,433,273	8,696,000	34,375,095	48,504,368
	5	Hist.	1,720	20,791	53,751	76,262	1,747,769	12,795,000	35,674,615	50,217,384
	6	Hist.	1,860	22,228	58,127	82,215	1,137,408	13,850,000	35,544,000	50,531,408
	7	Hist.	2,146	22,366	59,735	84,247	3,375,564	12,508,000	38,557,692	54,441,256
	8	Hist.	1,888	22,366	58,995	83,249	2,287,873	13,124,000	37,487,471	52,899,344
	9	Hist.	1,850	22,366	57,824	82,040	2,181,563	12,591,000	35,933,293	50,705,856
	10	FC	4,558	19,263	53,812	77,633	3,605,907	11,784,000	34,719,182	50,109,089
	11	FC	9,908	14,232	54,159	78,299	6,330,513	9,215,000	34,880,808	50,426,321
	12	FC	11,217	14,232	57,041	82,490	7,639,905	9,181,000	37,686,844	54,507,749

Historic and Forecasted Monthly Loads for MARSHALL, MN

Year	Month	Historic/ Forecast	Demand (kW)				Energy (kWh)			
			MRES	WAPA	Other	Total	MRES	WAPA	Other	Total
2016	1	FC	11,238	14,232	57,087	82,557	7,798,526	8,818,000	37,211,221	53,827,747
	2	FC	11,190	14,232	56,983	82,405	6,140,421	8,998,285	33,969,739	49,108,445
	3	FC	10,990	13,911	55,813	80,714	8,081,452	8,012,000	36,002,607	52,096,059
	4	FC	10,929	13,222	54,113	78,264	6,434,293	8,696,000	33,929,914	49,060,207
	5	FC	3,041	20,791	53,945	77,777	2,721,387	12,795,000	35,068,932	50,585,319
	6	FC	3,345	22,228	57,881	83,454	1,514,679	13,850,000	34,809,210	50,173,889
	7	FC	64,215	22,366	-	86,581	41,757,565	12,508,000	-	54,265,565
	8	FC	64,782	22,366	-	87,148	41,884,796	13,124,000	-	55,008,796
	9	FC	59,759	22,366	-	82,125	35,786,972	12,591,000	-	48,377,972
	10	FC	57,336	19,263	-	76,599	38,307,571	11,784,000	-	50,091,571
	11	FC	62,932	14,232	-	77,164	39,517,354	9,215,000	-	48,732,354
	12	FC	64,972	14,232	-	79,204	42,955,290	9,181,000	-	52,136,290
2017	1	FC	68,334	14,232	-	82,566	44,999,817	8,818,000	-	53,817,817
	2	FC	68,150	14,232	-	82,382	40,411,389	8,688,000	-	49,099,389
	3	FC	66,777	13,911	-	80,688	44,041,240	8,012,000	-	52,053,240
	4	FC	64,980	13,222	-	78,202	40,315,870	8,696,000	-	49,011,870
	5	FC	56,994	20,791	-	77,785	37,759,583	12,795,000	-	50,554,583
	6	FC	61,271	22,228	-	83,499	36,323,896	13,850,000	-	50,173,896
	7	FC	64,280	22,366	-	86,646	41,752,395	12,508,000	-	54,260,395
	8	FC	64,846	22,366	-	87,212	41,879,934	13,124,000	-	55,003,934
	9	FC	59,793	22,366	-	82,159	35,774,954	12,591,000	-	48,365,954
	10	FC	57,328	19,263	-	76,591	38,279,975	11,784,000	-	50,063,975
	11	FC	62,915	14,232	-	77,147	39,490,125	9,215,000	-	48,705,125
	12	FC	64,976	14,232	-	79,208	42,942,975	9,181,000	-	52,123,975
2018	1	FC	68,897	14,232	-	83,129	45,354,363	8,818,000	-	54,172,363
	2	FC	68,679	14,232	-	82,911	40,719,334	8,688,000	-	49,407,334
	3	FC	67,291	13,911	-	81,202	44,353,879	8,012,000	-	52,365,879
	4	FC	65,444	13,222	-	78,666	40,592,580	8,696,000	-	49,288,580
	5	FC	57,463	20,791	-	78,254	38,033,833	12,795,000	-	50,828,833
	6	FC	61,814	22,228	-	84,042	36,618,410	13,850,000	-	50,468,410
	7	FC	64,867	22,366	-	87,233	42,085,550	12,508,000	-	54,593,550
	8	FC	65,438	22,366	-	87,804	42,214,442	13,124,000	-	55,338,442
	9	FC	60,315	22,366	-	82,681	36,052,541	12,591,000	-	48,643,541
	10	FC	57,785	19,263	-	77,048	38,561,703	11,784,000	-	50,345,703
	11	FC	63,407	14,232	-	77,639	39,782,046	9,215,000	-	48,997,046
	12	FC	65,506	14,232	-	79,738	43,278,369	9,181,000	-	52,459,369
2019	1	FC	69,382	14,232	-	83,614	45,660,099	8,818,000	-	54,478,099
	2	FC	69,135	14,232	-	83,367	40,984,884	8,688,000	-	49,672,884
	3	FC	67,735	13,911	-	81,646	44,623,479	8,012,000	-	52,635,479
	4	FC	65,843	13,222	-	79,065	40,831,195	8,696,000	-	49,527,195
	5	FC	57,868	20,791	-	78,659	38,270,328	12,795,000	-	51,065,328
	6	FC	62,282	22,228	-	84,510	36,872,379	13,850,000	-	50,722,379
	7	FC	65,374	22,366	-	87,740	42,372,839	12,508,000	-	54,880,839
	8	FC	65,948	22,366	-	88,314	42,502,900	13,124,000	-	55,626,900
	9	FC	60,764	22,366	-	83,130	36,291,912	12,591,000	-	48,882,912
	10	FC	58,179	19,263	-	77,442	38,804,645	11,784,000	-	50,588,645
	11	FC	63,832	14,232	-	78,064	40,033,777	9,215,000	-	49,248,777
	12	FC	65,964	14,232	-	80,196	43,567,589	9,181,000	-	52,748,589
2020	1	FC	69,810	14,232	-	84,042	45,929,343	8,818,000	-	54,747,343
	2	FC	69,537	14,232	-	83,769	40,901,008	8,998,285	-	49,899,293
	3	FC	68,126	13,911	-	82,037	44,860,899	8,012,000	-	52,872,899
	4	FC	66,195	13,222	-	79,417	41,041,330	8,696,000	-	49,737,330
	5	FC	58,225	20,791	-	79,016	38,478,594	12,795,000	-	51,273,594
	6	FC	62,693	22,228	-	84,921	37,096,035	13,850,000	-	50,946,035
	7	FC	65,821	22,366	-	88,187	42,625,839	12,508,000	-	55,133,839
	8	FC	66,398	22,366	-	88,764	42,756,927	13,124,000	-	55,880,927
	9	FC	61,159	22,366	-	83,525	36,502,712	12,591,000	-	49,093,712
	10	FC	58,526	19,263	-	77,789	39,018,590	11,784,000	-	50,802,590
	11	FC	64,206	14,232	-	78,438	40,255,463	9,215,000	-	49,470,463
	12	FC	66,367	14,232	-	80,599	43,822,290	9,181,000	-	53,003,290
2021	1	FC	70,442	14,090	-	84,532	46,325,990	8,730,000	-	55,055,990
	2	FC	70,140	14,090	-	84,230	41,574,073	8,601,000	-	50,175,073
	3	FC	68,712	13,772	-	82,484	45,213,124	7,932,000	-	53,145,124
	4	FC	66,731	13,090	-	79,821	41,369,657	8,609,000	-	49,978,657
	5	FC	58,844	20,583	-	79,427	38,846,779	12,667,000	-	51,513,779
	6	FC	63,390	22,006	-	85,396	37,491,980	13,712,000	-	51,203,980
	7	FC	66,558	22,142	-	88,700	43,041,880	12,383,000	-	55,424,880
	8	FC	67,140	22,142	-	89,282	43,180,283	12,993,000	-	56,173,283
	9	FC	61,839	22,142	-	83,981	36,871,734	12,465,000	-	49,336,734
	10	FC	59,119	19,070	-	78,189	39,383,000	11,666,000	-	51,049,000
	11	FC	64,776	14,090	-	78,866	40,602,062	9,123,000	-	49,725,062
	12	FC	66,972	14,090	-	81,062	44,206,475	9,089,000	-	53,295,475

Historic and Forecasted Seasonal Loads for MARSHALL, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	7,873	22,366	59,735	89,974	23,662,759	76,652,000	211,886,238	312,200,997
S2011	Hist.	7,151	22,366	59,735	89,252	27,410,352	76,652,000	208,866,076	312,928,428
S2012	Hist.	5,619	22,366	59,336	86,094	21,921,802	76,652,000	212,760,677	311,334,479
S2013	Hist.	3,491	22,366	59,735	85,005	15,983,024	76,652,000	215,096,559	307,731,583
S2014	Hist.	3,397	22,366	58,884	83,936	15,452,185	76,652,000	211,750,625	303,854,810
S2015	FC	4,558	22,366	59,735	84,247	14,336,084	76,652,000	217,916,253	308,904,337
S2016	FC	64,782	22,366	57,881	87,148	161,972,970	76,652,000	69,878,142	308,503,112
S2017	FC	64,846	22,366	-	87,212	231,770,737	76,652,000	-	308,422,737
S2018	FC	65,438	22,366	-	87,804	233,566,479	76,652,000	-	310,218,479
S2019	FC	65,948	22,366	-	88,314	235,115,003	76,652,000	-	311,767,003
S2020	FC	66,398	22,366	-	88,764	236,478,697	76,652,000	-	313,130,697
S2021	FC	67,140	22,142	-	89,282	238,815,656	75,886,000	-	314,701,656
W2009-10	Hist.	9,678	14,232	56,979	80,889	36,112,489	52,610,000	211,425,771	300,148,260
W2010-11	Hist.	14,413	14,232	56,263	84,908	54,071,799	52,610,000	209,520,680	316,202,479
W2011-12	Hist.	12,943	14,232	54,692	81,867	48,802,741	52,920,000	204,711,647	306,434,388
W2012-13	Hist.	10,520	14,232	55,786	80,538	41,813,597	52,610,000	212,723,054	307,146,651
W2013-14	Hist.	10,745	14,232	58,605	83,582	39,091,618	52,610,000	215,183,972	306,885,590
W2014-15	Hist.	10,595	14,232	58,751	82,920	37,963,328	52,610,000	215,179,408	305,752,736
W2015-16	FC	11,238	14,232	57,087	82,557	42,425,110	52,920,285	213,681,133	309,026,528
W2016-17	FC	68,334	14,232	-	82,566	252,240,960	52,610,000	-	304,850,960
W2017-18	FC	68,897	14,232	-	83,129	253,453,256	52,610,000	-	306,063,256
W2018-19	FC	69,382	14,232	-	83,614	255,160,072	52,610,000	-	307,770,072
W2019-20	FC	69,810	14,232	-	84,042	256,333,946	52,920,285	-	309,254,231
W2020-21	FC	70,442	14,232	-	84,532	258,560,597	52,268,000	-	310,828,597

Historic and Forecasted Annual Loads for MARSHALL, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	13,524	22,366	59,735	89,974	66,191,665	129,262,000	423,489,376	618,943,041
2011	Hist.	14,413	22,366	59,735	89,252	79,795,182	129,262,000	416,733,919	625,791,101
2012	Hist.	12,943	22,366	59,336	86,094	67,925,592	129,572,000	419,440,331	616,937,923
2013	Hist.	10,520	22,366	59,735	85,005	57,308,958	129,262,000	429,619,044	616,190,002
2014	Hist.	10,745	22,366	58,884	83,936	54,230,048	129,262,000	425,664,373	609,156,421
2015	FC	11,217	22,366	59,735	84,247	53,928,882	129,262,000	434,038,661	617,229,543
2016	FC	64,972	22,366	57,881	87,148	272,900,306	129,572,285	210,991,623	613,464,214
2017	FC	68,334	22,366	-	87,212	483,972,153	129,262,000	-	613,234,153
2018	FC	68,897	22,366	-	87,804	487,647,050	129,262,000	-	616,909,050
2019	FC	69,382	22,366	-	88,314	490,816,026	129,262,000	-	620,078,026
2020	FC	69,810	22,366	-	88,764	493,289,030	129,572,285	-	622,861,315
2021	FC	70,442	22,142	-	89,282	498,107,037	127,970,000	-	626,077,037

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for MELROSE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	13,643	5,657	-	19,300	7,873,584	3,029,000	-	10,902,584
	2	Hist.	12,696	5,645	-	18,341	6,555,253	3,132,000	-	9,687,253
	3	Hist.	11,583	5,065	-	16,648	6,987,906	2,896,000	-	9,883,906
	4	Hist.	10,404	4,945	-	15,349	6,177,885	2,678,000	-	8,855,885
	5	Hist.	11,602	4,950	-	16,552	6,659,726	2,599,000	-	9,258,726
	6	Hist.	11,855	5,362	-	17,217	6,467,439	2,994,000	-	9,461,439
	7	Hist.	11,933	5,362	-	17,295	7,069,249	2,935,000	-	10,004,249
	8	Hist.	12,527	5,362	-	17,889	6,722,417	2,931,000	-	9,653,417
	9	Hist.	10,106	4,759	-	14,865	5,887,612	2,353,000	-	8,240,612
	10	Hist.	10,510	4,664	-	15,174	5,861,647	2,829,000	-	8,690,647
	11	Hist.	11,349	5,657	-	17,006	6,477,431	2,931,000	-	9,408,431
	12	Hist.	12,823	5,657	-	18,480	6,928,827	3,661,000	-	10,589,827
2011	1	Hist.	13,634	5,657	-	19,291	7,985,541	3,029,000	-	11,014,541
	2	Hist.	13,425	5,645	-	19,070	6,626,097	3,132,000	-	9,758,097
	3	Hist.	13,359	5,065	-	18,424	7,587,829	2,896,000	-	10,483,829
	4	Hist.	10,809	4,945	-	15,754	6,317,830	2,678,000	-	8,995,830
	5	Hist.	10,905	4,950	-	15,855	6,614,388	2,599,000	-	9,213,388
	6	Hist.	12,642	5,362	-	18,004	6,468,631	2,994,000	-	9,462,631
	7	Hist.	13,515	5,362	-	18,877	7,309,004	2,935,000	-	10,244,004
	8	Hist.	11,177	5,362	-	16,539	6,533,521	2,931,000	-	9,464,521
	9	Hist.	12,405	4,759	-	17,164	6,120,186	2,353,000	-	8,473,186
	10	Hist.	10,260	4,664	-	14,924	5,874,584	2,829,000	-	8,703,584
	11	Hist.	10,663	5,657	-	16,320	5,897,920	2,931,000	-	8,828,920
	12	Hist.	11,557	5,657	-	17,214	5,976,365	3,661,000	-	9,637,365
2012	1	Hist.	11,748	5,657	-	17,405	6,991,846	3,029,000	-	10,020,846
	2	Hist.	12,111	5,645	-	17,756	6,251,078	3,244,000	-	9,495,078
	3	Hist.	11,606	5,065	-	16,671	6,373,393	2,896,000	-	9,269,393
	4	Hist.	10,023	4,945	-	14,968	5,855,344	2,678,000	-	8,533,344
	5	Hist.	10,399	4,950	-	15,349	6,055,123	2,599,000	-	8,654,123
	6	Hist.	12,099	5,362	-	17,461	6,064,162	2,994,000	-	9,058,162
	7	Hist.	13,427	5,362	-	18,789	7,283,006	2,935,000	-	10,218,006
	8	Hist.	11,728	5,362	-	17,090	6,493,573	2,931,000	-	9,424,573
	9	Hist.	10,306	4,759	-	15,065	5,975,376	2,353,000	-	8,328,376
	10	Hist.	10,903	4,664	-	15,567	5,864,598	2,829,000	-	8,693,598
	11	Hist.	11,510	5,657	-	17,167	6,353,757	2,931,000	-	9,284,757
	12	Hist.	12,193	5,657	-	17,850	6,679,006	3,661,000	-	10,340,006
2013	1	Hist.	13,299	5,657	-	18,956	8,305,121	3,029,000	-	11,334,121
	2	Hist.	13,033	5,645	-	18,678	6,855,795	3,132,000	-	9,987,795
	3	Hist.	12,966	5,065	-	18,031	7,387,061	2,896,000	-	10,283,061
	4	Hist.	11,872	4,945	-	16,817	6,904,906	2,678,000	-	9,582,906
	5	Hist.	11,109	4,950	-	16,059	6,600,842	2,599,000	-	9,199,842
	6	Hist.	11,806	5,362	-	17,168	6,263,900	2,994,000	-	9,257,900
	7	Hist.	13,543	5,362	-	18,905	7,203,111	2,935,000	-	10,138,111
	8	Hist.	13,231	5,362	-	18,593	7,197,648	2,931,000	-	10,128,648
	9	Hist.	11,464	4,759	-	16,223	6,694,431	2,353,000	-	9,047,431
	10	Hist.	11,112	4,664	-	15,776	6,403,889	2,829,000	-	9,232,889
	11	Hist.	10,539	5,657	-	16,196	6,531,057	2,931,000	-	9,462,057
	12	Hist.	13,085	5,657	-	18,742	7,464,410	3,661,000	-	11,125,410
2014	1	Hist.	14,155	5,657	-	19,812	8,724,570	3,029,000	-	11,753,570
	2	Hist.	13,644	5,645	-	19,289	7,210,330	3,132,000	-	10,342,330
	3	Hist.	13,788	5,065	-	18,853	7,677,711	2,896,000	-	10,573,711
	4	Hist.	12,154	4,945	-	17,099	6,759,157	2,678,000	-	9,437,157
	5	Hist.	11,618	4,950	-	16,568	6,718,220	2,599,000	-	9,317,220
	6	Hist.	11,752	5,362	-	17,114	6,748,263	2,994,000	-	9,742,263
	7	Hist.	13,566	5,362	-	18,928	7,153,581	2,935,000	-	10,088,581
	8	Hist.	12,124	5,362	-	17,486	7,256,136	2,931,000	-	10,187,136
	9	Hist.	12,090	4,759	-	16,849	6,969,071	2,353,000	-	9,322,071
	10	Hist.	11,189	4,664	-	15,853	6,398,896	2,829,000	-	9,227,896
	11	Hist.	12,556	5,657	-	18,213	7,295,053	2,931,000	-	10,226,053
	12	Hist.	12,959	5,657	-	18,616	7,064,935	3,661,000	-	10,725,935
2015	1	Hist.	13,740	5,657	-	19,397	8,061,084	3,029,000	-	11,090,084
	2	Hist.	13,540	5,645	-	19,185	7,224,330	3,132,000	-	10,356,330
	3	Hist.	13,477	5,065	-	18,542	7,335,332	2,896,000	-	10,231,332
	4	Hist.	11,352	4,945	-	16,297	6,652,206	2,678,000	-	9,330,206
	5	Hist.	10,556	4,950	-	15,506	6,327,043	2,599,000	-	8,926,043
	6	Hist.	11,071	5,362	-	16,433	6,181,003	2,994,000	-	9,175,003
	7	Hist.	12,579	5,362	-	17,941	7,422,227	2,935,000	-	10,357,227
	8	Hist.	12,127	5,362	-	17,489	7,016,502	2,931,000	-	9,947,502
	9	Hist.	13,533	4,759	-	18,292	7,092,672	2,353,000	-	9,445,672
	10	FC	12,308	4,664	-	16,972	6,845,196	2,829,000	-	9,674,196
	11	FC	12,608	5,657	-	18,265	7,174,949	2,931,000	-	10,105,949
	12	FC	14,054	5,657	-	19,711	7,603,736	3,661,000	-	11,264,736

Historic and Forecasted Monthly Loads for MELROSE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	14,031	5,657	-	19,688	8,427,989	3,029,000	-	11,456,989
	2	FC	13,009	5,645	-	18,654	6,952,492	3,243,857	-	10,196,349
	3	FC	13,548	5,065	-	18,613	7,557,042	2,896,000	-	10,453,042
	4	FC	11,708	4,945	-	16,653	6,765,911	2,678,000	-	9,443,911
	5	FC	11,506	4,950	-	16,456	6,800,149	2,599,000	-	9,399,149
	6	FC	12,789	5,362	-	18,151	6,815,783	2,994,000	-	9,809,783
	7	FC	13,806	5,362	-	19,168	7,546,892	2,935,000	-	10,481,892
	8	FC	12,801	5,362	-	18,163	7,206,413	2,931,000	-	10,137,413
	9	FC	12,098	4,759	-	16,857	6,789,484	2,353,000	-	9,142,484
	10	FC	11,759	4,664	-	16,423	6,636,141	2,829,000	-	9,465,141
	11	FC	12,242	5,657	-	17,899	7,023,351	2,931,000	-	9,954,351
	12	FC	13,480	5,657	-	19,137	7,369,677	3,661,000	-	11,030,677
2017	1	FC	14,193	5,657	-	19,850	8,521,938	3,029,000	-	11,550,938
	2	FC	13,163	5,645	-	18,808	7,151,684	3,132,000	-	10,283,684
	3	FC	13,701	5,065	-	18,766	7,642,793	2,896,000	-	10,538,793
	4	FC	11,845	4,945	-	16,790	6,843,399	2,678,000	-	9,521,399
	5	FC	11,641	4,950	-	16,591	6,877,253	2,599,000	-	9,476,253
	6	FC	12,937	5,362	-	18,299	6,896,330	2,994,000	-	9,890,330
	7	FC	13,964	5,362	-	19,326	7,632,888	2,935,000	-	10,567,888
	8	FC	12,950	5,362	-	18,312	7,289,606	2,931,000	-	10,220,606
	9	FC	12,236	4,759	-	16,995	6,864,437	2,353,000	-	9,217,437
	10	FC	11,893	4,664	-	16,557	6,713,841	2,829,000	-	9,542,841
	11	FC	12,388	5,657	-	18,045	7,105,057	2,931,000	-	10,036,057
	12	FC	13,637	5,657	-	19,294	7,460,325	3,661,000	-	11,121,325
2018	1	FC	14,354	5,657	-	20,011	8,615,924	3,029,000	-	11,644,924
	2	FC	13,316	5,645	-	18,961	7,235,471	3,132,000	-	10,367,471
	3	FC	13,854	5,065	-	18,919	7,728,577	2,896,000	-	10,624,577
	4	FC	11,982	4,945	-	16,927	6,920,918	2,678,000	-	9,598,918
	5	FC	11,776	4,950	-	16,726	6,954,387	2,599,000	-	9,553,387
	6	FC	13,087	5,362	-	18,449	6,976,906	2,994,000	-	9,970,906
	7	FC	14,121	5,362	-	19,483	7,718,917	2,935,000	-	10,653,917
	8	FC	13,099	5,362	-	18,461	7,372,833	2,931,000	-	10,303,833
	9	FC	12,375	4,759	-	17,134	6,939,420	2,353,000	-	9,292,420
	10	FC	12,028	4,664	-	16,692	6,791,572	2,829,000	-	9,620,572
	11	FC	12,536	5,657	-	18,193	7,186,793	2,931,000	-	10,117,793
	12	FC	13,795	5,657	-	19,452	7,551,007	3,661,000	-	11,212,007
2019	1	FC	14,516	5,657	-	20,173	8,709,947	3,029,000	-	11,738,947
	2	FC	13,470	5,645	-	19,115	7,319,290	3,132,000	-	10,451,290
	3	FC	14,006	5,065	-	19,071	7,814,395	2,896,000	-	10,710,395
	4	FC	12,119	4,945	-	17,064	6,998,468	2,678,000	-	9,676,468
	5	FC	11,911	4,950	-	16,861	7,031,552	2,599,000	-	9,630,552
	6	FC	13,235	5,362	-	18,597	7,057,516	2,994,000	-	10,051,516
	7	FC	14,279	5,362	-	19,641	7,804,980	2,935,000	-	10,739,980
	8	FC	13,248	5,362	-	18,610	7,456,091	2,931,000	-	10,387,091
	9	FC	12,513	4,759	-	17,272	7,014,431	2,353,000	-	9,367,431
	10	FC	12,163	4,664	-	16,827	6,869,334	2,829,000	-	9,698,334
	11	FC	12,682	5,657	-	18,339	7,268,563	2,931,000	-	10,199,563
	12	FC	13,952	5,657	-	19,609	7,641,725	3,661,000	-	11,302,725
2020	1	FC	14,678	5,657	-	20,335	8,804,005	3,029,000	-	11,833,005
	2	FC	13,622	5,645	-	19,267	7,287,705	3,243,857	-	10,531,562
	3	FC	14,159	5,065	-	19,224	7,900,246	2,896,000	-	10,796,246
	4	FC	12,256	4,945	-	17,201	7,076,046	2,678,000	-	9,754,046
	5	FC	12,047	4,950	-	16,997	7,108,745	2,599,000	-	9,707,745
	6	FC	13,385	5,362	-	18,747	7,138,155	2,994,000	-	10,132,155
	7	FC	14,436	5,362	-	19,798	7,891,077	2,935,000	-	10,826,077
	8	FC	13,397	5,362	-	18,759	7,539,381	2,931,000	-	10,470,381
	9	FC	12,652	4,759	-	17,411	7,089,472	2,353,000	-	9,442,472
	10	FC	12,297	4,664	-	16,961	6,947,125	2,829,000	-	9,776,125
	11	FC	12,830	5,657	-	18,487	7,350,363	2,931,000	-	10,281,363
	12	FC	14,108	5,657	-	19,765	7,732,478	3,661,000	-	11,393,478
2021	1	FC	14,898	5,600	-	20,498	8,929,059	2,999,000	-	11,928,059
	2	FC	13,834	5,589	-	19,423	7,519,017	3,101,000	-	10,620,017
	3	FC	14,364	5,014	-	19,378	8,016,057	2,867,000	-	10,883,057
	4	FC	12,443	4,896	-	17,339	7,181,519	2,651,000	-	9,832,519
	5	FC	12,232	4,901	-	17,133	7,212,801	2,573,000	-	9,785,801
	6	FC	13,589	5,308	-	18,897	7,249,786	2,964,000	-	10,213,786
	7	FC	14,649	5,308	-	19,957	8,007,132	2,906,000	-	10,913,132
	8	FC	13,603	5,308	-	18,911	7,652,632	2,902,000	-	10,554,632
	9	FC	12,840	4,711	-	17,551	7,189,308	2,329,000	-	9,518,308
	10	FC	12,481	4,617	-	17,098	7,053,841	2,801,000	-	9,854,841
	11	FC	13,036	5,600	-	18,636	7,462,122	2,902,000	-	10,364,122
	12	FC	14,325	5,600	-	19,925	7,861,449	3,624,000	-	11,485,449

Historic and Forecasted Seasonal Loads for MELROSE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	12,527	5,362	-	17,889	38,668,090	16,641,000	-	55,309,090
S2011	Hist.	13,515	5,362	-	18,877	38,920,314	16,641,000	-	55,561,314
S2012	Hist.	13,427	5,362	-	18,789	37,735,838	16,641,000	-	54,376,838
S2013	Hist.	13,543	5,362	-	18,905	40,363,821	16,641,000	-	57,004,821
S2014	Hist.	13,566	5,362	-	18,928	41,244,167	16,641,000	-	57,885,167
S2015	FC	13,533	5,362	-	18,292	40,884,643	16,641,000	-	57,525,643
S2016	FC	13,806	5,362	-	19,168	41,794,862	16,641,000	-	58,435,862
S2017	FC	13,964	5,362	-	19,326	42,274,355	16,641,000	-	58,915,355
S2018	FC	14,121	5,362	-	19,483	42,754,035	16,641,000	-	59,395,035
S2019	FC	14,279	5,362	-	19,641	43,233,904	16,641,000	-	59,874,904
S2020	FC	14,436	5,362	-	19,798	43,713,955	16,641,000	-	60,354,955
S2021	FC	14,649	5,308	-	19,957	44,365,500	16,475,000	-	60,840,500
W2009-10	Hist.	13,643	5,657	-	19,300	40,903,982	18,327,000	-	59,230,982
W2010-11	Hist.	13,634	5,657	-	19,291	41,923,555	18,327,000	-	60,250,555
W2011-12	Hist.	12,111	5,657	-	17,756	37,345,946	18,439,000	-	55,784,946
W2012-13	Hist.	13,299	5,657	-	18,956	42,485,646	18,327,000	-	60,812,646
W2013-14	Hist.	14,155	5,657	-	19,812	44,367,235	18,327,000	-	62,694,235
W2014-15	Hist.	13,740	5,657	-	19,397	43,632,940	18,327,000	-	61,959,940
W2015-16	FC	14,054	5,657	-	19,711	44,482,119	18,438,857	-	62,920,976
W2016-17	FC	14,193	5,657	-	19,850	44,552,842	18,327,000	-	62,879,842
W2017-18	FC	14,354	5,657	-	20,011	45,066,272	18,327,000	-	63,393,272
W2018-19	FC	14,516	5,657	-	20,173	45,579,900	18,327,000	-	63,906,900
W2019-20	FC	14,678	5,657	-	20,335	45,978,290	18,438,857	-	64,417,147
W2020-21	FC	14,898	5,657	-	20,498	46,728,493	18,210,000	-	64,938,493

Historic and Forecasted Annual Loads for MELROSE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	13,643	5,657	-	19,300	79,668,976	34,968,000	-	114,636,976
2011	Hist.	13,634	5,657	-	19,291	79,311,896	34,968,000	-	114,279,896
2012	Hist.	13,427	5,657	-	18,789	76,240,262	35,080,000	-	111,320,262
2013	Hist.	13,543	5,657	-	18,956	83,812,171	34,968,000	-	118,780,171
2014	Hist.	14,155	5,657	-	19,812	85,975,923	34,968,000	-	120,943,923
2015	FC	14,054	5,657	-	19,711	84,936,280	34,968,000	-	119,904,280
2016	FC	14,031	5,657	-	19,688	85,891,324	35,079,857	-	120,971,181
2017	FC	14,193	5,657	-	19,850	86,999,551	34,968,000	-	121,967,551
2018	FC	14,354	5,657	-	20,011	87,992,725	34,968,000	-	122,960,725
2019	FC	14,516	5,657	-	20,173	88,986,292	34,968,000	-	123,954,292
2020	FC	14,678	5,657	-	20,335	89,864,798	35,079,857	-	124,944,655
2021	FC	14,898	5,600	-	20,498	91,334,723	34,619,000	-	125,953,723

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for MOORHEAD, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	37,416	37,296	-	74,712	23,763,000	21,357,000	-	45,120,000
	2	Hist.	36,203	37,237	-	73,440	15,517,000	23,219,000	-	38,736,000
	3	Hist.	26,755	37,133	-	63,888	19,135,000	17,393,000	-	36,528,000
	4	Hist.	20,782	33,386	-	54,168	11,975,912	17,968,000	-	29,943,912
	5	Hist.	28,037	35,995	-	64,032	14,092,000	17,828,000	-	31,920,000
	6	Hist.	25,935	38,744	-	64,679	13,789,000	17,891,000	-	31,680,000
	7	Hist.	30,988	37,772	-	68,760	17,974,420	18,275,000	-	36,249,420
	8	Hist.	36,229	38,627	-	74,856	19,077,000	18,219,000	-	37,296,000
	9	Hist.	18,240	37,632	-	55,872	11,079,000	19,209,000	-	30,288,000
	10	Hist.	23,712	32,880	-	56,592	14,777,000	18,055,000	-	32,832,000
	11	Hist.	32,958	32,562	-	65,520	18,679,000	18,137,000	-	36,816,000
	12	Hist.	34,942	37,106	-	72,048	25,040,000	19,648,000	-	44,688,000
2011	1	Hist.	37,800	37,296	-	75,096	26,211,000	21,357,000	-	47,568,000
	2	Hist.	40,307	37,237	-	77,544	16,573,000	23,219,000	-	39,792,000
	3	Hist.	31,051	37,133	-	68,184	23,551,000	17,393,000	-	40,944,000
	4	Hist.	24,406	33,386	-	57,792	16,304,000	17,968,000	-	34,272,000
	5	Hist.	19,997	35,995	-	55,992	13,900,000	17,828,000	-	31,728,000
	6	Hist.	36,568	38,744	-	75,312	14,125,000	17,891,000	-	32,016,000
	7	Hist.	39,820	37,772	-	77,592	19,837,000	18,275,000	-	38,112,000
	8	Hist.	35,413	38,627	-	74,040	18,981,000	18,219,000	-	37,200,000
	9	Hist.	30,672	37,632	-	68,304	12,630,422	19,209,000	-	31,839,422
	10	Hist.	28,104	32,880	-	60,984	14,936,360	18,055,000	-	32,991,360
	11	Hist.	34,230	32,562	-	66,792	17,719,000	18,137,000	-	35,856,000
	12	Hist.	36,358	37,106	-	73,464	21,200,000	19,648,000	-	40,848,000
2012	1	Hist.	36,984	37,296	-	74,280	21,507,000	21,357,000	-	42,864,000
	2	Hist.	36,851	37,237	-	74,088	14,640,000	24,048,000	-	38,688,000
	3	Hist.	29,683	37,133	-	66,816	16,841,690	17,393,000	-	34,234,690
	4	Hist.	21,838	33,386	-	55,224	12,560,000	17,968,000	-	30,528,000
	5	Hist.	26,501	35,995	-	62,496	13,948,000	17,828,000	-	31,776,000
	6	Hist.	31,528	38,744	-	70,272	16,100,947	17,891,000	-	33,991,947
	7	Hist.	40,660	37,772	-	78,432	22,976,140	18,275,000	-	41,251,140
	8	Hist.	38,869	38,627	-	77,496	18,069,000	18,219,000	-	36,288,000
	9	Hist.	29,712	37,632	-	67,344	12,711,000	19,209,000	-	31,920,000
	10	Hist.	28,896	32,880	-	61,776	16,711,767	18,055,000	-	34,766,767
	11	Hist.	36,462	32,562	-	69,024	19,591,000	18,137,000	-	37,728,000
	12	Hist.	37,918	37,106	-	75,024	24,848,000	19,648,000	-	44,496,000
2013	1	Hist.	43,176	37,296	-	80,472	25,587,000	21,357,000	-	46,944,000
	2	Hist.	37,811	37,237	-	75,048	17,389,000	23,219,000	-	40,608,000
	3	Hist.	30,763	37,133	-	67,896	24,140,262	17,393,000	-	41,533,262
	4	Hist.	29,542	33,386	-	62,928	19,232,000	17,968,000	-	37,200,000
	5	Hist.	22,229	35,995	-	58,224	15,303,801	17,828,000	-	33,131,801
	6	Hist.	31,548	38,744	-	70,292	15,936,328	17,891,000	-	33,827,328
	7	Hist.	37,544	37,772	-	75,316	19,537,883	18,275,000	-	37,812,883
	8	Hist.	40,009	38,627	-	78,636	19,068,600	18,219,000	-	37,287,600
	9	Hist.	36,647	37,632	-	74,279	14,643,768	19,209,000	-	33,852,768
	10	Hist.	25,739	32,880	-	58,619	16,734,920	18,055,000	-	34,789,920
	11	Hist.	34,735	32,562	-	67,297	20,318,862	18,137,000	-	38,455,862
	12	Hist.	39,918	37,106	-	77,024	28,875,008	19,648,000	-	48,523,008
2014	1	Hist.	43,126	37,296	-	80,422	27,215,976	21,357,000	-	48,572,976
	2	Hist.	38,505	37,237	-	75,742	19,340,248	23,219,000	-	42,559,248
	3	Hist.	33,568	37,133	-	70,701	24,189,945	17,393,000	-	41,582,945
	4	Hist.	29,877	33,386	-	63,263	16,925,408	17,968,000	-	34,893,408
	5	Hist.	31,288	35,995	-	67,283	16,068,352	17,828,000	-	33,896,352
	6	Hist.	24,056	38,744	-	62,800	15,211,115	17,891,000	-	33,102,115
	7	Hist.	38,614	37,772	-	76,386	17,419,384	18,275,000	-	35,694,384
	8	Hist.	30,643	38,627	-	69,270	18,132,038	18,219,000	-	36,351,038
	9	Hist.	28,024	37,632	-	65,656	13,498,248	19,209,000	-	32,707,248
	10	Hist.	28,129	32,880	-	61,009	16,211,751	18,055,000	-	34,266,751
	11	Hist.	37,129	32,562	-	69,691	21,689,272	18,137,000	-	39,826,272
	12	Hist.	38,847	37,106	-	75,953	24,129,022	19,648,000	-	43,777,022
2015	1	Hist.	40,241	37,296	-	77,537	24,046,824	21,357,000	-	45,403,824
	2	Hist.	38,197	37,237	-	75,434	18,741,045	23,219,000	-	41,960,045
	3	Hist.	33,242	37,133	-	70,375	20,563,631	17,393,000	-	37,956,631
	4	Hist.	23,807	33,386	-	57,193	14,259,327	17,968,000	-	32,227,327
	5	Hist.	20,633	35,995	-	56,628	14,082,400	17,828,000	-	31,910,400
	6	Hist.	26,691	38,744	-	65,435	15,709,240	17,891,000	-	33,600,240
	7	Hist.	36,814	37,772	-	74,586	19,961,310	18,275,000	-	38,236,310
	8	Hist.	37,157	38,627	-	75,784	18,644,184	18,219,000	-	36,863,184
	9	Hist.	43,366	37,632	-	80,998	15,664,248	19,209,000	-	34,873,248
	10	FC	28,683	32,880	-	61,563	17,552,820	18,055,000	-	35,607,820
	11	FC	38,696	32,562	-	71,258	21,259,722	18,137,000	-	39,396,722
	12	FC	40,516	37,106	-	77,622	26,857,533	19,648,000	-	46,505,533

Historic and Forecasted Monthly Loads for MOORHEAD, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	43,876	37,296	-	81,172	26,940,962	21,357,000	-	48,297,962
	2	FC	37,464	37,237	-	74,701	17,245,976	24,048,250	-	41,294,226
	3	FC	34,167	37,133	-	71,300	23,173,632	17,393,000	-	40,566,632
	4	FC	28,123	33,386	-	61,509	16,994,183	17,968,000	-	34,962,183
	5	FC	26,378	35,995	-	62,373	15,925,603	17,828,000	-	33,753,603
	6	FC	33,068	38,744	-	71,812	16,663,124	17,891,000	-	34,554,124
	7	FC	38,099	37,772	-	75,871	19,845,102	18,275,000	-	38,120,102
	8	FC	39,224	38,627	-	77,851	20,194,401	18,219,000	-	38,413,401
	9	FC	32,730	37,632	-	70,362	15,050,134	19,209,000	-	34,259,134
	10	FC	31,197	32,880	-	64,077	18,227,899	18,055,000	-	36,282,899
	11	FC	38,730	32,562	-	71,292	21,511,188	18,137,000	-	39,648,188
	12	FC	41,530	37,106	-	78,636	27,018,075	19,648,000	-	46,666,075
2017	1	FC	45,120	37,296	-	82,416	27,681,234	21,357,000	-	49,038,234
	2	FC	38,609	37,237	-	75,846	18,708,150	23,219,000	-	41,927,150
	3	FC	35,260	37,133	-	72,393	23,795,405	17,393,000	-	41,188,405
	4	FC	29,066	33,386	-	62,452	17,530,055	17,968,000	-	35,498,055
	5	FC	27,334	35,995	-	63,329	16,442,951	17,828,000	-	34,270,951
	6	FC	34,169	38,744	-	72,913	17,192,741	17,891,000	-	35,083,741
	7	FC	39,262	37,772	-	77,034	20,429,376	18,275,000	-	38,704,376
	8	FC	40,417	38,627	-	79,044	20,783,170	18,219,000	-	39,002,170
	9	FC	33,808	37,632	-	71,440	15,575,229	19,209,000	-	34,784,229
	10	FC	32,179	32,880	-	65,059	18,784,013	18,055,000	-	36,839,013
	11	FC	39,823	32,562	-	72,385	22,118,883	18,137,000	-	40,255,883
	12	FC	42,736	37,106	-	79,842	27,733,334	19,648,000	-	47,381,334
2018	1	FC	46,359	37,296	-	83,655	28,418,168	21,357,000	-	49,775,168
	2	FC	39,749	37,237	-	76,986	19,338,220	23,219,000	-	42,557,220
	3	FC	36,348	37,133	-	73,481	24,414,373	17,393,000	-	41,807,373
	4	FC	30,004	33,386	-	63,390	18,063,511	17,968,000	-	36,031,511
	5	FC	28,286	35,995	-	64,281	16,957,966	17,828,000	-	34,785,966
	6	FC	35,265	38,744	-	74,009	17,719,970	17,891,000	-	35,610,970
	7	FC	40,420	37,772	-	78,192	21,011,016	18,275,000	-	39,286,016
	8	FC	41,605	38,627	-	80,232	21,369,285	18,219,000	-	39,588,285
	9	FC	34,882	37,632	-	72,514	16,097,958	19,209,000	-	35,306,958
	10	FC	33,157	32,880	-	66,037	19,337,620	18,055,000	-	37,392,620
	11	FC	40,911	32,562	-	73,473	22,723,838	18,137,000	-	40,860,838
	12	FC	43,936	37,106	-	81,042	28,445,369	19,648,000	-	48,093,369
2019	1	FC	47,368	37,296	-	84,664	29,018,679	21,357,000	-	50,375,679
	2	FC	40,677	37,237	-	77,914	19,851,651	23,219,000	-	43,070,651
	3	FC	37,234	37,133	-	74,367	24,918,758	17,393,000	-	42,311,758
	4	FC	30,769	33,386	-	64,155	18,498,212	17,968,000	-	36,466,212
	5	FC	29,061	35,995	-	65,056	17,377,640	17,828,000	-	35,205,640
	6	FC	36,158	38,744	-	74,902	18,149,598	17,891,000	-	36,040,598
	7	FC	41,363	37,772	-	79,135	21,484,981	18,275,000	-	39,759,981
	8	FC	42,573	38,627	-	81,200	21,846,897	18,219,000	-	40,065,897
	9	FC	35,757	37,632	-	73,389	16,523,918	19,209,000	-	35,732,918
	10	FC	33,953	32,880	-	66,833	19,788,743	18,055,000	-	37,843,743
	11	FC	41,797	32,562	-	74,359	23,216,803	18,137,000	-	41,353,803
	12	FC	44,913	37,106	-	82,019	29,025,590	19,648,000	-	48,673,590
2020	1	FC	48,214	37,296	-	85,510	29,522,324	21,357,000	-	50,879,324
	2	FC	41,456	37,237	-	78,693	19,453,012	24,048,250	-	43,501,262
	3	FC	37,978	37,133	-	75,111	25,341,781	17,393,000	-	42,734,781
	4	FC	31,411	33,386	-	64,797	18,862,793	17,968,000	-	36,830,793
	5	FC	29,711	35,995	-	65,706	17,729,619	17,828,000	-	35,557,619
	6	FC	36,907	38,744	-	75,651	18,509,924	17,891,000	-	36,400,924
	7	FC	42,154	37,772	-	79,926	21,882,492	18,275,000	-	40,157,492
	8	FC	43,385	38,627	-	82,012	22,247,467	18,219,000	-	40,466,467
	9	FC	36,490	37,632	-	74,122	16,881,168	19,209,000	-	36,090,168
	10	FC	34,622	32,880	-	67,502	20,167,096	18,055,000	-	38,222,096
	11	FC	42,540	32,562	-	75,102	23,630,249	18,137,000	-	41,767,249
	12	FC	45,733	37,106	-	82,839	29,512,218	19,648,000	-	49,160,218
2021	1	FC	49,548	36,923	-	86,471	30,307,663	21,143,000	-	51,450,663
	2	FC	42,712	36,865	-	79,577	21,002,750	22,987,000	-	43,989,750
	3	FC	39,192	36,762	-	75,954	25,995,663	17,219,000	-	43,214,663
	4	FC	32,472	33,052	-	65,524	19,456,377	17,788,000	-	37,244,377
	5	FC	30,809	35,635	-	66,444	18,306,905	17,650,000	-	35,956,905
	6	FC	38,143	38,357	-	76,500	19,097,681	17,712,000	-	36,809,681
	7	FC	43,430	37,394	-	80,824	22,516,433	18,092,000	-	40,608,433
	8	FC	44,692	38,241	-	82,933	22,883,877	18,037,000	-	40,920,877
	9	FC	37,699	37,256	-	74,955	17,478,435	19,017,000	-	36,495,435
	10	FC	35,709	32,551	-	68,260	20,777,303	17,874,000	-	38,651,303
	11	FC	43,710	32,236	-	75,946	24,280,265	17,956,000	-	42,236,265
	12	FC	47,035	36,735	-	83,770	30,260,252	19,452,000	-	49,712,252

Historic and Forecasted Seasonal Loads for MOORHEAD, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	36,229	38,744	-	74,856	90,788,420	109,477,000	-	200,265,420
S2011	Hist.	39,820	38,744	-	77,592	94,409,782	109,477,000	-	203,886,782
S2012	Hist.	40,660	38,744	-	78,432	100,516,854	109,477,000	-	209,993,854
S2013	Hist.	40,009	38,744	-	78,636	101,225,300	109,477,000	-	210,702,300
S2014	Hist.	38,614	38,744	-	76,386	96,540,888	109,477,000	-	206,017,888
S2015	FC	43,366	38,744	-	80,998	101,614,202	109,477,000	-	211,091,202
S2016	FC	39,224	38,744	-	77,851	105,906,263	109,477,000	-	215,383,263
S2017	FC	40,417	38,744	-	79,044	109,207,480	109,477,000	-	218,684,480
S2018	FC	41,605	38,744	-	80,232	112,493,815	109,477,000	-	221,970,815
S2019	FC	42,573	38,744	-	81,200	115,171,777	109,477,000	-	224,648,777
S2020	FC	43,385	38,744	-	82,012	117,417,766	109,477,000	-	226,894,766
S2021	FC	44,692	38,357	-	82,933	121,060,634	108,382,000	-	229,442,634
W2009-10	Hist.	37,918	37,296	-	75,024	111,421,912	117,722,000	-	229,143,912
W2010-11	Hist.	40,307	37,296	-	77,544	126,358,000	117,722,000	-	244,080,000
W2011-12	Hist.	36,984	37,296	-	74,280	104,467,690	118,551,000	-	223,018,690
W2012-13	Hist.	43,176	37,296	-	80,472	130,787,262	117,722,000	-	248,509,262
W2013-14	Hist.	43,126	37,296	-	80,422	136,865,447	117,722,000	-	254,587,447
W2014-15	Hist.	40,241	37,296	-	77,537	123,429,121	117,722,000	-	241,151,121
W2015-16	FC	43,876	37,296	-	81,172	132,472,008	118,551,250	-	251,023,258
W2016-17	FC	45,120	37,296	-	82,416	136,244,107	117,722,000	-	253,966,107
W2017-18	FC	46,359	37,296	-	83,655	140,086,489	117,722,000	-	257,808,489
W2018-19	FC	47,368	37,296	-	84,664	143,456,507	117,722,000	-	261,178,507
W2019-20	FC	48,214	37,296	-	85,510	145,422,303	118,551,250	-	263,973,553
W2020-21	FC	49,548	37,106	-	86,471	149,904,920	116,922,000	-	266,826,920

Historic and Forecasted Annual Loads for MOORHEAD, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	37,416	38,744	-	74,856	204,898,332	227,199,000	-	432,097,332
2011	Hist.	40,307	38,744	-	77,592	215,967,782	227,199,000	-	443,166,782
2012	Hist.	40,660	38,744	-	78,432	210,504,544	228,028,000	-	438,532,544
2013	Hist.	43,176	38,744	-	80,472	236,767,432	227,199,000	-	463,966,432
2014	Hist.	43,126	38,744	-	80,422	230,030,759	227,199,000	-	457,229,759
2015	FC	43,366	38,744	-	80,998	227,342,284	227,199,000	-	454,541,284
2016	FC	43,876	38,744	-	81,172	238,790,279	228,028,250	-	466,818,529
2017	FC	45,120	38,744	-	82,416	246,774,541	227,199,000	-	473,973,541
2018	FC	46,359	38,744	-	83,655	253,897,294	227,199,000	-	481,096,294
2019	FC	47,368	38,744	-	84,664	259,701,470	227,199,000	-	486,900,470
2020	FC	48,214	38,744	-	85,510	263,740,143	228,028,250	-	491,768,393
2021	FC	49,548	38,357	-	86,471	272,363,604	224,927,000	-	497,290,604

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for ORTONVILLE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	2,370	4,051	-	6,421	1,740,639	2,008,000	-	3,748,639
	2	Hist.	1,931	3,861	-	5,792	1,221,102	1,954,000	-	3,175,102
	3	Hist.	1,562	3,618	-	5,180	1,060,092	1,709,000	-	2,769,092
	4	Hist.	880	3,205	-	4,085	507,998	1,605,000	-	2,112,998
	5	Hist.	194	4,543	-	4,737	203,162	2,026,000	-	2,229,162
	6	Hist.	378	4,822	-	5,200	299,083	1,978,000	-	2,277,083
	7	Hist.	1,988	3,927	-	5,915	849,821	1,919,000	-	2,768,821
	8	Hist.	628	5,065	-	5,693	706,155	2,118,000	-	2,824,155
	9	Hist.	-	3,972	-	3,972	-	2,009,116	-	2,009,116
	10	Hist.	95	4,293	-	4,388	284,014	1,940,000	-	2,224,014
	11	Hist.	1,659	3,779	-	5,438	952,395	1,796,000	-	2,748,395
	12	Hist.	2,005	4,067	-	6,072	1,527,508	2,133,000	-	3,660,508
2011	1	Hist.	2,354	4,051	-	6,405	1,761,258	2,008,000	-	3,769,258
	2	Hist.	2,351	3,861	-	6,212	1,148,711	1,954,000	-	3,102,711
	3	Hist.	2,105	3,618	-	5,723	1,383,765	1,709,000	-	3,092,765
	4	Hist.	1,115	3,205	-	4,320	763,070	1,605,000	-	2,368,070
	5	Hist.	-	4,321	-	4,321	64,478	2,026,000	-	2,090,478
	6	Hist.	909	4,822	-	5,731	241,354	1,978,000	-	2,219,354
	7	Hist.	2,525	3,927	-	6,452	1,038,864	1,919,000	-	2,957,864
	8	Hist.	724	5,065	-	5,789	530,112	2,118,000	-	2,648,112
	9	Hist.	795	4,712	-	5,507	57,183	2,021,000	-	2,078,183
	10	Hist.	-	4,277	-	4,277	226,015	1,940,000	-	2,166,015
	11	Hist.	1,184	3,779	-	4,963	762,433	1,796,000	-	2,558,433
	12	Hist.	1,310	4,067	-	5,377	905,456	2,133,000	-	3,038,456
2012	1	Hist.	1,982	4,051	-	6,033	1,198,184	2,008,000	-	3,206,184
	2	Hist.	1,826	3,861	-	5,687	814,259	2,024,000	-	2,838,259
	3	Hist.	1,312	3,618	-	4,930	658,362	1,709,000	-	2,367,362
	4	Hist.	866	3,205	-	4,071	442,836	1,605,000	-	2,047,836
	5	Hist.	-	4,421	-	4,421	14,708	2,026,000	-	2,040,708
	6	Hist.	401	4,822	-	5,223	358,280	1,978,000	-	2,336,280
	7	Hist.	2,346	3,927	-	6,273	1,082,212	1,919,000	-	3,001,212
	8	Hist.	322	5,065	-	5,387	293,545	2,118,000	-	2,411,545
	9	Hist.	69	4,712	-	4,781	-	1,968,907	-	1,968,907
	10	Hist.	-	4,177	-	4,177	248,746	1,940,000	-	2,188,746
	11	Hist.	986	3,779	-	4,765	733,516	1,796,000	-	2,529,516
	12	Hist.	1,403	4,067	-	5,470	1,096,902	2,133,000	-	3,229,902
2013	1	Hist.	2,104	4,051	-	6,155	1,466,473	2,008,000	-	3,474,473
	2	Hist.	2,190	3,861	-	6,051	1,123,003	1,954,000	-	3,077,003
	3	Hist.	1,781	3,618	-	5,399	1,390,081	1,709,000	-	3,099,081
	4	Hist.	1,685	3,205	-	4,890	960,454	1,605,000	-	2,565,454
	5	Hist.	-	4,017	-	4,017	62,719	2,026,000	-	2,088,719
	6	Hist.	234	4,822	-	5,056	226,125	1,978,000	-	2,204,125
	7	Hist.	1,992	3,927	-	5,919	791,291	1,919,000	-	2,710,291
	8	Hist.	1,015	5,065	-	6,080	544,917	2,118,000	-	2,662,917
	9	Hist.	869	4,712	-	5,581	127,502	2,021,000	-	2,148,502
	10	Hist.	48	4,293	-	4,341	343,503	1,940,000	-	2,283,503
	11	Hist.	1,281	3,779	-	5,060	887,929	1,796,000	-	2,683,929
	12	Hist.	1,918	4,067	-	5,985	1,424,479	2,133,000	-	3,557,479
2014	1	Hist.	2,323	4,051	-	6,374	1,691,366	2,008,000	-	3,699,366
	2	Hist.	2,089	3,861	-	5,950	1,346,188	1,954,000	-	3,300,188
	3	Hist.	2,213	3,618	-	5,831	1,299,789	1,709,000	-	3,008,789
	4	Hist.	1,584	3,205	-	4,789	753,427	1,605,000	-	2,358,427
	5	Hist.	290	4,543	-	4,833	157,486	2,026,000	-	2,183,486
	6	Hist.	71	4,822	-	4,893	271,027	1,978,000	-	2,249,027
	7	Hist.	1,601	3,927	-	5,528	598,040	1,919,000	-	2,517,040
	8	Hist.	117	5,065	-	5,182	437,550	2,118,000	-	2,555,550
	9	Hist.	-	4,198	-	4,198	9,332	2,021,000	-	2,030,332
	10	Hist.	92	4,293	-	4,385	248,203	1,940,000	-	2,188,203
	11	Hist.	1,647	3,779	-	5,426	1,164,949	1,796,000	-	2,960,949
	12	Hist.	1,717	4,067	-	5,784	1,067,703	2,133,000	-	3,200,703
2015	1	Hist.	2,162	4,051	-	6,213	1,347,172	2,008,000	-	3,355,172
	2	Hist.	1,897	3,861	-	5,758	1,227,399	1,954,000	-	3,181,399
	3	Hist.	1,950	3,618	-	5,568	1,000,113	1,709,000	-	2,709,113
	4	Hist.	909	3,205	-	4,114	516,315	1,605,000	-	2,121,315
	5	Hist.	-	3,833	-	3,833	15,771	2,026,000	-	2,041,771
	6	Hist.	52	4,822	-	4,874	236,043	1,978,000	-	2,214,043
	7	Hist.	1,386	3,927	-	5,313	708,974	1,919,000	-	2,627,974
	8	Hist.	646	5,065	-	5,711	300,004	2,118,000	-	2,418,004
	9	Hist.	522	4,712	-	5,234	125,002	2,021,000	-	2,146,002
	10	FC	16	4,293	-	4,309	321,166	1,940,000	-	2,261,166
	11	FC	1,320	3,779	-	5,099	874,292	1,796,000	-	2,670,292
	12	FC	1,706	4,067	-	5,773	1,265,060	2,133,000	-	3,398,060

Historic and Forecasted Monthly Loads for ORTONVILLE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	2,293	4,051	-	6,344	1,554,194	2,008,000	-	3,562,194
	2	FC	1,672	3,861	-	5,533	954,532	2,023,785	-	2,978,317
	3	FC	1,831	3,618	-	5,449	1,123,396	1,709,000	-	2,832,396
	4	FC	1,172	3,205	-	4,377	658,314	1,605,000	-	2,263,314
	5	FC	-	4,237	-	4,237	50,700	2,026,000	-	2,076,700
	6	FC	400	4,822	-	5,222	286,393	1,978,000	-	2,264,393
	7	FC	1,980	3,927	-	5,907	821,433	1,919,000	-	2,740,433
	8	FC	568	5,065	-	5,633	510,111	2,118,000	-	2,628,111
	9	FC	98	4,712	-	4,810	64,465	2,021,000	-	2,085,465
	10	FC	133	4,293	-	4,426	329,336	1,940,000	-	2,269,336
	11	FC	1,314	3,779	-	5,093	882,669	1,796,000	-	2,678,669
	12	FC	1,732	4,067	-	5,799	1,239,582	2,133,000	-	3,372,582
2017	1	FC	2,376	4,051	-	6,427	1,599,907	2,008,000	-	3,607,907
	2	FC	1,743	3,861	-	5,604	1,065,799	1,954,000	-	3,019,799
	3	FC	1,901	3,618	-	5,519	1,159,806	1,709,000	-	2,868,806
	4	FC	1,229	3,205	-	4,434	687,541	1,605,000	-	2,292,541
	5	FC	-	4,290	-	4,290	77,821	2,026,000	-	2,103,821
	6	FC	468	4,822	-	5,290	315,838	1,978,000	-	2,293,838
	7	FC	2,056	3,927	-	5,983	856,806	1,919,000	-	2,775,806
	8	FC	641	5,065	-	5,706	544,187	2,118,000	-	2,662,187
	9	FC	160	4,712	-	4,872	91,692	2,021,000	-	2,112,692
	10	FC	191	4,293	-	4,484	358,822	1,940,000	-	2,298,822
	11	FC	1,380	3,779	-	5,159	917,202	1,796,000	-	2,713,202
	12	FC	1,807	4,067	-	5,874	1,282,989	2,133,000	-	3,415,989
2018	1	FC	2,473	4,051	-	6,524	1,654,358	2,008,000	-	3,662,358
	2	FC	1,829	3,861	-	5,690	1,111,550	1,954,000	-	3,065,550
	3	FC	1,984	3,618	-	5,602	1,203,176	1,709,000	-	2,912,176
	4	FC	1,296	3,205	-	4,501	722,353	1,605,000	-	2,327,353
	5	FC	-	4,353	-	4,353	110,126	2,026,000	-	2,136,126
	6	FC	548	4,822	-	5,370	350,911	1,978,000	-	2,328,911
	7	FC	2,147	3,927	-	6,074	898,941	1,919,000	-	2,817,941
	8	FC	727	5,065	-	5,792	584,778	2,118,000	-	2,702,778
	9	FC	234	4,712	-	4,946	124,125	2,021,000	-	2,145,125
	10	FC	259	4,293	-	4,552	393,944	1,940,000	-	2,333,944
	11	FC	1,458	3,779	-	5,237	958,335	1,796,000	-	2,754,335
	12	FC	1,895	4,067	-	5,962	1,334,693	2,133,000	-	3,467,693
2019	1	FC	2,512	4,051	-	6,563	1,676,778	2,008,000	-	3,684,778
	2	FC	1,863	3,861	-	5,724	1,130,389	1,954,000	-	3,084,389
	3	FC	2,018	3,618	-	5,636	1,221,032	1,709,000	-	2,930,032
	4	FC	1,323	3,205	-	4,528	736,687	1,605,000	-	2,341,687
	5	FC	-	4,379	-	4,379	123,428	2,026,000	-	2,149,428
	6	FC	581	4,822	-	5,403	365,352	1,978,000	-	2,343,352
	7	FC	2,184	3,927	-	6,111	916,290	1,919,000	-	2,835,290
	8	FC	764	5,065	-	5,829	601,490	2,118,000	-	2,719,490
	9	FC	266	4,712	-	4,978	137,479	2,021,000	-	2,158,479
	10	FC	288	4,293	-	4,581	408,405	1,940,000	-	2,348,405
	11	FC	1,490	3,779	-	5,269	975,271	1,796,000	-	2,771,271
	12	FC	1,932	4,067	-	5,999	1,355,983	2,133,000	-	3,488,983
2020	1	FC	2,512	4,051	-	6,563	1,676,500	2,008,000	-	3,684,500
	2	FC	1,863	3,861	-	5,724	1,057,300	2,023,785	-	3,081,085
	3	FC	2,018	3,618	-	5,636	1,220,811	1,709,000	-	2,929,811
	4	FC	1,323	3,205	-	4,528	736,509	1,605,000	-	2,341,509
	5	FC	-	4,379	-	4,379	123,262	2,026,000	-	2,149,262
	6	FC	581	4,822	-	5,403	365,173	1,978,000	-	2,343,173
	7	FC	2,184	3,927	-	6,111	916,075	1,919,000	-	2,835,075
	8	FC	763	5,065	-	5,828	601,283	2,118,000	-	2,719,283
	9	FC	266	4,712	-	4,978	137,313	2,021,000	-	2,158,313
	10	FC	288	4,293	-	4,581	408,226	1,940,000	-	2,348,226
	11	FC	1,490	3,779	-	5,269	975,061	1,796,000	-	2,771,061
	12	FC	1,932	4,067	-	5,999	1,355,719	2,133,000	-	3,488,719
2021	1	FC	2,597	4,010	-	6,607	1,720,807	1,988,000	-	3,708,807
	2	FC	1,940	3,822	-	5,762	1,170,720	1,934,000	-	3,104,720
	3	FC	2,091	3,582	-	5,673	1,257,218	1,692,000	-	2,949,218
	4	FC	1,386	3,173	-	4,559	768,191	1,589,000	-	2,357,191
	5	FC	-	4,406	-	4,406	158,042	2,006,000	-	2,164,042
	6	FC	666	4,774	-	5,440	401,143	1,958,000	-	2,359,143
	7	FC	2,263	3,888	-	6,151	954,040	1,900,000	-	2,854,040
	8	FC	853	5,014	-	5,867	640,671	2,097,000	-	2,737,671
	9	FC	346	4,665	-	5,011	172,148	2,001,000	-	2,173,148
	10	FC	362	4,250	-	4,612	443,174	1,921,000	-	2,364,174
	11	FC	1,563	3,741	-	5,304	1,011,550	1,778,000	-	2,789,550
	12	FC	2,012	4,026	-	6,038	1,399,889	2,112,000	-	3,511,889

Historic and Forecasted Seasonal Loads for ORTONVILLE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	1,988	5,065	-	5,915	2,342,235	11,990,116	-	14,332,351
S2011	Hist.	2,525	5,065	-	6,452	2,158,006	12,002,000	-	14,160,006
S2012	Hist.	2,346	5,065	-	6,273	1,997,491	11,949,907	-	13,947,398
S2013	Hist.	1,992	5,065	-	6,080	2,096,057	12,002,000	-	14,098,057
S2014	Hist.	1,601	5,065	-	5,528	1,721,638	12,002,000	-	13,723,638
S2015	FC	1,386	5,065	-	5,711	1,706,960	12,002,000	-	13,708,960
S2016	FC	1,980	5,065	-	5,907	2,062,438	12,002,000	-	14,064,438
S2017	FC	2,056	5,065	-	5,983	2,245,166	12,002,000	-	14,247,166
S2018	FC	2,147	5,065	-	6,074	2,462,825	12,002,000	-	14,464,825
S2019	FC	2,184	5,065	-	6,111	2,552,444	12,002,000	-	14,554,444
S2020	FC	2,184	5,065	-	6,111	2,551,332	12,002,000	-	14,553,332
S2021	FC	2,263	5,014	-	6,151	2,769,218	11,883,000	-	14,652,218
W2009-10	Hist.	2,370	4,067	-	6,421	6,814,939	11,205,000	-	18,019,939
W2010-11	Hist.	2,354	4,067	-	6,405	7,536,707	11,205,000	-	18,741,707
W2011-12	Hist.	1,982	4,067	-	6,033	4,781,530	11,275,000	-	16,056,530
W2012-13	Hist.	2,190	4,067	-	6,155	6,770,429	11,205,000	-	17,975,429
W2013-14	Hist.	2,323	4,067	-	6,374	7,403,178	11,205,000	-	18,608,178
W2014-15	Hist.	2,162	4,067	-	6,213	6,323,651	11,205,000	-	17,528,651
W2015-16	FC	2,293	4,067	-	6,344	6,429,788	11,274,785	-	17,704,573
W2016-17	FC	2,376	4,067	-	6,427	6,635,304	11,205,000	-	17,840,304
W2017-18	FC	2,473	4,067	-	6,524	6,891,628	11,205,000	-	18,096,628
W2018-19	FC	2,512	4,067	-	6,563	7,057,914	11,205,000	-	18,262,914
W2019-20	FC	2,512	4,067	-	6,563	7,022,374	11,274,785	-	18,297,159
W2020-21	FC	2,597	4,067	-	6,607	7,247,716	11,132,000	-	18,379,716

Historic and Forecasted Annual Loads for ORTONVILLE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	2,370	5,065	-	6,421	9,351,969	23,195,116	-	32,547,085
2011	Hist.	2,525	5,065	-	6,452	8,882,699	23,207,000	-	32,089,699
2012	Hist.	2,346	5,065	-	6,273	6,941,550	23,224,907	-	30,166,457
2013	Hist.	2,190	5,065	-	6,155	9,348,476	23,207,000	-	32,555,476
2014	Hist.	2,323	5,065	-	6,374	9,045,060	23,207,000	-	32,252,060
2015	FC	2,162	5,065	-	6,213	7,937,311	23,207,000	-	31,144,311
2016	FC	2,293	5,065	-	6,344	8,475,125	23,276,785	-	31,751,910
2017	FC	2,376	5,065	-	6,427	8,958,410	23,207,000	-	32,165,410
2018	FC	2,473	5,065	-	6,524	9,447,290	23,207,000	-	32,654,290
2019	FC	2,512	5,065	-	6,563	9,648,584	23,207,000	-	32,855,584
2020	FC	2,512	5,065	-	6,563	9,573,232	23,276,785	-	32,850,017
2021	FC	2,597	5,014	-	6,607	10,097,593	22,976,000	-	33,073,593

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for SAUK CENTRE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	8,555	4,243	-	12,798	4,348,567	2,606,000	-	6,954,567
	2	Hist.	7,452	4,203	-	11,655	3,452,490	2,470,000	-	5,922,490
	3	Hist.	5,970	4,135	-	10,105	3,507,794	2,022,000	-	5,529,794
	4	Hist.	4,679	3,874	-	8,553	2,685,866	1,864,000	-	4,549,866
	5	Hist.	6,705	4,111	-	10,816	2,870,478	1,980,000	-	4,850,478
	6	Hist.	6,479	4,239	-	10,718	2,810,632	2,086,000	-	4,896,632
	7	Hist.	7,196	4,508	-	11,704	3,711,966	2,019,000	-	5,730,966
	8	Hist.	7,563	4,508	-	12,071	3,831,787	1,936,000	-	5,767,787
	9	Hist.	4,608	4,494	-	9,102	2,544,354	1,936,000	-	4,480,354
	10	Hist.	5,916	3,681	-	9,597	3,101,890	1,718,000	-	4,819,890
	11	Hist.	7,109	3,765	-	10,874	3,863,381	1,764,000	-	5,627,381
	12	Hist.	7,659	4,111	-	11,770	4,571,661	2,321,000	-	6,892,661
2011	1	Hist.	7,534	4,243	-	11,777	4,365,800	2,606,000	-	6,971,800
	2	Hist.	7,847	4,203	-	12,050	3,598,475	2,470,000	-	6,068,475
	3	Hist.	7,262	4,135	-	11,397	4,198,103	2,022,000	-	6,220,103
	4	Hist.	5,483	3,874	-	9,357	3,240,963	1,864,000	-	5,104,963
	5	Hist.	5,401	4,111	-	9,512	2,875,143	1,980,000	-	4,855,143
	6	Hist.	7,733	4,239	-	11,972	2,968,623	2,086,000	-	5,054,623
	7	Hist.	8,559	4,508	-	13,067	4,205,304	2,019,000	-	6,224,304
	8	Hist.	7,424	4,508	-	11,932	3,806,613	1,936,000	-	5,742,613
	9	Hist.	6,107	4,494	-	10,601	2,904,527	1,936,000	-	4,840,527
	10	Hist.	5,276	3,681	-	8,957	3,162,645	1,718,000	-	4,880,645
	11	Hist.	6,642	3,765	-	10,407	3,663,076	1,764,000	-	5,427,076
	12	Hist.	6,734	4,111	-	10,845	3,874,949	2,321,000	-	6,195,949
2012	1	Hist.	7,786	4,243	-	12,029	3,851,159	2,606,000	-	6,457,159
	2	Hist.	6,461	4,203	-	10,664	3,265,019	2,558,000	-	5,823,019
	3	Hist.	5,874	4,135	-	10,009	3,286,568	2,022,000	-	5,308,568
	4	Hist.	5,073	3,874	-	8,947	2,811,673	1,864,000	-	4,675,673
	5	Hist.	5,096	4,111	-	9,207	2,817,344	1,980,000	-	4,797,344
	6	Hist.	6,819	4,239	-	11,058	3,165,645	2,086,000	-	5,251,645
	7	Hist.	8,324	4,508	-	12,832	4,499,766	2,019,000	-	6,518,766
	8	Hist.	7,629	4,508	-	12,137	3,598,887	1,936,000	-	5,534,887
	9	Hist.	5,979	4,494	-	10,473	2,752,435	1,936,000	-	4,688,435
	10	Hist.	5,675	3,681	-	9,356	3,276,476	1,718,000	-	4,994,476
	11	Hist.	7,066	3,765	-	10,831	3,658,838	1,764,000	-	5,422,838
	12	Hist.	7,106	4,111	-	11,217	4,032,242	2,321,000	-	6,353,242
2013	1	Hist.	7,713	4,243	-	11,956	4,250,546	2,606,000	-	6,856,546
	2	Hist.	7,869	4,203	-	12,072	3,556,070	2,470,000	-	6,026,070
	3	Hist.	6,980	4,135	-	11,115	4,038,361	2,022,000	-	6,060,361
	4	Hist.	6,126	3,874	-	10,000	3,551,083	1,864,000	-	5,415,083
	5	Hist.	4,944	4,111	-	9,055	2,944,800	1,980,000	-	4,924,800
	6	Hist.	6,727	4,239	-	10,966	2,866,958	2,086,000	-	4,952,958
	7	Hist.	7,842	4,508	-	12,350	3,749,861	2,019,000	-	5,768,861
	8	Hist.	8,259	4,508	-	12,767	3,803,945	1,936,000	-	5,739,945
	9	Hist.	6,335	4,494	-	10,829	2,862,400	1,936,000	-	4,798,400
	10	Hist.	5,708	3,681	-	9,389	3,322,311	1,718,000	-	5,040,311
	11	Hist.	6,892	3,765	-	10,657	3,752,200	1,764,000	-	5,516,200
	12	Hist.	8,072	4,111	-	12,183	4,672,877	2,321,000	-	6,993,877
2014	1	Hist.	8,419	4,243	-	12,662	4,684,330	2,606,000	-	7,290,330
	2	Hist.	7,848	4,203	-	12,051	4,005,013	2,470,000	-	6,475,013
	3	Hist.	7,636	4,135	-	11,771	4,128,705	2,022,000	-	6,150,705
	4	Hist.	6,218	3,874	-	10,092	3,229,726	1,864,000	-	5,093,726
	5	Hist.	5,904	4,111	-	10,015	2,912,448	1,980,000	-	4,892,448
	6	Hist.	5,666	4,239	-	9,905	2,899,996	2,086,000	-	4,985,996
	7	Hist.	7,392	4,508	-	11,900	3,285,123	2,019,000	-	5,304,123
	8	Hist.	5,866	4,508	-	10,374	3,458,832	1,936,000	-	5,394,832
	9	Hist.	4,459	4,494	-	8,953	2,681,830	1,936,000	-	4,617,830
	10	Hist.	5,529	3,681	-	9,210	3,132,846	1,718,000	-	4,850,846
	11	Hist.	6,701	3,765	-	10,466	3,894,656	1,764,000	-	5,658,656
	12	Hist.	7,165	4,111	-	11,276	3,973,513	2,321,000	-	6,294,513
2015	1	Hist.	8,005	4,243	-	12,248	3,991,951	2,606,000	-	6,597,951
	2	Hist.	7,544	4,203	-	11,747	3,730,700	2,470,000	-	6,200,700
	3	Hist.	7,441	4,135	-	11,576	3,577,549	2,022,000	-	5,599,549
	4	Hist.	5,447	3,874	-	9,321	2,880,073	1,864,000	-	4,744,073
	5	Hist.	4,454	4,111	-	8,565	2,566,050	1,980,000	-	4,546,050
	6	Hist.	5,873	4,239	-	10,112	2,888,162	2,086,000	-	4,974,162
	7	Hist.	6,928	4,508	-	11,436	3,664,728	2,019,000	-	5,683,728
	8	Hist.	6,530	4,508	-	11,038	3,410,742	1,936,000	-	5,346,742
	9	Hist.	6,196	4,494	-	10,690	3,021,084	1,936,000	-	4,957,084
	10	FC	5,885	3,681	-	9,566	3,393,585	1,718,000	-	5,111,585
	11	FC	7,172	3,765	-	10,937	3,914,862	1,764,000	-	5,678,862
	12	FC	7,624	4,111	-	11,735	4,417,545	2,321,000	-	6,738,545

Historic and Forecasted Monthly Loads for SAUK CENTRE, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	7,999	4,243	-	12,242	4,289,921	2,606,000	-	6,895,921
	2	FC	6,997	4,203	-	11,200	3,461,686	2,558,214	-	6,019,900
	3	FC	6,965	4,135	-	11,100	3,811,467	2,022,000	-	5,833,467
	4	FC	5,590	3,874	-	9,464	3,102,302	1,864,000	-	4,966,302
	5	FC	5,153	4,111	-	9,264	2,827,097	1,980,000	-	4,807,097
	6	FC	6,566	4,239	-	10,805	2,903,042	2,086,000	-	4,989,042
	7	FC	7,084	4,508	-	11,592	3,514,632	2,019,000	-	5,533,632
	8	FC	6,608	4,508	-	11,116	3,366,363	1,936,000	-	5,302,363
	9	FC	5,267	4,494	-	9,761	2,662,466	1,936,000	-	4,598,466
	10	FC	5,678	3,681	-	9,359	3,232,477	1,718,000	-	4,950,477
	11	FC	6,917	3,765	-	10,682	3,786,939	1,764,000	-	5,550,939
	12	FC	7,467	4,111	-	11,578	4,291,394	2,321,000	-	6,612,394
2017	1	FC	8,263	4,243	-	12,506	4,439,063	2,606,000	-	7,045,063
	2	FC	7,239	4,203	-	11,442	3,683,113	2,470,000	-	6,153,113
	3	FC	7,204	4,135	-	11,339	3,937,506	2,022,000	-	5,959,506
	4	FC	5,796	3,874	-	9,670	3,209,703	1,864,000	-	5,073,703
	5	FC	5,353	4,111	-	9,464	2,931,175	1,980,000	-	4,911,175
	6	FC	6,799	4,239	-	11,038	3,011,080	2,086,000	-	5,097,080
	7	FC	7,334	4,508	-	11,842	3,634,262	2,019,000	-	5,653,262
	8	FC	6,848	4,508	-	11,356	3,480,995	1,936,000	-	5,416,995
	9	FC	5,479	4,494	-	9,973	2,762,055	1,936,000	-	4,698,055
	10	FC	5,881	3,681	-	9,562	3,339,440	1,718,000	-	5,057,440
	11	FC	7,149	3,765	-	10,914	3,906,765	1,764,000	-	5,670,765
	12	FC	7,717	4,111	-	11,828	4,434,284	2,321,000	-	6,755,284
2018	1	FC	8,516	4,243	-	12,759	4,581,840	2,606,000	-	7,187,840
	2	FC	7,471	4,203	-	11,674	3,807,937	2,470,000	-	6,277,937
	3	FC	7,435	4,135	-	11,570	4,058,166	2,022,000	-	6,080,166
	4	FC	5,992	3,874	-	9,866	3,312,519	1,864,000	-	5,176,519
	5	FC	5,545	4,111	-	9,656	3,030,810	1,980,000	-	5,010,810
	6	FC	7,023	4,239	-	11,262	3,114,506	2,086,000	-	5,200,506
	7	FC	7,574	4,508	-	12,082	3,748,784	2,019,000	-	5,767,784
	8	FC	7,080	4,508	-	11,588	3,590,733	1,936,000	-	5,526,733
	9	FC	5,682	4,494	-	10,176	2,857,393	1,936,000	-	4,793,393
	10	FC	6,075	3,681	-	9,756	3,441,836	1,718,000	-	5,159,836
	11	FC	7,370	3,765	-	11,135	4,021,475	1,764,000	-	5,785,475
	12	FC	7,957	4,111	-	12,068	4,571,073	2,321,000	-	6,892,073
2019	1	FC	8,762	4,243	-	13,005	4,720,369	2,606,000	-	7,326,369
	2	FC	7,696	4,203	-	11,899	3,929,049	2,470,000	-	6,399,049
	3	FC	7,657	4,135	-	11,792	4,175,236	2,022,000	-	6,197,236
	4	FC	6,183	3,874	-	10,057	3,412,277	1,864,000	-	5,276,277
	5	FC	5,732	4,111	-	9,843	3,127,481	1,980,000	-	5,107,481
	6	FC	7,239	4,239	-	11,478	3,214,858	2,086,000	-	5,300,858
	7	FC	7,807	4,508	-	12,315	3,859,903	2,019,000	-	5,878,903
	8	FC	7,302	4,508	-	11,810	3,697,207	1,936,000	-	5,633,207
	9	FC	5,878	4,494	-	10,372	2,949,897	1,936,000	-	4,885,897
	10	FC	6,263	3,681	-	9,944	3,541,187	1,718,000	-	5,259,187
	11	FC	7,584	3,765	-	11,349	4,132,774	1,764,000	-	5,896,774
	12	FC	8,189	4,111	-	12,300	4,703,794	2,321,000	-	7,024,794
2020	1	FC	9,003	4,243	-	13,246	4,856,211	2,606,000	-	7,462,211
	2	FC	7,916	4,203	-	12,119	3,956,774	2,558,214	-	6,514,988
	3	FC	7,876	4,135	-	12,011	4,290,035	2,022,000	-	6,312,035
	4	FC	6,368	3,874	-	10,242	3,510,099	1,864,000	-	5,374,099
	5	FC	5,914	4,111	-	10,025	3,222,278	1,980,000	-	5,202,278
	6	FC	7,453	4,239	-	11,692	3,313,261	2,086,000	-	5,399,261
	7	FC	8,035	4,508	-	12,543	3,968,864	2,019,000	-	5,987,864
	8	FC	7,522	4,508	-	12,030	3,801,615	1,936,000	-	5,737,615
	9	FC	6,071	4,494	-	10,565	3,040,604	1,936,000	-	4,976,604
	10	FC	6,448	3,681	-	10,129	3,638,611	1,718,000	-	5,356,611
	11	FC	7,795	3,765	-	11,560	4,241,913	1,764,000	-	6,005,913
	12	FC	8,417	4,111	-	12,528	4,833,940	2,321,000	-	7,154,940
2021	1	FC	9,284	4,201	-	13,485	5,017,187	2,580,000	-	7,597,187
	2	FC	8,178	4,161	-	12,339	4,190,887	2,445,000	-	6,635,887
	3	FC	8,134	4,094	-	12,228	4,424,038	2,002,000	-	6,426,038
	4	FC	6,593	3,835	-	10,428	3,626,308	1,845,000	-	5,471,308
	5	FC	6,137	4,070	-	10,207	3,336,528	1,960,000	-	5,296,528
	6	FC	7,706	4,197	-	11,903	3,432,106	2,065,000	-	5,497,106
	7	FC	8,308	4,463	-	12,771	4,097,103	1,999,000	-	6,096,103
	8	FC	7,784	4,463	-	12,247	3,924,327	1,917,000	-	5,841,327
	9	FC	6,308	4,449	-	10,757	3,149,787	1,917,000	-	5,066,787
	10	FC	6,668	3,644	-	10,312	3,752,361	1,701,000	-	5,453,361
	11	FC	8,041	3,727	-	11,768	4,368,265	1,746,000	-	6,114,265
	12	FC	8,684	4,070	-	12,754	4,986,195	2,298,000	-	7,284,195

Historic and Forecasted Seasonal Loads for SAUK CENTRE, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	7,563	4,508	-	12,071	18,871,107	11,675,000	-	30,546,107
S2011	Hist.	8,559	4,508	-	13,067	19,922,855	11,675,000	-	31,597,855
S2012	Hist.	8,324	4,508	-	12,832	20,110,553	11,675,000	-	31,785,553
S2013	Hist.	8,259	4,508	-	12,767	19,550,275	11,675,000	-	31,225,275
S2014	Hist.	7,392	4,508	-	11,900	18,371,075	11,675,000	-	30,046,075
S2015	FC	6,928	4,508	-	11,436	18,944,351	11,675,000	-	30,619,351
S2016	FC	7,084	4,508	-	11,592	18,506,077	11,675,000	-	30,181,077
S2017	FC	7,334	4,508	-	11,842	19,159,007	11,675,000	-	30,834,007
S2018	FC	7,574	4,508	-	12,082	19,784,062	11,675,000	-	31,459,062
S2019	FC	7,807	4,508	-	12,315	20,390,533	11,675,000	-	32,065,533
S2020	FC	8,035	4,508	-	12,543	20,985,233	11,675,000	-	32,660,233
S2021	FC	8,308	4,463	-	12,771	21,692,212	11,559,000	-	33,251,212
W2009-10	Hist.	8,555	4,243	-	12,798	21,940,850	13,047,000	-	34,987,850
W2010-11	Hist.	7,847	4,243	-	12,050	23,838,383	13,047,000	-	36,885,383
W2011-12	Hist.	7,786	4,243	-	12,029	20,752,444	13,135,000	-	33,887,444
W2012-13	Hist.	7,869	4,243	-	12,072	23,087,140	13,047,000	-	36,134,140
W2013-14	Hist.	8,419	4,243	-	12,662	24,472,851	13,047,000	-	37,519,851
W2014-15	Hist.	8,005	4,243	-	12,248	22,048,442	13,047,000	-	35,095,442
W2015-16	FC	7,999	4,243	-	12,242	22,997,783	13,135,214	-	36,132,997
W2016-17	FC	8,263	4,243	-	12,506	23,347,718	13,047,000	-	36,394,718
W2017-18	FC	8,516	4,243	-	12,759	24,101,511	13,047,000	-	37,148,511
W2018-19	FC	8,762	4,243	-	13,005	24,829,479	13,047,000	-	37,876,479
W2019-20	FC	9,003	4,243	-	13,246	25,449,687	13,135,214	-	38,584,901
W2020-21	FC	9,284	4,201	-	13,485	26,334,273	12,957,000	-	39,291,273

Historic and Forecasted Annual Loads for SAUK CENTRE, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	8,555	4,508	-	12,798	41,300,866	24,722,000	-	66,022,866
2011	Hist.	8,559	4,508	-	13,067	42,864,221	24,722,000	-	67,586,221
2012	Hist.	8,324	4,508	-	12,832	41,016,052	24,810,000	-	65,826,052
2013	Hist.	8,259	4,508	-	12,767	43,371,412	24,722,000	-	68,093,412
2014	Hist.	8,419	4,508	-	12,662	42,287,018	24,722,000	-	67,009,018
2015	FC	8,005	4,508	-	12,248	41,457,031	24,722,000	-	66,179,031
2016	FC	7,999	4,508	-	12,242	41,249,786	24,810,214	-	66,060,000
2017	FC	8,263	4,508	-	12,506	42,769,441	24,722,000	-	67,491,441
2018	FC	8,516	4,508	-	12,759	44,137,072	24,722,000	-	68,859,072
2019	FC	8,762	4,508	-	13,005	45,464,032	24,722,000	-	70,186,032
2020	FC	9,003	4,508	-	13,246	46,674,205	24,810,214	-	71,484,419
2021	FC	9,284	4,463	-	13,485	48,305,092	24,475,000	-	72,780,092

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for ST JAMES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	4,804	5,020	-	9,824	2,882,003	2,713,000	-	5,595,003
	2	Hist.	4,770	4,911	-	9,681	2,207,519	2,917,000	-	5,124,519
	3	Hist.	3,990	4,816	-	8,806	3,006,818	2,199,000	-	5,205,818
	4	Hist.	3,597	4,635	-	8,232	1,996,400	2,521,000	-	4,517,400
	5	Hist.	5,124	6,030	-	11,154	1,756,131	3,104,000	-	4,860,131
	6	Hist.	4,602	6,672	-	11,274	2,162,519	3,163,000	-	5,325,519
	7	Hist.	5,644	6,840	-	12,484	3,119,073	3,163,000	-	6,282,073
	8	Hist.	5,883	7,100	-	12,983	2,873,742	3,533,000	-	6,406,742
	9	Hist.	1,764	7,274	-	9,038	993,492	3,639,000	-	4,632,492
	10	Hist.	1,358	6,848	-	8,206	1,273,533	3,477,000	-	4,750,533
	11	Hist.	4,839	4,773	-	9,612	2,500,306	2,490,000	-	4,990,306
	12	Hist.	5,144	4,956	-	10,100	2,911,701	2,932,000	-	5,843,701
2011	1	Hist.	4,808	5,020	-	9,828	3,153,702	2,713,000	-	5,866,702
	2	Hist.	5,024	4,911	-	9,935	2,134,633	2,917,000	-	5,051,633
	3	Hist.	4,503	4,816	-	9,319	3,209,217	2,199,000	-	5,408,217
	4	Hist.	3,734	4,635	-	8,369	2,230,408	2,521,000	-	4,751,408
	5	Hist.	3,048	6,030	-	9,078	1,590,453	3,104,000	-	4,694,453
	6	Hist.	5,901	6,672	-	12,573	2,118,563	3,163,000	-	5,281,563
	7	Hist.	6,762	6,840	-	13,602	3,482,855	3,163,000	-	6,645,855
	8	Hist.	5,453	7,100	-	12,553	2,526,295	3,533,000	-	6,059,295
	9	Hist.	4,848	7,274	-	12,122	1,121,442	3,639,000	-	4,760,442
	10	Hist.	1,724	6,848	-	8,572	1,172,181	3,477,000	-	4,649,181
	11	Hist.	3,955	4,773	-	8,728	2,277,254	2,490,000	-	4,767,254
	12	Hist.	4,419	4,956	-	9,375	2,416,812	2,932,000	-	5,348,812
2012	1	Hist.	4,728	5,020	-	9,748	2,694,853	2,713,000	-	5,407,853
	2	Hist.	4,201	4,911	-	9,112	2,010,986	3,021,000	-	5,031,986
	3	Hist.	3,831	4,816	-	8,647	2,692,999	2,199,000	-	4,891,999
	4	Hist.	3,424	4,635	-	8,059	2,003,665	2,521,000	-	4,524,665
	5	Hist.	4,043	6,030	-	10,073	1,858,676	3,104,000	-	4,962,676
	6	Hist.	6,117	6,672	-	12,789	2,555,912	3,163,000	-	5,718,912
	7	Hist.	6,562	6,840	-	13,402	3,733,059	3,163,000	-	6,896,059
	8	Hist.	5,335	7,100	-	12,435	2,283,560	3,533,000	-	5,816,560
	9	Hist.	3,820	7,274	-	11,094	1,152,460	3,639,000	-	4,791,460
	10	Hist.	1,454	6,848	-	8,302	1,316,134	3,477,000	-	4,793,134
	11	Hist.	3,983	4,773	-	8,756	2,338,604	2,490,000	-	4,828,604
	12	Hist.	4,749	4,956	-	9,705	2,571,887	2,932,000	-	5,503,887
2013	1	Hist.	5,215	5,020	-	10,235	3,113,429	2,713,000	-	5,826,429
	2	Hist.	4,957	4,911	-	9,868	2,127,692	2,917,000	-	5,044,692
	3	Hist.	4,497	4,816	-	9,313	3,136,892	2,199,000	-	5,335,892
	4	Hist.	4,064	4,635	-	8,699	2,471,134	2,521,000	-	4,992,134
	5	Hist.	3,271	6,030	-	9,301	1,743,669	3,104,000	-	4,847,669
	6	Hist.	4,317	6,672	-	10,989	2,023,131	3,163,000	-	5,186,131
	7	Hist.	5,735	6,840	-	12,575	2,840,735	3,163,000	-	6,003,735
	8	Hist.	5,612	7,100	-	12,712	2,317,023	3,533,000	-	5,850,023
	9	Hist.	4,566	7,274	-	11,840	1,359,207	3,639,000	-	4,998,207
	10	Hist.	1,546	6,848	-	8,394	1,461,601	3,477,000	-	4,938,601
	11	Hist.	4,471	4,773	-	9,244	2,589,841	2,490,000	-	5,079,841
	12	Hist.	5,169	4,956	-	10,125	2,956,269	2,932,000	-	5,888,269
2014	1	Hist.	5,405	5,020	-	10,425	3,306,677	2,713,000	-	6,019,677
	2	Hist.	4,915	4,911	-	9,826	2,363,828	2,917,000	-	5,280,828
	3	Hist.	4,500	4,816	-	9,316	3,165,545	2,199,000	-	5,364,545
	4	Hist.	3,830	4,635	-	8,465	2,186,040	2,521,000	-	4,707,040
	5	Hist.	4,065	6,030	-	10,095	1,644,199	3,104,000	-	4,748,199
	6	Hist.	3,388	6,672	-	10,060	1,774,363	3,163,000	-	4,937,363
	7	Hist.	4,154	6,840	-	10,994	2,103,312	3,163,000	-	5,266,312
	8	Hist.	4,193	7,100	-	11,293	1,811,494	3,533,000	-	5,344,494
	9	Hist.	2,551	7,274	-	9,825	758,064	3,639,000	-	4,397,064
	10	Hist.	887	6,848	-	7,735	973,446	3,477,000	-	4,450,446
	11	Hist.	4,479	4,773	-	9,252	2,441,790	2,490,000	-	4,931,790
	12	Hist.	4,423	4,956	-	9,379	2,239,707	2,932,000	-	5,171,707
2015	1	Hist.	4,853	5,020	-	9,873	2,579,181	2,713,000	-	5,292,181
	2	Hist.	4,229	4,911	-	9,140	1,864,833	2,917,000	-	4,781,833
	3	Hist.	4,058	4,816	-	8,874	2,551,837	2,199,000	-	4,750,837
	4	Hist.	3,022	4,635	-	7,657	1,600,434	2,521,000	-	4,121,434
	5	Hist.	2,125	6,030	-	8,155	1,099,235	3,104,000	-	4,203,235
	6	Hist.	3,691	6,672	-	10,363	1,683,530	3,163,000	-	4,846,530
	7	Hist.	4,751	6,840	-	11,591	2,400,864	3,163,000	-	5,563,864
	8	Hist.	3,793	7,100	-	10,893	1,643,736	3,533,000	-	5,176,736
	9	Hist.	4,250	7,274	-	11,524	1,200,655	3,639,000	-	4,839,655
	10	FC	936	6,848	-	7,784	1,082,427	3,477,000	-	4,559,427
	11	FC	3,873	4,773	-	8,646	2,229,367	2,490,000	-	4,719,367
	12	FC	4,326	4,956	-	9,282	2,469,282	2,932,000	-	5,401,282

Historic and Forecasted Monthly Loads for ST JAMES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	4,599	5,020	-	9,619	2,740,139	2,713,000	-	5,453,139
	2	FC	3,771	4,911	-	8,682	1,677,205	3,021,178	-	4,698,383
	3	FC	3,864	4,816	-	8,680	2,716,158	2,199,000	-	4,915,158
	4	FC	3,163	4,635	-	7,798	1,842,018	2,521,000	-	4,363,018
	5	FC	2,702	6,030	-	8,732	1,290,862	3,104,000	-	4,394,862
	6	FC	3,904	6,672	-	10,576	1,706,103	3,163,000	-	4,869,103
	7	FC	4,532	6,840	-	11,372	2,439,199	3,163,000	-	5,602,199
	8	FC	4,191	7,100	-	11,291	1,834,854	3,533,000	-	5,367,854
	9	FC	2,560	7,274	-	9,834	698,678	3,639,000	-	4,337,678
	10	FC	813	6,848	-	7,661	909,951	3,477,000	-	4,386,951
	11	FC	3,698	4,773	-	8,471	2,083,215	2,490,000	-	4,573,215
	12	FC	4,216	4,956	-	9,172	2,293,953	2,932,000	-	5,225,953
2017	1	FC	4,682	5,020	-	9,702	2,787,296	2,713,000	-	5,500,296
	2	FC	3,846	4,911	-	8,757	1,825,533	2,917,000	-	4,742,533
	3	FC	3,939	4,816	-	8,755	2,758,595	2,199,000	-	4,957,595
	4	FC	3,230	4,635	-	7,865	1,879,843	2,521,000	-	4,400,843
	5	FC	2,778	6,030	-	8,808	1,329,116	3,104,000	-	4,433,116
	6	FC	3,996	6,672	-	10,668	1,748,411	3,163,000	-	4,911,411
	7	FC	4,631	6,840	-	11,471	2,487,747	3,163,000	-	5,650,747
	8	FC	4,289	7,100	-	11,389	1,881,507	3,533,000	-	5,414,507
	9	FC	2,646	7,274	-	9,920	736,592	3,639,000	-	4,375,592
	10	FC	880	6,848	-	7,728	948,240	3,477,000	-	4,425,240
	11	FC	3,771	4,773	-	8,544	2,122,821	2,490,000	-	4,612,821
	12	FC	4,295	4,956	-	9,251	2,339,235	2,932,000	-	5,271,235
2018	1	FC	4,782	5,020	-	9,802	2,843,967	2,713,000	-	5,556,967
	2	FC	3,937	4,911	-	8,848	1,874,585	2,917,000	-	4,791,585
	3	FC	4,030	4,816	-	8,846	2,809,595	2,199,000	-	5,008,595
	4	FC	3,312	4,635	-	7,947	1,925,300	2,521,000	-	4,446,300
	5	FC	2,869	6,030	-	8,899	1,375,090	3,104,000	-	4,479,090
	6	FC	4,106	6,672	-	10,778	1,799,256	3,163,000	-	4,962,256
	7	FC	4,749	6,840	-	11,589	2,546,091	3,163,000	-	5,709,091
	8	FC	4,407	7,100	-	11,507	1,937,575	3,533,000	-	5,470,575
	9	FC	2,749	7,274	-	10,023	782,156	3,639,000	-	4,421,156
	10	FC	961	6,848	-	7,809	994,256	3,477,000	-	4,471,256
	11	FC	3,859	4,773	-	8,632	2,170,418	2,490,000	-	4,660,418
	12	FC	4,390	4,956	-	9,346	2,393,655	2,932,000	-	5,325,655
2019	1	FC	4,818	5,020	-	9,838	2,864,291	2,713,000	-	5,577,291
	2	FC	3,969	4,911	-	8,880	1,892,176	2,917,000	-	4,809,176
	3	FC	4,062	4,816	-	8,878	2,827,885	2,199,000	-	5,026,885
	4	FC	3,341	4,635	-	7,976	1,941,603	2,521,000	-	4,462,603
	5	FC	2,902	6,030	-	8,932	1,391,578	3,104,000	-	4,495,578
	6	FC	4,146	6,672	-	10,818	1,817,490	3,163,000	-	4,980,490
	7	FC	4,792	6,840	-	11,632	2,567,014	3,163,000	-	5,730,014
	8	FC	4,449	7,100	-	11,549	1,957,682	3,533,000	-	5,490,682
	9	FC	2,785	7,274	-	10,059	798,497	3,639,000	-	4,437,497
	10	FC	990	6,848	-	7,838	1,010,757	3,477,000	-	4,487,757
	11	FC	3,891	4,773	-	8,664	2,187,488	2,490,000	-	4,677,488
	12	FC	4,424	4,956	-	9,380	2,413,171	2,932,000	-	5,345,171
2020	1	FC	4,808	5,020	-	9,828	2,858,685	2,713,000	-	5,571,685
	2	FC	3,960	4,911	-	8,871	1,779,812	3,021,178	-	4,800,990
	3	FC	4,054	4,816	-	8,870	2,822,841	2,199,000	-	5,021,841
	4	FC	3,332	4,635	-	7,967	1,937,105	2,521,000	-	4,458,105
	5	FC	2,893	6,030	-	8,923	1,387,030	3,104,000	-	4,491,030
	6	FC	4,134	6,672	-	10,806	1,812,460	3,163,000	-	4,975,460
	7	FC	4,780	6,840	-	11,620	2,561,243	3,163,000	-	5,724,243
	8	FC	4,438	7,100	-	11,538	1,952,136	3,533,000	-	5,485,136
	9	FC	2,775	7,274	-	10,049	793,990	3,639,000	-	4,432,990
	10	FC	981	6,848	-	7,829	1,006,206	3,477,000	-	4,483,206
	11	FC	3,881	4,773	-	8,654	2,182,779	2,490,000	-	4,672,779
	12	FC	4,415	4,956	-	9,371	2,407,788	2,932,000	-	5,339,788
2021	1	FC	4,897	4,970	-	9,867	2,907,430	2,686,000	-	5,593,430
	2	FC	4,044	4,862	-	8,906	1,935,324	2,888,000	-	4,823,324
	3	FC	4,136	4,768	-	8,904	2,864,336	2,177,000	-	5,041,336
	4	FC	3,410	4,589	-	7,999	1,979,654	2,496,000	-	4,475,654
	5	FC	2,989	5,970	-	8,959	1,435,961	3,073,000	-	4,508,961
	6	FC	4,245	6,605	-	10,850	1,864,218	3,131,000	-	4,995,218
	7	FC	4,894	6,772	-	11,666	2,615,764	3,131,000	-	5,746,764
	8	FC	4,554	7,029	-	11,583	2,008,914	3,498,000	-	5,506,914
	9	FC	2,889	7,201	-	10,090	847,929	3,603,000	-	4,450,929
	10	FC	1,082	6,780	-	7,862	1,059,280	3,442,000	-	4,501,280
	11	FC	3,964	4,725	-	8,689	2,226,116	2,465,000	-	4,691,116
	12	FC	4,502	4,906	-	9,408	2,457,767	2,903,000	-	5,360,767

Historic and Forecasted Seasonal Loads for ST JAMES, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	5,883	7,274	-	12,983	12,178,490	20,079,000	-	32,257,490
S2011	Hist.	6,762	7,274	-	13,602	12,011,789	20,079,000	-	32,090,789
S2012	Hist.	6,562	7,274	-	13,402	12,899,801	20,079,000	-	32,978,801
S2013	Hist.	5,735	7,274	-	12,712	11,745,366	20,079,000	-	31,824,366
S2014	Hist.	4,193	7,274	-	11,293	9,064,878	20,079,000	-	29,143,878
S2015	FC	4,751	7,274	-	11,591	9,110,447	20,079,000	-	29,189,447
S2016	FC	4,532	7,274	-	11,372	8,879,647	20,079,000	-	28,958,647
S2017	FC	4,631	7,274	-	11,471	9,131,613	20,079,000	-	29,210,613
S2018	FC	4,749	7,274	-	11,589	9,434,424	20,079,000	-	29,513,424
S2019	FC	4,792	7,274	-	11,632	9,543,018	20,079,000	-	29,622,018
S2020	FC	4,780	7,274	-	11,620	9,513,065	20,079,000	-	29,592,065
S2021	FC	4,894	7,201	-	11,666	9,832,066	19,878,000	-	29,710,066
W2009-10	Hist.	5,203	5,020	-	10,159	15,232,909	15,772,000	-	31,004,909
W2010-11	Hist.	5,144	5,020	-	10,100	16,139,967	15,772,000	-	31,911,967
W2011-12	Hist.	4,728	5,020	-	9,748	14,096,569	15,876,000	-	29,972,569
W2012-13	Hist.	5,215	5,020	-	10,235	15,759,638	15,772,000	-	31,531,638
W2013-14	Hist.	5,405	5,020	-	10,425	16,568,200	15,772,000	-	32,340,200
W2014-15	Hist.	4,853	5,020	-	9,873	13,277,782	15,772,000	-	29,049,782
W2015-16	FC	4,599	5,020	-	9,619	13,674,169	15,876,178	-	29,550,347
W2016-17	FC	4,682	5,020	-	9,702	13,628,435	15,772,000	-	29,400,435
W2017-18	FC	4,782	5,020	-	9,802	13,915,503	15,772,000	-	29,687,503
W2018-19	FC	4,818	5,020	-	9,838	14,090,028	15,772,000	-	29,862,028
W2019-20	FC	4,808	5,020	-	9,828	13,999,102	15,876,178	-	29,875,280
W2020-21	FC	4,897	4,970	-	9,867	14,277,311	15,669,000	-	29,946,311

Historic and Forecasted Annual Loads for ST JAMES, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	5,883	7,274	-	12,983	27,683,237	35,851,000	-	63,534,237
2011	Hist.	6,762	7,274	-	13,602	27,433,815	35,851,000	-	63,284,815
2012	Hist.	6,562	7,274	-	13,402	27,212,795	35,955,000	-	63,167,795
2013	Hist.	5,735	7,274	-	12,712	28,140,623	35,851,000	-	63,991,623
2014	Hist.	5,405	7,274	-	11,293	24,768,465	35,851,000	-	60,619,465
2015	FC	4,853	7,274	-	11,591	22,405,381	35,851,000	-	58,256,381
2016	FC	4,599	7,274	-	11,372	22,232,335	35,955,178	-	58,187,513
2017	FC	4,682	7,274	-	11,471	22,844,936	35,851,000	-	58,695,936
2018	FC	4,782	7,274	-	11,589	23,451,944	35,851,000	-	59,302,944
2019	FC	4,818	7,274	-	11,632	23,669,632	35,851,000	-	59,520,632
2020	FC	4,808	7,274	-	11,620	23,502,075	35,955,178	-	59,457,253
2021	FC	4,897	7,201	-	11,666	24,202,693	35,493,000	-	59,695,693

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for STAPLES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	2,822	1,382	-	4,204	1,652,800	758,000	-	2,410,800
	2	Hist.	2,546	1,381	-	3,927	1,273,689	783,000	-	2,056,689
	3	Hist.	2,261	1,375	-	3,636	1,335,669	687,000	-	2,022,669
	4	Hist.	1,903	1,262	-	3,165	1,088,782	668,000	-	1,756,782
	5	Hist.	3,160	787	-	3,947	1,492,685	385,000	-	1,877,685
	6	Hist.	3,004	774	-	3,778	1,437,936	396,000	-	1,833,936
	7	Hist.	3,185	782	-	3,967	1,737,506	364,000	-	2,101,506
	8	Hist.	3,704	806	-	4,510	1,769,529	381,000	-	2,150,529
	9	Hist.	2,694	806	-	3,500	1,387,319	349,000	-	1,736,319
	10	Hist.	2,740	707	-	3,447	1,511,279	355,000	-	1,866,279
	11	Hist.	2,652	1,226	-	3,878	1,340,834	694,000	-	2,034,834
	12	Hist.	2,934	1,304	-	4,238	1,657,965	747,000	-	2,404,965
2011	1	Hist.	2,853	1,382	-	4,235	1,691,260	758,000	-	2,449,260
	2	Hist.	2,652	1,381	-	4,033	1,319,430	783,000	-	2,102,430
	3	Hist.	2,435	1,375	-	3,810	1,455,390	687,000	-	2,142,390
	4	Hist.	2,141	1,262	-	3,403	1,172,140	668,000	-	1,840,140
	5	Hist.	2,597	787	-	3,384	1,401,830	385,000	-	1,786,830
	6	Hist.	3,338	774	-	4,112	1,359,600	396,000	-	1,755,600
	7	Hist.	3,832	782	-	4,614	1,788,080	364,000	-	2,152,080
	8	Hist.	3,296	806	-	4,102	1,622,250	381,000	-	2,003,250
	9	Hist.	3,113	806	-	3,919	1,408,010	349,000	-	1,757,010
	10	Hist.	2,608	707	-	3,315	1,500,710	355,000	-	1,855,710
	11	Hist.	2,481	1,226	-	3,707	1,287,500	694,000	-	1,981,500
	12	Hist.	2,632	1,304	-	3,936	1,473,930	747,000	-	2,220,930
2012	1	Hist.	2,812	1,382	-	4,194	1,536,760	758,000	-	2,294,760
	2	Hist.	2,436	1,381	-	3,817	1,241,150	811,000	-	2,052,150
	3	Hist.	2,226	1,375	-	3,601	1,269,990	687,000	-	1,956,990
	4	Hist.	2,024	1,262	-	3,286	1,073,260	668,000	-	1,741,260
	5	Hist.	2,879	787	-	3,666	1,383,290	385,000	-	1,768,290
	6	Hist.	3,072	774	-	3,846	1,507,920	396,000	-	1,903,920
	7	Hist.	3,869	782	-	4,651	1,948,760	364,000	-	2,312,760
	8	Hist.	3,551	806	-	4,357	1,634,610	381,000	-	2,015,610
	9	Hist.	3,157	806	-	3,963	1,438,910	349,000	-	1,787,910
	10	Hist.	2,630	707	-	3,337	1,556,330	355,000	-	1,911,330
	11	Hist.	2,543	1,226	-	3,769	1,275,140	694,000	-	1,969,140
	12	Hist.	2,607	1,304	-	3,911	1,511,010	747,000	-	2,258,010
2013	1	Hist.	2,926	1,382	-	4,308	1,635,640	758,000	-	2,393,640
	2	Hist.	2,794	1,381	-	4,175	1,288,530	783,000	-	2,071,530
	3	Hist.	2,339	1,375	-	3,714	1,467,750	687,000	-	2,154,750
	4	Hist.	2,199	1,262	-	3,461	1,277,200	668,000	-	1,945,200
	5	Hist.	2,552	787	-	3,339	1,451,270	385,000	-	1,836,270
	6	Hist.	3,094	774	-	3,868	1,402,860	396,000	-	1,798,860
	7	Hist.	3,742	782	-	4,524	1,707,740	364,000	-	2,071,740
	8	Hist.	3,979	806	-	4,785	1,671,690	381,000	-	2,052,690
	9	Hist.	3,395	806	-	4,201	1,395,650	349,000	-	1,744,650
	10	Hist.	2,671	707	-	3,378	1,537,790	355,000	-	1,892,790
	11	Hist.	2,515	1,226	-	3,741	1,330,760	694,000	-	2,024,760
	12	Hist.	2,960	1,304	-	4,264	1,690,230	747,000	-	2,437,230
2014	1	Hist.	3,025	1,382	-	4,407	1,765,420	758,000	-	2,523,420
	2	Hist.	2,869	1,381	-	4,250	1,430,670	783,000	-	2,213,670
	3	Hist.	2,778	1,375	-	4,153	1,511,010	687,000	-	2,198,010
	4	Hist.	2,210	1,262	-	3,472	1,215,400	668,000	-	1,883,400
	5	Hist.	3,021	787	-	3,808	1,464,001	385,000	-	1,849,001
	6	Hist.	2,756	774	-	3,530	1,433,760	396,000	-	1,829,760
	7	Hist.	3,685	782	-	4,467	1,627,400	364,000	-	1,991,400
	8	Hist.	2,987	806	-	3,793	1,653,150	381,000	-	2,034,150
	9	Hist.	2,559	806	-	3,365	1,420,370	349,000	-	1,769,370
	10	Hist.	2,517	707	-	3,224	1,500,710	355,000	-	1,855,710
	11	Hist.	2,552	1,226	-	3,778	1,404,920	694,000	-	2,098,920
	12	Hist.	2,691	1,304	-	3,995	1,517,190	747,000	-	2,264,190
2015	1	Hist.	2,867	1,382	-	4,249	1,620,240	758,000	-	2,378,240
	2	Hist.	2,673	1,381	-	4,054	1,402,488	783,000	-	2,185,488
	3	Hist.	2,582	1,375	-	3,957	1,365,336	687,000	-	2,052,336
	4	Hist.	1,961	1,262	-	3,223	1,118,688	668,000	-	1,786,688
	5	Hist.	2,441	787	-	3,228	1,379,784	385,000	-	1,764,784
	6	Hist.	2,853	774	-	3,627	1,430,352	396,000	-	1,826,352
	7	Hist.	3,390	782	-	4,172	1,686,288	364,000	-	2,050,288
	8	Hist.	3,379	806	-	4,185	1,575,864	381,000	-	1,956,864
	9	Hist.	3,334	806	-	4,140	1,509,816	349,000	-	1,858,816
	10	FC	2,672	707	-	3,379	1,547,073	355,000	-	1,902,073
	11	FC	2,573	1,226	-	3,799	1,329,295	694,000	-	2,023,295
	12	FC	2,805	1,304	-	4,109	1,592,237	747,000	-	2,339,237

Historic and Forecasted Monthly Loads for STAPLES, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	2,930	1,382	-	4,312	1,668,033	758,000	-	2,426,033
	2	FC	2,516	1,381	-	3,897	1,284,603	810,964	-	2,095,567
	3	FC	2,449	1,375	-	3,824	1,403,882	687,000	-	2,090,882
	4	FC	2,089	1,262	-	3,351	1,161,338	668,000	-	1,829,338
	5	FC	2,691	787	-	3,478	1,418,413	385,000	-	1,803,413
	6	FC	3,019	774	-	3,793	1,417,442	396,000	-	1,813,442
	7	FC	3,420	782	-	4,202	1,650,855	364,000	-	2,014,855
	8	FC	3,293	806	-	4,099	1,580,620	381,000	-	1,961,620
	9	FC	2,923	806	-	3,729	1,393,610	349,000	-	1,742,610
	10	FC	2,650	707	-	3,357	1,532,088	355,000	-	1,887,088
	11	FC	2,558	1,226	-	3,784	1,333,361	694,000	-	2,027,361
	12	FC	3,633	1,304	-	4,937	1,971,029	747,000	-	2,718,029
2017	1	FC	3,668	1,382	-	5,050	2,066,200	758,000	-	2,824,200
	2	FC	3,248	1,381	-	4,629	1,704,853	783,000	-	2,487,853
	3	FC	3,150	1,375	-	4,525	1,761,829	687,000	-	2,448,829
	4	FC	2,930	1,262	-	4,192	1,560,618	668,000	-	2,228,618
	5	FC	3,619	787	-	4,406	1,838,151	385,000	-	2,223,151
	6	FC	4,054	774	-	4,828	1,880,176	396,000	-	2,276,176
	7	FC	4,389	782	-	5,171	2,162,515	364,000	-	2,526,515
	8	FC	4,304	806	-	5,110	2,168,284	381,000	-	2,549,284
	9	FC	3,980	806	-	4,786	1,997,422	349,000	-	2,346,422
	10	FC	3,549	707	-	4,256	1,992,083	355,000	-	2,347,083
	11	FC	3,450	1,226	-	4,676	1,776,786	694,000	-	2,470,786
	12	FC	3,663	1,304	-	4,967	1,987,761	747,000	-	2,734,761
2018	1	FC	3,698	1,382	-	5,080	2,083,502	758,000	-	2,841,502
	2	FC	3,276	1,381	-	4,657	1,720,116	783,000	-	2,503,116
	3	FC	3,178	1,375	-	4,553	1,776,836	687,000	-	2,463,836
	4	FC	2,956	1,262	-	4,218	1,574,284	668,000	-	2,242,284
	5	FC	3,646	787	-	4,433	1,851,728	385,000	-	2,236,728
	6	FC	4,084	774	-	4,858	1,894,077	396,000	-	2,290,077
	7	FC	4,421	782	-	5,203	2,177,931	364,000	-	2,541,931
	8	FC	4,335	806	-	5,141	2,183,841	381,000	-	2,564,841
	9	FC	4,009	806	-	4,815	2,011,741	349,000	-	2,360,741
	10	FC	3,575	707	-	4,282	2,006,407	355,000	-	2,361,407
	11	FC	3,479	1,226	-	4,705	1,791,928	694,000	-	2,485,928
	12	FC	3,694	1,304	-	4,998	2,004,517	747,000	-	2,751,517
2019	1	FC	3,730	1,382	-	5,112	2,100,826	758,000	-	2,858,826
	2	FC	3,304	1,381	-	4,685	1,735,399	783,000	-	2,518,399
	3	FC	3,205	1,375	-	4,580	1,791,864	687,000	-	2,478,864
	4	FC	2,981	1,262	-	4,243	1,587,968	668,000	-	2,255,968
	5	FC	3,673	787	-	4,460	1,865,325	385,000	-	2,250,325
	6	FC	4,113	774	-	4,887	1,907,999	396,000	-	2,303,999
	7	FC	4,452	782	-	5,234	2,193,368	364,000	-	2,557,368
	8	FC	4,366	806	-	5,172	2,199,420	381,000	-	2,580,420
	9	FC	4,039	806	-	4,845	2,026,080	349,000	-	2,375,080
	10	FC	3,602	707	-	4,309	2,020,752	355,000	-	2,375,752
	11	FC	3,508	1,226	-	4,734	1,807,091	694,000	-	2,501,091
	12	FC	3,723	1,304	-	5,027	2,021,295	747,000	-	2,768,295
2020	1	FC	3,761	1,382	-	5,143	2,118,174	758,000	-	2,876,174
	2	FC	3,332	1,381	-	4,713	1,721,846	810,964	-	2,532,810
	3	FC	3,232	1,375	-	4,607	1,806,912	687,000	-	2,493,912
	4	FC	3,007	1,262	-	4,269	1,601,672	668,000	-	2,269,672
	5	FC	3,700	787	-	4,487	1,878,940	385,000	-	2,263,940
	6	FC	4,142	774	-	4,916	1,921,939	396,000	-	2,317,939
	7	FC	4,484	782	-	5,266	2,208,827	364,000	-	2,572,827
	8	FC	4,397	806	-	5,203	2,215,021	381,000	-	2,596,021
	9	FC	4,068	806	-	4,874	2,040,438	349,000	-	2,389,438
	10	FC	3,627	707	-	4,334	2,035,115	355,000	-	2,390,115
	11	FC	3,536	1,226	-	4,762	1,822,274	694,000	-	2,516,274
	12	FC	3,754	1,304	-	5,058	2,038,097	747,000	-	2,785,097
2021	1	FC	3,806	1,368	-	5,174	2,143,802	750,000	-	2,893,802
	2	FC	3,376	1,367	-	4,743	1,774,286	775,000	-	2,549,286
	3	FC	3,275	1,361	-	4,636	1,829,206	680,000	-	2,509,206
	4	FC	3,046	1,249	-	4,295	1,622,619	661,000	-	2,283,619
	5	FC	3,735	779	-	4,514	1,896,701	381,000	-	2,277,701
	6	FC	4,180	766	-	4,946	1,940,026	392,000	-	2,332,026
	7	FC	4,524	774	-	5,298	2,228,435	360,000	-	2,588,435
	8	FC	4,438	798	-	5,236	2,234,771	377,000	-	2,611,771
	9	FC	4,105	798	-	4,903	2,057,913	346,000	-	2,403,913
	10	FC	3,661	700	-	4,361	2,053,627	351,000	-	2,404,627
	11	FC	3,577	1,214	-	4,791	1,844,702	687,000	-	2,531,702
	12	FC	3,798	1,291	-	5,089	2,062,145	740,000	-	2,802,145

Historic and Forecasted Seasonal Loads for STAPLES, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	3,704	806	-	4,510	9,336,254	2,230,000	-	11,566,254
S2011	Hist.	3,832	806	-	4,614	9,080,480	2,230,000	-	11,310,480
S2012	Hist.	3,869	806	-	4,651	9,469,820	2,230,000	-	11,699,820
S2013	Hist.	3,979	806	-	4,785	9,167,000	2,230,000	-	11,397,000
S2014	Hist.	3,685	806	-	4,467	9,099,391	2,230,000	-	11,329,391
S2015	FC	3,390	806	-	4,185	9,129,177	2,230,000	-	11,359,177
S2016	FC	3,420	806	-	4,202	8,993,028	2,230,000	-	11,223,028
S2017	FC	4,389	806	-	5,171	12,038,631	2,230,000	-	14,268,631
S2018	FC	4,421	806	-	5,203	12,125,725	2,230,000	-	14,355,725
S2019	FC	4,452	806	-	5,234	12,212,944	2,230,000	-	14,442,944
S2020	FC	4,484	806	-	5,266	12,300,280	2,230,000	-	14,530,280
S2021	FC	4,524	798	-	5,298	12,411,473	2,207,000	-	14,618,473
W2009-10	Hist.	2,869	1,382	-	4,204	8,207,185	4,337,000	-	12,544,185
W2010-11	Hist.	2,934	1,382	-	4,238	8,637,019	4,337,000	-	12,974,019
W2011-12	Hist.	2,812	1,382	-	4,194	7,882,590	4,365,000	-	12,247,590
W2012-13	Hist.	2,926	1,382	-	4,308	8,455,270	4,337,000	-	12,792,270
W2013-14	Hist.	3,025	1,382	-	4,407	8,943,490	4,337,000	-	13,280,490
W2014-15	Hist.	2,867	1,382	-	4,249	8,428,862	4,337,000	-	12,765,862
W2015-16	FC	2,930	1,382	-	4,312	8,439,388	4,364,964	-	12,804,352
W2016-17	FC	3,668	1,382	-	5,050	10,397,890	4,337,000	-	14,734,890
W2017-18	FC	3,698	1,382	-	5,080	10,919,285	4,337,000	-	15,256,285
W2018-19	FC	3,730	1,382	-	5,112	11,012,502	4,337,000	-	15,349,502
W2019-20	FC	3,761	1,382	-	5,143	11,076,990	4,364,964	-	15,441,954
W2020-21	FC	3,806	1,368	-	5,174	11,230,284	4,307,000	-	15,537,284

Historic and Forecasted Annual Loads for STAPLES, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	3,704	1,382	-	4,510	17,685,993	6,567,000	-	24,252,993
2011	Hist.	3,832	1,382	-	4,614	17,480,130	6,567,000	-	24,047,130
2012	Hist.	3,869	1,382	-	4,651	17,377,130	6,595,000	-	23,972,130
2013	Hist.	3,979	1,382	-	4,785	17,857,110	6,567,000	-	24,424,110
2014	Hist.	3,685	1,382	-	4,467	17,944,001	6,567,000	-	24,511,001
2015	FC	3,390	1,382	-	4,249	17,557,461	6,567,000	-	24,124,461
2016	FC	3,633	1,382	-	4,937	17,815,274	6,594,964	-	24,410,238
2017	FC	4,389	1,382	-	5,171	22,896,678	6,567,000	-	29,463,678
2018	FC	4,421	1,382	-	5,203	23,076,908	6,567,000	-	29,643,908
2019	FC	4,452	1,382	-	5,234	23,257,387	6,567,000	-	29,824,387
2020	FC	4,484	1,382	-	5,266	23,409,255	6,594,964	-	30,004,219
2021	FC	4,524	1,368	-	5,298	23,688,233	6,500,000	-	30,188,233

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for WADENA, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	6,059	7,935	-	13,994	3,204,366	4,457,000	-	7,661,366
	2	Hist.	4,964	7,935	-	12,899	2,477,134	4,084,000	-	6,561,134
	3	Hist.	3,700	7,798	-	11,498	2,214,752	3,745,000	-	5,959,752
	4	Hist.	2,612	6,791	-	9,403	1,378,022	3,532,000	-	4,910,022
	5	Hist.	3,790	6,391	-	10,181	1,978,195	3,183,000	-	5,161,195
	6	Hist.	4,096	6,475	-	10,571	1,630,074	3,355,000	-	4,985,074
	7	Hist.	4,041	6,808	-	10,849	2,369,702	3,205,000	-	5,574,702
	8	Hist.	4,445	6,957	-	11,402	2,181,696	3,302,000	-	5,483,696
	9	Hist.	2,204	6,846	-	9,050	1,384,220	3,084,000	-	4,468,220
	10	Hist.	3,194	6,288	-	9,482	1,853,202	3,110,000	-	4,963,202
	11	Hist.	4,226	6,909	-	11,135	2,276,732	3,650,000	-	5,926,732
	12	Hist.	5,136	7,648	-	12,784	3,331,425	4,097,000	-	7,428,425
2011	1	Hist.	4,887	7,935	-	12,822	3,162,100	4,457,000	-	7,619,100
	2	Hist.	4,764	7,935	-	12,699	2,430,800	4,084,000	-	6,514,800
	3	Hist.	4,390	7,798	-	12,188	2,834,560	3,745,000	-	6,579,560
	4	Hist.	3,099	6,791	-	9,890	1,854,000	3,532,000	-	5,386,000
	5	Hist.	3,800	6,391	-	10,191	1,825,160	3,183,000	-	5,008,160
	6	Hist.	4,743	6,475	-	11,218	1,577,960	3,355,000	-	4,932,960
	7	Hist.	5,039	6,808	-	11,847	2,703,750	3,205,000	-	5,908,750
	8	Hist.	3,958	6,957	-	10,915	2,248,490	3,302,000	-	5,550,490
	9	Hist.	3,778	6,846	-	10,624	1,803,459	3,084,000	-	4,887,459
	10	Hist.	2,876	6,288	-	9,164	1,949,790	3,110,000	-	5,059,790
	11	Hist.	4,004	6,909	-	10,913	2,232,724	3,650,000	-	5,882,724
	12	Hist.	4,531	7,648	-	12,179	2,802,630	4,097,000	-	6,899,630
2012	1	Hist.	5,010	7,935	-	12,945	2,676,970	4,457,000	-	7,133,970
	2	Hist.	4,184	7,935	-	12,119	2,204,200	4,230,000	-	6,434,200
	3	Hist.	3,455	7,798	-	11,253	2,040,430	3,745,000	-	5,785,430
	4	Hist.	3,078	6,791	-	9,869	1,538,820	3,532,000	-	5,070,820
	5	Hist.	2,762	6,391	-	9,153	1,739,670	3,183,000	-	4,922,670
	6	Hist.	4,222	6,475	-	10,697	1,807,650	3,355,000	-	5,162,650
	7	Hist.	5,230	6,808	-	12,038	2,949,920	3,205,000	-	6,154,920
	8	Hist.	4,611	6,957	-	11,568	2,244,370	3,302,000	-	5,546,370
	9	Hist.	3,595	6,846	-	10,441	1,863,270	3,084,000	-	4,947,270
	10	Hist.	3,848	6,288	-	10,136	2,449,340	3,110,000	-	5,559,340
	11	Hist.	5,421	6,909	-	12,330	2,534,830	3,650,000	-	6,184,830
	12	Hist.	4,957	7,648	-	12,605	3,235,230	4,097,000	-	7,332,230
2013	1	Hist.	6,116	7,935	-	14,051	3,354,710	4,457,000	-	7,811,710
	2	Hist.	5,414	7,935	-	13,349	2,671,820	4,084,000	-	6,755,820
	3	Hist.	4,688	7,798	-	12,486	3,121,930	3,745,000	-	6,866,930
	4	Hist.	4,461	6,791	-	11,252	2,432,860	3,532,000	-	5,964,860
	5	Hist.	3,259	6,391	-	9,650	1,919,920	3,183,000	-	5,102,920
	6	Hist.	4,283	6,475	-	10,758	1,677,870	3,355,000	-	5,032,870
	7	Hist.	5,010	6,808	-	11,818	2,438,010	3,205,000	-	5,643,010
	8	Hist.	5,624	6,957	-	12,581	2,302,050	3,302,000	-	5,604,050
	9	Hist.	4,065	6,846	-	10,911	1,899,320	3,084,000	-	4,983,320
	10	Hist.	3,887	6,288	-	10,175	2,413,290	3,110,000	-	5,523,290
	11	Hist.	5,162	6,909	-	12,071	2,779,970	3,650,000	-	6,429,970
	12	Hist.	6,296	7,648	-	13,944	4,071,590	4,097,000	-	8,168,590
2014	1	Hist.	6,481	7,935	-	14,416	4,032,450	4,457,000	-	8,489,450
	2	Hist.	6,037	7,935	-	13,972	3,450,500	4,084,000	-	7,534,500
	3	Hist.	6,082	7,798	-	13,880	3,482,430	3,745,000	-	7,227,430
	4	Hist.	5,017	6,791	-	11,808	2,295,870	3,532,000	-	5,827,870
	5	Hist.	3,635	6,391	-	10,026	2,157,850	3,183,000	-	5,340,850
	6	Hist.	3,377	6,475	-	9,852	1,735,550	3,355,000	-	5,090,550
	7	Hist.	4,968	6,808	-	11,776	2,272,180	3,205,000	-	5,477,180
	8	Hist.	3,317	6,957	-	10,274	2,244,370	3,302,000	-	5,546,370
	9	Hist.	2,614	6,846	-	9,460	1,913,740	3,084,000	-	4,997,740
	10	Hist.	3,772	6,288	-	10,060	2,348,400	3,110,000	-	5,458,400
	11	Hist.	5,429	6,909	-	12,338	3,248,620	3,650,000	-	6,898,620
	12	Hist.	6,042	7,648	-	13,690	3,336,170	4,097,000	-	7,433,170
2015	1	Hist.	6,072	7,935	-	14,007	3,375,672	4,457,000	-	7,832,672
	2	Hist.	5,771	7,935	-	13,706	3,312,720	4,084,000	-	7,396,720
	3	Hist.	5,451	7,798	-	13,249	2,904,048	3,745,000	-	6,649,048
	4	Hist.	3,845	6,791	-	10,636	1,924,680	3,532,000	-	5,456,680
	5	Hist.	2,985	6,391	-	9,376	1,887,528	3,183,000	-	5,070,528
	6	Hist.	3,797	6,475	-	10,272	1,832,832	3,355,000	-	5,187,832
	7	Hist.	4,691	6,808	-	11,499	2,673,912	3,205,000	-	5,878,912
	8	Hist.	4,618	6,957	-	11,575	2,292,072	3,302,000	-	5,594,072
	9	Hist.	4,508	6,846	-	11,354	2,191,968	3,084,000	-	5,275,968
	10	FC	4,156	6,288	-	10,444	2,557,051	3,110,000	-	5,667,051
	11	FC	5,364	6,909	-	12,273	2,837,579	3,650,000	-	6,487,579
	12	FC	5,768	7,648	-	13,416	3,659,546	4,097,000	-	7,756,546

Historic and Forecasted Monthly Loads for WADENA, MN

Year	Month	Historic/ Forecast	Demand (kW)				Energy (kWh)			
			MRES	WAPA	Other	Total	MRES	WAPA	Other	Total
2016	1	FC	6,168	7,935	-	14,103	3,580,046	4,457,000	-	8,037,046
	2	FC	4,852	7,935	-	12,787	2,685,640	4,229,857	-	6,915,497
	3	FC	4,952	7,798	-	12,750	2,953,007	3,745,000	-	6,698,007
	4	FC	3,975	6,791	-	10,766	2,055,923	3,532,000	-	5,587,923
	5	FC	3,468	6,391	-	9,859	2,005,876	3,183,000	-	5,188,876
	6	FC	4,512	6,475	-	10,987	1,870,951	3,355,000	-	5,225,951
	7	FC	5,057	6,808	-	11,865	2,647,997	3,205,000	-	5,852,997
	8	FC	4,592	6,957	-	11,549	2,366,773	3,302,000	-	5,668,773
	9	FC	3,575	6,846	-	10,421	1,943,921	3,084,000	-	5,027,921
	10	FC	3,957	6,288	-	10,245	2,441,325	3,110,000	-	5,551,325
	11	FC	5,235	6,909	-	12,144	2,822,390	3,650,000	-	6,472,390
	12	FC	5,913	7,648	-	13,561	3,654,705	4,097,000	-	7,751,705
2017	1	FC	6,339	7,935	-	14,274	3,677,289	4,457,000	-	8,134,289
	2	FC	5,007	7,935	-	12,942	2,919,987	4,084,000	-	7,003,987
	3	FC	5,106	7,798	-	12,904	3,034,060	3,745,000	-	6,779,060
	4	FC	4,106	6,791	-	10,897	2,123,698	3,532,000	-	5,655,698
	5	FC	3,587	6,391	-	9,978	2,068,774	3,183,000	-	5,251,774
	6	FC	4,645	6,475	-	11,120	1,934,356	3,355,000	-	5,289,356
	7	FC	5,200	6,808	-	12,008	2,718,800	3,205,000	-	5,923,800
	8	FC	4,733	6,957	-	11,690	2,435,423	3,302,000	-	5,737,423
	9	FC	3,702	6,846	-	10,548	2,004,868	3,084,000	-	5,088,868
	10	FC	4,081	6,288	-	10,369	2,508,505	3,110,000	-	5,618,505
	11	FC	5,383	6,909	-	12,292	2,900,725	3,650,000	-	6,550,725
	12	FC	6,077	7,648	-	13,725	3,748,419	4,097,000	-	7,845,419
2018	1	FC	6,514	7,935	-	14,449	3,777,030	4,457,000	-	8,234,030
	2	FC	5,166	7,935	-	13,101	3,005,964	4,084,000	-	7,089,964
	3	FC	5,265	7,798	-	13,063	3,117,195	3,745,000	-	6,862,195
	4	FC	4,240	6,791	-	11,031	2,193,214	3,532,000	-	5,725,214
	5	FC	3,710	6,391	-	10,101	2,133,287	3,183,000	-	5,316,287
	6	FC	4,781	6,475	-	11,256	1,999,390	3,355,000	-	5,354,390
	7	FC	5,348	6,808	-	12,156	2,791,421	3,205,000	-	5,996,421
	8	FC	4,876	6,957	-	11,833	2,505,834	3,302,000	-	5,807,834
	9	FC	3,831	6,846	-	10,677	2,067,381	3,084,000	-	5,151,381
	10	FC	4,207	6,288	-	10,495	2,577,410	3,110,000	-	5,687,410
	11	FC	5,534	6,909	-	12,443	2,981,072	3,650,000	-	6,631,072
	12	FC	6,246	7,648	-	13,894	3,844,541	4,097,000	-	7,941,541
2019	1	FC	6,673	7,935	-	14,608	3,867,450	4,457,000	-	8,324,450
	2	FC	5,311	7,935	-	13,246	3,083,905	4,084,000	-	7,167,905
	3	FC	5,409	7,798	-	13,207	3,192,561	3,745,000	-	6,937,561
	4	FC	4,361	6,791	-	11,152	2,256,233	3,532,000	-	5,788,233
	5	FC	3,821	6,391	-	10,212	2,191,772	3,183,000	-	5,374,772
	6	FC	4,905	6,475	-	11,380	2,058,344	3,355,000	-	5,413,344
	7	FC	5,482	6,808	-	12,290	2,857,254	3,205,000	-	6,062,254
	8	FC	5,006	6,957	-	11,963	2,569,667	3,302,000	-	5,871,667
	9	FC	3,948	6,846	-	10,794	2,124,051	3,084,000	-	5,208,051
	10	FC	4,323	6,288	-	10,611	2,639,876	3,110,000	-	5,749,876
	11	FC	5,670	6,909	-	12,579	3,053,910	3,650,000	-	6,703,910
	12	FC	6,398	7,648	-	14,046	3,931,679	4,097,000	-	8,028,679
2020	1	FC	6,819	7,935	-	14,754	3,951,224	4,457,000	-	8,408,224
	2	FC	5,444	7,935	-	13,379	3,005,594	4,229,857	-	7,235,451
	3	FC	5,542	7,798	-	13,340	3,262,387	3,745,000	-	7,007,387
	4	FC	4,474	6,791	-	11,265	2,314,621	3,532,000	-	5,846,621
	5	FC	3,925	6,391	-	10,316	2,245,959	3,183,000	-	5,428,959
	6	FC	5,020	6,475	-	11,495	2,112,966	3,355,000	-	5,467,966
	7	FC	5,606	6,808	-	12,414	2,918,249	3,205,000	-	6,123,249
	8	FC	5,127	6,957	-	12,084	2,628,806	3,302,000	-	5,930,806
	9	FC	4,058	6,846	-	10,904	2,176,557	3,084,000	-	5,260,557
	10	FC	4,430	6,288	-	10,718	2,697,750	3,110,000	-	5,807,750
	11	FC	5,797	6,909	-	12,706	3,121,395	3,650,000	-	6,771,395
	12	FC	6,540	7,648	-	14,188	4,012,412	4,097,000	-	8,109,412
2021	1	FC	7,060	7,856	-	14,916	4,088,333	4,412,000	-	8,500,333
	2	FC	5,671	7,856	-	13,527	3,276,587	4,043,000	-	7,319,587
	3	FC	5,767	7,720	-	13,487	3,376,145	3,708,000	-	7,084,145
	4	FC	4,666	6,723	-	11,389	2,413,934	3,497,000	-	5,910,934
	5	FC	4,102	6,327	-	10,429	2,337,629	3,151,000	-	5,488,629
	6	FC	5,211	6,410	-	11,621	2,207,172	3,321,000	-	5,528,172
	7	FC	5,809	6,740	-	12,549	3,017,288	3,173,000	-	6,190,288
	8	FC	5,329	6,887	-	12,216	2,726,870	3,269,000	-	5,995,870
	9	FC	4,246	6,778	-	11,024	2,265,375	3,053,000	-	5,318,375
	10	FC	4,611	6,225	-	10,836	2,792,379	3,079,000	-	5,871,379
	11	FC	6,005	6,840	-	12,845	3,231,586	3,614,000	-	6,845,586
	12	FC	6,771	7,572	-	14,343	4,142,102	4,056,000	-	8,198,102

Historic and Forecasted Seasonal Loads for WADENA, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	4,445	6,957	-	11,402	11,397,089	19,239,000	-	30,636,089
S2011	Hist.	5,039	6,957	-	11,847	12,108,609	19,239,000	-	31,347,609
S2012	Hist.	5,230	6,957	-	12,038	13,054,220	19,239,000	-	32,293,220
S2013	Hist.	5,624	6,957	-	12,581	12,650,460	19,239,000	-	31,889,460
S2014	Hist.	4,968	6,957	-	11,776	12,672,090	19,239,000	-	31,911,090
S2015	FC	4,691	6,957	-	11,575	13,435,363	19,239,000	-	32,674,363
S2016	FC	5,057	6,957	-	11,865	13,276,843	19,239,000	-	32,515,843
S2017	FC	5,200	6,957	-	12,008	13,670,726	19,239,000	-	32,909,726
S2018	FC	5,348	6,957	-	12,156	14,074,723	19,239,000	-	33,313,723
S2019	FC	5,482	6,957	-	12,290	14,440,964	19,239,000	-	33,679,964
S2020	FC	5,606	6,957	-	12,414	14,780,287	19,239,000	-	34,019,287
S2021	FC	5,809	6,887	-	12,549	15,346,713	19,046,000	-	34,392,713
W2009-10	Hist.	6,059	7,935	-	13,994	14,794,626	23,565,000	-	38,359,626
W2010-11	Hist.	5,136	7,935	-	12,822	15,889,617	23,565,000	-	39,454,617
W2011-12	Hist.	5,010	7,935	-	12,945	13,495,774	23,711,000	-	37,206,774
W2012-13	Hist.	6,116	7,935	-	14,051	17,351,380	23,565,000	-	40,916,380
W2013-14	Hist.	6,481	7,935	-	14,416	20,112,810	23,565,000	-	43,677,810
W2014-15	Hist.	6,072	7,935	-	14,007	18,101,910	23,565,000	-	41,666,910
W2015-16	FC	6,168	7,935	-	14,103	17,771,741	23,710,857	-	41,482,598
W2016-17	FC	6,339	7,935	-	14,274	18,232,129	23,565,000	-	41,797,129
W2017-18	FC	6,514	7,935	-	14,449	18,742,547	23,565,000	-	42,307,547
W2018-19	FC	6,673	7,935	-	14,608	19,225,762	23,565,000	-	42,790,762
W2019-20	FC	6,819	7,935	-	14,754	19,519,415	23,710,857	-	43,230,272
W2020-21	FC	7,060	7,856	-	14,916	20,288,806	23,407,000	-	43,695,806

Historic and Forecasted Annual Loads for WADENA, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	6,059	7,935	-	13,994	26,279,520	42,804,000	-	69,083,520
2011	Hist.	5,039	7,935	-	12,822	27,425,423	42,804,000	-	70,229,423
2012	Hist.	5,421	7,935	-	12,945	27,284,700	42,950,000	-	70,234,700
2013	Hist.	6,296	7,935	-	14,051	31,083,340	42,804,000	-	73,887,340
2014	Hist.	6,481	7,935	-	14,416	32,518,130	42,804,000	-	75,322,130
2015	FC	6,072	7,935	-	14,007	31,449,608	42,804,000	-	74,253,608
2016	FC	6,168	7,935	-	14,103	31,028,554	42,949,857	-	73,978,411
2017	FC	6,339	7,935	-	14,274	32,074,904	42,804,000	-	74,878,904
2018	FC	6,514	7,935	-	14,449	32,993,739	42,804,000	-	75,797,739
2019	FC	6,673	7,935	-	14,608	33,826,702	42,804,000	-	76,630,702
2020	FC	6,819	7,935	-	14,754	34,447,920	42,949,857	-	77,397,777
2021	FC	7,060	7,856	-	14,916	35,875,400	42,376,000	-	78,251,400

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for WESTBROOK, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	154	1,471	-	1,625	140,178	758,000	-	898,178
	2	Hist.	-	1,424	-	1,424	-	759,516	-	759,516
	3	Hist.	-	1,256	-	1,256	85,144	635,000	-	720,144
	4	Hist.	-	1,145	-	1,145	-	559,537	-	559,537
	5	Hist.	311	1,135	-	1,446	62,213	534,000	-	596,213
	6	Hist.	105	1,381	-	1,486	128,347	493,000	-	621,347
	7	Hist.	288	1,304	-	1,592	152,230	586,000	-	738,230
	8	Hist.	388	1,225	-	1,613	203,223	562,000	-	765,223
	9	Hist.	-	1,089	-	1,089	43,674	514,000	-	557,674
	10	Hist.	126	1,049	-	1,175	99,894	506,000	-	605,894
	11	Hist.	185	1,311	-	1,496	21,929	677,000	-	698,929
	12	Hist.	93	1,460	-	1,553	192,470	694,000	-	886,470
2011	1	Hist.	134	1,471	-	1,605	142,647	758,000	-	900,647
	2	Hist.	36	1,496	-	1,532	-	752,914	-	752,914
	3	Hist.	-	1,410	-	1,410	142,624	635,000	-	777,624
	4	Hist.	-	1,196	-	1,196	-	644,174	-	644,174
	5	Hist.	-	1,085	-	1,085	48,636	534,000	-	582,636
	6	Hist.	177	1,381	-	1,558	132,963	493,000	-	625,963
	7	Hist.	554	1,304	-	1,858	259,905	586,000	-	845,905
	8	Hist.	524	1,225	-	1,749	150,830	562,000	-	712,830
	9	Hist.	251	1,326	-	1,577	60,879	514,000	-	574,879
	10	Hist.	148	1,049	-	1,197	91,221	506,000	-	597,221
	11	Hist.	-	1,283	-	1,283	-	656,452	-	656,452
	12	Hist.	70	1,460	-	1,530	88,247	694,000	-	782,247
2012	1	Hist.	18	1,471	-	1,489	30,804	758,000	-	788,804
	2	Hist.	-	1,405	-	1,405	-	707,215	-	707,215
	3	Hist.	-	1,247	-	1,247	-	617,854	-	617,854
	4	Hist.	-	1,061	-	1,061	-	547,907	-	547,907
	5	Hist.	46	1,135	-	1,181	25,301	534,000	-	559,301
	6	Hist.	245	1,381	-	1,626	172,531	493,000	-	665,531
	7	Hist.	476	1,304	-	1,780	269,867	586,000	-	855,867
	8	Hist.	413	1,225	-	1,638	110,200	562,000	-	672,200
	9	Hist.	64	1,326	-	1,390	41,401	514,000	-	555,401
	10	Hist.	121	1,049	-	1,170	106,875	506,000	-	612,875
	11	Hist.	46	1,311	-	1,357	-	656,700	-	656,700
	12	Hist.	34	1,460	-	1,494	102,714	694,000	-	796,714
2013	1	Hist.	102	1,471	-	1,573	96,252	758,000	-	854,252
	2	Hist.	-	1,494	-	1,494	-	755,743	-	755,743
	3	Hist.	-	1,438	-	1,438	131,789	635,000	-	766,789
	4	Hist.	-	1,237	-	1,237	-	648,344	-	648,344
	5	Hist.	-	1,062	-	1,062	51,811	534,000	-	585,811
	6	Hist.	54	1,381	-	1,435	123,251	493,000	-	616,251
	7	Hist.	313	1,304	-	1,617	156,706	586,000	-	742,706
	8	Hist.	472	1,225	-	1,697	149,619	562,000	-	711,619
	9	Hist.	139	1,326	-	1,465	74,267	514,000	-	588,267
	10	Hist.	213	1,049	-	1,262	125,680	506,000	-	631,680
	11	Hist.	77	1,311	-	1,388	51,742	677,000	-	728,742
	12	Hist.	109	1,460	-	1,569	165,530	694,000	-	859,530
2014	1	Hist.	137	1,471	-	1,608	126,040	758,000	-	884,040
	2	Hist.	39	1,496	-	1,535	5,219	769,000	-	774,219
	3	Hist.	31	1,444	-	1,475	117,045	635,000	-	752,045
	4	Hist.	-	1,220	-	1,220	-	602,878	-	602,878
	5	Hist.	31	1,135	-	1,166	44,771	534,000	-	578,771
	6	Hist.	-	1,280	-	1,280	117,984	493,000	-	610,984
	7	Hist.	209	1,304	-	1,513	64,642	586,000	-	650,642
	8	Hist.	245	1,225	-	1,470	104,789	562,000	-	666,789
	9	Hist.	-	1,236	-	1,236	29,660	514,000	-	543,660
	10	Hist.	156	1,049	-	1,205	80,177	506,000	-	586,177
	11	Hist.	98	1,311	-	1,409	53,086	677,000	-	730,086
	12	Hist.	1	1,460	-	1,461	78,227	694,000	-	772,227
2015	1	Hist.	7	1,471	-	1,478	12,504	758,000	-	770,504
	2	Hist.	-	1,382	-	1,382	-	727,869	-	727,869
	3	Hist.	-	1,328	-	1,328	19,228	635,000	-	654,228
	4	Hist.	-	1,054	-	1,054	-	541,363	-	541,363
	5	Hist.	-	981	-	981	2,829	534,000	-	536,829
	6	Hist.	-	1,328	-	1,328	111,292	493,000	-	604,292
	7	Hist.	152	1,304	-	1,456	118,036	586,000	-	704,036
	8	Hist.	222	1,225	-	1,447	78,523	562,000	-	640,523
	9	Hist.	106	1,326	-	1,432	73,161	514,000	-	587,161
	10	FC	173	1,049	-	1,222	126,418	506,000	-	632,418
	11	FC	118	1,311	-	1,429	33,178	677,000	-	710,178
	12	FC	107	1,460	-	1,567	162,334	694,000	-	856,334

Historic and Forecasted Monthly Loads for WESTBROOK, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	43	1,471	-	1,514	61,203	758,000	-	819,203
	2	FC	-	1,335	-	1,335	-	695,685	-	695,685
	3	FC	-	1,363	-	1,363	68,812	635,000	-	703,812
	4	FC	-	1,105	-	1,105	-	571,792	-	571,792
	5	FC	-	1,037	-	1,037	5,894	534,000	-	539,894
	6	FC	1	1,381	-	1,382	97,971	493,000	-	590,971
	7	FC	222	1,304	-	1,526	112,624	586,000	-	698,624
	8	FC	290	1,225	-	1,515	93,636	562,000	-	655,636
	9	FC	-	1,264	-	1,264	21,347	514,000	-	535,347
	10	FC	112	1,049	-	1,161	80,555	506,000	-	586,555
	11	FC	11	1,311	-	1,322	-	663,187	-	663,187
	12	FC	15	1,460	-	1,475	100,650	694,000	-	794,650
2017	1	FC	50	1,471	-	1,521	64,895	758,000	-	822,895
	2	FC	-	1,341	-	1,341	-	698,730	-	698,730
	3	FC	-	1,369	-	1,369	71,982	635,000	-	706,982
	4	FC	-	1,110	-	1,110	-	574,295	-	574,295
	5	FC	-	1,042	-	1,042	8,332	534,000	-	542,332
	6	FC	7	1,381	-	1,388	100,627	493,000	-	593,627
	7	FC	229	1,304	-	1,533	115,765	586,000	-	701,765
	8	FC	296	1,225	-	1,521	96,586	562,000	-	658,586
	9	FC	-	1,269	-	1,269	23,763	514,000	-	537,763
	10	FC	118	1,049	-	1,167	83,194	506,000	-	589,194
	11	FC	18	1,311	-	1,329	-	666,091	-	666,091
	12	FC	23	1,460	-	1,483	104,226	694,000	-	798,226
2018	1	FC	58	1,471	-	1,529	69,224	758,000	-	827,224
	2	FC	-	1,348	-	1,348	-	702,301	-	702,301
	3	FC	-	1,376	-	1,376	75,698	635,000	-	710,698
	4	FC	-	1,116	-	1,116	-	577,230	-	577,230
	5	FC	-	1,047	-	1,047	11,191	534,000	-	545,191
	6	FC	14	1,381	-	1,395	103,741	493,000	-	596,741
	7	FC	236	1,304	-	1,540	119,447	586,000	-	705,447
	8	FC	304	1,225	-	1,529	100,043	562,000	-	662,043
	9	FC	-	1,276	-	1,276	26,595	514,000	-	540,595
	10	FC	124	1,049	-	1,173	86,288	506,000	-	592,288
	11	FC	25	1,311	-	1,336	-	669,494	-	669,494
	12	FC	30	1,460	-	1,490	108,419	694,000	-	802,419
2019	1	FC	62	1,471	-	1,533	71,222	758,000	-	829,222
	2	FC	-	1,351	-	1,351	-	703,949	-	703,949
	3	FC	-	1,379	-	1,379	77,414	635,000	-	712,414
	4	FC	-	1,118	-	1,118	-	578,584	-	578,584
	5	FC	-	1,049	-	1,049	12,511	534,000	-	546,511
	6	FC	19	1,381	-	1,400	105,178	493,000	-	598,178
	7	FC	240	1,304	-	1,544	121,146	586,000	-	707,146
	8	FC	308	1,225	-	1,533	101,639	562,000	-	663,639
	9	FC	-	1,279	-	1,279	27,902	514,000	-	541,902
	10	FC	126	1,049	-	1,175	87,715	506,000	-	593,715
	11	FC	28	1,311	-	1,339	-	671,066	-	671,066
	12	FC	34	1,460	-	1,494	110,354	694,000	-	804,354
2020	1	FC	62	1,471	-	1,533	71,558	758,000	-	829,558
	2	FC	-	1,352	-	1,352	-	704,226	-	704,226
	3	FC	-	1,379	-	1,379	77,702	635,000	-	712,702
	4	FC	-	1,119	-	1,119	-	578,812	-	578,812
	5	FC	-	1,050	-	1,050	12,733	534,000	-	546,733
	6	FC	19	1,381	-	1,400	105,420	493,000	-	598,420
	7	FC	241	1,304	-	1,545	121,431	586,000	-	707,431
	8	FC	309	1,225	-	1,534	101,907	562,000	-	663,907
	9	FC	-	1,279	-	1,279	28,122	514,000	-	542,122
	10	FC	127	1,049	-	1,176	87,955	506,000	-	593,955
	11	FC	29	1,311	-	1,340	-	671,330	-	671,330
	12	FC	34	1,460	-	1,494	110,679	694,000	-	804,679
2021	1	FC	82	1,456	-	1,538	81,870	750,000	-	831,870
	2	FC	-	1,355	-	1,355	-	705,922	-	705,922
	3	FC	-	1,383	-	1,383	85,659	629,000	-	714,659
	4	FC	-	1,121	-	1,121	-	580,206	-	580,206
	5	FC	-	1,052	-	1,052	19,250	529,000	-	548,250
	6	FC	36	1,367	-	1,403	112,059	488,000	-	600,059
	7	FC	258	1,291	-	1,549	129,373	580,000	-	709,373
	8	FC	325	1,213	-	1,538	109,741	556,000	-	665,741
	9	FC	-	1,282	-	1,282	34,627	509,000	-	543,627
	10	FC	140	1,039	-	1,179	94,584	501,000	-	595,584
	11	FC	45	1,298	-	1,343	3,040	670,000	-	673,040
	12	FC	54	1,445	-	1,499	119,894	687,000	-	806,894

Historic and Forecasted Seasonal Loads for WESTBROOK, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	388	1,381	-	1,613	689,581	3,195,000	-	3,884,581
S2011	Hist.	554	1,381	-	1,858	744,434	3,195,000	-	3,939,434
S2012	Hist.	476	1,381	-	1,780	726,175	3,195,000	-	3,921,175
S2013	Hist.	472	1,381	-	1,697	681,334	3,195,000	-	3,876,334
S2014	Hist.	245	1,304	-	1,513	442,023	3,195,000	-	3,637,023
S2015	FC	222	1,328	-	1,456	510,259	3,195,000	-	3,705,259
S2016	FC	290	1,381	-	1,526	412,027	3,195,000	-	3,607,027
S2017	FC	296	1,381	-	1,533	428,267	3,195,000	-	3,623,267
S2018	FC	304	1,381	-	1,540	447,305	3,195,000	-	3,642,305
S2019	FC	308	1,381	-	1,544	456,091	3,195,000	-	3,651,091
S2020	FC	309	1,381	-	1,545	457,568	3,195,000	-	3,652,568
S2021	FC	325	1,367	-	1,549	499,634	3,163,000	-	3,662,634
W2009-10	Hist.	209	1,471	-	1,669	531,282	4,083,053	-	4,614,335
W2010-11	Hist.	185	1,496	-	1,605	499,670	4,161,088	-	4,660,758
W2011-12	Hist.	70	1,471	-	1,530	119,051	3,981,428	-	4,100,479
W2012-13	Hist.	102	1,494	-	1,573	330,755	4,147,787	-	4,478,542
W2013-14	Hist.	137	1,496	-	1,608	465,576	4,135,878	-	4,601,454
W2014-15	Hist.	98	1,471	-	1,478	163,045	4,033,232	-	4,196,277
W2015-16	FC	118	1,471	-	1,567	325,527	4,031,477	-	4,357,004
W2016-17	FC	50	1,471	-	1,521	237,527	4,023,212	-	4,260,739
W2017-18	FC	58	1,471	-	1,529	249,148	4,032,622	-	4,281,770
W2018-19	FC	62	1,471	-	1,533	257,055	4,039,027	-	4,296,082
W2019-20	FC	62	1,471	-	1,533	259,614	4,041,104	-	4,300,718
W2020-21	FC	82	1,460	-	1,538	278,208	4,030,458	-	4,308,666

Historic and Forecasted Annual Loads for WESTBROOK, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	388	1,471	-	1,625	1,129,302	7,278,053	-	8,407,355
2011	Hist.	554	1,496	-	1,858	1,117,952	7,335,540	-	8,453,492
2012	Hist.	476	1,471	-	1,780	859,693	7,176,676	-	8,036,369
2013	Hist.	472	1,494	-	1,697	1,126,647	7,363,087	-	8,489,734
2014	Hist.	245	1,496	-	1,608	821,640	7,330,878	-	8,152,518
2015	FC	222	1,471	-	1,567	737,503	7,228,232	-	7,965,735
2016	FC	290	1,471	-	1,526	642,692	7,212,664	-	7,855,356
2017	FC	296	1,471	-	1,533	669,370	7,221,116	-	7,890,486
2018	FC	304	1,471	-	1,540	700,646	7,231,025	-	7,931,671
2019	FC	308	1,471	-	1,544	715,081	7,235,599	-	7,950,680
2020	FC	309	1,471	-	1,545	717,507	7,236,368	-	7,953,875
2021	FC	325	1,456	-	1,549	790,097	7,185,128	-	7,975,225

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Historic and Forecasted Monthly Loads for WORTHINGTON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	1	Hist.	23,534	9,139	-	32,673	13,352,042	4,816,000	-	18,168,042
	2	Hist.	22,493	8,621	-	31,114	11,499,188	4,741,000	-	16,240,188
	3	Hist.	20,822	8,421	-	29,243	12,956,805	4,338,000	-	17,294,805
	4	Hist.	22,077	8,198	-	30,275	11,428,213	4,618,000	-	16,046,213
	5	Hist.	29,894	9,050	-	38,944	12,230,807	4,524,000	-	16,754,807
	6	Hist.	29,813	10,204	-	40,017	14,041,022	4,667,000	-	18,708,022
	7	Hist.	32,596	9,956	-	42,552	16,393,111	4,757,000	-	21,150,111
	8	Hist.	33,133	10,331	-	43,464	16,537,997	5,240,000	-	21,777,997
	9	Hist.	23,022	10,938	-	33,960	12,143,617	5,121,000	-	17,264,617
	10	Hist.	21,974	10,664	-	32,638	12,221,185	5,512,000	-	17,733,185
	11	Hist.	22,266	8,884	-	31,150	12,386,522	5,034,000	-	17,420,522
	12	Hist.	22,668	9,139	-	31,807	13,661,911	5,011,000	-	18,672,911
2011	1	Hist.	22,529	9,139	-	31,668	13,641,217	4,816,000	-	18,457,217
	2	Hist.	23,348	8,621	-	31,969	11,684,394	4,741,000	-	16,425,394
	3	Hist.	21,614	8,421	-	30,035	13,050,924	4,338,000	-	17,388,924
	4	Hist.	21,076	8,198	-	29,274	11,370,607	4,618,000	-	15,988,607
	5	Hist.	24,199	9,050	-	33,249	12,413,259	4,524,000	-	16,937,259
	6	Hist.	32,098	10,204	-	42,302	14,331,018	4,667,000	-	18,998,018
	7	Hist.	35,748	9,956	-	45,704	18,229,692	4,757,000	-	22,986,692
	8	Hist.	32,255	10,331	-	42,586	15,915,314	5,240,000	-	21,155,314
	9	Hist.	31,206	10,938	-	42,144	13,135,302	5,121,000	-	18,256,302
	10	Hist.	22,533	10,664	-	33,197	12,868,583	5,512,000	-	18,380,583
	11	Hist.	22,179	8,884	-	31,063	12,607,442	5,034,000	-	17,641,442
	12	Hist.	22,862	9,139	-	32,001	13,125,857	5,011,000	-	18,136,857
2012	1	Hist.	23,365	9,139	-	32,504	13,306,385	4,816,000	-	18,122,385
	2	Hist.	22,222	8,621	-	30,843	12,264,081	4,910,000	-	17,174,081
	3	Hist.	21,727	8,421	-	30,148	12,751,822	4,338,000	-	17,089,822
	4	Hist.	24,870	8,198	-	33,068	12,086,954	4,618,000	-	16,704,954
	5	Hist.	27,229	9,050	-	36,279	14,033,798	4,524,000	-	18,557,798
	6	Hist.	32,626	10,204	-	42,830	15,649,363	4,667,000	-	20,316,363
	7	Hist.	35,516	9,956	-	45,472	18,948,622	4,757,000	-	23,705,622
	8	Hist.	33,940	10,331	-	44,271	16,248,426	5,240,000	-	21,488,426
	9	Hist.	29,438	10,938	-	40,376	13,501,075	5,121,000	-	18,622,075
	10	Hist.	20,847	10,664	-	31,511	13,404,791	5,512,000	-	18,916,791
	11	Hist.	23,438	8,884	-	32,322	13,246,194	5,034,000	-	18,280,194
	12	Hist.	24,002	9,139	-	33,141	13,908,277	5,011,000	-	18,919,277
2013	1	Hist.	24,424	9,139	-	33,563	14,635,394	4,816,000	-	19,451,394
	2	Hist.	23,849	8,621	-	32,470	12,687,373	4,741,000	-	17,428,373
	3	Hist.	22,809	8,421	-	31,230	14,268,415	4,338,000	-	18,606,415
	4	Hist.	22,091	8,198	-	30,289	11,648,299	4,618,000	-	16,266,299
	5	Hist.	26,485	9,050	-	35,535	13,427,276	4,524,000	-	17,951,276
	6	Hist.	30,415	10,204	-	40,619	14,054,739	4,667,000	-	18,721,739
	7	Hist.	33,508	9,956	-	43,464	16,774,395	4,757,000	-	21,531,395
	8	Hist.	35,431	10,331	-	45,762	16,304,389	5,240,000	-	21,544,389
	9	Hist.	31,137	10,938	-	42,075	14,024,223	5,121,000	-	19,145,223
	10	Hist.	22,011	10,664	-	32,675	13,002,617	5,512,000	-	18,514,617
	11	Hist.	22,901	8,884	-	31,785	12,891,470	5,034,000	-	17,925,470
	12	Hist.	24,409	9,139	-	33,548	14,415,550	5,011,000	-	19,426,550
2014	1	Hist.	25,338	9,139	-	34,477	14,774,639	4,816,000	-	19,590,639
	2	Hist.	24,127	8,621	-	32,748	12,542,991	4,741,000	-	17,283,991
	3	Hist.	23,054	8,421	-	31,475	13,146,920	4,338,000	-	17,484,920
	4	Hist.	22,086	8,198	-	30,284	12,012,643	4,618,000	-	16,630,643
	5	Hist.	29,698	9,050	-	38,748	12,757,137	4,524,000	-	17,281,137
	6	Hist.	28,536	10,204	-	38,740	13,966,126	4,667,000	-	18,633,126
	7	Hist.	30,659	9,956	-	40,615	15,013,671	4,757,000	-	19,770,671
	8	Hist.	31,816	10,331	-	42,147	14,905,137	5,240,000	-	20,145,137
	9	Hist.	28,394	10,938	-	39,332	13,092,474	5,121,000	-	18,213,474
	10	Hist.	21,433	10,664	-	32,097	12,562,055	5,512,000	-	18,074,055
	11	Hist.	23,911	8,884	-	32,795	12,561,368	5,034,000	-	17,595,368
	12	Hist.	23,591	9,139	-	32,730	13,649,787	5,011,000	-	18,660,787
2015	1	Hist.	24,201	9,139	-	33,340	14,381,054	4,816,000	-	19,197,054
	2	Hist.	23,968	8,621	-	32,589	12,835,812	4,741,000	-	17,576,812
	3	Hist.	23,895	8,421	-	32,316	13,631,337	4,338,000	-	17,969,337
	4	Hist.	22,824	8,198	-	31,022	12,438,758	4,618,000	-	17,056,758
	5	Hist.	24,612	9,050	-	33,662	12,648,780	4,524,000	-	17,172,780
	6	Hist.	28,946	10,204	-	39,150	14,820,522	4,667,000	-	19,487,522
	7	Hist.	32,358	9,956	-	42,314	17,048,227	4,757,000	-	21,805,227
	8	Hist.	30,378	10,331	-	40,709	15,540,629	5,240,000	-	20,780,629
	9	Hist.	31,407	10,938	-	42,345	15,069,605	5,121,000	-	20,190,605
	10	FC	22,827	10,664	-	33,491	13,627,239	5,512,000	-	19,139,239
	11	FC	24,242	8,884	-	33,126	13,504,971	5,034,000	-	18,538,971
	12	FC	25,289	9,139	-	34,428	14,754,267	5,011,000	-	19,765,267

Historic and Forecasted Monthly Loads for WORTHINGTON, MN

Year	Month	Historic/ Forecast	Demand (kW) MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2016	1	FC	24,451	9,139	-	33,590	14,424,502	4,816,000	-	19,240,502
	2	FC	23,100	8,621	-	31,721	12,537,049	4,910,321	-	17,447,370
	3	FC	23,034	8,421	-	31,455	13,611,829	4,338,000	-	17,949,829
	4	FC	23,079	8,198	-	31,277	12,191,828	4,618,000	-	16,809,828
	5	FC	26,743	9,050	-	35,793	13,244,970	4,524,000	-	17,768,970
	6	FC	31,168	10,204	-	41,372	14,636,101	4,667,000	-	19,303,101
	7	FC	32,875	9,956	-	42,831	16,688,963	4,757,000	-	21,445,963
	8	FC	33,166	10,331	-	43,497	15,916,310	5,240,000	-	21,156,310
	9	FC	29,132	10,938	-	40,070	13,477,701	5,121,000	-	18,598,701
	10	FC	22,304	10,664	-	32,968	13,128,650	5,512,000	-	18,640,650
	11	FC	23,570	8,884	-	32,454	13,095,963	5,034,000	-	18,129,963
	12	FC	24,129	9,139	-	33,268	14,110,866	5,011,000	-	19,121,866
2017	1	FC	24,929	9,139	-	34,068	14,697,711	4,816,000	-	19,513,711
	2	FC	23,551	8,621	-	32,172	12,959,780	4,741,000	-	17,700,780
	3	FC	23,481	8,421	-	31,902	13,866,641	4,338,000	-	18,204,641
	4	FC	23,522	8,198	-	31,720	12,430,707	4,618,000	-	17,048,707
	5	FC	27,251	9,050	-	36,301	13,497,317	4,524,000	-	18,021,317
	6	FC	31,756	10,204	-	41,960	14,910,123	4,667,000	-	19,577,123
	7	FC	33,483	9,956	-	43,439	16,993,212	4,757,000	-	21,750,212
	8	FC	33,784	10,331	-	44,115	16,216,696	5,240,000	-	21,456,696
	9	FC	29,702	10,938	-	40,640	13,742,006	5,121,000	-	18,863,006
	10	FC	22,772	10,664	-	33,436	13,393,722	5,512,000	-	18,905,722
	11	FC	24,031	8,884	-	32,915	13,353,626	5,034,000	-	18,387,626
	12	FC	24,602	9,139	-	33,741	14,382,492	5,011,000	-	19,393,492
2018	1	FC	25,406	9,139	-	34,545	14,971,026	4,816,000	-	19,787,026
	2	FC	24,002	8,621	-	32,623	13,207,868	4,741,000	-	17,948,868
	3	FC	23,928	8,421	-	32,349	14,121,553	4,338,000	-	18,459,553
	4	FC	23,967	8,198	-	32,165	12,669,679	4,618,000	-	17,287,679
	5	FC	27,760	9,050	-	36,810	13,749,763	4,524,000	-	18,273,763
	6	FC	32,344	10,204	-	42,548	15,184,254	4,667,000	-	19,851,254
	7	FC	34,091	9,956	-	44,047	17,297,581	4,757,000	-	22,054,581
	8	FC	34,401	10,331	-	44,732	16,517,201	5,240,000	-	21,757,201
	9	FC	30,272	10,938	-	41,210	14,006,414	5,121,000	-	19,127,414
	10	FC	23,242	10,664	-	33,906	13,658,898	5,512,000	-	19,170,898
	11	FC	24,492	8,884	-	33,376	13,611,390	5,034,000	-	18,645,390
	12	FC	25,075	9,139	-	34,214	14,654,222	5,011,000	-	19,665,222
2019	1	FC	25,884	9,139	-	35,023	15,244,448	4,816,000	-	20,060,448
	2	FC	24,453	8,621	-	33,074	13,456,053	4,741,000	-	18,197,053
	3	FC	24,375	8,421	-	32,796	14,376,563	4,338,000	-	18,714,563
	4	FC	24,412	8,198	-	32,610	12,908,744	4,618,000	-	17,526,744
	5	FC	28,269	9,050	-	37,319	14,002,308	4,524,000	-	18,526,308
	6	FC	32,931	10,204	-	43,135	15,458,491	4,667,000	-	20,125,491
	7	FC	34,700	9,956	-	44,656	17,602,069	4,757,000	-	22,359,069
	8	FC	35,019	10,331	-	45,350	16,817,823	5,240,000	-	22,057,823
	9	FC	30,841	10,938	-	41,779	14,270,925	5,121,000	-	19,391,925
	10	FC	23,711	10,664	-	34,375	13,924,176	5,512,000	-	19,436,176
	11	FC	24,954	8,884	-	33,838	13,869,253	5,034,000	-	18,903,253
	12	FC	25,548	9,139	-	34,687	14,926,060	5,011,000	-	19,937,060
2020	1	FC	26,361	9,139	-	35,500	15,517,973	4,816,000	-	20,333,973
	2	FC	24,904	8,621	-	33,525	13,529,594	4,910,321	-	18,439,915
	3	FC	24,823	8,421	-	33,244	14,631,670	4,338,000	-	18,969,670
	4	FC	24,857	8,198	-	33,055	13,147,901	4,618,000	-	17,765,901
	5	FC	28,777	9,050	-	37,827	14,254,949	4,524,000	-	18,778,949
	6	FC	33,519	10,204	-	43,723	15,732,833	4,667,000	-	20,399,833
	7	FC	35,308	9,956	-	45,264	17,906,673	4,757,000	-	22,663,673
	8	FC	35,637	10,331	-	45,968	17,118,560	5,240,000	-	22,358,560
	9	FC	31,411	10,938	-	42,349	14,535,538	5,121,000	-	19,656,538
	10	FC	24,182	10,664	-	34,846	14,189,557	5,512,000	-	19,701,557
	11	FC	25,415	8,884	-	34,299	14,127,216	5,034,000	-	19,161,216
	12	FC	26,021	9,139	-	35,160	15,198,001	5,011,000	-	20,209,001
2021	1	FC	26,933	9,048	-	35,981	15,841,140	4,768,000	-	20,609,140
	2	FC	25,445	8,535	-	33,980	14,001,212	4,694,000	-	18,695,212
	3	FC	25,357	8,337	-	33,694	14,931,252	4,295,000	-	19,226,252
	4	FC	25,386	8,116	-	33,502	13,434,620	4,572,000	-	18,006,620
	5	FC	29,379	8,960	-	38,339	14,554,127	4,479,000	-	19,033,127
	6	FC	34,213	10,102	-	44,315	16,055,783	4,620,000	-	20,675,783
	7	FC	36,020	9,856	-	45,876	18,260,928	4,709,000	-	22,969,928
	8	FC	36,361	10,228	-	46,589	17,473,075	5,188,000	-	22,661,075
	9	FC	32,094	10,829	-	42,923	14,852,884	5,070,000	-	19,922,884
	10	FC	24,762	10,557	-	35,319	14,511,799	5,457,000	-	19,968,799
	11	FC	25,969	8,795	-	34,764	14,436,877	4,984,000	-	19,420,877
	12	FC	26,588	9,048	-	35,636	15,521,646	4,961,000	-	20,482,646

Historic and Forecasted Seasonal Loads for WORTHINGTON, MN

Seas	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
S2010	Hist.	33,133	10,938	-	43,464	83,567,739	29,821,000	-	113,388,739
S2011	Hist.	35,748	10,938	-	45,704	86,893,168	29,821,000	-	116,714,168
S2012	Hist.	35,516	10,938	-	45,472	91,786,075	29,821,000	-	121,607,075
S2013	Hist.	35,431	10,938	-	45,762	87,587,639	29,821,000	-	117,408,639
S2014	Hist.	31,816	10,938	-	42,147	82,296,600	29,821,000	-	112,117,600
S2015	FC	32,358	10,938	-	42,345	88,755,002	29,821,000	-	118,576,002
S2016	FC	33,166	10,938	-	43,497	87,092,695	29,821,000	-	116,913,695
S2017	FC	33,784	10,938	-	44,115	88,753,076	29,821,000	-	118,574,076
S2018	FC	34,401	10,938	-	44,732	90,414,111	29,821,000	-	120,235,111
S2019	FC	35,019	10,938	-	45,350	92,075,792	29,821,000	-	121,896,792
S2020	FC	35,637	10,938	-	45,968	93,738,110	29,821,000	-	123,559,110
S2021	FC	36,361	10,829	-	46,589	95,708,596	29,523,000	-	125,231,596
W2009-10	Hist.	24,558	9,139	-	33,697	75,144,012	28,558,000	-	103,702,012
W2010-11	Hist.	23,348	9,139	-	31,969	75,795,575	28,558,000	-	104,353,575
W2011-12	Hist.	24,870	9,139	-	33,068	76,142,541	28,727,000	-	104,869,541
W2012-13	Hist.	24,424	9,139	-	33,563	80,393,952	28,558,000	-	108,951,952
W2013-14	Hist.	25,338	9,139	-	34,477	79,784,213	28,558,000	-	108,342,213
W2014-15	Hist.	24,201	9,139	-	33,340	79,498,116	28,558,000	-	108,056,116
W2015-16	FC	25,289	9,139	-	34,428	81,024,446	28,727,321	-	109,751,767
W2016-17	FC	24,929	9,139	-	34,068	81,161,668	28,558,000	-	109,719,668
W2017-18	FC	25,406	9,139	-	34,545	82,706,244	28,558,000	-	111,264,244
W2018-19	FC	25,884	9,139	-	35,023	84,251,420	28,558,000	-	112,809,420
W2019-20	FC	26,361	9,139	-	35,500	85,622,451	28,727,321	-	114,349,772
W2020-21	FC	26,933	9,139	-	35,981	87,533,441	28,374,000	-	115,907,441

Historic and Forecasted Annual Loads for WORTHINGTON, MN

Year	Historic/ Forecast	Demand (kW) [1] MRES	WAPA	Other	Total	Energy (kWh) MRES	WAPA	Other	Total
2010	Hist.	33,133	10,938	-	43,464	158,852,420	58,379,000	-	217,231,420
2011	Hist.	35,748	10,938	-	45,704	162,373,609	58,379,000	-	220,752,609
2012	Hist.	35,516	10,938	-	45,472	169,349,788	58,548,000	-	227,897,788
2013	Hist.	35,431	10,938	-	45,762	168,134,140	58,379,000	-	226,513,140
2014	Hist.	31,816	10,938	-	42,147	160,984,948	58,379,000	-	219,363,948
2015	FC	32,358	10,938	-	42,345	170,301,201	58,379,000	-	228,680,201
2016	FC	33,166	10,938	-	43,497	167,064,732	58,548,321	-	225,613,053
2017	FC	33,784	10,938	-	44,115	170,444,033	58,379,000	-	228,823,033
2018	FC	34,401	10,938	-	44,732	173,649,849	58,379,000	-	232,028,849
2019	FC	35,019	10,938	-	45,350	176,856,913	58,379,000	-	235,235,913
2020	FC	35,637	10,938	-	45,968	179,890,465	58,548,321	-	238,438,786
2021	FC	36,361	10,829	-	46,589	183,875,343	57,797,000	-	241,672,343

1: Demand columns do not always sum to the Total values because the columns are not coincident.

Appendix H: DSM Potential Assessment

Assessment of Energy Efficiency and Demand Response Potential

October 27, 2014

Missouri River Energy Services
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Table of Contents

Executive Summary

Overview

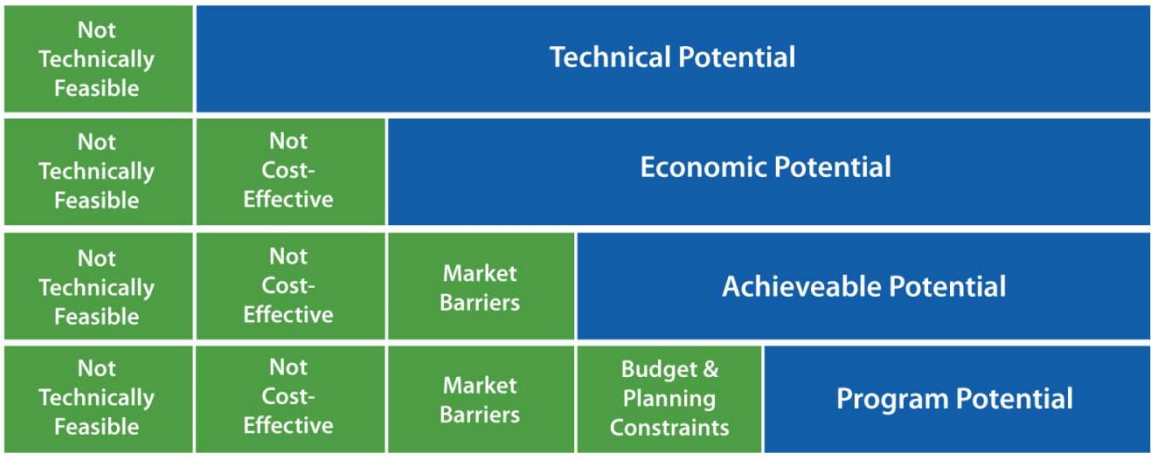
In early 2014, Missouri River Energy Services (MRES) engaged Morgan Marketing Partners and its partner Cadmus (MMP/Cadmus Team) to assess and quantify the long-term demand-side management (DSM) potential for measures offered through its existing energy-efficiency programs, and to identify additional measures to provide cost-effective benefits for MRES, its members, and their customers.

This report summarizes findings from MMP/Cadmus' estimation of energy-efficiency and demand response potentials. We sought to develop reliable estimates of the magnitude, timing, and costs of DSM resources likely available to MRES over a 25-year horizon.

Potential studies serve as theoretical exercises intended to inform integrated resource planning (IRP) and program planning. This potential study provides realistic bounds on savings MRES can acquire over its IRP planning horizon. Potential studies can also be used to identify existing savings opportunities as well as areas where program savings may be depleted due to market saturation or new codes and standards.

MMP/Cadmus estimated four types of energy-efficiency potential: technical, economic, achievable, and program, as shown in Figure 1.[1]

Figure 1. Types of Energy-Efficiency Potential



EPA – National Guide for Resource Planning

Definitions follow for these types of potential:

- ***Technical potential*** assumes all technically feasible energy-efficiency measures can be implemented, regardless of their costs or market barriers.

[1] For detailed definitions of energy-efficiency potential types, see: National Action Plan for Energy Efficiency. *Guide for Conducting Energy Efficiency Potential Studies.* 2007. Prepared by Philip Mosenthal and Jeffrey Loiter, Optimal Energy, Inc. Available online: www.epa.gov/eeactionplan.

- ***Economic potential*** represents a subset of technical potential measures that meet cost-effectiveness criteria, based on MRES' avoided supply costs for delivering electricity and avoided line losses. MMP/Cadmus determined economic potential using a total resource cost test (TRC).
- ***Achievable potential*** represents the portion of economic potential assumed reasonably achievable over the planning horizon, given budgetary constraints and market barriers that may impede customer participation.
- ***Program potential*** represents the amount of annual energy savings likely acquired once the utility's specific program design components—such as measures offered, incentive structures, marketing efforts, and program budget constraints—have been taken into account. MMP/Cadmus determined program potential for this study with program input from MRES completing the analysis using the DSMore cost benefit tool.

To estimate technical potential, the MMP/Cadmus team used an industry-standard, bottom-up approach, consistent with other energy-efficiency potential studies conducted MMP/Cadmus in various jurisdictions. Bottom-up studies require estimation of baseline end-use consumption for each MRES major sector. MMP/Cadmus relied on secondary data sources to develop baseline forecasts, such as:

- The Energy Information Administration's Residential Energy Consumption Survey;
- The Commercial Building Energy Consumption Survey;
- The Manufacturing Energy Consumption Survey; and
- The United States Census Bureau's 2012 Survey of Business Owners.

Summary of Results

This study quantifies the amount of energy and demand potential MRES can save within its service territories from 2015 to 2039. MRES can achieve these savings through adopting proven, commercially available energy-efficient technologies, while accounting for:

- Changes in codes and standards (taking effect from 2015 to 2039);
- Technical feasibility and limitations (technical potential);
- Cost-effectiveness (economic potential), calculated using the TRC;
- Consumers' willingness to adopt energy-efficiency measures (achievable potential); and
- Program implementation and operational considerations (program potential).

As shown in Table 1, the study results indicate a cumulative 253 MW of technically feasible energy-efficiency demand potential by the end of the 25-year study horizon, with approximately 189 MW (75%) of these savings proving cost-effective.

Table 1. Technical and Economic Electric Energy-Efficiency Potential, Cumulative 2039 by Sector

Sector	Base Case Sales (MWh)	Technical Potential			Economic Potential				
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales	Percent of Technical Potential, Energy	Percent of Technical Potential, Demand
Residential	1,587,797	156	419,653	26%	117	308,913	19%	74%	75%
Commercial	1,150,628	53	260,526	23%	42	198,810	17%	76%	79%
Industrial	2,680,378	43	328,002	12%	30	229,690	9%	70%	70%
Total	**5,418,804**	**253**	**1,008,281**	**19%**	**189**	**737,413**	**14%**	**73%**	**75%**

The estimated amount of technical energy potential equals 19% of forecasted sales in 2039, and economic potential equals 14% of baseline sales. Economic potential represents savings from all measures passing the TRC test; however, the TRC does not recognize that only fractions of these savings are realistically achievable. Achievable potential is a subset of economic potential that accounts for market barriers that include: implementation constraints, customers' willingness-to-adopt energy-efficiency measures, and the role of incentives on market penetration. Program Potential uses program design, budgets, field experience and staff resources to refine the achievable potential to a final level that can be accomplished given the realities of the utility members and program delivery. This estimate is then run through the cost benefit modeling to finalize the cost effective program savings potential.

Achievable potential is a subset of the economic potential accounting for market barriers and is shown is Table 2 below.

Table 2. Achievable Energy-Efficiency Potential, Cumulative 2039 by MRES Program Group

MRES Program Group	Achievable Potential		
	Coincident kW	Non-coincident kW	MWh
C&I Compressed Air/Process	9,121	10,264	68,980
C&I Custom - Lo LF (Plug Load/Specialty)	276	696	3,629
C&I HVAC	8,396	18,741	22,385
C&I Lighting	25,459	35,638	156,654
C&I Refrigeration	669	1,541	8,249
C&I Food Service	136	136	557
C&I Custom - Hi LF	4,530	4,891	28,312
Res Appliances	599	1,295	5,105
Res HVAC	41,004	81,286	84,894
Res Lighting	7,573	16,674	71,067
Total	**97,763**	**171,162**	**449,832**

MMP/Cadmus estimated the program potential for MRES' IRP inputs. Table 3 3 shows the program energy-efficiency potential by sector.

Table 3. Program Energy-Efficiency Potential, Cumulative 2039 by Sector

MRES Program Group	Program Potential		
	Coincident kW	Non-coincident kW	MWh
C&I Compressed Air/Process	9,121	9,137	68,980
C&I Custom - Lo LF (Plug Load - Specialty)	276	583	3,629
C&I HVAC	8,396	11,826	22,385
C&I Lighting	23,843	33,272	147,788
C&I Refrigeration	669	1,440	8,240
C&I Food Service	116	116	557
C&I Custom - Hi LF	4,530	4,891	28,312
Res Appliances	599	1,295	5,105
Res HVAC	29,334	34,900	49,521
Res Lighting	7,573	14,761	71,067
Total	**84,455**	**112,223**	**405,584**

Results indicate that 84 MW and 405,584 MWh of program energy-efficiency potential are available for the IRP study period, from 2015 through 2039.

MMP/Cadmus also estimated the available potential from demand response via residential direct load control (DLC) of air conditioners and water heaters. Table 4 provides the available demand response potential for residential DLC by program in year 2039.

Table 4. Demand Response Potential, Cumulative 2039 by DLC Program

Residential DLC Program	2039 Cumulative Potential (MW)	Levelized Cost
Air Conditioning	14.2	$129/kW
Water Heating	8	$241/kW
Total	**22.2**	**$161/kW**

Results show over 22 MW of cumulative demand potential available for MRES through 2039 from the implementation of its residential DLC programs.

Organization of the Report

This report, which presents Cadmus' methodologies and findings, includes the following five sections:

1. ***General Approach and Methodology*** provides an overview of the methodology MMP/Cadmus used to estimate technical, economic, achievable, and program potential.
2. ***Technical and Economic Potential*** presents the technical and economic potential available from energy-efficiency resources.
3. ***Achievable Potential*** outlines the amount of economic potential estimated as achievable from energy-efficiency resources over the study's timeline.
4. ***Program Potential*** uses program design, budgets, field experience and staff resources to refine the achievable potential to a final level that can be accomplished given the realities of the utility members and program delivery. This is then run through the cost benefit modeling to finalize the cost effective program savings potential.
5. ***Demand Response*** describes the methodology and assumptions used to determine the amount of potential available from residential DLC programs.

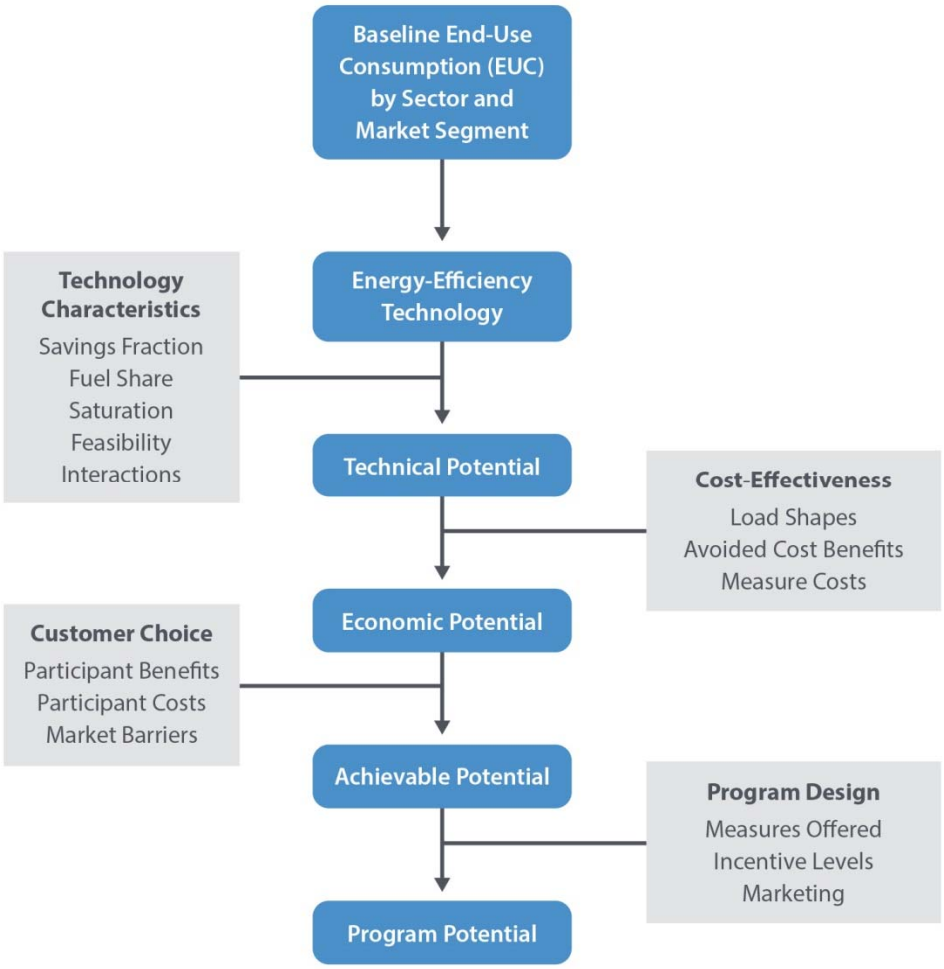
General Approach and Methodology

For this assessment, MMP/Cadmus relied on industry best practices, analytic rigor, and flexible and transparent tools to estimate the potential for energy and capacity savings within MRES' service territory between 2015 and 2039. This section describes each step of our assessment process and summarizes the results.

General Approach

MMP/Cadmus estimated technical, economic, and achievable energy-efficiency potential, based on standard industry practices. Figure 2 presents the general methodology used and illustrates how MMP/Cadmus combined baseline and efficiency data to estimate savings for each type of potential.

Figure 2. General Methodology for Assessing Energy-Efficiency Potentials



For this study, MMP/Cadmus considered four types of potential: technical, economic, achievable, and program. More detailed discussions of these types follow:

- ***Technical potential*** assumes all technically feasible demand-side management measures can be implemented, regardless of their costs or market barriers. For energy-efficiency resources, technical potential can be divided into three distinct classes: retrofit opportunities in existing

buildings; equipment replacements in existing buildings; and new construction. Retrofit opportunities in existing buildings can be determined at any point in the planning horizon, while equipment replacement and new construction rates dictate the timing for the other two classes.

- ***Economic potential*** represents a subset of technical potential, consisting solely of measures meeting cost-effectiveness criteria based on MRES' avoided energy and capacity costs. For each energy-efficiency measure, we structured the benefit/cost test as the ratio of the net present values of the measure's benefits and costs, and we only deemed measures with a total resource cost (TRC) benefit/cost ratio of 1.0 or greater as cost-effective.
- ***Achievable potential*** equals the portion of economic potential that might be reasonably achievable in the course of the planning horizon, given market barriers that might impede customer participation in utility programs.
- ***Program potential*** equals the portion of the achievable potential that might be reasonably achieved given constraints of resources such as budgets, incentive structures, marketing, and staff resources within the programs. Final participation is also reviewed once more for cost-effectiveness given program realities.

Overview

Energy-efficiency potential estimation draws upon a sequential analysis of various energy-efficiency measures in terms of: technical feasibility (technical potential); cost-effectiveness (economic potential); and expected market acceptance, considering normal barriers possibly impeding measure implementation (achievable potential).

MMP/Cadmus followed five steps in conducting this assessment:

1. ***Developing a baseline forecast:*** Determining 25-year future energy consumption by fuel, sector, market segment, and end use. MMP/Cadmus calibrated the base year, 2014, to MRES' sector load forecasts. Baseline forecasts in this report include estimates of naturally occurring potential.
2. ***Estimating technical potential:*** Estimating technical potential, based on alternative forecasts that reflect the technical impacts of specific energy-efficiency measures.
3. ***Estimating economic potential:*** Estimating economic potential, based on forecasts that reflect the economic impacts of cost-effective energy-efficiency measures.
4. ***Estimating achievable potential:*** Calculating achievable potential by applying ramp-up rates and an achievability percentage to cost-effective measures (as detailed in the Achievable Potential section).
5. ***Estimating program potential:*** Estimating program potentials based on program history, program designs, market response, budget constraints and staffing resources.

Developing a Baseline Forecast

Collecting Baseline Data

Creating a baseline forecast required multiple data inputs to characterize energy consumption within MRES' service area. These key inputs included:

- Sales and customer forecasts;
- Major customer segments (e.g., residential dwelling types or commercial business types);
- End-use saturations;
- Equipment saturations;
- Fuel shares;
- Efficiency shares (the percentage of equipment below, at, and above federal standard); and
- Annual end-use consumption estimates by efficiency level.

Data specific to MRES' service territory not only provided the basis for baseline calibration but supported estimation of technical potential. MRES provided data on actual and forecasted sales and customers by sector. MMP/Cadmus consulted other primary and secondary sources. Table 55 identifies the sources used for key data.

Table 5. Data Sources

Data	Residential	Commercial	Industrial
Baseline Sales and Customers	MRES Actual	MRES Actual	MRES Actual
Forecasted Sales and Customers	MRES Total Load Forecast prorated to estimate residential load	MRES Total Load Forecast prorated to estimate commercial load	MRES Total Load Forecasts prorated to estimate industrial load
Percent Sales by Building Type	Census Data	MRES Top-200 Customers List, 2012 Survey of Business Owners	MRES Top-200 Customers List, Energy Information Administration (EIA), Commercial Building Energy Consumption Survey (MECS)
End-Use Energy Consumption	MRES Load Forecast, Minnesota Technical Resource Manual (MN TRM), EIA Residential Energy Consumption Survey (RECS), ENERGY STAR	MRES Load Forecast, EIA Commercial Building Energy Consumption Survey (CBECS)	MRES Total Load Forecast prorated to estimate industrial load, EIA MECS
Saturations and Fuel Shares	EIA RECS	MMP/Cadmus surveys/site visits from IUA Assessment, EIA CBECS	N/A
Efficiency Shares	EIA RECS	MMP/Cadmus surveys/site visits from IUA Assessment, EIA CBECS	N/A
Energy-Efficiency Measures	(MN TRM), MRES Deemed Measures, MMP/Cadmus Measure List	MN TRM, MRES Deemed Measures, MMP/Cadmus Measure List	MN TRM, MRES Deemed Measures, MMP/Cadmus Measure List

Preparing the Baseline Forecast

MMP/Cadmus derived the baseline forecast for each customer sector from the baseline data (described above) for estimating average consumption by market segment, construction vintage, and end use; we then summed that data to the sector level. MMP/Cadmus calibrated the end-use and customer sector forecasts to MRES' official forecasts to evaluate the accuracy of our forecast and to ensure consistency with the MRES' forecasts. This approach offered the following key advantages:

- MMP/Cadmus derived savings estimates using a baseline calibrated to official sales forecasts, which required care to ensure the underlying inputs and assumptions remained reasonable and consistent with other known customer characteristics.
- The forecasts incorporated the effects of equipment standards and naturally occurring efficiency improvements resulting from usage reductions upon the retirement of lower-efficiency equipment and their replacements with higher-efficiency units. Ensuring the baseline forecast accounted for these effects prevented inflation of potential estimates by naturally occurring efficiency, which would have double-counted the potential.

Incorporating Codes and Standards

The importance of accurately accounting for changes in codes and standards over the planning horizon cannot be overstated. Not only do these changes affect customers' energy consumption patterns and behaviors, but they determine which energy-efficiency measures continue to produce savings over minimum requirements. MMP/Cadmus captured current efficiency requirements as well as those enacted but not yet in effect.

MMP/Cadmus did not attempt to predict how energy codes and standards might change in the future; rather, we only factored in enacted legislation—notably, the Energy Independence and Security Act (EISA) provisions known to take effect over the course of the analysis.

EISA requires that general service lighting becomes roughly 30% more efficient than current incandescent technology, with standards phased in by wattage from 2012 to 2014. In addition, EISA includes a backstop provision, requiring even higher-efficiency technologies beginning in 2020.

Moreover, MMP/Cadmus explicitly accounted for several other pending federal codes and standards. For the residential sector, these included appliances, HVAC, and water heating standards. For the commercial sector, these included appliances, motors, water heating, HVAC, and lighting standards. Table 6 provides a comprehensive list of codes and standards considered in this study.

Table 6. Federal Equipment Standards

Equipment Type	Existing (Baseline) Standard	New Standard	Sector	Year Effective
Appliances				
Clothes Washer	Modified Energy Factor (MEF) 1.48 and Water Factor (WF) 9.5 (Electric Domestic Hot Water [DHW] and Dryer)	Federal Standard Clothes Washer, MEF 1.72 and WF 8.0 (Electric DHW & Dryer)	Residential	2016
Clothes Washer	MEF 1.48 and WF 9.5 (Electric DHW & Dryer)	Federal Standard Clothes Washer, MEF 2.0 and WF 6.0 (Electric DHW & Dryer)	Residential	2018
Commercial Refrigeration Equipment (semi-vertical and vertical cases)	Commercial Refrigeration Equipment 2010 (varies by equipment class)	Commercial Refrigeration Equipment 2012 (varies by equipment class)	Commercial	2012
Cooking Oven	National Appliance Energy Conservation Act 1990	Range and Oven Standards 2012	Residential	2012
Dehumidifier	Federal Standard 2007 Dehumidifier	Federal Standard 2012 Dehumidifier	Residential	2013
Dishwasher	Federal Standard 2010 Dishwasher (355 kWh/year and 6.5 gal/cycle)	Federal Standard 2014 Dishwasher (307 kWh/year and 5.0 gal/cycle)	Commercial and Residential	2014
Dryer	Standard Dryer with Controls	Federal Standard 2015	Residential	2015

Equipment Type	Existing (Baseline) Standard	New Standard	Sector	Year Effective
	and Moisture Sensor Combined Energy Factor (CEF)/Energy Factor (EF) 3.14/3.19	Dryer (CEF/EF 3.73/3.83)		
Freezer	Federal Standard 2001 Freezer	Federal Standard 2014 Freezer	Commercial and Residential	2015
Refrigerator	Federal Standard 2001 Refrigerator	Federal Standard 2014 Refrigerator	Commercial and Residential	2015
Vending Machines	Existing Conditions (no Federal Standard)	Federal Standard 2012 Vending Machines	Commercial	2012
Motors				
Small Electric Motors	National Electrical Manufacturers Association Standards, Publication MG1-1987	Small Electric Motor Standard 2015	Commercial	2015
Water Heaters				
Water Heater > 55 gallons	Federal Standard 2004 Storage Water Heater (EF 0.87)	Federal Standard 2015 Heat Pump Water Heater (EF 1.97)	Commercial and Residential	2015
Water Heater ≤ 55 gallons	Federal Standard 2004 Storage Water Heater (EF 0.92)	Federal Standard 2015 Storage Water Heater (EF 0.95)	Commercial and Residential	2015
HVAC				
Boiler	National Appliance Energy Conservation Act of 1987 (80% Annual Fuel Utilization Efficiency (AFUE))	Federal Standard 2012 Boiler (82% AFUE)	Commercial and Residential	2012
Central Air Conditioner	Federal Standard 2006 Central Air Conditioner (SEER/EER 13/11 split system)	Federal Standard 2015 Central Air Conditioner (SEER/EER 14/12 split system)	Residential	2015

Equipment Type	Existing (Baseline) Standard	New Standard	Sector	Year Effective
Heat Pump (Air Source)	Federal Standard 2006 Heat Pump (SEER 13 and HSPF 7.7 split system)	Federal Standard 2015 Heat Pump (SEER 14 and HSPF 8.2 split system)	Residential	2015
Lighting				
Lighting General Service Fluorescent Lamp (EISA)	Standards 1995 Fluorescent Linear Tube	Standards 2012 Linear Tube Fluorescent Lamp	Commercial and Industrial	2012
Lighting General Service Lamp (EISA)	Existing Conditions (no federal standard)	EISA 2007 (phased in over three years)	Commercial and Residential	2012, 2013, 2014
Lighting General Service Lamp (EISA backstop provision)	Existing Conditions (no federal standard)	EISA Backstop Provision 2020	Commercial and Residential	2020
Lighting Specialty Lamp (EISA incandescent reflector lamps)	Incandescent Reflector Lamp (IRL) Standards 1995	EISA 2007 Impacts, 2.5 Inch Diameter Reflectors and Above 2012	Residential	2013

To ensure accurate assessment of the remaining potential, MMP/Cadmus accounted for the effects of future standards. Based on a strict interpretation of the legislation, MMP/Cadmus assumed that affected equipment would be replaced with more efficient alternatives meeting minimum federal standards; in other words, we assumed complete compliance.

Accounting for Naturally Occurring Efficiency

MMP/Cadmus' baseline forecast included naturally occurring efficiency—that is, reductions in energy use likely to occur from normal market forces (e.g., technological changes, energy price changes, market transformation efforts, and higher energy codes and standards). MMP/Cadmus accounted for four classes of naturally occurring efficiency:

1. For the potential associated with certain energy-efficiency measures, we assumed a natural adoption rate, net of current saturation. For example, total potential savings associated with ENERGY STAR appliances accounted for current adoption trends.
2. We accounted for gradual efficiency increases due to retiring older equipment in existing buildings, followed by replacement with units meeting or exceeding minimum standards at the time of replacement.
3. We accounted for pending improvements to equipment efficiency standards taking effect during the planning horizon. We did not, however, forecast changes to standards not yet adopted.
4. Energy consumption estimates in new construction reflected the 2012 IECC. We assumed all energy-efficiency measures in this study met or exceeded 2012 IECC, and, where applicable, we calculated energy savings using 2012 IECC as a baseline. Note that building codes have the smallest impact of the four classes of naturally occurring efficiency as they only apply to new construction.

Compiling Energy-Efficiency Technology Data

MMP/Cadmus created a list of electric energy-efficiency measures applicable to MRES' service territory. This list included all measures currently offered through MRES' existing energy-efficiency programs as well as measures included in the Minnesota TRM and Cadmus' own database of industrial measures. MMP/Cadmus classified energy-efficiency measures into two categories:

1. ***High-efficiency equipment measures***, directly affecting end-use equipment (e.g., high-efficiency central air conditioners), and which follow normal replacement patterns based on expected lifetimes.
2. ***Non-equipment measures***, affecting end-use consumption without replacing end-use equipment (e.g., insulation). Such measures do not include timing constraints from equipment turnover (except for new construction), and should be considered as discretionary, as savings can be acquired at any point over the planning horizon.

The relevant inputs for each measure type follow:

- Equipment and non-equipment measures:
  - Equipment cost: full or incremental, depending on the nature of the measure and the application.
  - Labor cost: the expense of installing the measure, accounting for differences in labor rates by region, urban versus rural areas, and other variables.
  - Energy savings: average annual savings attributable to installing the measure, in absolute and/or percentage terms.
- Non-equipment measures only:
  - Technical feasibility: the percentage of buildings where this measure can be installed, accounting for physical constraints.
  - Percent incomplete: the percentage of buildings not already installing the measure, but where its installation remains technically feasible.
  - Measure competition: for mutually exclusive measures, accounting for the percentage of each measure likely installed (to avoid double-counting savings).
  - Measure interaction: accounting for end-use interactions (e.g., a decrease in lighting power density causing heating loads to increase).

Estimating Technical Potential

Once MMP/Cadmus fully populated the measure database, we used measure-level inputs to estimate technical potential over the planning horizon. We began this process by estimating savings from all measures included in the analysis, then aggregating the results to the end use, market segment, and sector levels.

MMP/Cadmus began this approach by characterizing individual measure savings, first in terms of the percentage of end-use consumption. For each non-equipment measure, MMP/Cadmus estimated absolute savings using the following basic relationship:

$$SAVE_{ijm} = EUI_{ije} * PCTSAV_{ijem} * APP_{ijem}$$

Where:

$SAVE_{ijm}$	=	Annual energy savings for measure *m* for end use *j* in customer segment *i*
EUI_{ije}	=	Calibrated annual end-use energy consumption for equipment *e* for end use *j* in customer segment *i*
$PCTSAV_{ijem}$	=	The percentage savings of measure *m* relative to the base usage for the equipment configuration *ije*, calibrating interactions among measures to annual end-use energy consumption
APP_{ijem}	=	Measure applicability, or a fraction representing a combination of the technical feasibility, existing measure saturation, end-use interaction, and any adjustments to account for competing measures

For example, wall insulation saves 10% of space heating consumption; so the final percentage of the end use saved would be 5%, assuming an overall applicability of 50%. This 5% represents the amount of baseline consumption the measure saved in an average home.

Capturing all applicable measures required examining many instances where multiple measures affected a single end use. To avoid overestimating total savings, MMP/Cadmus conducted measure stacking to assess cumulative impacts, accounting for interactions among the various measures. The primary method to account for stacking effects was to establish a rolling, reduced baseline, then apply it sequentially upon the assessment of measures in the stack. The equations below illustrate this technique, applying measures 1, 2, and 3 to the same end use:

$$SAVE_{ij1} = EUI_{ije} * PCTSAV_{ije1} * APP_{ije1}$$

$$SAVE_{ij2} = (EUI_{ije} - SAVE_{ij1}) * PCTSAV_{ije2} * APP_{ije2}$$

$$SAVE_{ij3} = (EUI_{ije} - SAVE_{ij1} - SAVE_{ij2}) * PCTSAV_{ije3} * APP_{ije3}$$

After iterating all measures in a bundle, the final percentage of the reduced end-use consumption provided the sum of individual measures' stacked savings, divided by the original baseline consumption.

Estimating Economic Potential

MMP/Cadmus' based our methodology for estimating economic potential on the methods described in the California Standard Practice Manual (SPM),[2] which establishes the procedures for economic

[2] California Public Utilities Commission. *California Standard Practice Manual for Economic Analysis of Demand-Side Programs and Projects.* 2002.

evaluation from the perspectives of participants, the utility (or program administrator), TRC, societal, and all ratepayers.

For each measure, MMP/Cadmus began the application of the TRC test by valuing the measure's benefits, as measured by the avoided long-run energy and capacity costs and avoided line losses, and by comparing the result to the measure's costs. For equipment measures, we calculated costs based on the measure's incremental costs compared to the cost of baseline technology. For retrofit measures, measure costs included installation costs.

MMP/Cadmus considered a measure cost-effective if the net present value of its benefits exceeded the net present value of its costs, measured according to the TRC:

$$\text{TRC Benefits/TRC Costs} \geq 1$$

Where:

$$\text{TRC Benefits} = NPV\left(\sum_{year=1}^{measurelife}\left(\sum_{i}^{i=p}(impact_i \times avoided\ \cos t_i)\right)\right) \text{ and}$$

TRC Costs = Net Present Value (incremental installed measure cost or total installed measure cost)

Where *p* represents the timeframes by which avoided cost is defined.

Economic potential represents savings from the subset of measures passing the TRC cost-effectiveness criterion. To calculate a measure's total resource benefits, MMP/Cadmus used the following data:

- ***End-use load shapes:*** End-use consumption patterns by costing period, applied to electric measures, capturing the time-differentiated value of energy savings and determining the savings amount during peak periods.
- ***Line losses:*** Representing energy lost between the generator and the customer meter. MMP/Cadmus used an electric line loss of 5.0%.
- ***Discount rate:*** MMP/Cadmus used MRES' 6.0% TRC discount rate assumption.
- ***Utility avoided energy costs:*** MRES' value of time and seasonally differentiated electric costs.
- ***Utility avoided capacity costs:*** MRES' value of avoided generation, transmission, and distribution at peak.

MRES provided MMP/Cadmus with the line loss factor, discount rate, and avoided energy and avoided capacity costs used throughout this analysis.

Technical and Economic Potential

Scope of Analysis

For this study, MMP/Cadmus separately assessed technical and economic potential for the residential, commercial, and industrial sectors. Within each sector-level assessment, we further distinguished among market segments or business types, vintage, and applicable end uses, as follows:

- Six residential segments (existing and new construction for single-family, multifamily, and manufactured home);
- Eighteen commercial building types (nine building types within existing and new construction); and
- Fifteen industrial segments.

MMP/Cadmus began the analysis by assessing the technical potential of 278 unique measures (shown by sector in Table 77), representing a comprehensive set of electric energy-efficiency measures applicable to the local climate and customer characteristics.

Table 7. Energy-Efficiency Measure Counts

Sector	Unique Measures	Permutations by Market Segment, Vintage, and End Use
Residential	75	600
Commercial	139	3,214
Industrial	64	820
Total	**278**	**4,634**

Considering all permutations of these measures across applicable customer sectors, market segments, and end uses, MMP/Cadmus compiled a customized data set and analyzed over 4,600 measures. The remainder of this section presents summarizes resource potentials, with detailed sector-level results.

Summary of Results

Energy-Efficiency Potential

Table 88 shows forecasted 2039 baseline electric sales, technical, and economic potential by sector.

Study results indicated 1,008,281 MWh of technically feasible energy-efficiency potential by 2039, the end of the integrated resource planning (IRP) study horizon, with approximately 737,413 MWh of these resources proving cost-effective. Identified economic potential amounted to 14% of the forecasted retail electricity sales in 2039.

MMP/Cadmus based these savings on forecasts of future consumption, absent utility program activities. While the consumption forecast accounted for the past savings each MRES member acquired, estimated potential excluded current, forecasted program savings. These planned program savings are already implicit in the MRES load forecast.

MMP/Cadmus calculated the demand savings shown in Table 88 using kW values for commercial and residential measures in the Minnesota TRM. For industrial measures—all derived from the

MMP/Cadmus measure database, MMP/Cadmus estimated an average MRES program kW to kWh ratio, which we multiplied by annual energy savings to determine demand savings for each measure.

Table 8. Technical and Economic Energy-Efficiency Potential, Cumulative 2039 by Sector

Sector	Base Case Sales (MWh)	Technical Potential			Economic Potential				
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales	Percent of Technical Potential - Energy	Percent of Technical Potential - Demand
Residential	1,587,797	156	419,653	26%	117	308,913	19%	74%	75%
Commercial	1,150,628	53	260,526	23%	42	198,810	17%	76%	79%
Industrial	2,680,378	43	328,002	12%	30	229,690	9%	70%	70%
Total	**5,418,804**	**253**	**1,008,281**	**19%**	**189**	**737,413**	**14%**	**73%**	**75%**

As Table 8 shows, the residential sector offered the largest portion of technical and economic demand potential and energy savings potential. The relatively high share of cost-effective savings in the residential sector resulted from the savings potential for efficient cooling measures, which have high capacity benefits and a relatively low dollar cost per kW.

Detailed Energy-Efficiency Potentials

Residential Sector

Study results indicated that residential customers accounted for approximately 29% of forecasted electricity retail sales. The single-family, manufactured, and multifamily segment potential savings sources included the following types of energy-efficiency measures:

- Equipment efficiency upgrades (e.g., air conditioning, refrigerators);
- Increases in lighting efficiency (e.g., standard and specialty light-emitting diodes);
- Appliance recycling (e.g., air conditioners, freezers, and refrigerators); and
- Devices reducing hot water consumption (e.g., low-flow showerheads and aerators).

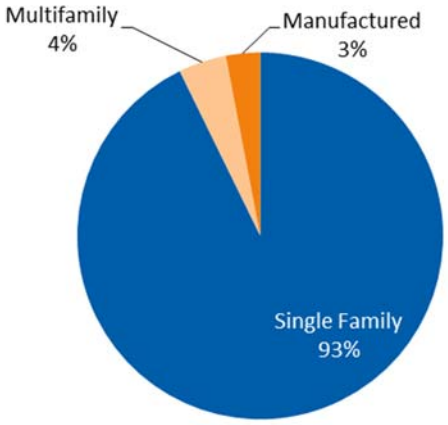
Table 99 summarizes the residential technical and economic potential by customer segment. The single-family segment accounts for 89% of forecasted residential electricity sales and 93% of residential economic demand potential savings.

Table 9. Residential Technical and Economic Potential by Segment

Segment	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Sales	MW	MWh	Percent of Base Sales
Single Family	1,414,647	144	377,641	27%	108	283,347	20%
Multifamily	103,272	7	23,627	23%	5	15,561	15%
Manufactured	69,878	5	18,384	26%	4	10,005	14%
Total	**1,587,797**	**156**	**419,653**	**26%**	**117**	**308,913**	**19%**

Figure 3 outlines the distribution of economic demand potential by residential segment.

Figure 3. Residential Economic Demand Potential by Segment



Total = 117 MW

Table 1010 presents the residential technical and economic potential by end use. MMP/Cadmus modeled the energy and demand savings for measures corresponding to 15 unique end uses within the residential sector.

Table 10. Residential Technical and Economic Potential by End Use

End Use	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Energy Base Sales	MW	MWh	Percent of Energy Base Sales
Cooking Oven	30,012	1	7,393	25%	0	0	0%
Central Cooling	171,287	109	72,147	42%	84	48,549	28%
Cool Room	24,898	12	12,311	49%	9	10,939	44%
Dehumidifier	52,809	0	337	1%	0	337	1%
Freezer	35,850	1	7,120	20%	0	4,235	12%
Heat Central	101,123	0	9,952	10%	0	9,952	10%
Lighting Interior Specialty	80,203	8	72,950	91%	8	72,856	91%
Lighting Interior Standard	128,571	8	76,191	59%	8	76,191	59%
Plug Load Other	352,810	1	17,587	5%	0	0	0%

End Use	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Energy Base Sales	MW	MWh	Percent of Energy Base Sales
Refrigerator	114,329	2	18,552	16%	0	3,363	3%
Ventilation And Circulation	169,555	0	37,941	22%	0	36,217	21%
Water Heat GT 55 Gal	37,155	1	9,553	26%	0	4,043	11%
Water Heat LE 55 Gal	150,213	6	51,863	35%	2	20,042	13%
Heat Pump	97,432	8	23,625	24%	5	22,187	23%
Heat Room	41,552	0	2,132	5%	0	0	0%
Total	**1,587,797**	**156**	**419,653**	**26%**	**117**	**308,913**	**19%**

The lighting interior standard, lighting interior specialty, and central cooling end uses constituted the majority (64%) of the economic energy potential. The cool central end use dominated the economic demand potential, with 72% of total savings.

Commercial Sector

The commercial sector constituted about 21% of forecasted electricity retail sales. MMP/Cadmus segmented MRES commercial customers into the nine building types, listed in Table 2. Five building types—warehouse, education, health, office, and retail—accounted for approximately 81% of the forecasted commercial electricity retail sales.

Table 21. Commercial Technical and Economic Potential by Segment

Building Type	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales
Education	219,404	13	46,289	21%	11	33,976	15%
Grocery	96,034	3	25,358	26%	2	21,295	22%
Health	174,396	5	24,233	14%	4	18,322	11%
Lodging	37,037	1	7,279	20%	0	4,442	12%
Office	125,785	6	31,041	25%	5	22,121	18%
Other Commercial	64,978	3	13,622	21%	2	10,086	16%
Restaurant	25,162	1	5,279	21%	1	3,787	15%
Retail	158,063	8	37,583	24%	7	30,587	19%
Warehouse	249,769	13	69,944	28%	10	54,193	22%
Total	**1,150,628**	**53**	**260,626**	**23%**	**41**	**198,810**	**17%**

MMP/Cadmus completed the commercial segmentation using the following data sources:

- MRES-provided list of top 200 customers;
- EIA 2009 CBECS data; and
- U.S. Census Bureau 2012 Survey of Building Owners.

The list of top 200 customers contained: industrial and commercial customers, corresponding North American Industry Classification System (NAICS) codes and business descriptions, and annual energy sales. MMP/Cadmus mapped the electric sales of these customers by NAICS codes to the commercial building types shown in Table 21. Commercial customers in the top 200 list accounted for about 61% of total MRES commercial sales.

MMP/Cadmus relied on CBECS data from the West North Central census division to segment the remaining 39% of the commercial load for customers not listed in the top 200 into the commercial building types. States in the West North Central census division included: North Dakota, South Dakota, Nebraska, Kansas, Missouri, Minnesota, and Iowa. CBECS data provided total energy consumption by NAICS codes for sites in the survey. MMP/Cadmus then mapped NAICS codes to building-type designations used for this study.

MMP/Cadmus then combined the results from the two data sources to create a weighted average of energy consumption by building type for the commercial sector within MRES' service territory. Table 32 provides the percent of commercial energy sales by building type for the two data sources and for the weighted average value used in the study.

Table 32. Percent of Energy Consumption for MRES' Commercial Building Types

Building Type	Percent of MRES Top-200 Sales	Percent of Energy Consumption from CBECS	Weighted Average of MRES Top-200, CBECS
Other Commercial	2%	11%	6%
Education	26%	7%	19%
Retail	13%	14%	13%
Health	19%	12%	16%
Office	2%	25%	11%
Warehouse	29%	10%	21%
Grocery	8%	9%	8%
Lodging	1%	7%	3%
Restaurant	0%	6%	2%
Total	**100%**	**100%**	**100%**

Figure 4 provides the commercial sector economic demand potential by building type. The education and warehouse building types together equated to roughly one-half of the total commercial economic demand potential. The retail, office, and health building types combined to make up approximately 36% of the economic demand potential. Grocery, other commercial, restaurants, and lodging facilities—which, combined, accounted for 19% of forecasted sales—constituted the remaining 14% of commercial economic demand potential.

Figure 4. Commercial Economic Demand Potential by Segment

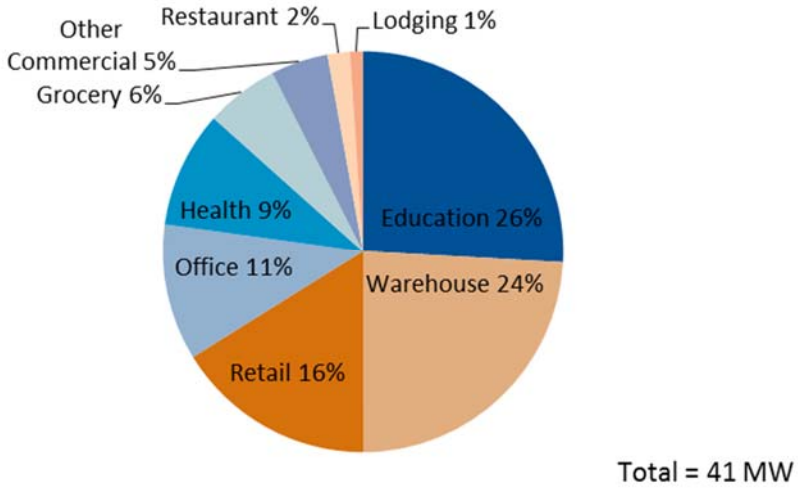


Table 43 provides the technical and economic potential by end use for the commercial sector. MMP/Cadmus segmented commercial sector forecasted electricity sales into 24 unique end uses. The lighting interior fluorescent (34%), plug load (12%), and ventilation and circulation (11%) end uses made up the majority of forecasted electricity sales in the commercial sector within MRES customers' service territory.

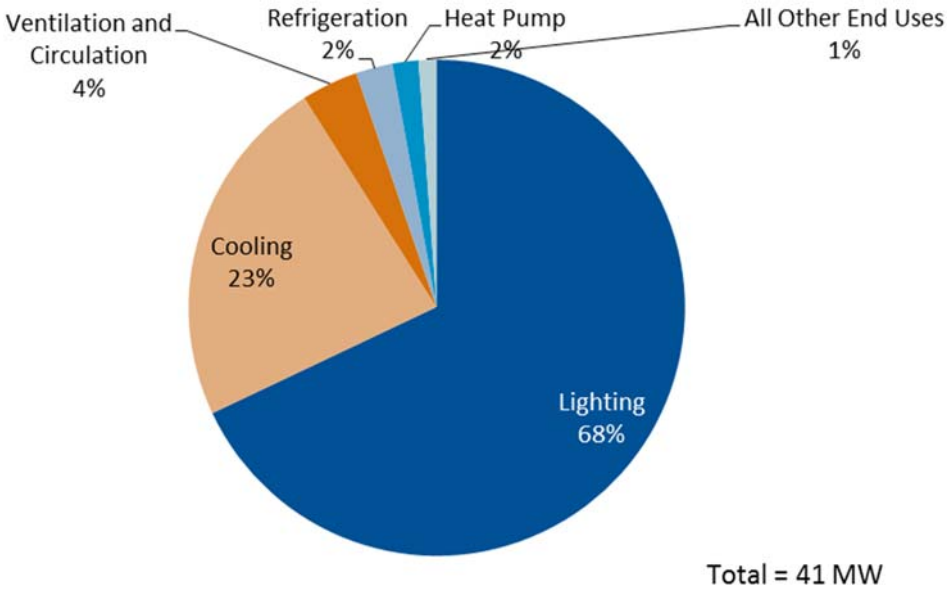
Table 43. Commercial Technical and Economic Potential by End Use

End Use	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales
Compressed Air	2,592	0	313	12%	0	198	8%
Computers	14,974	0	1,143	8%	0	1,110	7%
Cooking	5,825	1	1,879	32%	0	871	15%
Cooling Chillers	15,131	7	5,421	36%	7	4,272	28%
Cooling DX	27,820	3	5,612	20%	3	2,778	10%
Ext Lighting	12,272	0	4,341	35%	0	3,870	32%
Freezers	434	0	70	16%	0	34	8%
Heat Pump	22,497	1	3,310	15%	1	2,829	13%
Lighting Interior Fluorescent	387,628	23	117,817	30%	16	84,980	22%
Lighting Interior Hid	106,157	8	51,678	49%	8	45,786	43%
Lighting Interior Other	8,701	0	619	7%	0	0	0%
Lighting Interior Screw Base	69,078	4	23,575	34%	4	21,776	32%
Other Plug Load	141,693	1	6,865	5%	0	0	0%
Package Terminal AC	3,940	0	325	8%	0	0	0%
Package Terminal HP	1,077	0	25	2%	0	17	2%
Refrigeration	63,622	1	14,639	23%	1	12,158	19%

End Use	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales
Refrigerators	3,242	0	812	25%	0	434	13%
Room Cool	16,289	0	345	2%	0	63	0%
Room Heat	5,544	0	20	0%	0	0	0%
Space Heat	66,456	0	1,502	2%	0	626	1%
Vending Machines	6,350	0	2,584	41%	0	2,584	41%
Ventilation and Circulation	124,175	2	13,632	11%	2	13,465	11%
Water Heat GT 55 Gal	11,515	0	448	4%	0	231	2%
Water Heat LE 55 Gal	33,615	0	3,650	11%	0	727	2%
Total	**1,150,628**	**53**	**260,626**	**23%**	**41**	**198,810**	**17%**

Figure 5 provides the commercial economic demand potential by end-use group. The lighting end-use group dominated the commercial demand savings potential, with nearly 68%. The cooling end use made up nearly one-quarter of the commercial demand potential. The remaining 9% of commercial economic demand potential contained: the ventilation and circulation, refrigeration, heat pump, and all other end uses.

Figure 5. Commercial Economic Demand Potential by End-Use Group



Industrial Sector

The industrial sector accounted for 48% of MRES' forecasted, retail electricity sales. Table 54 and Figure 6 present the technical and economic potential by industrial segment. MMP/Cadmus

disaggregated MRES' industrial loads into the 15 industrial segments, listed in the following Table 54 and Figure 6.

Table 54. Industrial and Economic Potential by Segment

Segment	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales
Chemical Manufacturing	270,558	3	25,322	9%	2	16,670	6%
Electrical Equipment Mfg.	26,738	1	4,304	16%	0	2,168	8%
Fabricated Metal Products	151,040	2	15,117	10%	1	10,068	7%
Food Manufacturing	822,771	18	138,956	17%	14	108,764	13%
Industrial Machinery	165,709	3	22,842	14%	2	14,220	9%
Instruments	30,885	0	3,308	11%	0	2,081	7%
Miscellaneous Manufacturing	218,056	4	29,980	14%	2	18,816	9%
Nonmetallic Mineral Products	92,041	1	6,875	7%	1	4,244	5%
Paper Manufacturing	102,257	1	8,739	9%	1	5,461	5%
Plastics Rubber Products	166,951	2	15,807	9%	1	10,599	6%
Primary Metal Manufacturing	324,394	2	17,899	6%	2	12,785	4%
Printing Related Support	30,159	0	3,129	10%	0	1,946	6%
Transportation Equipment Mfg.	137,132	2	18,561	14%	1	11,169	8%
Wastewater	35,879	0	3,076	9%	0	679	2%
Wood Product Manufacturing	105,810	2	14,088	13%	1	10,021	9%
Total	**2,680,378**	**43**	**328,002**	**12%**	**30**	**229,690**	**9%**

Overall, the industrial sector included 43MW of technical demand potential and 30 MW of economic demand potential over the study's 25-year period. Cumulative technical and economic energy savings accounted for over 328,000 and 229,000 MWh, respectively. The technical and economic energy-savings values equaled 12% and 9% of the industrial sales forecasted for 2039.

MMP/Cadmus disaggregated the MRES base case sales forecast into the segments shown in Table 54 by using two different data sources (one of which was the MRES list of its top 200 customers by retail electricity sales). This list included commercial and industrial customers as well as NAICS codes that MMP/Cadmus used to map to this study's segments. Overall, industrial customers within the MRES top 200-customer list accounted for roughly 47% of total industrial sales.[3]

MMP/Cadmus characterized the remaining 53% of MRES' industrial load using EIA 2010 MECS data from the Midwest Census Region. This data source included net electricity sales by NAICS codes for the following states: Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri,

[3] MRES member total industrial sales, minus one large customer and several member jurisdictions not included in MRES' IRP planning process.

Nebraska, North Dakota, and South Dakota. MMP/Cadmus mapped this dataset to this study's list of industrial segments.

Table5 provides the EIA 2010 MECS Midwest Census Region data that MMP/Cadmus mapped to the study segments.

Table 15. EIA 2010 MECS Industry Data Mapped to Study Segments

NAICS Code	MECS Industry	Net Electricity (Annual Million kWh)	Percentage of Net Electricity	Study Segment
311	Food	33,034	15%	Food Manufacturing
312	Beverage and Tobacco Products	1,369	1%	Miscellaneous Manufacturing
313	Textile Mills	394	0%	Miscellaneous Manufacturing
314	Textile Product Mills	Q	NA	Miscellaneous Manufacturing
315	Apparel	Q	NA	Miscellaneous Manufacturing
316	Leather and Allied Products	90	0%	Miscellaneous Manufacturing
321	Wood Products	2,468	1%	Wood Product Manufacturing
322	Paper	15,068	7%	Paper Manufacturing
323	Printing and Related Support	4,444	2%	Printing Related Support
324	Petroleum and Coal Products	8,596	4%	Miscellaneous Manufacturing
325	Chemicals	34,431	15%	Chemical Manufacturing
326	Plastics and Rubber Products	15,451	7%	Plastics Rubber Products
327	Nonmetallic Mineral Products	8,939	4%	Nonmetallic Mineral Products
331	Primary Metals	46,699	21%	Primary Metal Manufacturing
332	Fabricated Metal Products	16,345	7%	Fabricated Metal Products
333	Machinery	9,688	4%	Industrial Machinery
334	Computer and Electronic Products	4,551	2%	Instruments
335	Electrical Equip., Appliances, and Components	2,827	1%	Electrical Equipment Manufacturing
336	Transportation Equipment	19,775	9%	Transportation Equipment Manufacturing
337	Furniture and Related Products	1,665	1%	Miscellaneous Manufacturing
339	Miscellaneous	1,254	1%	Miscellaneous Manufacturing

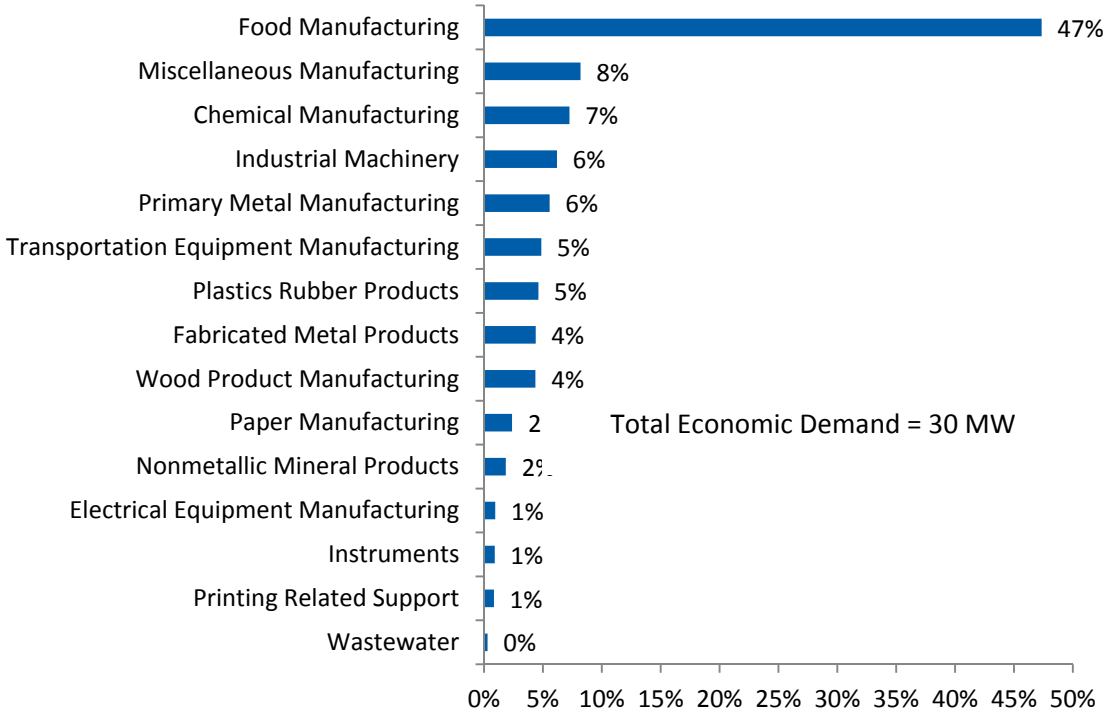
Once MMP/Cadmus mapped the top 200 customer and EIA 2010 MECS datasets to the study segments, we combined the two to create the final segmentation of MRES' industrial sector load. MMP/Cadmus weighted each data source's percent of sales by its relative share of the total industrial load to create the final MRES percent of sales, shown in Table 66.

Table 66. MRES Percent of Industrial Sales by Segment

Industrial Study Segments	Percent of MRES Top-200 Customer Industrial Sales	Percent of EIA 2010 MECS Sales	MRES Total Sales (2012)	Weighted Average (MRES, MECS) Percent of Industrial Sales
Chemical Manufacturing	3%	15%	193,280	10%
Electrical Equipment Manufacturing	1%	1%	19,101	1%
Fabricated Metal Products	4%	7%	107,900	6%
Food Manufacturing	53%	15%	587,769	31%
Industrial Machinery	9%	4%	118,379	6%
Instruments	0%	2%	22,063	1%
Miscellaneous Manufacturing	11%	6%	155,774	8%
Nonmetallic Mineral Products	3%	4%	65,752	3%
Paper Manufacturing	0%	7%	73,050	4%
Plastics Rubber Products	5%	7%	119,266	6%
Primary Metal Manufacturing	1%	21%	231,739	12%
Printing Related Support	0%	2%	21,545	1%
Transportation Equipment Manufacturing	0%	9%	97,964	5%
Wood Product Manufacturing	8%	1%	75,589	4%
Wastewater	3%	NA	25,631	1%
Total	**100%**	**100%**	**1,914,801**	**100%**

Figure 6 shows food manufacturing represented the segment with the highest percentage of economic demand and energy potential (47%) from the total industrial sector. Food manufacturing represented about 31% of the disaggregated, industrial load, as Table 66 shows.

Figure 6. Industrial Economic Demand Potential by Segment



In addition to disaggregating the MRES industrial load into segments within this study, MMP/Cadmus disaggregated the load within those segments to their appropriate end uses. We then applied the measures to those end uses to determine energy and demand savings for the industrial sector. We used EIA 2010 MECS data as the primary source for disaggregating the load within each segment at the end-use level. Unlike the industrial segment characterization, EIA 2010 MECS provided these end-use data only at the national level. These 12 industrial end uses consumed electricity at different rates within each segment. For example, some industrial segments' energy consumption could be weighted more heavily towards process loads, whereas others could consume more energy due to lighting or HVAC end uses.

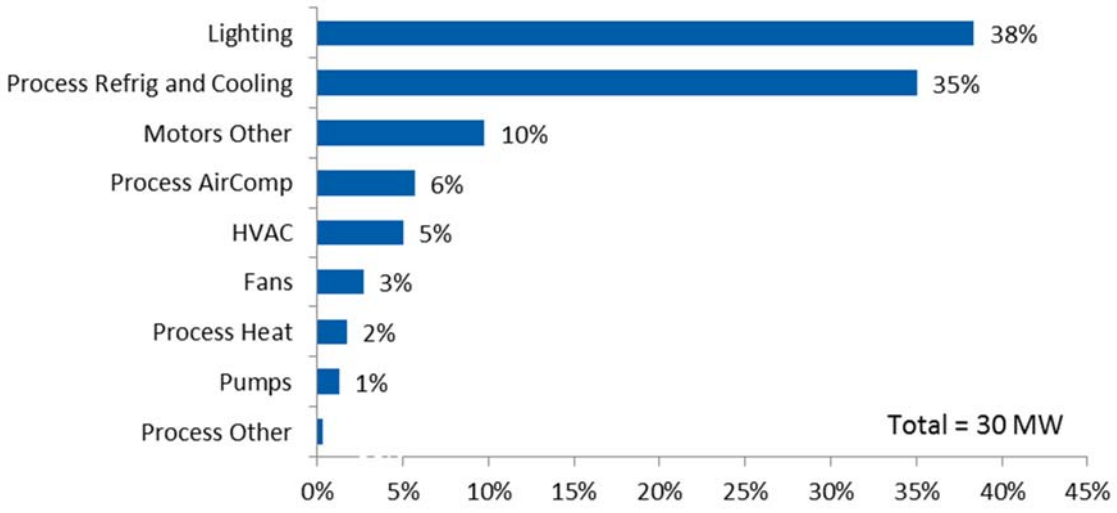
Table 77 and Figure 7 provide the industrial technical and economic potential by end use. The following four end uses constituted the majority of industrial sales: motors (17%); refrigeration and cooling processes (17%); process heat (12%); and HVAC (11%). The other eight end uses accounted for the remaining 43% of industrial sales at the end-use level.

Table 77. Industrial Technical and Economic Potential by End Use

End Use	Base Case Sales (MWh)	Technical Potential			Economic Potential		
		MW	MWh	Percent of Base Energy Sales	MW	MWh	Percent of Base Energy Sales
Fans	141,077	1	8,352	6%	1	6,231	4%
HVAC	282,116	4	27,522	10%	2	11,628	4%
Indirect Boiler	36,322	0	0	0%	0	0	0%
Lighting	221,842	16	121,958	55%	12	88,103	40%
Motors Other	463,446	4	29,323	6%	3	22,452	5%
Other	126,125	2	12,209	10%	0	152	0%
Process Air Compressor	193,028	3	24,644	13%	2	13,065	7%
Process Electro Chemical	136,160	0	0	0%	0	0	0%
Process Heat	317,933	1	3,995	1%	1	3,995	1%
Process Other	52,536	0	1,077	2%	0	696	1%
Process Refrigeration and Cooling	462,323	12	88,450	19%	11	80,464	17%
Pumps	247,469	1	10,470	4%	0	2,904	1%
Total	**2,680,378**	**43**	**328,002**	**12%**	**30**	**229,690**	**9%**

Figure 7 provides the economic demand for each end use as a percentage of total industrial potential. Even though lighting represented only 8% of the total industrial load, it accounted for 38% of the total industrial economic demand potential. The refrigeration and cooling process end use accounted for 35% of the total industrial end-use demand potential. Considering the food manufacturing segment accounted for 31% of MRES' total industrial energy sales, having such a large percentage of economic demand potential attributed to the refrigeration and cooling process end use proved a logical extension. In fact, the EIA 2010 MECS data indicated refrigeration and cooling accounted for nearly 41% of the energy consumption within the food-manufacturing segment.

Figure 7. Industrial Economic Demand Potential by End-Use Group



Achievable Potential

For this study, MMP/Cadmus estimated the achievable potential scenario based on a business-as-usual case for MRES. As the study's measure impact results will serve as inputs to MRES' IRP, which relies upon point estimates of savings rather than a range, deciding to base the achievable potential estimate on actual MRES historical savings proved to be a logical choice.

MRES provided data to MMP/Cadmus to allow establishment of a base-case scenario. Table 88 summarizes data MRES provided to Cadmus. Values included in the table apply to the 2012 program year—the most recent year with all data points available.

Table 88. 2012 Achievable Base-Case Scenario Inputs

Inputs to Determining Achievable Potential	MRES
Total Energy-Efficiency Incentives Paid	$1,617,412
Total Energy-Efficiency Administrative Costs	$1,501,906
Total Energy-Efficiency Program Costs	$3,119,318
Incentive Expenditures % of Spending	52%
Incentive % of Incremental Measure Cost*	17%
Energy-Efficiency Savings (MWh)	24,377
Total Retail Electricity Sales	3,964,655
Annual Savings % of Retail Sales	0.61%

*Calculated by MMP/Cadmus using MRES' measure database and program results.

As shown in Table 89, MRES achieved energy-efficiency savings in 2012 equal to 24,377 MWh (or about 0.61% of total retail electricity sales) through incentive payments totaling more than $1.6 million and program costs totaling $1.5 million. MMP/Cadmus also calculated the incentive value as a proportion of the incremental cost using a combination of MRES' historical program achievements for actual measures installed from 2011 to 2013 and its deemed savings database of measures, which included values for incremental costs and incentives. MMP/Cadmus estimated the achievable potential with this set of basic assumptions on costs and incentives. Adjustments were made to the incentives and costs in the program potential assessment and the resulting participation levels modified as appropriate.

The next step in determining achievable potential involved determining the amount of economic potential available in a given year. Table 99 provides the remaining input—estimated annual economic potential—needed to determine the percent of economic potential achievable under the business-as-usual scenario.

Table 99. Achievable Percentage Calculation

Inputs to Determining Achievable Potential	Inputs
2012 Energy Efficiency Savings (MWh)	24,377
Estimated Annual Economic Potential (MWh)	39,420
Achievable as Percentage of Economic Potential	62%

MMP/Cadmus derived the estimated annual economic potential value shown in Table 99 using a simplified approach to the rate at which discretionary and lost opportunity savings are acquired over the study period (2015 to 2039). Lost opportunity savings included equipment replacements and new construction measures, which could only be implemented at discrete points in time (either when equipment failed or when new homes or businesses were constructed). For this measure class, MMP/Cadmus assumed a constant ramp rate, with an equal amount of lost opportunity savings available to MRES in each of the 25 years addressed through the measure study.

Alternatively, retrofit opportunities in existing buildings can be acquired at any point. To build an average estimated annual economic potential value, MMP/Cadmus assumed an accelerated ramp rate for MRES to acquire all cost-effective retrofit potential identified over the entire planning horizon during the study's first 13 years. Within each of these years, MMP/Cadmus assumed the acquisition rate of retrofit potential would remain the same.

A 62% achievable potential of economic potential proved comparable to results from other potential studies and market potential levels deemed achievable within other jurisdictions. MMP/Cadmus reviewed over 100 electric energy-efficiency potential studies, completed across 37 states, and found 23 cases where estimates of economic potential exceeded 72% of technical potential (this study estimated 74%).[4] These studies estimated average achievable potential as 60% of economic potential, just slightly below this study's estimates.

MMP/Cadmus recently performed a similar potential study for a client with customers that included a large number of municipal utilities in the Midwest. The estimates included base and high-case scenarios, where the estimated percentage of economic potential that is achievable ranged from 58% to 74%. Though the MRES estimate of achievable potential fell within this range, the studies primarily differed in that the former mainly concerned potential estimates for program planning purposes, while the MRES study focused on IRP.

[4] http://www.cadmusgroup.com/wp-content/uploads/2012/11/PUF-Haeri-04012011_FrontiersofEfficiency.pdf

Achievable Potential Results

Table 20 presents cumulative, achievable energy-efficiency potential through 2039 by MRES program category. MMP/Cadmus estimated MRES has 95 MW of demand potential and over 400,000 MWh of energy potential, equal to over 8% of forecasted retail electricity sales.[5]

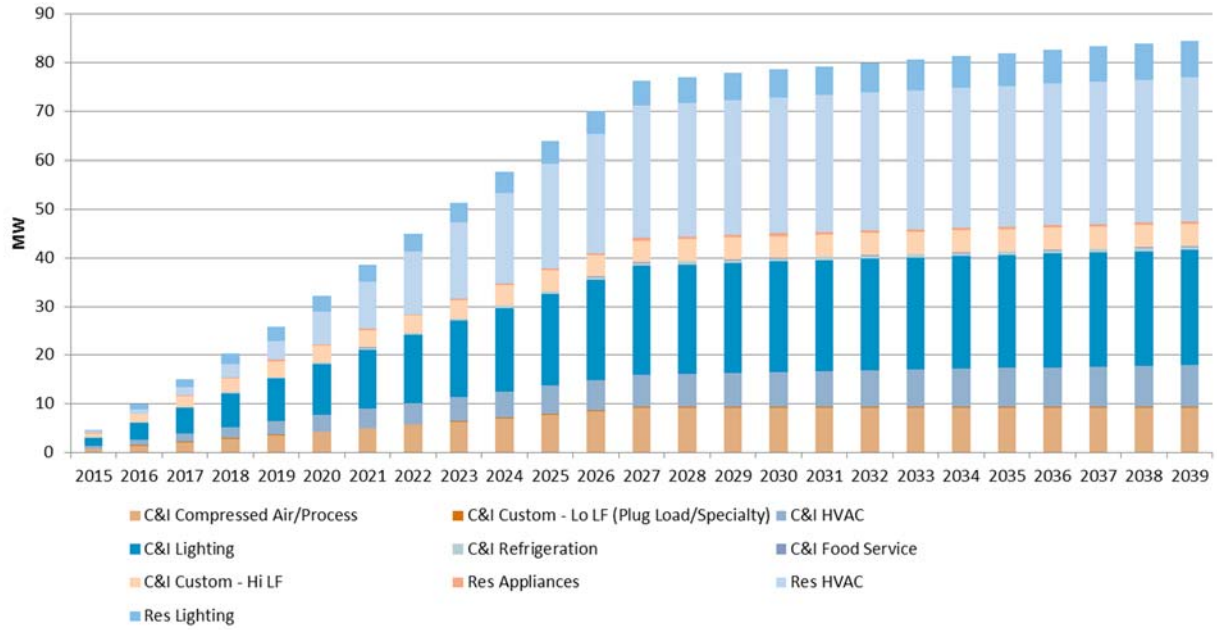
Table 20. Achievable Energy-Efficiency Potential, Cumulative 2039 by MRES Program Group

MRES Program Group	Achievable Potential		
	Coincident kW	Non-coincident kW	MWh
C&I Compressed Air/Process	9,121	10,264	68,980
C&I Custom - Lo LF (Plug Load -Specialty)	276	696	3,629
C&I HVAC	8,396	18,741	22,385
C&I Lighting	25,459	35,638	156,654
C&I Refrigeration	669	1,541	8,249
C&I Food Service	136	136	557
C&I Custom - Hi LF	4,530	4,891	28,312
Res Appliances	599	1,295	5,105
Res HVAC	41,004	81,286	84,894
Res Lighting	7,573	16,674	71,067
Total	**97,763**	**171,162**	**449,832**

Figure 8 shows the estimate achievable demand potential from 2015 through 2039, assuming an even ramping schedule for all the discretionary measure savings evenly over the study's first 13 years (2015–2027). Savings from lost opportunity measures occurred equally within each year of the 25-year study period (2015–2039).

[5] MMP/Cadmus adjusted the achievable potential for one residential measure, Quality Installation for Central Air Conditioning, reducing it by 50% to account for this measure's lack of market support within MRES' service territory. Consequently, the total achievable demand (and energy) potential equaled less than 62% of the total economic potential.

Figure 8. Achievable Demand Potential 2015–2039



Program Potential

The last step in determining potential is to factor in the operational realities of delivering programs. There are many factors that can influence this adjustment to achievable potential including program design, incentives, marketing, available budgets and staff resources. Based on discussions with MRES implementation staff and review of existing budget and staff projections, achievable potential was adjusted as required. Most of these adjustments were to the ramp up time of new initiatives to get into the marketplace and become effective programs.

As part of this step a cost effectiveness screening is also completed. Using projected costs for incentives and program delivery plus the adjusted participation rates of the program potential, the cost benefit analysis was completed to determine if the program was cost effective from a Utility Cost Test perspective for MRES. To complete this analysis the cost effectiveness model DSMore was utilized. The DSMore tool is award-winning modeling software that is nationally recognized and used in many states across the country to determine cost-effectiveness. Developed and licensed by Integral Analytics based in Cincinnati Ohio, the DSMore cost-effectiveness modeling tool takes hourly prices and hourly energy savings from the specific measures/technologies being considered for the energy efficiency program, and then correlates both to weather. This tool looks at over 30 years of historic weather variability to get the full weather variances appropriately modeled. In turn, this allows the model to capture the low probability, but high consequence weather events and apply appropriate value to them. Thus, a more accurate view of the value of the efficiency measure can be captured in comparison to other alternative supply options. Inputs into the model include participation rates, incentives paid, measure energy savings, life of the measure, implementation costs, administrative costs, and incremental costs to the participant of the high efficiency measure. To be consistent with other MRES planning DSMore utilizes MRES provided member utility rates; escalation rates; discount rates for the utility, society and the participant; and avoided costs. The model also produces specific measure energy savings by hour. This hourly savings is then provided to MRES for use within its Integrated Resource Plan models to determine savings from energy efficiency.

Test results by program are below in Table 21. It shows that all programs in the analysis are cost effective.

Table 101. Cost Benefit Scores

	UCT	TRC
C&I Compressed Air/Process	5.82	4.47
C&I Custom - Lo LF (Plug Load/Specialty)	7.52	5.76
C&I HVAC	3.21	2.66
C&I Lighting	6.19	4.76
C&I Refrigeration	6.10	5.06
C&I Food Service	4.22	2.61
C&I Custom - Hi LF	6.60	4.08
Res Appliances	4.17	4.36
Res HVAC	1.73	1.56
Res Lighting	4.03	2.83
Total Efficiency Portfolio no DLC	4.08	3.25
DLC	1.32	3.15

Program Potential Results

The program potential results were based on the achievable potential and adjusted based on inputs from MRES program staff, program operations, final incentives, final budgets, marketing, and other historic information. The adjustments to the achievable were primarily in the ramp up speed of new initiatives. An example of this ramp up is the development of an equipment tune up and retrocommissioning program. While this has large savings potential, it will take several years of contractor training and education to get this program fully operational. This resulted in lower savings the first five years. The Custom Hi Load Factor (Custom Hi LF) was increased to reflect existing experience and activity with the current custom program.

Table 22 shows the final program potential through 2039 by sector.

Table 22. Program Energy-Efficiency Potential, Cumulative 2039 by Sector

MRES Program Group	Program Potential		
	Coincident kW	Non-coincident kW	MWh
C&I Compressed Air/Process	9,121	9,137	68,980
C&I Custom - Lo LF (Plug Load- Specialty)	276	583	3,629
C&I HVAC	8,396	11,826	22,385
C&I Lighting	23,843	33,272	147,788
C&I Refrigeration	669	1,440	8,240
C&I Food Service	116	116	557
C&I Custom - Hi LF	4,530	4,891	28,312
Res Appliances	599	1,295	5,105
Res HVAC	29,334	34,900	49,521
Res Lighting	7,573	14,761	71,067
Total	**84,455**	**112,223**	**405,584**

Results indicate that 84 MW and 405,584 MWh of program energy-efficiency potential are available for the IRP study period, from 2015 through 2039.

Demand Response

In addition to determining the energy-efficiency savings potential, MRES engaged MMP/Cadmus to estimate the demand response market potential for its service territory. Demand response programmatic options seek to achieve the following:

- Reduce peak demand to reduce or delay the need for future power supply resources;
- Reduce peak demand during system emergencies or periods of extreme market prices;
- Promote improved system reliability; and
- In some cases, balance variable-load resources.

Benefits from demand response resources accrue by providing incentives for customers to curtail loads during utility-specified events (e.g., direct load control [DLC]), or by offering pricing structures to induce participants to shift load away from peak periods (e.g., critical peak pricing programs). For this study, Cadmus' analysis focused on program options pertaining to residential DLC for air conditioning (DLC AC) and water heating (DLC WH).

Methodology and Assumptions

Residential DLC proves unique in that, unlike other demand response options, it affects specific end uses and equipment (e.g., air conditioners and water heaters). Therefore, market potential may be quantified directly as the product of four variables:

1. The number of eligible customers.
2. Expected per unit (kW) impacts.
3. Equipment saturation rate.
4. Expected program participation.

Number of Eligible Customers

MMP/Cadmus calculated MRES' expected customer base from 2014 to 2039, using the rate of growth from the MRES' load forecast. Table 3 shows the number of residential customers in 2014 and the expected number of customers in 2039.

Table 23. Total MRES Residential Customers

Segment	Customers in Base Year (2014)	Customers in End Year (2039)
Single Family	102,821	134,881
Multifamily	15,474	20,202
Manufactured	8,331	11,012
Residential Total	**126,626**	**166,096**

Expected Per Unit (kW) Impacts

MRES offers residential DLC programs through a number of its member utilities. These programs target residential customers with central air conditioning and/or electric water heat. DLC switches, installed on

the end-use customers' air conditioning or water heaters, allow such equipment to be cycled on and off during peak events.

MMP/Cadmus relied on the kW impact per-switch values of 1.0 and 0.35 for air conditioners and electric water heaters, respectively. These values were based on the Minnesota Division of Energy Resources deemed savings values. MRES confirmed the validity and reasonableness of these values for their use in this study. Furthermore, MMP/Cadmus benchmarked these values and found the 1.0 kW per-switch air conditioning value fit within the range of values from 0.75 to 1.05 from other Midwestern utilities operating in Minnesota, Iowa, and Indiana. The water heating value of 0.35 also fell within the range of values from 0.20 to 0.77 kW per-switch used by utilities across the United States.

Equipment Saturation Rate

Equipment saturation represents the percentage of customers eligible for participating in the program. To participate in MRES' DLC programs, a customer must have air conditioning or electric water heat. Equipment saturation levels for each residential customer segment derived from EIA RECS data and remained consistent with saturations used to estimate energy-efficiency potential.

Table 24. Saturation of Air Conditioning and Electric Water Heat

Segment	Saturation of Air Conditioning	Saturation of Electric WH
Single-Family	73%	31%
Multifamily	23%	38%
Manufactured	52%	44%
Residential Total	**65%**	**33%**

Expected Program Participation

In 2012, 19 of MRES' 58 members offered DLC programs. Ten percent of all residential customers were enrolled in the DLC AC program, equivalent to 15% of all customers with air conditioning and 8% of all customers were enrolled in the DLC WH program, equating to 23% of customers with electric water heat. MMP/Cadmus assumed participation in the air conditioning program could increase to 25% of customers with air conditioners in their homes (16% of all MRES customers), while the water heat program could increase participation levels to 40% (13% of all MRES customers). To calculate the potential for new DLC existing 2012 participation in the DLC program was subtracted from the total participation potential to reflect the incremental participation increase going forward. MMP/Cadmus assumed this additional participation would be achieved through more MRES members implementing DLC programs as opposed to more customers enrolling in the programs that are already being offered. If the current participation rates of those members who offer programs were applied to new programs, an additional 17 of MRES' members would need to offer programs.

Additional Program Assumptions

MMP/Cadmus created costs estimates for a number of program components, including administration, marketing, and incentives. MMP/Cadmus based the costs on MRES' program experience and on program costs from other utilities operating similar programs. Table 115 shows program cost details and other assumptions used in the potential assessment analysis.

Table 115. Program Costs and Assumptions

Inputs	AC Program	WH Program
Costs		
Annual MRES Administrative Costs	$112,500	$37,500
Technology Cost (per new participant)	$200	$200
Marketing Cost (per new participant)	$25	$25
Communication (annual costs per participant)	$7	$7
Incentives (annual costs per participant)	$22	$36
Discount Rate	6%	6%
Inflation	2.5%	2.5%
Program Details		
Savings per switch (kW/switch)	0.5[6]	0.35
Program Participation	25%	40%
Event Participation	95%	95%
Annual Attrition	1%	1%

Detailed Residential DLC Potentials

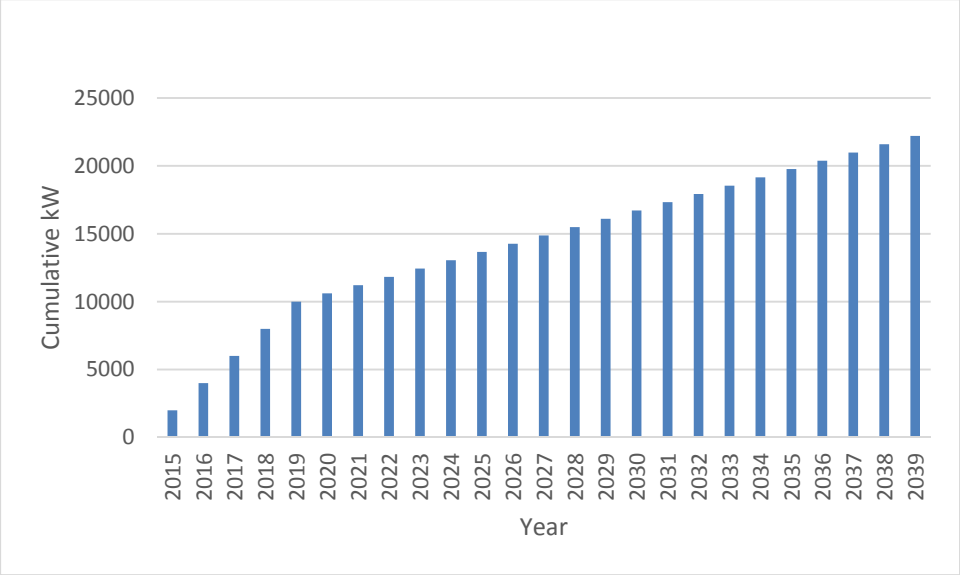
Table 26 and Figure 9 shows the estimated market potential for the DLC AC and WH programs from 2015 through 2039, with the programs' new incremental potential at 1.9 MW in 2015 and 22.2 MW in 2039. MMP/Cadmus assumed 2015 participation rates would remain consistent with 2012; and the program would then follow a 10-year ramping period from 2016–2025. This ramping period would allow MRES' members not offering DLC programs to design and implement new programs.

[6] The savings are based on 1 kW per unit with a 15 minute cycling strategy.

Table 126. Cumulative Residential DL Potential, 2015-2039

Year	Residential DLC	
	Cumulative kW	Cumulative kWh
2015	1,999	55,702
2016	3,998	111,405
2017	5,997	167,107
2018	7,996	222,810
2019	9,995	278,512
2020	10,606	295,535
2021	11,217	312,557
2022	11,828	329,579
2023	12,439	346,601
2024	13,048	363,596
2025	13,659	380,618
2026	14,270	397,640
2027	14,881	414,662
2028	15,492	431,684
2029	16,103	448,707
2030	16,714	465,729
2031	17,325	482,751
2032	17,935	499,773
2033	18,546	516,796
2034	19,157	533,818
2035	19,768	550,840
2036	20,378	567,834
2037	20,989	584,857
2038	21,600	601,879
2039	22,211	618,901

Figure 9. DLC Potential 2015–2039



Budget Projections

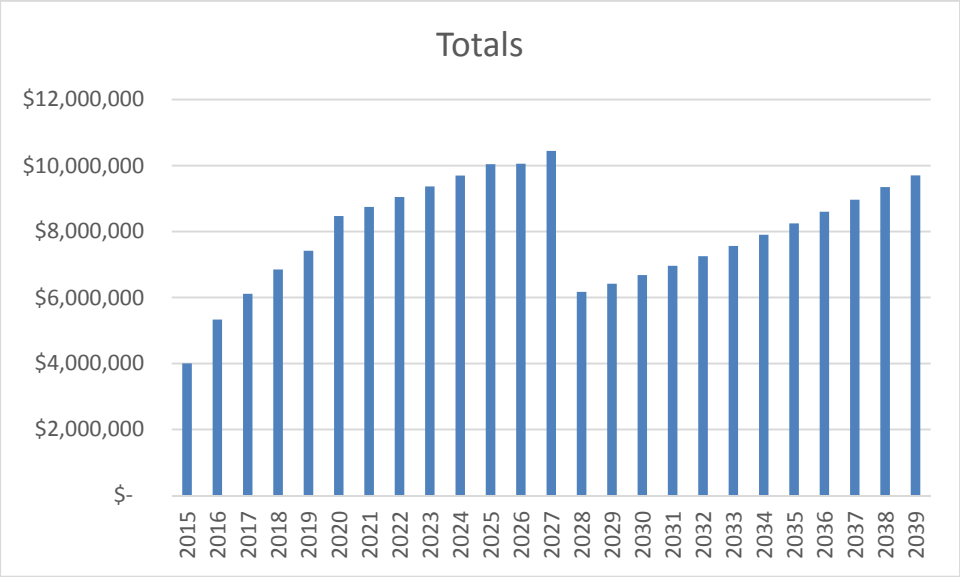
To develop realistic budget projections for the final program screening, the MMP/Cadmus team used historic program spending for incentives and administration to trend future spending. When new measures or initiatives were added to the portfolio, experience from other utilities was applied or a cost per kW saved based on MRES experience. In this way the projections are based on realistic costs to deliver programs in a dispersed territory like MRES.

Table 27 and Figure 10 below shows the projected spending per year for all programs used for the program potential results. The programs are designed to actively build participation through 2027 and then maintain participation from 2028 to 2039 thus the budgets are reduced correspondingly.

Table 137. Budget Projections, 2015-2039

Year	Total Expenditures
2015	$4,001,305
2016	$5,334,421
2017	$6,113,649
2018	$6,849,600
2019	$7,418,087
2020	$8,469,253
2021	$8,749,012
2022	$9,048,206
2023	$9,366,465
2024	$9,696,135
2025	$10,040,372
2026	$10,057,211
2027	$10,442,921
2028	$6,170,705
2029	$6,417,519
2030	$6,679,712
2031	$6,961,603
2032	$7,255,289
2033	$7,565,575
2034	$7,904,661
2035	$8,245,004
2036	$8,600,857
2037	$8,964,051
2038	$9,348,322
2039	$9,701,920

Figure 10. Budget Projections 2015–2039



Appendix I: EVA Modeling Summary

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To: JP Schumacher, Eric Carl

From: Energy Ventures Analysis, Inc.

Subject: EVA Modeling Methodology and Scenario Summary

Date: April 27, 2015

Overview

Regulations governing power plant emissions will have a significant impact on both the price of fossil fuels as well as emission allowance values. Studies performed by EVA over the past several years have shown that regulations seeking to curb carbon emissions will increase wholesale electricity prices, stymy electricity demand growth, influence plant investment decisions, and drive change fuel switching patterns across the U.S. Together, these impacts will alter fossil fuel demand growth and prices and make carbon intensity an important factor when dispatching units. The extent of these changes will be dependent upon the actual environmental program structures and requirements.

The purpose of this study is to identify a range of future natural gas prices under varying carbon tax schemes as well as the resulting wholesale price of power at MISO's Minnesota Hub. These fuel and power price results can be applied to Missouri River Energy System's (MRES) resource modeling to help determine the least-cost generation alternatives under each carbon regime.

Study Approach

To project future fossil fuel demand and the resulting price changes it drives, EVA uses a customized version of the commercially available AuroraXMP power modeling software. As illustrated in the appendix, this model dispatches generating units across the U.S. according to their operating parameters to meet load in each hour and calculates the wholesale cost of power in up to 120 regions. Additionally, the model provides unit-specific generation, fuel demand, revenue, and cost results, as well as market-specific results such as new builds required to meet reserve margins, economic retirements, and power flows between regions. To ensure an internally consistent outlook and account for variations in fuel consumption, EVA has developed proprietary models that utilize AuroraXMP's outputs to adjust fuel prices based on fuel demand. The inclusion of a carbon emission tax typically results in higher natural gas demand and lower coal demand, and EVA amends the fuel prices accordingly.

Inputs and market drivers that EVA has customized and has the ability to sensitize include:

- **Economic assumptions:** These are generally manifested in the electricity demand outlook, which is dependent on GDP growth, expectations for energy efficiency and distributed generation growth, and industrial demand.
- **Generation technology:** EVA reviews dozens of options for new generation technology – both fossil and renewable – before choosing which to include as options in the model's capacity expansion runs. Factors such as heat rate, capacity, emission controls, plant availability, dispatch rate, fixed and variable O&M, capital cost, and financing assumptions for each technology are evaluated when determining the optimal mix of future generating resources.
- **Fuel prices:** As mentioned above, EVA has developed proprietary models that work in tandem with AuroraXMP to adjust fuel prices based on demand. Coal prices are adjusted by basin, while gas prices are adjusted at the Henry Hub but also take into account price elasticity effects on other sectors that use natural gas, including industrial, commercial, and residential. EVA takes into account factors like mine productivity, the cost of labor, environmental regulations, the potential for LNG exports, and pipeline congestion, among others, when developing fossil fuel price forecasts. EVA also has the ability to alter the price of nuclear fuel (typically uranium) but has found that this has little to no effect on plant dispatch, demand for gas and coal, and wholesale electricity prices.
- **Future government regulations:** EVA continuously tracks federal and state legislation that may potentially affect the energy sector to ensure that resources are modeled properly and that its forecasts take into account all possible future outcomes.
- **Renewable capacity growth:** EVA develops state-level renewable capacity growth outlooks for solar, wind, biomass, landfill gas, geothermal, and municipal solid waste based on RPS targets, resource availability, natural gas prices, and the presence of carbon legislation.

To establish a range of future natural gas and wholesale power prices, four different scenarios were assessed. The major input that changed from case to case was the assumed carbon emission allowance tax, which is likely to have a significant impact on fuel and wholesale power pricing. The four scenarios analyzed were:

- **No Carbon Tax:** No federal carbon legislation is passed by Congress, and only the regional programs (RGGI and AB32) continue to operate as written.
- **$21.50/ton Carbon Tax:** A federal $21.50/ton carbon tax (2015$) beginning in 2020 is passed by Congress. The tax remains escalates with inflation (flat in constant dollars) through 2040.
- **$21.50/ton Carbon Tax & High Gas Price:** Similar to the case above, a federal $21.50/ton carbon tax beginning in 2020 is passed by Congress and escalates with inflation (flat in constant dollars) through 2040. However, it is assumed that the natural gas production costs are much higher due to a combination of more governmental regulation, slower drilling technology advancements, and smaller gas reserve/access. This case represents the upper range of potential gas supply price outlooks. The Henry Hub price strip used in this scenario was sourced from EIA's 2014 Annual Energy Outlook Low Gas Resource Case.

- **$34/ton Carbon Tax:** A higher federal carbon tax of $34/ton beginning in 2020 is passed by Congress. The tax escalates with inflation (flat in constant dollars) through 2040.

Note: EVA assumes a higher renewable capacity growth outlook in the scenarios that include a carbon tax based on the expectation for higher wholesale power prices resulting in upside for carbon-free generating resources.

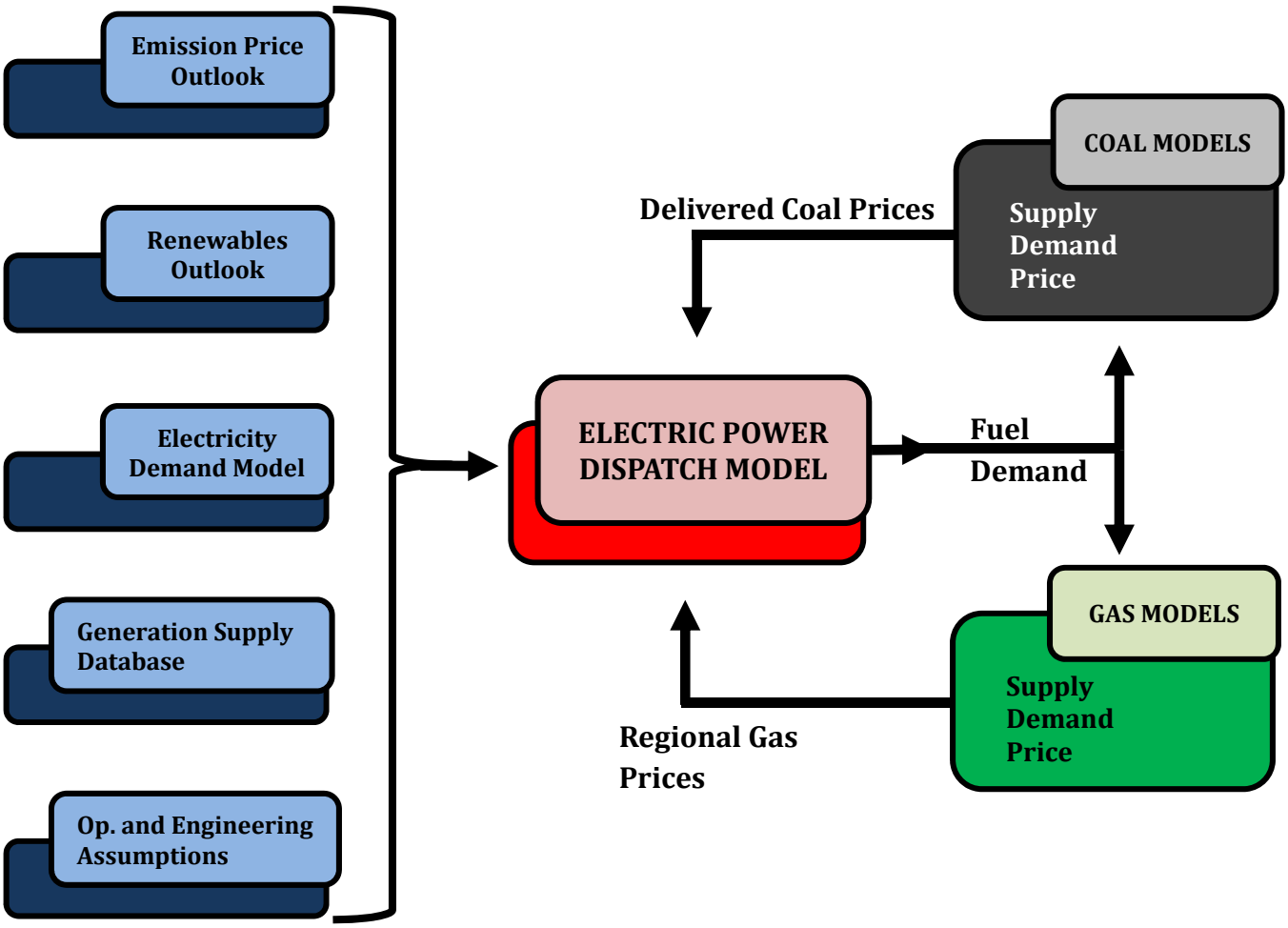
For each of the four scenarios listed above, EVA has provided an annual forecast of Henry Hub prices and peak, off-peak, and average wholesale power prices at MISO's Minnesota Hub.

Peak and off-peak prices at the Minnesota Hub over the last five years have averaged $36/MWh and $20/MWh, respectively, and have largely remained below those of the other major hubs in MISO, namely Indiana and Illinois. Annual off-peak prices have averaged below $20/MWh in three of the last five years, likely driven by increased nighttime wind generation.

Key takeaways from this analysis include:

- Carbon tax increases natural gas generation share and provides higher natural gas demand. Prices rise to expand U.S. natural gas supply to meet this higher demand.
- Higher carbon tax further increases natural gas market share more forcing even greater gas demand and higher Henry Hub gas prices.
- Minnesota Hub prices set by variable costs of marginal provider-- often a natural gas-fired unit.
- The combination of carbon tax and higher natural gas commodity prices increase variable power production costs for power plants and push marginal supplier costs and wholesale power rates higher.
- Differences in underlying natural gas supply have an even greater potential impact on natural gas prices than the carbon tax induced demand shift.
- Several elements can directly influence future supply costs. These factors include: governmental regulations (fracking, air, water, etc.), well drilling technology advancements, natural gas reserve changes, and access.

EVA's Integrated Power Market Forecasting Methodology



Appendix J: MRES Environmental Matrix

Appendix J contains Trade Secret / Confidential information.
The entire Appendix has been redacted from this report.

Appendix K: Renewable Energy Standard (RES) Rate Impact Report

Overview

One of the new requirements for this resource plan is providing a report regarding the impact on wholesale rates of the cost of acquiring resources necessary to meet the state renewable energy objective (REO) and the renewable energy standard (RES). Minn. Stat. § 216B.1691, subd. 2e. The statute is intended to provide a mechanism for determining and communicating to legislators and constituents what utility rates would be if the state's renewable energy objectives (REO) and renewable energy standard (RES) had never been implemented. The Commission established a uniform method for utilities to use when making such estimates, and it provides further guidance as to the types of costs that are to be included and the years to be covered by the reports.

The Legislature established a framework for utilities to implement expanded renewable energy portfolios when it adopted the REO in 2001, and later when it adopted the RES in 2007 (as part of the Next Generation Energy Act or NGEA) which changes the objective to a more expanded mandate. The NGEA requires electric utilities that serve Minnesota retail load to obtain increasing amounts of energy from eligible renewable resources according to a specified timeline. The amounts are calculated in terms of a percentage of each utility's total retail sales. During the 2011 legislative session, a measure was passed that requires utilities to report the cost impacts of the state's renewable energy requirements. In 2013, the Minnesota Legislature directed the Commission to develop a uniform system for utilities to use when estimating how electric rates have been influenced by Minn. Stat. § 216B.1691. After obtaining stakeholder comments, the Commission approved the general guiding principles and format to be used by reporting utilities.[1]

The Order is comprehensive, and also provides flexibility given the vast differences in demographics, structure and load of reporting utilities. Utilities estimating the rate impact of Minn. Stat. § 216B.1691 are required to do the following:

- Report data for the period 2005 until the last reported year. (Order Point 1.A).
- Analyze costs from the year following the last reported year, and for the following 15 years. (Order Point 2.A).
- Include all facilities used to comply with the Renewable Energy Standard ("RES") and the Solar Energy Standard ("SES"), regardless of when the facilities were constructed. (Order Point 2.B).
- Calculate direct costs to include payments under power purchase agreements and revenue requirements associated with utility-owned renewable energy projects. (Order Point 2.C).

[1] "*Order Establishing Uniform Reporting System for Estimating Rate Impact of Minn. Stat. § 216B.1691*," Minnesota Public Utilities Commission, Docket No. E-999/CI-11-852, dated January 6, 2015.

- Provide a narrative discussion about the impact that adding generators powered by renewable sources may have had on the utility's indirect costs, such as the cost for ancillary services and base load cycling. (Order Point 2.D).
- Include transmission costs for transmission improvements created exclusively for the purpose of gaining access to electricity from renewable resources, as well as the percentage directly attributable to compliance with the RES and SES. Calculate savings arising from avoiding energy and capacity costs that the utility would have incurred directly in the absence of the RES and SES. (Order Point 2.E).
- Calculate savings arising from avoiding costs (past and future) that the utility would have incurred indirectly in the absence of the RES and SES. These savings include costs of energy and capacity, as well as the past and future costs of allowances for sulfur dioxides ("SO_2") and oxides of nitrogen ("NOx") required under Title IV of the Clean Air Act, as well as the range of compliance cost values for carbon dioxide ("CO_2") set by the Commission under Minn. Stat. § 216H.06. (Order Points 2.F and 2.G).
- Report estimated annualized and estimated levelized costs. (Order Point 2.H).
- Calculate separately the rate impacts of complying with the RES and the SES. (Order Point 2.I).
- Calculate the ultimate rate impact of Minn. Stat. § 216H.1691 to reflect the fact that renewable energy comprises only a fraction of a utility's total energy costs, and consequently most of a utility's energy costs are unaffected by the RES and SES. (Order Point 2.J.1).
- Calculate additional modifications as are agreed upon by the Department of Commerce – Division of Energy Resources and the commentors. (Order Point 2.J.2).

Methodology

MRES calculated historic and future rate impacts of Minn. Stat. § 216B.1691. No calculation for the SES was performed, as MRES is not subject to the SES. Minn. Stat. § 216B.1691, subd. 2f(a). Calculations were performed both for the historic period (2005 through 2015), and future years (2016 through 2031).

Historic Rate Impact (2005-2015)

The historic rate impact was determined by comparing the actual costs of renewable generation with the estimated cost that would have been incurred had there been no renewable requirements.

The actual cost of renewable generation includes the cost of transmission in those cases where specific facilities serve the generation project, and the cost was reduced for any tax credits received. These historic costs were compared to the costs MRES would have incurred if no renewable generation been in existence. The energy was valued at the historic LMP prices at the WAUE node, and the capacity was valued at the historic MISO ZRC (Zonal Resource Credit)

clearing prices for Zone 1. The resulting annual rate impacts to MRES members are shown in Table K-1.

Table K-1
Historic Rate Impact (2005-2015 Annualized)

	RES Generation	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
A	Total RES Generation (PPA + Owned, GWh)	10.6	9.7	11.2	89.9	131.2	220.7	241.1	255.0	243.2	271.8	243.6
	Costs associated with RES Generation											
B	Purchased Power + Owned Generation (millions)	$ 0.04	$ 0.01	$ 0.06	$ 3.79	$ 5.86	$ 10.72	$ 11.75	$ 12.31	$ 11.67	$ 13.10	$ 11.99
C	RES Attributable Transmission (millions)	$ -	$ -	$ 10.61	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
D=B+C	Total Cost for RES Generation (millions)	$ 0.04	$ 0.01	$ 10.67	$ 3.79	$ 5.86	$ 10.72	$ 11.75	$ 12.31	$ 11.67	$ 13.10	$ 11.99
E=(D/A)	Total Cost for RES Generation ($/MWh)	$ 3.42	$ 0.57	$ 949.31	$ 42.10	$ 44.64	$ 48.59	$ 48.73	$ 48.28	$ 47.96	$ 48.20	$ 49.22
	Avoided Costs due to RES											
F	Avoided Energy Costs for PPAs & Owned Generation (millions)	$ 0.46	$ 0.39	$ 0.54	$ 3.99	$ 3.29	$ 5.64	$ 5.24	$ 4.96	$ 5.86	$ 8.02	$ 4.95
G	Avoided Capacity Costs for PPAs & Owned Generation (millions)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.00	$ 0.01	$ 0.01
H	Avoided Transmsission Costs (millions)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
I	Avoided Emissions Costs for PPAs and Owned Generation (millions)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
J=F+G+H+I	Total Avoided Costs for PPAs & Owned Generation (millions)	$ 0.46	$ 0.39	$ 0.54	$ 3.99	$ 3.29	$ 5.64	$ 5.24	$ 4.96	$ 5.87	$ 8.03	$ 4.96
K=J/A	Total Avoided Costs for PPAs & Owned Generation ($/MWh)	$ 43.36	$ 40.35	$ 48.09	$ 44.32	$ 25.06	$ 25.56	$ 21.75	$ 19.47	$ 24.12	$ 29.54	$ 20.35
L=D-J	Total RES Premium/Discount (millions)	$ (0.43)	$ (0.39)	$ 10.13	$ (0.20)	$ 2.57	$ 5.08	$ 6.51	$ 7.35	$ 5.80	$ 5.07	$ 7.03
M=E-K	Total RES Premium/Discount ($/MWh)	$ (39.94)	$ (39.77)	$ 901.22	$ (2.22)	$ 19.58	$ 23.03	$ 26.98	$ 28.82	$ 23.83	$ 18.66	$ 28.87
	Annualized RES Rate Impacts											
N	MRES Wholsale Power Sales (GWh)	1790.2	1929.9	2068.2	2106.4	1994.0	2091.2	2135.6	2091.3	2205.3	2212.5	2107.7
O=L/N	Rate Impact ($/MWh)	$ (0.24)	$ (0.20)	$ 4.90	$ (0.09)	$ 1.29	$ 2.43	$ 3.05	$ 3.51	$ 2.63	$ 2.29	$ 3.34
P=O/10	Rate Impact (c/kWh)	-.02¢	-.02¢	.49¢	-.01¢	.13¢	.24¢	.30¢	.35¢	.26¢	.23¢	.33¢

Future Rate Impact (2016-2031)

Future RES Rate impacts were determined by comparing two different Strategist® cases, 1) the Base Case as identified earlier in this IRP filing, and 2) a variation of the Base Case that removes and replaces all existing and future renewable resources (both energy and capacity) with non-renewable resources ("No RES" case).

Comparing these two cases produces an estimate of the cost (or savings) of compliance with the REO and RES. The Base Case includes the costs of renewable generation, debt service for future renewable generation additions, and transmission specifically used for renewable installations. When comparing the Base Case with the No RES case, it also shows that the Base Case avoids several costs such as: market purchases, fuel costs, O&M costs, capacity purchase costs (valued at MISO CONE prices), debt service for new thermal generators, and emissions costs. The

estimated cost of compliance with the REO and RES is the overall difference in costs between these two cases. The calculations are shown in Table K-2 and Table K-3, which follow.

Table K-2
Future Rate Impact (2016-2023 Annualized)

	RES Generation	2016	2017	2018	2019	2020	2021	2022	2023
A	Total RES Generation (PPA + Owned, GWh)	241.0	240.4	240.4	411.0	437.7	447.6	447.6	447.6
	Costs associated with RES Generation								
B	Purchased Power + Owned Generation (millions)	$ 12.14	$ 12.01	$ 36.92	$ 41.64	$ 43.29	$ 43.70	$ 43.85	$ 44.00
C	RES Attributable Transmission (millions)	$ -	$ -	$ 0.38	$ 0.41	$ 0.51	$ 0.51	$ 0.51	$ 0.51
D=B+C	Total Cost for RES Generation (millions)	$ 12.14	$ 12.01	$ 37.30	$ 42.06	$ 43.80	$ 44.21	$ 44.36	$ 44.52
E=(D/A)	Total Cost for RES Generation ($/MWh)	$ 50.40	$ 49.96	$ 155.17	$ 102.33	$ 100.07	$ 98.78	$ 99.12	$ 99.46
	Avoided Costs due to RES								
F	Avoided Energy Costs for PPAs & Owned Generation (millions)	$ 6.35	$ 7.18	$ 8.12	$ 15.46	$ 24.24	$ 25.54	$ 23.12	$ 21.91
G	Avoided Capacity Costs for PPAs & Owned Generation (millions)	$ 0.39	$ 0.95	$ 0.88	$ 4.63	$ 4.77	$ 4.81	$ 9.24	$ 10.24
H	Avoided Transmsission Costs (millions)	$ -	$ -	$ -	$ -	$ -	$ -	$ 0.82	$ 0.84
I	Avoided Emissions Costs for PPAs and Owned Generation (millions)	$ -	$ -	$ -	$ -	$ 0.00	$ 0.00	$ 1.20	$ 2.01
J=F+G+H+I	Total Avoided Costs for PPAs & Owned Generation (millions)	$ 6.74	$ 8.13	$ 9.00	$ 20.09	$ 29.01	$ 30.35	$ 34.37	$ 35.00
K=J/A	Total Avoided Costs for PPAs & Owned Generation ($/MWh)	$ 27.96	$ 33.83	$ 37.45	$ 48.89	$ 66.29	$ 67.80	$ 76.79	$ 78.21
L=D-J	Total RES Premium/Discount (millions)	$ 5.41	$ 3.88	$ 28.30	$ 21.96	$ 14.78	$ 13.86	$ 9.99	$ 9.51
M=E-K	Total RES Premium/Discount ($/MWh)	$ 22.44	$ 16.14	$ 117.72	$ 53.44	$ 33.78	$ 30.98	$ 22.33	$ 21.26
	Annualized RES Rate Impacts								
N	MRES Wholsale Power Sales (GWh)	2308.6	2600.0	2608.9	2612.2	2607.2	2637.3	2641.6	2647.0
O=L/N	Rate Impact ($/MWh)	$ 2.34	$ 1.49	$ 10.85	$ 8.41	$ 5.67	$ 5.26	$ 3.78	$ 3.59
P=O/10	Rate Impact (c/kWh)	.23¢	.15¢	$1.08	.84¢	.57¢	.53¢	.38¢	.36¢

Table K-3
Future Rate Impact (2024-2031 Annualized)

	RES Generation	2024	2025	2026	2027	2028	2029	2030	2031
A	Total RES Generation (PPA + Owned, GWh)	448.5	447.6	447.6	447.6	448.5	447.6	447.6	447.6
	Costs associated with RES Generation								
B	Purchased Power + Owned Generation (millions)	$ 44.19	$ 44.31	$ 44.48	$ 44.64	$ 44.86	$ 45.01	$ 45.21	$ 45.41
C	RES Attributable Transmission (millions)	$ 0.52	$ 0.52	$ 0.52	$ 0.53	$ 0.53	$ 0.53	$ 0.54	$ 0.54
D=B+C	Total Cost for RES Generation (millions)	$ 44.71	$ 44.83	$ 45.00	$ 45.17	$ 45.39	$ 45.55	$ 45.75	$ 45.96
E=(D/A)	Total Cost for RES Generation ($/MWh)	$ 99.70	$ 100.17	$ 100.55	$ 100.93	$ 101.20	$ 101.76	$ 102.21	$ 102.68
	Avoided Costs due to RES								
F	Avoided Energy Costs for PPAs & Owned Generation (millions)	$ 22.87	$ 23.87	$ 24.85	$ 25.85	$ 26.98	$ 28.30	$ 29.48	$ 31.10
G	Avoided Capacity Costs for PPAs & Owned Generation (millions)	$ 10.55	$ 10.86	$ 11.19	$ 11.52	$ 11.87	$ 12.23	$ 12.59	$ 12.97
H	Avoided Transmsission Costs (millions)	$ 0.87	$ 0.89	$ 0.92	$ 0.95	$ 0.98	$ 1.01	$ 1.04	$ 1.07
I	Avoided Emissions Costs for PPAs and Owned Generation (millions)	$ 2.05	$ 2.07	$ 2.12	$ 2.13	$ 2.21	$ 2.23	$ 2.26	$ 2.43
J=F+G+H+I	Total Avoided Costs for PPAs & Owned Generation (millions)	$ 36.34	$ 37.70	$ 39.08	$ 40.46	$ 42.03	$ 43.76	$ 45.38	$ 47.57
K=J/A	Total Avoided Costs for PPAs & Owned Generation ($/MWh)	$ 81.02	$ 84.24	$ 87.32	$ 90.39	$ 93.72	$ 97.78	$ 101.39	$ 106.29
L=D-J	Total RES Premium/Discount (millions)	$ 8.38	$ 7.13	$ 5.92	$ 4.72	$ 3.35	$ 1.78	$ 0.37	$ (1.62)
M=E-K	Total RES Premium/Discount ($/MWh)	$ 18.68	$ 15.94	$ 13.23	$ 10.53	$ 7.48	$ 3.98	$ 0.82	$ (3.61)
	Annualized RES Rate Impacts								
N	MRES Wholsale Power Sales (GWh)	2648.1	2659.5	2664.6	2670.0	2680.6	2705.2	2724.9	2761.6
O=L/N	Rate Impact ($/MWh)	$ 3.16	$ 2.68	$ 2.22	$ 1.77	$ 1.25	$ 0.66	$ 0.14	$ (0.59)
P=O/10	Rate Impact (c/kWh)	.32¢	.27¢	.22¢	.18¢	.13¢	.07¢	.01¢	-.06¢

Levelized Rate Impact

The levelized rate impact was then calculated for both the historic and future time periods. A discount rate of 6% was used. The results indicate that the cost of REO and RES compliance has been $1.98 per MWh for MRES members between 2005 and 2015. It is anticipated that the future cost of compliance will cost MRES members $3.76 per MWh between 2016 and 2031. These calculations can be seen in Table K-4, below.

Table K-4
Levelized RES Rate Impact

		Historic Period	Future Period
	Levelized RES Generation	**2005-2015**	**2016-2031**
A	Total RES Generation (PPA + Owned, GWh)	139.1	389.3
	Levelized Costs associated with RES Generation		
B	Purchased Power + Owned Generation (millions)	$6.48	$37.63
C	RES Attributable Transmission (millions)	$1.13	$0.41
D=B+C	Total Cost for RES Generation (millions)	$ 7.61	$ 38.03
E=(D/A)	Total Cost for RES Generation ($/MWh)	$ 54.68	$ 97.69
	Levelized Avoided Costs due to RES		
F	Avoided Energy Costs for PPAs & Owned Generation (millions)	$3.55	$19.71
G	Avoided Capacity Costs for PPAs & Owned Generation (millions)	$0.00	$6.97
H	Avoided Transmsission Costs (millions)	$0.00	$0.47
I	Avoided Emissions Costs for PPAs and Owned Generation (millions)	$0.00	$1.04
J=F+G+H+I	Total Avoided Costs for PPAs & Owned Generation (millions)	$ 3.55	$ 28.19
K=J/A	Total Avoided Costs for PPAs & Owned Generation ($/MWh)	$ 25.51	$ 72.42
L=D-J	Levelized Total RES Premium/Discount (millions)	$ 4.06	$ 9.84
M=E-K	Levelized Total RES Premium/Discount ($/MWh)	$ 29.16	$ 25.27
	Levelized RES Rate Impacts		
N	MRES Wholsale Power Sales (GWh)	2048.9	2616.0
O=L/N	Rate Impact ($/MWh)	$ 1.98	$ 3.76
P=O/10	Rate Impact (c/kWh)	.20¢	.38¢
* 6%	discount rate used in levelization calculations		

Appendix L: RES Progress Since Previous Resource Plan Filing

Since they were enacted, MRES has incorporated the Minnesota state renewable energy objective (REO) and the subsequent renewable energy standard (RES) into its business objectives as it pursues ongoing resource diversity. Consistent with Minn. Stat. §216B.1691, subd. 3, MRES has reported to the Commission its plans and progress toward meeting RES every two years in its Biennial REO/RES Compliance Reports, and in its annual Green Pricing Reports, and Renewable Energy Certificate Retirement Reports.

Based on these regular reports, the Commission has found MRES to be in compliance with the requirements of Minn. Stat. §216B.1691. Attached as part of this Appendix L are each of the Commission Orders issued in 2011 (page L-2), 2013 (page L-10), and 2015 (page L-18).

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Ellen Anderson	Chair
David C. Boyd	Commissioner
J. Dennis O'Brien	Commissioner
Phyllis A. Reha	Commissioner
Betsy Wergin	Commissioner

In the Matter of Commission Consideration and Determination on Compliance with Renewable Energy Obligations and Renewable Energy Standards

ISSUE DATE: May 13, 2011

DOCKET NO. E-999/M-10-989

ORDER FINDING UTILITIES IN COMPLIANCE AND CLARIFYING REQUIREMENTS FOR REPORTING WHOLESALE ELECTRICITY SALES

PROCEDURAL HISTORY

I. The Renewable Energy Statute

In 2001, the Minnesota Legislature enacted Minn. Stat § 216B.1691, setting renewable energy objectives (REO) for Minnesota investor-owned electric utilities, generation and transmission cooperatives, and municipal power agencies (utilities). Since that time, the statute has been amended twice (in 2003 and 2007), requiring Commission supervision of utility efforts to comply with the statutory objectives,[1] and requiring utilities to secure larger amounts of renewable generation under longer time frames, with fewer opportunities for waiver or deferment.

These amendments left in place the renewable energy objectives, which required only good faith efforts, and added renewable energy standards (RES), which begin for Xcel Energy in 2010 and for the other utilities in 2012. The RES require actual performance, unless the Commission finds that it is in the public interest to modify or delay that performance.

The RES require non-nuclear utilities to generate 25 percent of total retail sales with renewable technologies by 2025; they require Xcel, the state's only nuclear utility, to generate 30 percent of retail sales with renewable technologies by the same date. The amendments also set milestones to measure utilities' progress between the statute's effective date and 2025.

[1] The Commission issued the required orders in Docket Number E-999/CI-03-869, on June 1, August 13, and October 19, 2004, and on December 18, 2007. Those orders set standards for determining utility compliance with their renewable energy objective obligations and established reporting requirements to ensure effective Commission oversight.

On November 12, 2008, the Commission issued its Order Setting Filing Requirements and Clarifying Procedures in Docket E-999/M-08-1163. The Order provided guidance on the content, form, and deadlines for Renewable Energy Obligations - Renewable Energy Standards (REO-RES) compliance reports that are required to be filed every two years with the Commission.

This Order also coordinated the timing of its compliance review of utilities' biennial reports to the Commission with the OES's biennial report to the Legislature, to coordinate information-gathering and avoid duplication. The 2008 Order required the utilities to include standardized information, so that comparisons could be drawn between the various utilities submitting reports.

The amendments to the statute also required the Commission to exercise its previously discretionary authority to establish a program and protocols for trading renewable energy credits, and they required the Commission to mandate participation in that program by all utilities.[2] The Commission issued orders on October 9, 2007 and December 18, 2007 implementing these objectives.[3]

These orders required all utilities to use the Midwest Renewable Energy Tracking System (M-RETS) to record and track – in the form of Renewable Energy Credits (RECs) – their generation and purchase of any renewable energy supplies they wished to count toward compliance with the REO-RES. The orders also permitted utilities to buy and sell RECs properly registered within the M-RETs system and to count RECs purchased through the system toward compliance with the objectives or standards.

Finally, in its December 3, 2008 *Third Order Detailing Criteria and Standards for Determining Compliance Under Minn. Stat. §216B.1691 and Setting Procedures for Retiring Renewable Energy Credits*, the Commission directed utilities to begin retiring RECs to M-RETS sub-accounts (designated for the retirement of RECs used to meet the Minnesota REO-RES) for the applicable calendar year by May 1 of the following year.[4]

On April 28, 2011, the Commission met to consider the utilities' compliance with the 2008-2009 renewable energy objectives. The Commission also considered an issue raised in Minnesota Power's (one of the electric utilities subject to the REO-RES requirements) recent integrated resource plan -- whether a utility subject to Minn. Stat. § 216B.1691 must include wholesale electricity sales to Minnesota distribution cooperatives or municipals when calculating its total RES requirement.

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[2] Minn. Stat. § 216B.1691, subd. 4.

[3] *Order Approving Midwest Renewable Tracking System (M-RETS) Under Minn. Stat. § 216B.1691, Subd. 4,* Docket No. E-999/CI-04-1616 (October 9, 2007): *Order Establishing Initial Protocols for Trading Renewable Energy Credits*, Docket NO. E-999/CI-04-1616 (December 18, 2007).

[4] Once retired, RECs, are not available to meet other state or program requirements. In its December 3, 2008 Order, the Commission further directed utilities to submit a compliance filing demonstrating compliance with the RES by June 1.

II. Utilities Subject to Filing REO-RES Biennial Compliance Reports

The following 16 utilities are subject to the REO-RES requirements, and have timely submitted their 2008-2009 REO-RES biennial compliance reports:

- Basin Electric Power Cooperative
- Central Minnesota Municipal Power Agency
- Dairyland Power Cooperative
- East River Electric Power Cooperative
- Great River Energy
- Heartland Consumers Power District
- Interstate Power and Light Company
- L&O Power Cooperative
- Minnkota Power Cooperative, Inc.
- Minnesota Municipal Power Agency
- Minnesota Power
- Missouri River Energy Services
- Northwestern Wisconsin Electric
- Otter Tail Power Company
- Southern Minnesota Municipal Power Agency
- Xcel Energy

Four utilities – Minnesota Power, Great River Energy, Otter Tail Power, and Xcel Energy -- submitted written comments in response to the Commission's request for comments regarding the statutory interpretation issue related to wholesale sales. The Izaak Walton League of America – Midwest Office, Fresh Energy, and Minnesota Center for Environmental Advocacy (the Environmental Organizations) also submitted comments regarding this issue.[5]

FINDINGS AND CONCLUSIONS

I. Compliance with REO-RES Requirements

A. Department of Commerce Report

On January 25, 2011, the Department of Commerce (the Department) filed its report to the Legislature regarding electric utilities' compliance with the Renewable Energy Objectives and Standards set forth at Minn. Stat. § 216B.1691. The Department found that all 16 utilities submitting reports had complied with the statutory requirements in 2009, and appeared to be on track to comply with the 2010 requirements.

The Department concluded that all utilities met the statutorily required percentage of renewable energy for 2009, and noted the retirement of each utility's renewable energy credits in Docket No. 10-267.

[5] The Minnesota Chamber of Commerce also submitted comments requesting the Commission to require a ratepayer impact analysis from all utilities as a supplement to the REO-RES compliance filing.

B. Commission Action

The Commission has reviewed the individual REO-RES compliance reports submitted by the 16 utilities required to report under the REO-RES statute. Each utility filed a compliance report with specific information on that utility's past efforts and future plans. The Commission has also reviewed the recommendations of the Department.

The Commission finds that each of the 16 utilities subject to the REO-RES statute has complied with the requirement of Minn. Stat. § 216B. 1691, subd. 3(a), by reporting on its plans, activities, and progress with regard to its REO-RES obligations. In addition, based upon the data provided in this docket, all 16 utilities subject to the REO-RES statute have attained the 2008-2009 renewable energy objective of one percent. The Commission will continue to monitor future compliance through compliance filings, updates, and future resource plans.

The Commission further notes that several utilities initially filed portions of the REO-RES data required for the biennial filing as trade secret. These utilities, however, provided little or no explanation as to why such data should be treated as trade secret. Several of the utilities agreed to re-file all their data as public, or to significantly limit the designation of information as trade secret. In the future, the Commission will require all utilities who file trade secret data in their biennial REO-RES reports to specifically detail why each category of data filed as trade secret meets the Commission's requirements for the filing of trade secret data.[6]

Finally, the Commission finds that the 16 utilities covered under Minn. Stat. § 216B.1691 have submitted what appear to be reasonable plans to meet the REO in 2011, and the renewable energy standard in 2012, subject to review of the utilities' compliance in other appropriate proceedings. This finding, however, does not imply that particular generation projects are counted under the REO-RES statute; it is a general finding that the plans filed by each company demonstrate compliance, subject to confirmation of individual project eligibility through normal regulatory processes.

II. Wholesale Transactions Subject to REO-RES

A. Introduction

In Minnesota Power's recent integrated resource plan,[7] the Department reviewed Minnesota Power's REO-RES compliance with Minn. Stat. § 216B.1691 as part of its overall review of the utility's 2010 plan. The Department concluded that the utility's proposed plan is reasonable; however, the agency recommended that the Commission require Minnesota Power to retire an additional 8,799 RECs, equivalent to one percent of the Company's wholesale sales to Minnesota municipal utilities, to comply with the 2009 REO on behalf of those municipal customers.

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[6] See, e.g., the Minnesota Government Data Practices Act, Minn. Stat. § 13.37 and the Commission's Revised Procedures for Handling Trade Secret and Privileged Data, located on the Data Practices Section of its web page.

[7] Docket No. E-015/RP-09-1088.

Minnesota Power retired the necessary RECs to cover one percent of its own retail customers, but questioned the need to do so for its wholesale sales. Minnesota Power requested that the issue be addressed in a generic docket because the issue was one of statutory interpretation, which could affect other utilities subject to the renewable energy statute. Minnesota Power nevertheless agreed that if the Commission were to adopt the Department's recommendation, it would timely retire all necessary RECS for 2009 and on a going forward basis, so long as it has wholesale contracts with Minnesota municipal utilities.

Accordingly, the Commission issued a notice on December 22, 2010, identifying the issue, moving it to this docket, and requesting comments. The question presented is whether a utility subject to Minn. Stat. § 216B.1691 must include wholesale electricity sales to Minnesota distribution cooperatives or municipals when calculating its total RES requirement.

B. Positions of the Parties

1. The Minnesota Department of Commerce

The Department recommended that: 1) the Commission find that a utility's wholesale sales to distribution companies serving Minnesota customers are subject to the RES; and 2) the Commission require Minnesota Power to retire an additional 8,799 RECs, equivalent to one percent of the Company's wholesale sales to Minnesota municipals, to comply with the 2009 REO-RES on behalf of those municipal customers.

The Department asserted that the language of Minn. Stat. § 216B.1691, subd. 2 is clear that wholesale sales to distribution companies which serve Minnesota customers are subject to the RES. The Department further argued that exempting such sales for Minnesota Power would result in discriminatory treatment relative to the municipal power agencies and generation and transmission cooperatives serving Minnesota distribution companies, which are subject to the REO-RES.

2. Minnesota Power

Minnesota Power argued that Minn. Stat. § 216B.1691, subd. 2 does not require it to include wholesale electricity sales to Minnesota distribution cooperatives or municipals when calculating its total RES requirement. Minnesota Power reasoned that under the definitions of "electric utility,"[8] and "total retail sales"[9] found in the statute, a public utility is not required to include wholesale electric sales to Minnesota cooperatives or municipals when calculating total REO-RES requirements.

As support, Minnesota Power relied on a June 1, 2004 Commission Order which held that municipal utilities are not subject to the REO requirements.[10] Based on that order, the utility

[8] Minn. Stat. § 216B.1691, subd. 1(b).

[9] Minn. Stat. § 216B.1691, subd. 1(c).

[10] *Initial Order Detailing Criteria and Standards for Determining Compliance with Minn. Stat. § 216B.1691 and Requiring Customer Notification by Certain Cooperative, Municipal and Investor-Owned Distribution Utilities*, Docket No. E-999/CI-03-869 (June 1, 2004).

argued that to count its wholesale electricity sales to Minnesota distribution cooperatives or municipals would, in effect, inappropriately require municipal utilities that have all-requirements contracts with Minnesota Power to comply with the REO-RES requirements.

Finally, Minnesota Power argued that its wholesale municipal customers have never been deemed retail customers with a corresponding obligation by the utility to serve them and that they could not be designated retail customers under Minnesota's service territory laws.

3. Other Utilities and the Environmental Organizations

Great River Energy and the Environmental Organizations filed comments concurring with the Department that the renewable energy statute clearly states that utilities subject to the REO-RES must include in their calculation of total retail electric sales the electricity they sell to distribution utilities, such as a distribution cooperative or a municipal. Great River Energy also raised several related concerns with respect to wholesale sales by a distribution utility.

Otter Tail Power filed comments supporting Minnesota Power's interpretation of the statute. Otter Tail Power argued that a public utility is primarily a retail power supplier with only incidental wholesale sales. Otter Tail stated its belief that the intent of the legislature was to make the dictates of the renewable energy statute apply to *either* a retail power supplier *or* a wholesale power supplier, not to merely incidental wholesale sales by a retail power supplier.

Xcel Energy filed comments stating that position of either the Department or Minnesota Power was supportable by the statute.

C. Commission Action

The Commission has carefully reviewed the filings of the parties and concurs with the Department that the clear meaning of the renewable energy statute requires that any wholesale power sales to distribution companies that serve Minnesota customers are subject to the RES. The statutory provision at issue reads as follows:

> Each electric utility shall make a good faith effort to generate or procure sufficient electricity generated by an eligible energy technology to provide its retail consumers, *or the retail customers of a distribution utility to which the electric utility provides wholesale electric service*, so that commencing in 2005, at least one percent of the electric utility's total retail electric sales to retail customers in Minnesota is generated by eligible energy technologies and seven percent of the electric utility's total retail electric sales to retail customers in Minnesota by 2010 is generated by eligible energy technologies.
>
> Minn. Stat. § 216B.1691, subd. 2 (emphasis added).

Further, the definitions section of the renewable energy statute (Minn. Stat. § 216B. 169, subd. 1(c)) defines "total retail electric sales" as the kilowatt hours of electricity sold in a year by an electric utility to retail customers of the electric utility or to a distribution utility for distribution to the retail customers of the distribution utility. This definition is consistent with subd. 2 of that statute, adding further support to this interpretation.

Minnesota Power's assertion that only a utility's power sales to its own retail customers count in the calculation of its total REO-RES requirement is unsupported either by the statute or by Commission decisions interpreting the statute. Arguing that wholesale electricity sales to Minnesota distribution cooperatives or municipals are not covered by the renewable energy statute, Minnesota Power relied on a 2004 Commission order.[11] That order, however, addressed which *entities* are subject to the renewable energy statute – with a Commission finding that municipal utilities (in contrast to municipal power agencies) are *not* subject to the statute. Minnesota Power, however, a rate-regulated investor-owned utility serving Minnesota retail customers, is clearly subject to the renewable energy statutory mandates.

The 2004 Commission decision, moreover, clearly does not address the issue presented here -- which is what *transactions* by a public utility are subject to the renewable energy statute, i.e., whether a public utility must include wholesale electric sales to Minnesota cooperatives or municipals when calculating its total REO-RES requirement. As to that issue, the Commission concurs with the Department that the language and dictates of Minn. Stat. § 216B.1691 are clear, and require a utility to include wholesale power sales to distribution companies that serve Minnesota customers in calculating its renewable energy requirement.

The Commission therefore concurs with the Department, and on a going forward basis finds that any wholesale power sales that an electric utility, as that term is defined in the statute, makes to a distribution utility for distribution to that utility's Minnesota retail customers must be included in the calculation of the utility's renewable energy objective or standard.

Finally, any increased number of RECs that must be retired under today's order shall begin for total retail electric sales made during the year 2010.

The Commission will so order.

ORDER

1. The 16 utilities enumerated herein and subject to the REO-RES statute have complied with the requirement of Minn. Stat. § 216B.1691, subd. 3(a) by reporting on their plans, activities, and progress with regard to REO-RES.

2. The Commission delegates to the Executive Secretary the authority to clarify or otherwise streamline the content requirements of all filings required under orders issued in this docket, in dockets E-999/CI-03-869 and E-999/CI-04-1616, and in any other docket in which the Commission has set reporting or filing requirements for purposes of monitoring compliance with the REO and RES.

3. The Commission finds that the 16 utilities subject to subject to Minn. Stat. § 216B.1691 have complied with the 2008-2009 renewable energy objective of one percent.

[11] Docket No. E-999/CI-03-869 (June 1, 2004).

4. The 16 utilities subject to Minnesota Statute §216B.1691 have submitted what appear to be reasonable plans to meet the renewable energy objective in 2011 and the renewable energy standard in 2012. This finding does not imply that particular generation projects are counted under the REO-RES statute, but is a general finding that the plans filed by the companies demonstrate planned compliance, subject to confirmation of individual project eligibility through normal regulatory processes.

5. Minn. Stat. § 216B.1691 includes in sales subject to REO/RES requirements, wholesale sales to a distribution utility for distribution to that utility's retail customers. All utilities shall include these sales in their REO/RES calculations, beginning with sales in calendar year 2010.

6. All utilities who file trade secret data in their next biennial REO-RES report shall specifically detail why each category of data filed as trade secret meets the Commission's requirements for the filing of trade secret data.

7. This Order is effective as of the date of the Commission meeting, April 28, 2011.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

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BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
J. Dennis O'Brien	Commissioner
Betsy Wergin	Commissioner

In the Matter of Commission Consideration and Determination on Compliance with Renewable Energy Obligations and Renewable Energy Standards

In the Matter of Detailing Criteria and Standards for Measuring an Electric Utility's Good Faith Efforts in Meeting the Renewable Energy Objectives Under Minn. Stat. § 216B.1691

In the Matter of a Renewable Energy Certificate Retirement Report for Compliance Year 2010

In the Matter of a Renewable Energy Certificate Retirement Report for Compliance Year 2011

ISSUE DATE: May 28, 2013

DOCKET NO. E-999/M-12-958
E-999/CI-03-869
E-999/PR-11-189
E-999/PR-12-334

ORDER FINDING UTILITIES IN COMPLIANCE WITH MINN. STAT. § 216B.1691 AND MODIFYING BIENNIAL REPORTING PROCEDURES

PROCEDURAL HISTORY

I. The Renewable Energy Standards

Under Minn. Stat. § 216B.1691, all Minnesota investor-owned electric utilities, generation and transmission cooperatives, municipal power agencies, and power districts (hereinafter, "utilities") must generate or procure specific percentages of their total retail sales using eligible renewable technologies by specific year-end deadlines. These requirements, called the Renewable Energy Standards, are different for nuclear and non-nuclear utilities and are set forth below:[1]

Non-Nuclear Utilities		*Nuclear Utility*	
2012	12%	2010	15%
2016	17%	2012	18%
2020	20%	2016	25%
2025	25%	2020	30%

[1] The state has only one nuclear utility, Xcel Energy.

The statute directs and authorizes the Commission to oversee utilities' compliance with the Renewable Energy Standards. It requires utilities to report on compliance efforts at least every two years and directs the Commission to regularly investigate each utility's compliance. It authorizes the Commission to enter orders requiring specific performance by non-complying utilities and to assess financial penalties if those orders are not obeyed.

The statute also directs the Commission to establish a program and protocols for trading renewable energy credits and to require all utilities to participate.[2] The Commission has implemented this directive by requiring utilities to use the Midwest Renewable Energy Tracking System (M-RETS) to record and track – in the form of renewable energy credits issued by M-RETS – all renewable generation and purchased power supplies they propose to count toward compliance with the Renewable Energy Standards.[3]

Finally, the statute grants the Commission the authority to modify or delay any utility obligation under the Renewable Energy Standards if it is in the public interest to do so.[4]

II. This Proceeding

Implementing the Renewable Energy Standards – and the Renewable Energy Objectives, which preceded them – has been a complex, iterative process. The Commission has issued a series of orders on implementation issues, detailing the information utilities must provide in their biennial compliance filings and the criteria and standards it will use to determine compliance with the statute. Each time, the Commission has first requested comments from utilities and other stakeholders to help develop the issues as fully as possible.

On September 12, 2012, the Commission again issued a notice requesting comments on implementation issues, asking specifically whether any aspect of the biennial reporting process – including filing deadlines and content requirements for the biennial reports – should be streamlined or modified. The notice set a comment deadline of October 22, to coincide with the date by which the Commission was requesting that utilities file their biennial compliance filings.

III. Biennial Compliance Filings; Comments on Compliance Process

All utilities subject to the Renewable Energy Standards duly filed their biennial compliance reports. Those utilities are listed below.

- Basin Electric Power Cooperative
- Central Minnesota Municipal Power Agency
- Dairyland Power Cooperative
- East River Electric Power Cooperative, Inc.

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[2] Minn. Stat. § 216B.1691, subd. 4.

[3] See orders dated October 9, 2007, December 18, 2007, December 3, 2008, and February 3, 2010, in *In the Matter of a Commission Investigation into a Multi-State Tracking and Trading System for Renewable Energy Credits*, Docket No. E-999/CI-04-1616.

[4] Minn. Stat. § 216B.1691, subd. 2b.

- Great River Energy
- Heartland Consumers Power District
- Interstate Power and Light Company
- L & O Power Cooperative
- Minnesota Municipal Power Agency
- Minnesota Power
- Minnkota Power Cooperative, Inc.
- Missouri River Energy Services
- Northern States Power Company d/b/a Xcel Energy
- Northwestern Wisconsin Electric Company
- Otter Tail Power Company
- Southern Minnesota Municipal Power Agency

The following utilities and stakeholders filed comments in response to the Commission's request for comments on the biennial compliance reporting process:

- Dairyland Power Cooperative
- East River Electric Power Cooperative, Inc.
- Interstate Power and Light Company
- Minnesota Chamber of Commerce and the Minnesota Large Industrial Group, filing jointly as "Joint Business Intervenors"
- Minnesota Department of Commerce
- Minnesota Municipal Power Agency
- Minnesota Power
- Missouri River Energy Services
- Northern States Power Company d/b/a Xcel Energy
- Southern Minnesota Municipal Power Agency

On May 9, 2013, the utilities' biennial compliance reports and stakeholders' comments on the biennial reporting process came before the Commission.

FINDINGS AND CONCLUSIONS

I. Biennial Compliance Filings

All sixteen utilities subject to the Minnesota Renewable Energy Standards have filed the biennial reports required under Minn. Stat. § 216B.1691, subd. 3 (a). These reports included all information required under the Renewable Energy Standard statute and Commission orders implementing the statute.

These reports demonstrate that all utilities have met the seven percent Renewable Energy Objective set forth at Minn. Stat. § 216B.1691, subd. 2, and that all utilities appear to have reasonable plans in place to meet the Renewable Energy Standards applicable for the 2012-2014 reporting period. The utilities are therefore found to be in compliance with their Renewable Energy Standard obligations.

The finding on utilities' plans for future compliance is a general finding that the plans reasonably demonstrate planned compliance; it does not imply that generation from specific projects qualifies for credit under the Renewable Energy Standards. Individual projects must still qualify as eligible energy technologies through normal regulatory review.

II. Biennial Compliance Reporting Process

A. Parties' Recommendations

Eight utilities, the Joint Business Intervenors, and the Department of Commerce filed comments in response to the request for comments on streamlining or otherwise modifying the biennial compliance reporting process.

The utility commenters recommended reviewing all reporting requirements for obsolescence and redundancy, developing a uniform set of questions for all utilities, and filing biennial compliance reports on the same date as their annual reports on retirements of renewable energy credits.

The Joint Business Intervenors filed comments urging the Commission to require utilities to include in their biennial compliance reports detailed analyses of the costs of meeting the Renewable Energy Standard, as measured by specific computer models and cost methodologies. These intervenors filed the same comments in docket E-999/CI-11-852, *In the Matter of Utility Renewable Energy Cost Impact Reports Required by Minnesota Statutes Section 216B.1691, Subd. 2e.*

The Department – which is required by statute to compile the information in the utilities' biennial compliance filings, report to the Legislature on utilities' progress in increasing renewable energy supplies, and make recommendations for regulatory or legislative action[5] – filed comments recommending streamlining and consolidating filing requirements and moving filing dates to better match utilities' annual and biennial reporting obligations. In brief, the agency recommended the following:

- Eliminating – as superseded by the Midwest Renewable Energy Tracking System – the compliance filing requirements set in the first order in these dockets, *First Order Detailing Criteria and Standards for Determining Compliance with Minn. Stat. § 216B.1691 and Requiring Customer Notification by Certain Cooperative, Municipal, and Investor-Owned Distribution Utilities*, dated June 1, 2004 in docket E-999/CI-03-869.

- Eliminating, rephrasing, and supplementing assorted compliance filing requirements from the second set of filing requirements set in these dockets, *Order Setting Filing Requirements and Clarifying Procedures*, dated November 12, 2008 in docket E-999/CI-03-869.

  Retaining – as essential to tracking renewable energy supplies through the Midwest Renewable Energy Tracking System – the compliance filing requirements from the third set of filing requirements set in these dockets, *Third Order Detailing Criteria and Standards for Determining Compliance with Minn. Stat. § 216B.1691 and Setting Procedures for Retiring Renewable Energy Credits*, dated December 3, 2008 in dockets E-999/CI-03-869 and E-999/CI-04-1616.

[5] Minn. Stat. § 216B.1691, subd. 3.

The Department's recommendations were unopposed. They did not conflict with those of any other party, and they incorporated most of the utilities' recommendations.

B. Commission Action

The Commission concurs with the Department and the utilities that the biennial compliance reporting requirements can and should be streamlined.

First, the Commission's and the Department's experience in monitoring utilities' compliance with the Renewable Energy Objectives and Standards over the past several years has helped clarify which statutory obligations require detailed compliance information and documentation and which do not.

Second, the reporting, verification, accounting, and tracking functions of the Midwest Renewable Energy Tracking System (M-RETS), which all Minnesota utilities are required by statute to use, have rendered many of the original biennial filing requirements superfluous. Tracking renewable energy supplies through their associated M-RETS renewable energy credits is generally as accurate as, and more efficient than, tracking those supplies through the narrative explanations required of utilities in the past. And the Commission and the Department have the authority to require any additional explanation, analysis, or documentation that might be necessary or helpful.

The Commission will therefore adopt, with minor modifications, the Department's recommendations to streamline, consolidate, and otherwise modify the biennial compliance reporting requirements. The new biennial compliance reporting requirements are set forth in the ordering paragraphs below.

Those requirements continue to authorize Northwestern Wisconsin Electric Company to file, as its biennial compliance report, the renewable energy compliance information it provides to the Wisconsin Public Service Commission, since the company has fewer than 100 Minnesota customers and is subject to Wisconsin's renewable energy requirements. See ordering paragraph 5.B., which duplicates the company-specific authorization first granted in the November 12, 2008 *Order Setting Filing Requirements and Clarifying Procedures* in docket E-999/CI-03-869.

Finally, the Commission will not at this time adopt the filing requirements on cost calculations recommended by the Joint Business Intervenors. The timing of the recommendation did not permit its analysis by other stakeholders, nor is it clear that this case is the most effective vehicle for development of these issues.

ORDER

1. Dairyland Power Cooperative, Interstate Power and Light, Missouri River Energy Services, East River Electric Power Cooperative Inc, Heartland Consumers Power District, Central Minnesota Municipal Power Agency, Otter Tail Power Company, Southern Minnesota Municipal Power Agency, Xcel Energy, Basin Electric Power Cooperative, L& O Power Cooperative, Great River Energy, Northwestern Wisconsin Electric, Minnkota Power Cooperative, Minnesota Power, and Minnesota Municipal Power Agency have complied with

the requirement of Minn. Stat. §216B.1691 subd. 3(a) by reporting on their plans, activities, and progress with regard to REO-RES.

2. The 16 utilities enumerated above and subject to Minn. Stat. § 216B.1691 have complied with the 2010 and 2011 objectives of seven percent.

3. The 16 utilities subject to Minn. Stat. §216B.1691 have submitted what appear to be reasonable plans to meet the renewable energy standards for 2012-2014. This finding does not imply that particular generation projects are counted under the REO- RES statute, but is a general finding that the plans filed by the companies demonstrate planned compliance, subject to confirmation of individual project eligibility through normal regulatory processes.

4. The Commission adopts the Department's February 25, 2013 recommendation to streamline reporting requirements, modified to require utilities to report

   A. the year through which the utility can maintain compliance with its current renewable portfolio, and

   B. a chart showing projected compliance for the current year plus three (3) upcoming years, with projected Minnesota sales in MWh, the Renewable Energy Standard (RES) percentages for those years, projected RES needs, projected RES-eligible resources in MWh (or RECs), and projected surplus or deficit in MWh, and

   C. any unbundled renewable energy credit (REC) sales or purchases for the two preceding calendar years, including the number of RECs sold or purchased and the price paid for the RECs.

5. The biennial compliance reporting requirements are set forth below:

   A. The Commission clarifies that each utility subject to Minn. Stat. §216B.1691 must file its own individual biennial compliance report.

   B. Northwestern Wisconsin Electric Company shall comply with the reporting requirements of Minn. Stat. §216B.1691. Northwestern Wisconsin Electric Company shall file the information it has supplied to the Minnesota Office of Energy Security under the time lines set forth herein and shall file its biennial compliance filing under the time lines set forth herein. At its discretion, the company may file the renewable energy compliance information it has provided to the Wisconsin Public Service Commission as the biennial compliance report required under this order.

   C. Beginning with the next biennial reporting cycle, utilities shall file their biennial compliance reports at the same time they file their biennial reports with the Minnesota Office of Energy Security, but in no case later than June 1 in even numbered years. These reports shall be filed as miscellaneous tariff filings under the Commission's rules of practice and procedure.

   D. Biennial compliance reports shall be clearly labeled, and preferably labeled "REO-RES Compliance Report."

   E. Biennial compliance reports shall contain at least all of the information set forth below:

1. total Minnesota retail sales in megawatt hours for each year relevant to compliance;
2. an accounting of what portion, if any, of the renewable energy identified in part F has been allocated to meet the renewable energy requirements of other states or the requirements of green pricing programs;
3. sections addressing the four categories of information required by statute:
    i. the status of the utility's renewable energy mix relative to the objective and standards;
    ii. efforts taken to meet the objective and standards;
    iii. any obstacles encountered or anticipated in meeting the objective or standards; and
    iv. potential solutions to the obstacles.

F. Any other State Renewable Standards or Objectives to which the utility is subject;

G. Any renewable generation facilities expected to become operational during the upcoming year, the type of facility, and the capacity and capacity factor of each facility;

H. Through what year the utility is in compliance with the Minnesota RES given its current renewable portfolio;

I. A table – similar to the one set forth below, which is labeled Table 8f at page 5 of the biennial compliance report submitted in this docket by Missouri River Energy Services – showing projected compliance for the current year plus the next three years showing the utility's projected Minnesota sales in MWh, the RES percentages for those four years, the projected RES needs in MWh for those years, projected RES-eligible resources in MWh, and projected surplus or deficit in MWh;

Table 8f					
Year	**Projected MN sales (MWh)**	**RES**	**Projected RES Needs (MWh)**	**Projected *Resources (MWh)**	**Projected Surplus/Deficit (MWh)**
2012	1,274,887	12.00%	152,986	414,857	261,871
2013	1,390,611	12.00%	166,873	416,874	250,000
2014	1,417,035	12.00%	170,044	404,667	234,622
2015	1,443,081	12.00%	173,170	388,991	215,821

*Current year generation from Worthington, Marshall, Odin, Rugby and Hancock Wind projects plus eligible inventoried REC's from previous years

J. Any unbundled REC sales or purchases for the two preceding calendar years, including the number of RECs sold or purchased and the price paid for the RECs;

K. Demonstrated reasonable efforts to adequately protect against undesirable economic impacts on ratepayers, including, but not necessarily limited to keeping the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints.

6. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

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BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
John A. Tuma	Commissioner
Betsy Wergin	Commissioner

In the Matter of Commission Consideration and Determination on Compliance with Renewable Energy Standards	ISSUE DATE: August 13, 2015 DOCKET NO. E-999/M-14-237
In the Matter of a Renewable Energy Certificate Retirement Report for Compliance Year 2013	DOCKET NO. E-999/PR-14-12 DOCKET NO. E-999/PR-13-186
In the Matter of a Renewable Energy Certificate Retirement Report for Compliance Year 2012	ORDER FINDING UTILITIES IN COMPLIANCE WITH MINN. STAT. § 216B.1691

PROCEDURAL HISTORY

I. The Renewable Energy Standards

Under Minn. Stat. § 216B.1691, all Minnesota investor-owned utilities, generation and transmission cooperatives, municipal power agencies, and power districts (altogether, "utilities") must generate or procure specific percentages of their total retail sales using eligible renewable technologies by specific year-end deadlines. These requirements, called the Renewable Energy Standards (RES), are different for nuclear and non-nuclear utilities and are set forth below.[1]

Non-Nuclear Utilities		*Nuclear Utility*	
2012	12%	2010	15%
2016	17%	2012	18%
2020	20%	2016	25%
2025	25%	2020	30%

The statute directs and authorizes the Commission to oversee utilities' compliance with the Renewable Energy Standards. It requires utilities to report on compliance efforts at least every two years and directs the Commission to regularly investigate each utility's compliance. It authorizes the Commission to enter orders requiring specific performance by non-complying utilities and to assess financial penalties if those orders are not obeyed.

[1] Xcel Energy is the only nuclear utility in the state.

The statute also directs the Commission to establish a program and protocols for trading renewable energy credits and to require all utilities to participate.[2] The Commission has implemented this directive by requiring utilities to use the Midwest Renewable Energy Tracking system (M-RETS) to record and track – in the form of renewable energy credits issued by M-RETS – all renewable generation and purchased power supplies they propose to count toward compliance with the Renewable Energy Standards.[3]

Finally, the statute grants the Commission the authority to modify or delay any utility obligation under the Renewable Energy Standards if it is in the public interest to do so.

II. Reporting Process

Implementing the Renewable Energy Standards – and the Renewable Energy Objectives, which preceded them – has been a complex, iterative process.[4] The Commission has issued a series of orders on implementation issues, detailing the information utilities must provide in their biennial compliance filings and the criteria and standards it will use to determine compliance with the statute. Each time, the Commission has first requested comments from utilities and other stakeholders to help develop the issues as fully as possible.

On May 28, 2013, the Commission issued an order adopting the recommendations of the Department of Commerce (the Department) to streamline the biennial compliance reporting process.[5] The Department had recommended consolidating certain filing requirements, eliminating others, and moving filing dates to better match utilities' annual and biennial reporting obligations. The Commission adopted the recommendations, with minor modifications. As a result, utilities' reports now follow a standard format that was jointly developed by the Department and the Commission.

III. This Proceeding

By June 1, 2014, all utilities subject to the Renewable Energy Standards duly filed their biennial compliance reports. Those utilities are as follows:

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[2] Minn. Stat. § 216B.1691, subd. 4.

[3] See orders dated October 9, 2007, December 18, 2007, December 3, 2008, and February 3, 2010, in *In the Matter of a Commission Investigation into a Multi-State Tracking and Trading System for Renewable Energy Credits*, Docket No. E-999/CI-04-1616.

[4] This is the first reporting period where the utilities are not required to report on their good faith efforts to meet the renewable energy objectives under Minn. Stat. § 216B.1691, subd. 2. Under that provision, utilities were required to make good faith efforts to generate or procure sufficient electricity from an eligible energy technology so that at least seven percent of their total retail electric sales to retail customers came from eligible energy technologies. The utilities have fulfilled their obligations, having reached the seven percent goal.

[5] *In the Matter of Commission Consideration and Determination on Compliance with Renewable Energy Obligations and Renewable Energy Standards*, Docket No. E-999/M-12-958 Order Finding Utilities In Compliance with Minn. Stat. § 216B.1691 and Modifying Biennial Reporting Procedures (May 28, 2013).

- Basin Electric Power Cooperative
- Central Minnesota Municipal Power Agency
- Dairyland Power Cooperative
- East River Electric Power Cooperative, Inc.
- Great River Energy
- Heartland Consumer Power District
- Interstate Power and Light Company
- L & O Power Cooperative
- Minnesota Municipal Power Agency
- Minnesota Power
- Minnkota Power Cooperative, Inc.
- Missouri River Energy Services
- Northern States Power Company d/b/a Xcel Energy
- Northwestern Wisconsin Electric Company
- Otter Tail Power Company
- Southern Minnesota Municipal Power Agency

On January 28, 2015, the Department – which is required by statute to compile the information in the utilities' biennial compliance filings, report to the Legislature on utilities' progress in increasing renewable energy supplies, and make recommendations for regulatory or legislative action – filed its report with the Legislature.[6] The report stated that the Department believed that the utilities had complied with their 2013 obligations and appear able to comply into the future.

On February 2, 2015, the Commission issued a notice requesting comments on whether the utilities' reports demonstrate compliance with the Renewable Energy Standards and the Commission's order that modified the reporting procedures. No one filed comments.

On July 1, 2015, the utilities' biennial compliance reports came before the Commission.

FINDINGS AND CONCLUSIONS

All sixteen utilities subject to the Minnesota Renewable Energy Standards have filed the biennial reports required under Minn. Stat. § 216B.1691, subd. 3 (a). These reports included all information required under the Renewable Energy Standards statute and Commission orders implementing the statute.

These reports demonstrate that all utilities have met the twelve percent Renewable Energy Standards set forth at Minn. Stat. § 216B.1691, subd. 2a, for year-end 2012 and 2013. The reports also demonstrate that all utilities appear to have reasonable plans in place to meet the Renewable Energy Standards applicable for the 2014-2016 reporting period.[7] The utilities are therefore found to be in compliance with their Renewable Energy Standards requirements.

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[6] Minn. Stat. § 216B.1691, subd. 3.

[7] Xcel, as a nuclear utility, met its requirement to generate or procure sufficient electricity generated by an eligible energy technology so that, by 2012, 18 percent of its total retail electric sales to customers came from eligible energy technologies.

The findings on utilities' plans for future compliance is a general finding that the plans reasonably demonstrate planned compliance; it does not imply that generation from specific projects qualifies for credit under the Renewable Energy Standards. Individual projects must still qualify as eligible energy technologies through normal regulatory review.

ORDER

1. Dairyland Power Cooperative, Interstate Power and Light, Missouri River Energy Services, East River Electric Power Cooperative Inc, Heartland Consumer Power District, Central Minnesota Municipal Power Agency, Otter Tail Power Company, Southern Minnesota Municipal Power Agency, Xcel Energy, Basin Electric Power Cooperative, L& O Power Cooperative, Great River Energy, Northwestern Wisconsin Electric, Minnkota Power Cooperative, Minnesota Power, and Minnesota Municipal Power Agency have complied with the requirement of Minn. Stat. § 216B.1691, subd. 3(a) by reporting on their plans, activities, and progress with regard to RES.

2. The Commission finds that the 16 utilities enumerated above and subject to Minn. Stat. § 216B.1691 have complied with the 2012 and 2013 standards.

3. The Commission finds that the 16 utilities subject to Minn. Stat. § 216B.1691 have submitted what appear to be reasonable plans to meet the renewable energy standards for 2014-2016. This finding does not imply that particular generation projects are counted under the RES statute, but is a general finding that the plans filed by the companies demonstrate planned compliance, subject to confirmation of individual project eligibility through normal regulatory process.

4. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

Daniel P. Wolf

Daniel P. Wolf
Executive Secretary

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