MIDAMERICAN ENERGY COMPANY
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July 15, 2019

Mr. Anthony Star
Director
Illinois Power Agency
160 North LaSalle Street, Suite C-504
Chicago, Illinois 60601

Dear Mr. Star:

MidAmerican is submitting its load and generation forecasts to meet the Illinois Power Agency's July 15, 2019 data requirements. Please contact me if there are any questions or concerns with this information.

The following information is being supplied with this filing:

1. Forecast Documentation_IL_07152019.pdf – This file contains a discussion of load forecast methodology.
2. IL_Base_Fcst_EST_07152019.xlsx – This file contains the required base scenario MidAmerican Illinois hourly load forecast from January 1, 2019 through May 31, 2026.
3. IL_Base_Retail_Sales_Forecast_07152019.xlsx – This file contains the required MidAmerican Illinois hourly retail sales load forecast from January 1, 2019 through May 31, 2026.
4. High_Hourly_Forecast_07152017.xlsx – This file contains the required high scenario MidAmerican Illinois hourly load forecast from January 1, 2019 through May 31, 2026.
5. Low_Hourly_Forecast_07152017.xlsx – This file contains the required low scenario MidAmerican Illinois hourly load forecast from January 1, 2019 through May 31, 2026.
6. IL_NCP_Forecast_07152019.xlsx – This file contains the noncoincident peak demand forecast.
7. MWh_Sales_and_NCP_MW_High_Scenario.xlsx – This file contains the MWh sales forecast and the non-coincident peak demand forecast supporting the high hourly forecast scenario.
8. MWH_Sales_and_NCP_MW_Low_Scenario.xlsx – This file contains the MWh sales forecast and the non-coincident peak demand forecast supporting the low hourly forecast scenario.
9. Forecasted Load and Capability_07152019.xlsx – This file contains MidAmerican's forecasted load and capability utilizing unforced capacity ratings.
10. Historical and Forecasted ICAP and UCAP 07152019.xlsx – this file shows historical installed capacity (ICAP) and unforced capacity (UCAP) values for the Illinois historical resources.

11. Generation and Load Data MidAmerican Energy Projection 07152019.xlsx. This file contains the hourly MWh generation and sales forecast, including a summary tab computing the on and off peak short energy positions and a tab summarizing the resources required, the resources already under contract and the quantities to be procured.

Sincerely,

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Methodology for the 2020-2029 Illinois Electric Customers and Sales Forecasts

In December 2014, an electric rate case was finalized in MEC's Illinois service territory. As a result of the implementation of new electric rates, a number of customers were switched to a different revenue class. This switching will cause noticeable changes in the forecast, as compared to historical values.

The 2020-2029 electric customer and sales forecasts were produced using econometric models on a monthly basis and are carried out in three steps using a top-down approach:

Step 1: The aggregate customer numbers were forecasted directly by revenue class:

- Residential
- Commercial
- Industrial
- Public authority.

Industrial kWh sales were forecast directly. The street lighting forecasts were forecast using trending. In this class, the current customer numbers were assumed to remain constant while the corresponding energy sales were projected to grow approximately 0.10% annually in IL. Similar to the peak demand forecast, the Quad Cities' economic and demographic drivers are assumed to be a good proxy for MidAmerican Illinois service territory electric sales and customers in these forecasts.

Step 2: For residential, commercial and public authority, econometric models were built to forecast kWh per customer. The resulting kWh per customer forecasts were multiplied by the appropriate customer forecasts to arrive at a kWh sales forecast. For industrial, the kWh per customer values for each revenue class were calculated using customer and sales forecasts, and employed to check the presence of any discontinuity between the historical and forecasted values.

Step 3: The projected customers and sales numbers were modeled using data specific to the area being forecast. Economic data for the Quad Cities' metropolitan statistical area was used in building the models.

Economic and demographic variables

Some variables, such as customer numbers, price, sales, revenue class, jurisdiction, etc., were obtained internally from the company database while other data, such as economic, demographic and weather, were received from external sources.

The economic and demographic data for the models were obtained from the IHS Markit, Inc. database. The economic and demographic data forecast was performed by IHS Markit, Inc. in January 2019. The list of variables considered for the electric sales and customer forecasts is shown in Table 1. For MEC's Illinois service territory, economic and demographic variables specific to the Quad Cities metropolitan area were used in the forecasting process. The Quad Cities area encompasses MEC's Illinois service territory.

Table 1: List of economic and demographic variables considered for the 2020-2029 forecasts

Quad Cities MSA	
1	Real Gross Metropolitan Area Product (Millions 2009$)
2	Real Gross Metropolitan Area Product, Government, State and Local (Millions 2009$)
3	Real Gross Metropolitan Area Product, Manufacturing (Millions 2009$)
4	Population (Thousands)
5	Households, Family and Non-Family (Thousands)
6	Employment (NAICS), Total Non-Farm (Thousands)
7	Employment (NAICS), State and Local Government (Thousands)

Weather variables

The weather variables (derived from conditions at the Moline International Airport) used in the present forecast are:

Current month and previous month cooling degree days (CDD)
Current month and previous month heating degree days (HDD)

The present energy forecasts are based on billed data. This means that the sales numbers reflect, in part, the weather conditions from the previous month as well as the weather conditions for the current month, depending on the meter read date. To take this into account, both current month and previous month degree days are used in the modeling process. The forecasts used actual weather values for the historical period and normal weather values for the forecast period. In the 2020-2029 forecast, normal weather was defined as the average monthly degree days from 1989-2018.

To compare the growth rates the historical sales figures were "weather normalized" using average (normal) weather values. The normalization process consists of three steps. First, the historic predicted numbers were obtained from a regression model using the actual weather values. Second, the sales were re-calculated using average weather results.[1] Third, the difference between them, which defines the weather impact, was subtracted from the corresponding actual sales to arrive the normalized sales. In mathematical terms, the weather normalization can be written as follows:

$$Normalized\,Sales = ActualSales - [\Pr edictedSales_{ActualWeather} - \Pr edictedSales_{NormalWeather}]$$

[1] The same equation obtained in the first step was used.

Modeling

The econometric forecasting method used in this study assumes that the relationship between the dependent and independent variables is linear (additive) and defined as follows:

$$y = r + \alpha X + \beta Y + \gamma Z$$

where X, Y and Z are the variables, α, β and γ are the coefficients and r is the constant.

The forecasts were prepared using MetrixND software, version 4.7, developed by Itron, Inc. The forecasts typically involve finding a mathematical relationship between the dependent and independent variables. The steps taken in this forecast were as follows: The historical numbers since 2000 and the forecast numbers for economic variables until 2047 were obtained. These values were then exported into MetrixND and the analysis was carried out.

The primary criterion in selecting the variables was the relevance to the dependent variable being forecasted. Other considerations were the sign (the direction of change) and impact (the magnitude of elasticity coefficients) of variables on the forecasted dependent variable. Some of the statistical parameters important to the econometric model are:

Adjusted R-Square: It indicates the fraction of total variation explained by the independent variables in the regression. Its value ranges between 0 and 1, 1 being a perfect fit.

$$R^2 = \frac{ExplainedVariation}{TotalVariation}$$

Adjusted R^2 takes into account the number of variables (k) with a constant sample size (n) as this leads to a decrease in the degree of freedom (n-k). Thus, adjusted R^2 is more conservative.

$$\text{Adjusted } R^2 = 1 - (1 - R^2)\left(\frac{n-1}{n-k}\right)$$

F-Statistics (Probability): This is an alternative measure of goodness of the fit. F-statistics number indicates the probability that the estimated regression fit is purely accidental. This number is preferred to be as low as possible as compared to a critical number of 5%.

Mean Absolute Percentage Error (MAPE): MAPE defines the magnitude of errors in the model. It is the average of absolute values of the residual error percentages measured at each data point. The lower the MAPE number the better the model is considered to be.

Durbin-Watson Statistic: It tests the hypothesis that the errors from a model do not exhibit first order autocorrelation. In the absence of autocorrelation, the statistic has a value of 2. While it

varies between 0 and 4, a value above 2 indicates negative autocorrelation, while a value below 2 indicates positive autocorrelation.

Test parameters for statistical significance

The t-statistics and P-values show the statistical significance of independent variables in 95% confidence interval (or 5% significance level).

To evaluate the reasonableness of the model, the residual patterns and model fit statistics were studied. The residuals indicate the difference between the predicted and actual values. Any pattern associated with residuals suggests a missing variable(s). The residuals were studied through the autocorrelation factor and partial autocorrelation diagrams.

Customer forecasts

Variables and model statistics

The customer forecasts in general were straight-forward and involved fewer variables. The customer variables used in the models of different revenue classes are:

- Residential: Number of households in the Quad Cities Metropolitan Statistical Area (MSA), binary variable for the Illinois rate case impact and monthly binary variables
- Commercial: Time trend variable, binary variables for the Illinois rate case impact and monthly binary variables
- Industrials: Non-farm employment for the Quad Cities MSA, binary variable for the Illinois rate case impact and monthly binary variables
- Public authority: Economic variable weighted between state and local government employment in the Quad Cities MSA and non-farm employment in the Quad Cities MSA, binary variable for the Illinois rate case impact and monthly binary variables

The statistics for the customer forecasts are tabulated in Table 2.

Table 2: Adjusted R^2 and MAPE values for the customer forecasts

Revenue Class	MAPE
Residential	0.04%
Commercial	0.11%
Industrial	1.05%
Public Authority	0.28%

Customer forecast results

The monthly customer numbers are shown below at an average annual level for each revenue class.

Table 3: Summary of the historical and forecast average annual customer numbers in different classes

	Residential	Commercial	Industrial	Public Authority	Street Lighting	Total
2011	75,516	7,721	104	1,427	44	84,813
2012	75,693	7,716	107	1,376	44	84,936
2013	75,765	7,709	105	1,389	44	85,012
2014	75,812	7,765	99	1,392	44	85,111
2015	74,455	8,998	56	1,302	42	84,852
2016	74,298	9,209	49	1,288	42	84,886
2017	74,159	9,401	39	1,371	43	85,014
2018	73,933	9,653	38	1,410	43	85,078
2019	73,984	9,944	39	1,426	44	85,436
2020	73,976	10,021	39	1,425	44	85,506
2021	73,975	10,095	40	1,425	44	85,579
2022	73,971	10,169	40	1,425	44	85,649
2023	73,964	10,244	40	1,426	44	85,718
2024	73,958	10,320	41	1,426	44	85,788
2025	73,948	10,396	41	1,426	44	85,855
2026	73,936	10,472	41	1,426	44	85,920
2027	73,930	10,550	42	1,426	44	85,991
2028	73,925	10,628	42	1,426	44	86,065
2029	73,913	10,708	42	1,426	44	86,132

Sales forecasts

Variables and model statistics

The energy forecasts are more complicated and involve more variables than do the customer forecasts. For the residential, commercial and public authority classes, sales are determined by multiplying customers by use per customer. For the industrial class, sales are modeled directly. For the street lighting class, sales are forecast using trending. The sales forecast variables used in the industrial class model are:

- Industrial: An weighted index made up of the real gross metropolitan area product for the Quad Cities MSA, the non-farm employment in the Quad Cities MSA and the population of the Quad Cities MSA, the number of billing days in each month, current month cooling degree days, industrial retail average revenue lagged twelve months, current monthly heating degree days and monthly binaries.

The statistics for the sales forecasts are tabulated in Table 4.

Table 4: Adjusted R^2 and MAPE values for the sales forecasts

Revenue Class	MAPE
Industrial	8.12%

The comparison of tables (Tables 2 and 4) clearly indicates that better statistics were obtained for the customer models than sales models. The reason is that there is more uncertainty in the sales forecasts due to the presence of multiple drivers and their possible interactions. For example, a relatively small change in the historical usage pattern of a large industrial customer could have a measureable impact on the total energy usage in this class. Similarly, the changes in billing cycle could have significant effect on the billed sales.

Sales forecast results

The monthly billed sales numbers were forecasted at an aggregate level for each revenue class. The annual historical data and 10-year forecast values are summarized in Table 5.

Table 5: Summary of the historical and forecast annual billed sales of different revenue classes (MWh)

	Residential	Commercial	Industrial	Public Authority	Street Lighting	Total
2011	684,803	442,263	714,016	203,970	12,911	2,057,964
2012	679,471	437,523	712,702	191,436	12,647	2,033,778
2013	687,543	443,376	686,082	185,177	12,599	2,014,777
2014	676,836	435,336	681,658	177,095	12,595	1,983,520
2015	627,826	461,907	641,935	163,747	10,129	1,905,544
2016	646,439	466,908	634,925	169,402	9,949	1,927,623
2017	606,492	465,721	637,991	163,514	10,487	1,884,204
2018	663,656	478,047	626,337	169,615	10,829	1,948,484
2019	618,536	466,128	645,528	165,404	9,694	1,905,291
2020	611,342	469,471	652,705	164,400	9,704	1,907,622
2021	607,228	471,947	658,301	163,526	9,713	1,910,716
2022	603,630	474,401	663,949	162,656	9,723	1,914,359
2023	600,381	476,909	668,795	161,776	9,733	1,917,594
2024	597,099	479,416	674,129	160,894	9,743	1,921,281
2025	594,174	481,926	678,694	160,010	9,752	1,924,556
2026	591,425	484,455	683,259	159,132	9,762	1,928,032
2027	588,178	487,005	688,498	158,268	9,772	1,931,722
2028	584,729	489,584	693,869	157,411	9,782	1,935,375
2029	581,943	492,194	699,218	156,553	9,791	1,939,700

Usage per customer (UPC) forecasts
For the residential, commercial and public authority classes, kWh per customer values was forecast using econometric models. For the industrial and street lighting classes, the kWh per customer forecast values were calculated using the forecast sales and customer numbers data.

UPC forecast results:
Residential model – Number of members per household in the Quad Cities MSA, billing days, cooling degree days (current month), heating degree days (current month), binary variable for the Illinois rate case impact and monthly binaries
Commercial model – Time trend variable, cooling degree days (current month), heating degree days (lagged month), billing days, hours of light, binary variable for the Illinois rate case impact and monthly binaries
Public Authority model – State and local government employment in the Quad Cities MSA, billing days, heating degree days (current month), cooling degree days (current month), hours of light, binary variable for the Illinois rate case impact, an autoregressive term and monthly binaries

Table 6: Model Statistics

Revenue Class	MAPE
Residential	2.07%
Commercial	2.84%
Public Authority	4.04%

Methodology for the 2020-2029 Monthly Illinois Non-Coincident Electric Gross Peak Demand Forecast

2018 Electric Gross Peak Demand

The gross peak numbers used in the analysis are the historical gross peaks, which take into account demand side management impacts. Since there are planned large load additions, using the model results alone for the peak demand forecast would result in a forecast that is too low. Therefore, the planned large load additions are added to the model results to achieve the final peak demand forecast.

The gross peak load value was calculated according to the following equation:

Gross Peak = Native Peak Load + Residential Direct Load Control + Curtailment

Native Peak Load: For MEC's Illinois service territory, the 2018 native system peak load of 457 MW occurred on July 13, 2018 in the hour ending at 5:00 p.m. Central Daylight Time. Note: this figure does not include the load of MEC Illinois' distribution only customers.

SummerSaver Program: SummerSaver is MEC's residential direct load control program. Load displaced due to the energy saving program which aims to curtail energy usage of on-peak hours was also received from the energy efficiency group. At the time of gross system peak, the SummerSaver program was not in effect.

Curtailment: Load displaced due to curtailment of customers on an interruptible rate. There was no curtailment event in effect at the time of gross system peak.

Source Data and Model
The historical hourly data underlying the model is load research data by class for MEC's Illinois service territory. The data was divided into the following classes: residential, small commercial, large commercial, small industrial and large industrial. This data was at the meter level. MEC used data from January 1, 2009 through December 31, 2018 to build a monthly non-coincident electric gross peak demand model for its Illinois service territory.

The class data was added together to derive the total Illinois load. Next, the monthly peak dates and times were calculated. Weather data, taken from the weather station at the Quad City International Airport in Moline, IL, associated with the peak dates were compiled for use in the model.

The forecasting model consists of an economic driver variable, a number of weather variables and monthly indicator variables.

Economic variables
A weighted economic variable and Net Energy for Load

For the 2020-2029 forecast, MEC used the area's net energy for load as the economic driver. Also used was an economic variable weighted between real gross metro area product for the Quad Cities MSA and the number of households in the Quad Cities MSA. This variable was constructed in the following manner:

Real GMP^0.15*Number of households^0.85

Weather variables
Five weather variables were used:

1. Summer peak day maximum temperature (summer = May through September)
2. Summer peak day average daily dew point
3. Winter peak day minimum temperature (winter = November through March)
4. Winter peak day three day build up (the sum of the average temperatures of the three days prior to the winter peak day)
5. Shoulder peak day HDD65 (shoulder = April and October; HDD65 = 65 less the peak day average temperature, if the average temperature is less than 65; = 0 if the average temperature is greater than 65)

The forecast weather was calculated using the rank and average method for 2008 through 2018. First, the weather variables, as measured on the monthly peak days, were averaged for each month across the years. This revealed the monthly order for each weather variable throughout the year. For each year, the peak day weather variables were then ranked. Next, the ranked results were averaged: the highest values averaged, the second highest values averaged, and so on. The average of the highest values was then assigned to the month with the highest value, the average of the second highest values was then assigned to the month with the second highest value and so on.

The remaining explanatory variables in the model were monthly binary variables and a binary variable indicating whether or not the gross peak demand occurred on a Friday.

Table 7: MEC Illinois monthly non-coincident peak demand forecast

Year	Month	Peak MW at Generator (MEC served)
2020	6	372.61
2020	7	448.38
2020	8	431.65
2020	9	398.90
2020	10	284.41
2020	11	265.40
2020	12	306.27
2021	1	325.81
2021	2	301.94
2021	3	278.21
2021	4	279.59
2021	5	326.50
2021	6	373.39
2021	7	448.91
2021	8	432.20
2021	9	399.51
2021	10	285.41
2021	11	266.45
2021	12	307.32
2022	1	327.62
2022	2	303.72
2022	3	279.97
2022	4	281.24
2022	5	328.04
2022	6	374.86
2022	7	450.41
2022	8	433.69
2022	9	401.00
2022	10	286.94
2022	11	267.94
2022	12	308.87
2023	1	328.91
2023	2	304.97
2023	3	281.19
2023	4	282.41
2023	5	329.07
2023	6	375.79
2023	7	451.25
2023	8	434.55
2023	9	401.86
2023	10	288.09
2023	11	269.15
2023	12	310.17
2024	1	329.62
2024	2	305.71
2024	3	282.00
2024	4	283.24
2024	5	329.75
2024	6	376.33
2024	7	451.55
2024	8	434.89
2024	9	402.30
2024	10	288.79
2024	11	269.82
2024	12	310.73
2025	1	330.73
2025	2	306.84
2025	3	283.16
2025	4	284.14
2025	5	330.41
2025	6	376.79
2025	7	452.05
2025	8	435.45
2025	9	402.95
2025	10	289.56
2025	11	270.57
2025	12	311.44
2026	1	331.86
2026	2	307.92
2026	3	284.22
2026	4	285.27
2026	5	331.48

Weather in the Hourly Model

Using average daily temperature as an example, this is how a chaotic normal weather pattern (weather pattern used to create a realistic 8760 for dispatch simulations) is created:

1. Sort the Order variable (a ranking of the days in the month by average temperature, determined over the 1989-2018 time period) and the associated dates from highest to lowest within each month.
2. Sort the average temperature variable from highest to lowest within each month.
3. Assign the highest average temperature value to the date that corresponds to the highest value in the Order variable within the month.
4. Sort the Order variable by date for each month.
5. Create the average temperature output variable for the reference year.
6. Rotate the average temperature output variable to multiple years for forecasting purposes.

Hourly Load Shape Models by Class

Hourly models by class (residential, commercial, industrial, public authority and street lighting) were developed in MetrixND. The source data was hourly load research data by class for MEC's service territory. The classes of load research data were residential, small commercial, large commercial, small industrial and large industrial. The residential class load shape was developed using the residential load research data. The commercial class load shape was developed by combining the small and large commercial load research data. The industrial class load shape was developed using the small and large industrial load research data. The street lighting load shape was a lighting load shape from MEC's load research library. The public authority class load shape was developed by using a weighted average of the residential, commercial, industrial and street lighting class load shapes, based on the rate codes that made up the public authority class. Making use of linear regression, the models were estimated on data from January 1, 2015 through December 31, 2018. The models contain weather, binary and trend explanatory variables. There were twenty four models for each class. A forecast was developed through May 31, 2026, using the weather forecast developed as described above.

Long-Term Hourly Modeling

The long-term hourly forecast was developed in MetrixLT. The hourly profiles by class were calibrated to existing calendar month sales forecasts by class and an overall monthly non-coincident peak demand forecast.

Energy Efficiency in the Load Forecast

MEC has energy efficiency programs operating in its Illinois service territory. Estimated past energy savings are implicit in the historical data used to derive the electric sales forecast models. Without adjustment, this method implies that the level of future estimated program savings will be similar to past estimated program savings. Estimated program impacts in the forecast period are not projected to deviate measurably from estimated historical levels, so no adjustment was made to the forecasting models.

Load Forecast for the Retail Choice Switching

MEC has one active alternative retail supplier in its Illinois service territory. The retail choice switching forecast was derived by reviewing recent switching activity and projecting forward recent trends. Switched load is expected to grow from 16.6 MW in 2019 to 16.9 MW in 2026.

Table 8: Retail Switching: Monthly Peak Demand and Energy Forecasts

	Residential kWh	Commercial kWh	Industrial kWh	Public Authority kWh	Street Lighting kWh	Total kWh	MW Demand
Jan-20	42,669	4,392,200	500,000	1,125,000	-	6,059,869	13.88
Feb-20	49,523	5,406,634	500,000	1,125,000	-	7,081,157	13.00
Mar-20	40,774	5,135,670	500,000	1,125,000	-	6,801,444	15.10
Apr-20	37,060	5,379,989	500,000	1,483,719	-	7,400,768	13.03
May-20	35,792	4,185,743	500,000	1,126,688	-	5,848,223	13.93
Jun-20	33,996	5,483,017	500,000	1,126,688	-	7,143,701	15.84
Jul-20	20,672	5,482,265	500,000	1,126,688	-	7,129,625	16.61
Aug-20	62,337	7,792,925	500,000	1,126,688	-	9,481,950	16.64
Sep-20	38,558	3,342,545	500,000	1,126,688	-	5,007,791	15.79
Oct-20	38,577	7,174,779	500,000	1,126,688	-	8,840,044	13.53
Nov-20	33,176	4,152,135	500,000	1,126,688	-	5,811,999	13.03
Dec-20	38,577	4,720,250	500,000	1,126,688	-	6,385,515	13.28
Jan-21	42,733	4,405,382	500,000	1,126,688	-	6,074,803	13.91
Feb-21	49,598	5,422,860	500,000	1,126,688	-	7,099,146	13.03
Mar-21	40,835	5,151,084	500,000	1,126,688	-	6,818,607	15.14
Apr-21	37,115	5,396,136	500,000	1,485,945	-	7,419,197	13.07
May-21	35,846	4,198,305	500,000	1,128,379	-	5,862,530	13.97
Jun-21	34,047	5,499,473	500,000	1,128,379	-	7,161,898	15.88
Jul-21	20,703	5,498,718	500,000	1,128,379	-	7,147,800	16.65
Aug-21	62,431	7,816,313	500,000	1,128,379	-	9,507,123	16.68
Sep-21	38,616	3,352,577	500,000	1,128,379	-	5,019,571	15.83
Oct-21	38,635	7,196,312	500,000	1,128,379	-	8,863,326	13.57
Nov-21	33,226	4,164,597	500,000	1,128,379	-	5,826,201	13.07
Dec-21	38,635	4,734,417	500,000	1,128,379	-	6,401,430	13.32
Jan-22	42,797	4,418,604	500,000	1,128,379	-	6,089,780	13.94
Feb-22	49,672	5,439,136	500,000	1,128,379	-	7,117,186	13.07
Mar-22	40,897	5,166,543	500,000	1,128,379	-	6,835,819	15.18
Apr-22	37,171	5,412,331	500,000	1,488,175	-	7,437,677	13.10
May-22	35,900	4,210,905	500,000	1,130,072	-	5,876,877	14.00
Jun-22	34,098	5,515,978	500,000	1,130,072	-	7,180,148	15.92
Jul-22	20,734	5,515,221	500,000	1,130,072	-	7,166,027	16.69
Aug-22	62,525	7,839,772	500,000	1,130,072	-	9,532,369	16.72
Sep-22	38,674	3,362,639	500,000	1,130,072	-	5,031,384	15.87
Oct-22	38,693	7,217,910	500,000	1,130,072	-	8,886,675	13.60
Nov-22	33,276	4,177,096	500,000	1,130,072	-	5,840,443	13.10
Dec-22	38,693	4,748,626	500,000	1,130,072	-	6,417,391	13.35
Jan-23	42,862	4,431,865	500,000	1,130,072	-	6,104,798	13.98
Feb-23	49,746	5,455,460	500,000	1,130,072	-	7,135,278	13.10
Mar-23	40,958	5,182,050	500,000	1,130,072	-	6,853,079	15.22
Apr-23	37,227	5,428,575	500,000	1,490,408	-	7,456,210	13.13
May-23	35,954	4,223,543	500,000	1,131,767	-	5,891,264	14.04
Jun-23	34,149	5,532,533	500,000	1,131,767	-	7,198,449	15.96
Jul-23	20,765	5,531,774	500,000	1,131,767	-	7,184,307	16.74
Aug-23	62,618	7,863,301	500,000	1,131,767	-	9,557,687	16.77
Sep-23	38,732	3,372,731	500,000	1,131,767	-	5,043,230	15.91
Oct-23	38,751	7,239,573	500,000	1,131,767	-	8,910,092	13.64
Nov-23	33,326	4,189,632	500,000	1,131,767	-	5,854,726	13.13
Dec-23	38,751	4,762,878	500,000	1,131,767	-	6,433,396	13.38
Jan-24	42,926	4,445,166	500,000	1,131,767	-	6,119,860	14.01
Feb-24	49,821	5,471,833	500,000	1,131,767	-	7,153,422	13.13
Mar-24	41,019	5,197,602	500,000	1,131,767	-	6,870,389	15.25
Apr-24	37,282	5,444,867	500,000	1,492,644	-	7,474,794	13.16
May-24	36,008	4,236,219	500,000	1,133,466	-	5,905,693	14.07
Jun-24	34,200	5,549,137	500,000	1,133,466	-	7,216,803	16.00
Jul-24	20,797	5,548,376	500,000	1,133,466	-	7,202,638	16.78
Aug-24	62,712	7,886,901	500,000	1,133,466	-	9,583,079	16.81
Sep-24	38,790	3,382,854	500,000	1,133,466	-	5,055,109	15.95
Oct-24	38,809	7,261,301	500,000	1,133,466	-	8,933,576	13.67
Nov-24	33,376	4,202,206	500,000	1,133,466	-	5,869,048	13.16
Dec-24	38,809	4,777,172	500,000	1,133,466	-	6,449,447	13.42
Jan-25	42,990	4,458,507	500,000	1,133,466	-	6,134,963	14.05
Feb-25	49,896	5,488,255	500,000	1,133,466	-	7,171,617	13.16
Mar-25	41,081	5,213,201	500,000	1,133,466	-	6,887,748	15.29
Apr-25	37,338	5,461,209	500,000	1,494,884	-	7,493,431	13.20
May-25	36,062	4,248,933	500,000	1,135,166	-	5,920,161	14.11
Jun-25	34,252	5,565,792	500,000	1,135,166	-	7,235,210	16.04
Jul-25	20,828	5,565,028	500,000	1,135,166	-	7,221,022	16.82
Aug-25	62,807	7,910,572	500,000	1,135,166	-	9,608,545	16.85
Sep-25	38,848	3,393,006	500,000	1,135,166	-	5,067,021	15.99
Oct-25	38,867	7,283,094	500,000	1,135,166	-	8,957,128	13.70
Nov-25	33,426	4,214,818	500,000	1,135,166	-	5,883,411	13.20
Dec-25	38,867	4,791,510	500,000	1,135,166	-	6,465,544	13.45
Jan-26	43,055	4,471,888	500,000	1,135,166	-	6,150,110	14.08
Feb-26	49,971	5,504,727	500,000	1,135,166	-	7,189,864	13.20
Mar-26	41,143	5,228,848	500,000	1,135,166	-	6,905,157	15.33
Apr-26	37,394	5,477,599	500,000	1,497,127	-	7,512,121	13.23
May-26	36,116	4,261,685	500,000	1,136,870	-	5,934,671	14.15
Jun-26	34,303	5,582,496	500,000	1,136,870	-	7,253,669	16.08
Jul-26	20,859	5,581,730	500,000	1,136,870	-	7,239,459	16.86
Aug-26	62,901	7,934,313	500,000	1,136,870	-	9,634,084	16.89
Sep-26	38,906	3,403,190	500,000	1,136,870	-	5,078,966	16.03
Oct-26	38,926	7,304,952	500,000	1,136,870	-	8,980,748	13.74
Nov-26	33,476	4,227,468	500,000	1,136,870	-	5,897,814	13.23
Dec-26	38,926	4,805,890	500,000	1,136,870	-	6,481,686	13.48

Table 9: Retail Switching: Monthly Customer Count Forecasts

	Residential	Commercial	Industrial	Public Authority	Street Lighting	Total
Jan-20	77	194	1	25	-	297
Feb-20	77	194	1	25	-	297
Mar-20	77	194	1	25	-	298
Apr-20	77	194	1	25	-	298
May-20	77	194	1	25	-	298
Jun-20	77	194	1	25	-	298
Jul-20	77	194	1	25	-	298
Aug-20	77	194	1	25	-	298
Sep-20	77	194	1	25	-	298
Oct-20	77	194	1	25	-	298
Nov-20	77	194	1	25	-	298
Dec-20	77	194	1	25	-	298
Jan-21	77	194	1	25	-	298
Feb-21	77	194	1	25	-	298
Mar-21	77	195	1	25	-	298
Apr-21	77	195	1	25	-	298
May-21	77	195	1	25	-	298
Jun-21	77	195	1	25	-	298
Jul-21	77	195	1	25	-	298
Aug-21	77	195	1	25	-	298
Sep-21	77	195	1	25	-	298
Oct-21	77	195	1	25	-	298
Nov-21	77	195	1	25	-	298
Dec-21	77	195	1	25	-	298
Jan-22	77	195	1	25	-	298
Feb-22	77	195	1	25	-	298
Mar-22	77	195	1	25	-	299
Apr-22	77	195	1	25	-	299
May-22	77	195	1	25	-	299
Jun-22	77	195	1	25	-	299
Jul-22	77	195	1	25	-	299
Aug-22	77	195	1	25	-	299
Sep-22	77	195	1	25	-	299
Oct-22	77	195	1	25	-	299
Nov-22	77	195	1	25	-	299
Dec-22	77	195	1	25	-	299
Jan-23	77	195	1	25	-	299
Feb-23	77	195	1	25	-	299
Mar-23	77	196	1	25	-	299
Apr-23	77	196	1	25	-	299
May-23	77	196	1	25	-	299
Jun-23	77	196	1	25	-	299
Jul-23	77	196	1	25	-	299
Aug-23	77	196	1	25	-	299
Sep-23	77	196	1	25	-	299
Oct-23	77	196	1	25	-	299
Nov-23	77	196	1	25	-	299
Dec-23	77	196	1	25	-	299
Jan-24	77	196	1	25	-	299
Feb-24	77	196	1	25	-	299
Mar-24	77	196	1	25	-	300
Apr-24	77	196	1	25	-	300
May-24	77	196	1	25	-	300
Jun-24	77	196	1	25	-	300
Jul-24	77	196	1	25	-	300
Aug-24	77	196	1	25	-	300
Sep-24	77	196	1	25	-	300
Oct-24	77	196	1	25	-	300
Nov-24	77	196	1	25	-	300
Dec-24	77	196	1	25	-	300
Jan-25	77	196	1	25	-	300
Feb-25	77	196	1	25	-	300
Mar-25	77	197	1	25	-	301
Apr-25	77	197	1	25	-	301
May-25	77	197	1	25	-	301
Jun-25	77	197	1	25	-	301
Jul-25	77	197	1	25	-	301
Aug-25	77	197	1	25	-	301
Sep-25	77	197	1	25	-	301
Oct-25	77	197	1	25	-	301
Nov-25	77	197	1	25	-	301
Dec-25	77	197	1	25	-	301
Jan-26	77	197	1	25	-	301
Feb-26	78	197	1	25	-	301
Mar-26	78	197	1	25	-	301
Apr-26	78	197	1	25	-	301
May-26	78	197	1	25	-	301
Jun-26	78	197	1	25	-	301
Jul-26	78	197	1	25	-	301
Aug-26	78	197	1	25	-	301
Sep-26	78	197	1	25	-	301
Oct-26	78	197	1	25	-	301
Nov-26	78	197	1	25	-	301
Dec-26	78	197	1	25	-	301

Table 10: Multi-Year Historical Load Detail

	Small Industrial		Residential		Large Commercial		Small Commercial		Large Industrial		Lighting		Total	
	kWh	kW Demand	kWh	kW Demand	kWh	kW Demand	kWh	kW Demand	kWh	kW Demand	kWh	kW Demand	kWh	kW Demand
Jan-14	28,171,730	49,761	67,104,249	142,274	33,701,323	57,619	13,840,010	30,258	35,536,920	58,882			178,354,231	313,262
Feb-14	26,197,668	49,481	59,481,578	126,833	29,869,294	56,943	11,983,787	29,046	33,939,937	61,217			161,472,263	289,748
Mar-14	27,752,047	49,916	54,363,062	131,121	30,800,211	55,959	12,109,374	28,836	37,830,750	67,578			162,855,445	285,736
Apr-14	26,526,608	50,315	43,469,025	101,202	28,915,683	54,235	10,919,129	29,247	39,219,975	68,305			149,050,420	257,303
May-14	28,286,776	55,643	48,835,372	154,314	31,865,409	67,748	11,477,521	32,747	32,332,205	66,670			152,797,283	341,478
Jun-14	30,045,397	57,414	64,873,449	174,811	34,236,736	69,378	12,330,543	32,529	38,088,101	67,490			179,574,226	364,197
Jul-14	30,645,548	59,062	65,347,076	197,861	35,113,643	71,742	13,681,986	36,669	37,653,960	67,431			182,442,213	401,834
Aug-14	29,819,076	55,948	68,153,454	212,432	35,856,060	73,995	12,940,389	35,004	35,887,061	64,955			182,656,040	381,118
Sep-14	26,999,392	52,546	48,937,711	192,787	30,378,554	74,398	10,950,399	33,005	32,598,186	60,788			149,864,243	380,154
Oct-14	26,299,447	48,267	43,411,551	94,285	27,994,689	54,415	11,676,485	29,159	34,688,635	60,088			144,070,806	248,016
Nov-14	24,794,827	46,047	51,704,310	118,879	28,994,074	56,065	12,822,913	32,370	37,233,621	69,459			155,549,744	283,871
Dec-14	25,889,580	46,470	57,086,294	123,407	30,865,350	55,300	12,862,509	32,401	34,888,914	63,493			161,592,648	275,167
Jan-15	23,082,533	40,129	53,796,551	122,682	31,587,487	59,298	16,527,816	39,432	38,535,453	66,824	1,757,228	3,929	165,287,066	298,525
Feb-15	21,350,307	40,119	49,855,826	110,346	29,312,362	56,665	15,298,966	40,460	34,801,640	68,531	1,476,341	3,929	152,095,441	274,273
Mar-15	23,060,882	39,898	43,915,206	98,952	28,554,546	55,282	14,932,529	38,138	38,191,489	62,873	1,468,286	3,929	150,122,938	261,893
Apr-15	21,628,894	41,037	37,368,479	89,586	26,225,378	53,007	13,382,509	35,362	37,569,752	64,943	1,258,980	3,929	137,433,992	236,626
May-15	23,552,990	44,593	42,664,820	109,069	28,287,187	58,738	13,220,888	36,672	38,563,411	67,583	1,158,256	3,929	147,447,553	285,712
Jun-15	25,103,490	47,623	61,284,244	180,673	31,856,580	68,503	15,358,917	42,236	42,017,393	70,714	1,051,376	3,929	176,672,001	382,043
Jul-15	26,899,977	48,804	74,223,189	205,728	34,838,869	73,693	16,891,119	46,053	42,599,298	70,929	1,117,783	3,929	196,570,235	412,481
Aug-15	26,824,918	49,175	66,426,087	196,257	33,465,146	68,753	15,930,888	40,493	40,458,702	68,055	1,237,303	3,929	184,343,044	363,968
Sep-15	25,416,257	50,271	60,162,321	194,554	32,009,481	73,963	15,560,593	47,054	27,318,817	71,402	1,354,137	3,929	161,821,607	400,665
Oct-15	22,952,773	44,531	40,807,245	102,629	27,346,760	57,045	16,016,337	41,908	35,123,855	62,973	1,570,057	3,929	143,817,027	252,989
Nov-15	21,158,547	44,222	44,047,527	104,121	26,682,217	50,546	14,657,926	38,274	25,370,639	60,481	1,661,940	3,929	133,578,796	238,785
Dec-15	21,062,194	38,667	53,088,386	111,192	28,739,821	51,288	15,062,674	37,907	33,630,402	63,486	1,793,116	3,929	153,376,594	264,108
Jan-16	21,168,803	35,857	55,821,714	121,179	26,601,397	48,002	22,661,733	47,084	40,620,290	69,100	1,734,512	3,879	168,608,448	289,003
Feb-16	19,520,513	35,265	48,283,197	114,934	24,181,413	46,491	19,657,565	43,641	38,251,196	69,962	1,506,902	3,879	151,400,787	274,902
Mar-16	20,302,200	34,826	42,835,667	94,914	23,785,437	43,444	17,966,766	41,978	44,577,120	71,950	1,443,616	3,879	150,910,806	260,743
Apr-16	19,680,897	35,397	40,005,602	89,700	23,018,637	45,778	16,366,787	38,587	39,494,089	70,510	1,237,598	3,879	139,803,609	241,241
May-16	20,932,855	38,885	43,969,041	148,257	24,894,368	55,349	16,836,165	42,626	40,750,360	71,076	1,139,598	3,879	148,522,388	309,038
Jun-16	22,743,794	40,798	74,994,261	195,055	30,274,051	63,401	20,734,836	49,430	39,024,949	70,671	1,037,139	3,879	188,809,030	386,918
Jul-16	23,307,675	42,096	77,506,472	211,441	30,920,639	67,477	21,069,087	54,092	41,873,228	72,152	1,106,048	3,879	195,783,150	424,506
Aug-16	24,031,429	43,009	71,719,002	190,571	30,754,170	64,323	21,615,362	55,112	42,922,767	74,666	1,226,027	3,879	192,268,756	401,024
Sep-16	22,050,541	42,149	54,535,194	181,490	26,990,902	62,551	18,759,543	50,939	32,890,070	69,655	1,342,061	3,879	156,568,312	390,039
Oct-16	20,961,586	38,762	40,358,936	111,883	23,888,541	51,219	20,323,690	47,867	29,516,400	55,902	1,555,061	3,879	136,604,215	270,049
Nov-16	19,912,679	35,871	41,730,315	97,613	22,397,890	42,661	19,909,739	42,891	35,169,591	70,350	1,644,205	3,879	140,764,419	265,753
Dec-16	20,762,354	35,924	57,938,860	133,863	25,818,971	46,242	23,675,009	52,739	44,794,868	73,332	1,770,647	3,879	174,760,709	300,137
Jan-17	17,643,075	29,769	57,977,890	117,589	20,385,857	35,826	30,420,713	66,064	41,994,393	71,152	1,734,512	3,879	170,156,440	296,942
Feb-17	15,756,617	29,462	44,021,650	106,654	17,287,706	33,990	24,262,955	61,208	37,197,836	70,011	1,457,256	3,879	139,984,021	268,951
Mar-17	17,280,745	29,180	45,605,028	91,439	18,901,840	33,169	26,010,158	57,160	44,233,569	72,242	1,443,616	3,879	153,474,956	257,166
Apr-17	16,283,695	29,096	37,404,411	81,857	17,209,645	32,876	21,844,958	51,842	37,253,573	64,808	1,237,598	3,879	131,233,880	224,477
May-17	17,770,081	33,320	40,409,445	129,352	18,635,395	42,498	22,585,265	58,269	43,296,459	73,617	1,139,598	3,879	143,836,244	303,334
Jun-17	18,905,124	35,256	59,570,771	169,806	22,132,809	48,273	26,629,776	69,779	44,361,827	75,071	1,037,139	3,879	172,637,446	373,755
Jul-17	19,975,106	36,077	74,492,245	179,789	24,423,954	50,700	29,493,396	75,994	33,469,146	70,913	1,106,048	3,879	182,959,896	371,881
Aug-17	19,298,369	33,375	53,880,710	143,099	21,736,650	45,152	26,592,946	63,066	43,539,287	72,918	1,226,027	3,879	166,273,989	338,195
Sep-17	18,157,551	34,651	50,680,626	160,565	20,241,510	46,811	24,688,069	67,089	41,884,820	69,945	1,342,061	3,879	156,994,638	354,368
Oct-17	17,728,362	31,737	41,595,585	100,631	18,195,001	38,461	27,198,973	68,520	44,249,008	71,340	1,555,061	3,879	150,521,990	253,516
Nov-17	16,558,923	29,426	47,417,055	96,504	17,623,034	31,673	30,994,744	72,586	39,123,520	67,903	1,644,205	3,879	153,361,481	267,234
Dec-17	17,098,024	29,079	59,350,639	138,883	19,482,390	34,996	30,470,912	65,697	40,418,303	69,139	1,770,647	3,879	168,590,915	302,752
Jan-18	18,524,003	31,257	62,788,813	144,730	15,485,175	26,993	38,685,763	86,788	41,152,504	70,760	1,734,512	3,879	178,370,770	310,974
Feb-18	16,517,562	30,908	53,484,994	122,320	13,543,018	26,291	33,275,863	75,351	37,460,696	71,191	1,457,256	3,879	155,739,389	293,550
Mar-18	17,377,100	28,976	47,462,847	96,877	13,558,806	23,368	31,328,752	68,552	38,094,821	70,405	1,443,616	3,879	149,265,942	250,790
Apr-18	16,768,543	30,419	42,214,934	94,681	12,778,232	23,892	29,727,850	69,943	40,837,875	69,904	1,237,598	3,879	143,565,031	267,425
May-18	19,072,982	35,055	50,233,294	171,243	14,880,115	33,139	28,855,187	78,128	42,650,914	69,807	1,139,598	3,879	156,832,091	348,731
Jun-18	19,416,471	36,279	64,600,808	178,871	16,323,550	36,258	32,078,038	82,288	39,072,173	73,591	1,037,139	3,879	172,528,179	367,227
Jul-18	20,035,969	36,770	72,249,504	193,532	17,138,715	36,227	34,395,732	88,588	43,055,039	71,861	1,106,048	3,879	187,981,006	401,105
Aug-18	20,216,858	34,917	65,855,522	179,191	16,695,156	34,247	33,047,543	81,443	40,712,492	69,745	1,226,027	3,879	177,753,597	357,930
Sep-18	18,106,776	35,616	50,344,979	156,188	14,104,690	32,946	28,295,191	81,725	37,401,667	68,184	1,342,061	3,879	149,595,364	353,268
Oct-18	17,444,664	33,012	41,124,561	103,600	12,690,746	28,770	32,834,109	74,260	42,617,339	69,688	1,555,061	3,879	148,266,479	269,414
Nov-18	16,667,259	28,764	51,663,750	114,281	13,106,795	23,599	33,876,768	73,797	42,008,059	70,859	1,644,205	3,879	158,966,837	273,559
Dec-18	16,745,952	28,904	58,489,703	119,213	13,735,500	23,561	34,848,285	74,384	42,241,265	67,928	1,770,647	3,879	167,831,352	281,505

Low and High Load Forecast Scenarios

The required low and high hourly load forecast scenarios were created by taking the 95% confidence interval around each class-level sales, customer and use per customer forecast and the 95% confidence interval around the non-coincident gross peak demand forecast. MetrixND, the load forecasting software used for the sales, customers use per customer and non-coincident peak demand forecasts, provided the upper and lower bounds of a 95% confidence interval around each monthly forecast value. This software feature allowed the construction of upper and lower bound forecasts for the residential, commercial, industrial and public authority sales forecasts. The street lighting sales forecast was multiplied by 0.99 and 1.01 to generate, respectively, a lower and upper bound street lighting sales forecast. As mentioned above, the monthly residential, commercial and public authority sales forecasts were calculated by multiplying together a class-level customer forecast and a class-level use per customer forecast. For each month in the forecast period, the lower bound of each class-level sales forecast was found by multiplying the lower bound of the class-level customer count forecast by the lower bound of the class-level use per customer forecast. The same procedure was followed to arrive at the upper bound of the class-level sales forecasts. The industrial sales forecast was generated by a class-level total sales model. The lower and upper bounds of the 95% confidence interval were an output of the modeling process.

The lower bound forecasts of each class' 95% confidence interval were summed to arrive at the lower bound for the total sales forecast, while the upper bound forecasts of each class' 95% confidence interval were summed to arrive at the upper bound for the total sales forecast. The lower bound class-level sales forecasts were then applied to the appropriate load profile and, along with the lower bound non-coincident gross peak demand forecast, was run through MetrixLT to generate the lower bound of the hourly forecast. The same procedure was undertaken with the upper bound sales forecasts and non-coincident peak demand forecast to generate the upper bound of the hourly forecast.

The reference case temperature assumptions in the hourly load forecast model were not changed for the scenarios. The reference case weather-related assumptions in the sales, the use per customer and the non-coincident peak demand forecast models for MEC's Illinois service territory were not changed in the scenarios. The reference case forecasts for retail switching sales, customers and demand in MEC's Illinois service territory were not changed in the scenarios.