Direct Testimony and Schedules
Benjamin S. Levine

Before the North Dakota Public Service Commission
State of North Dakota

In the Matter of the Application of Northern States Power Company
for Authority to Increase Rates for Electric Service in North Dakota

Case No. PU-24-____
Exhibit___(BSL-1)

Sales Forecast

December 2, 2024

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Schedules

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Benjamin S Levine. I am the Senior Energy Forecasting Analyst in the Sales, Energy, and Demand Forecasting department for Xcel Energy Services Inc. (XES), which is the service company subsidiary of Xcel Energy Inc. (XEI).

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I graduated from the University of Wisconsin with a Bachelor of Science degree in Economics. I have worked in a sales forecasting role since 2008 when I began my career in forecasting as a Utility Load Forecaster at Minnesota Power (Allete). I assumed my current role as an Energy Forecasting Analyst in the Sales, Energy, and Demand Forecasting department at Xcel Energy in December of 2022. I was promoted to Sr. Energy Forecasting Analyst in April of 2024. My resume is included as Exhibit___(BSL-1), Schedule 1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I sponsor the Company's forecasts of sales and customers for the 2025 test year, as well as the Company's jurisdictional demand allocator for the 2025 test year. I recommend that the North Dakota Public Service Commission (Commission) adopt my forecasts of sales and customers for the purpose of determining the revenue requirement and final rates in this proceeding. In support of my recommended forecasts, I first compare our customer and sales forecast to historical customer and megawatt-hour (MWh) sales trends for Xcel Energy's North Dakota service territory. I will also describe the methodology used to develop the electric MWh sales and customer forecasts and the results. I also

recommend that the Commission adopt my jurisdictional demand allocator for the 2025 test year.

Q. ARE THERE DEFINED TERMS YOU PLAN TO USE IN YOUR TESTIMONY?

A. Yes. The definitions of terms that are included in my testimony are provided in Exhibit___(BSL-1), Schedule 2.

II. CUSTOMER AND SALES FORECAST

Q. WHAT GEOGRAPHICAL AREA DO THE TEST YEAR SALES REFLECT?

A. My testimony and schedules reflect electric usage and customers in Xcel Energy's North Dakota service territory. Xcel Energy's North Dakota service territory includes approximately 96,000 customers in and around Fargo, Minot, and Grand Forks, North Dakota.

Q. PLEASE DESCRIBE THE CUSTOMER CATEGORIES INCLUDED IN XCEL ENERGY'S CUSTOMER AND SALES FORECASTS.

A. The following customer classes comprise Xcel Energy's North Dakota electric customer and sales forecasts:

- *Residential without Space Heating* – residential service for domestic purposes excluding space heating. This class accounted for 62.7 percent of customers and 23.7 percent of sales in 2023.
- *Residential with Space Heating* – residential service for domestic purposes including space heating. This class accounted for 23.3 percent of customers and 11.8 percent of sales in 2023.

- *Small Commercial and Industrial* – commercial and industrial service requiring less than 1,000 kilowatts (kW) billing demand per month on average per year. This class accounted for 13.5 percent of customers and 46.4 percent of sales in 2023.
- *Large Commercial and Industrial* – commercial and industrial service requiring 1,000 kW or more billing demand per month on average per year. This class accounted for 0.02 percent of customers and 16.8 percent of sales in 2023.
- *Public Street and Highway Lighting* – street lighting service available for year-round illumination of public streets, parkways, and highways. This class accounted for 0.3 percent of customers and 0.6 percent of sales in 2023.
- *Other Sales to Public Authorities* – public authority service including municipal pumping service and fire and civil defense siren service. This class accounted for 0.2 percent of customers and 0.7 percent of sales in 2023.

Q. HOW ARE CUSTOMER AND SALES FORECASTS USED IN THIS PROCEEDING?

A. The customer and sales forecasts are used to calculate the following:

1) The monthly and annual electric supply requirements;
2) Test year revenue under present rates; and
3) Test year revenue under proposed rates.

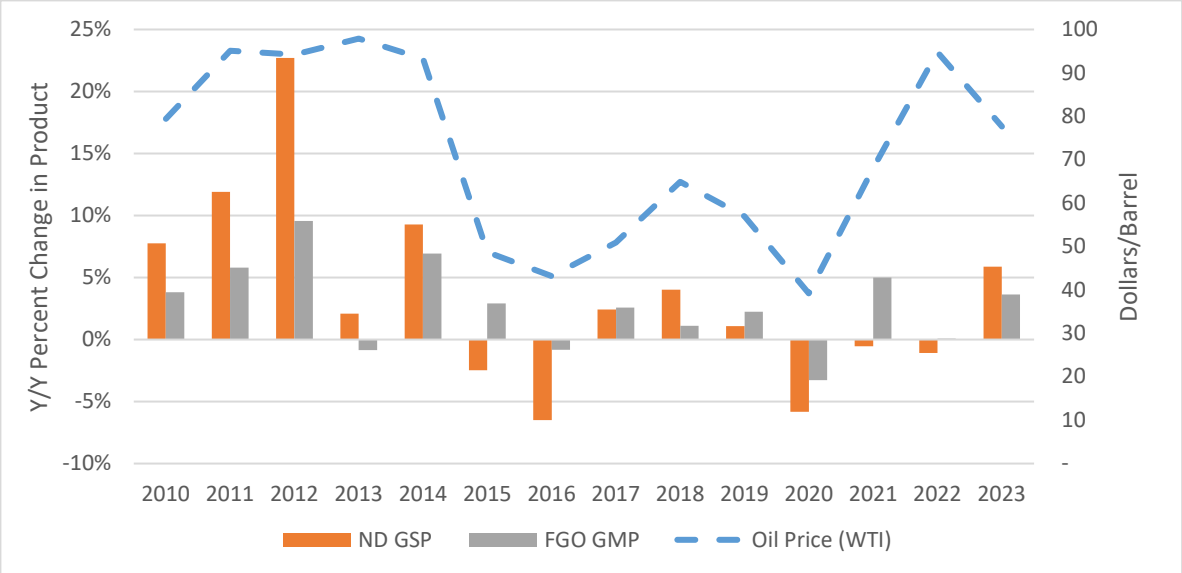
Q. PLEASE PROVIDE AN OVERVIEW OF THE ECONOMIC LANDSCAPE OF XCEL ENERGY'S NORTH DAKOTA SERVICE TERRITORY.

A. Xcel Energy's North Dakota customers are primarily located in Fargo, West Fargo, Grand Forks, and Minot, with 93 percent of the customer base in these four locations. Just under half of all North Dakota customers are located in Fargo and West Fargo, 26 percent are in Grand Forks, and 20 percent are in Minot.

These urban areas generally are surrounded by rural electric cooperatives, limiting opportunities to expand the Xcel Energy service territory through customer growth. Much of the economic growth in the state had been driven by oil and natural gas extraction activity in the Bakken region, which is closest to Minot but well outside of the Xcel Energy service territory.

As shown in Figure 1 below, from 2010 through 2014, when oil prices were high and oil and natural gas extraction activity was booming, the state's economic growth (ND Gross State Product) exceeded the economic growth in the eastern portion of the state (Fargo Gross Metro Product) served by NSP. As oil prices dropped towards the end of 2014, and continued dropping in 2015 and 2016, the state's economy declined, but the impact of the slowdown was not as pronounced in eastern North Dakota, where the Fargo and Grand Forks economies remained virtually flat. Economic activity has improved both at the state level and in the Red River Valley but has likely been affected more by COVID-19 in general than oil prices specifically.

Figure 1
North Dakota and Fargo Gross Product Compared to Oil Prices



Q. HAS THE NORTH DAKOTA ECONOMY RECOVERED FROM THE COVID-19 PANDEMIC?

A. Like most areas of the country, the COVID-19 pandemic significantly impacted the North Dakota economy in 2020. Total non-farm employment for the state, as reported by the U.S. Bureau of Labor Statistics, declined 12.2 percent from 440,400 in February 2020 to 386,800 in April 2020. As of July 2024, non-farm employment in North Dakota was 443,600 (0.7 percent above February 2020 levels). Fargo non-farm employment declined 12.3 percent from 146,800 in February 2020 to 128,800 in April, and as of July 2024, employment reached 154,800 (5.4 percent above February 2020 levels).

Q. ARE THERE ANY LASTING EFFECTS FROM COVID-19 THAT ARE EXPECTED TO IMPACT 2025 TEST YEAR ELECTRICITY USAGE?

A. No. As noted previously, the Fargo metro economy has more than recovered from COVID-19. Electricity usage correlated with that economic activity has also nearly returned to pre-pandemic levels. One could argue usage would have grown had the pandemic not occurred and regional electric demand was set back or deferred as a result, but outside of this counterfactual, no-pandemic scenario, I would say the lasting effects of the pandemic are nuanced and minimal.

Q. WHAT IS XCEL ENERGY'S FORECAST OF ELECTRIC SALES AND CUSTOMERS FOR THE TEST YEAR ENDING DECEMBER 31, 2025?

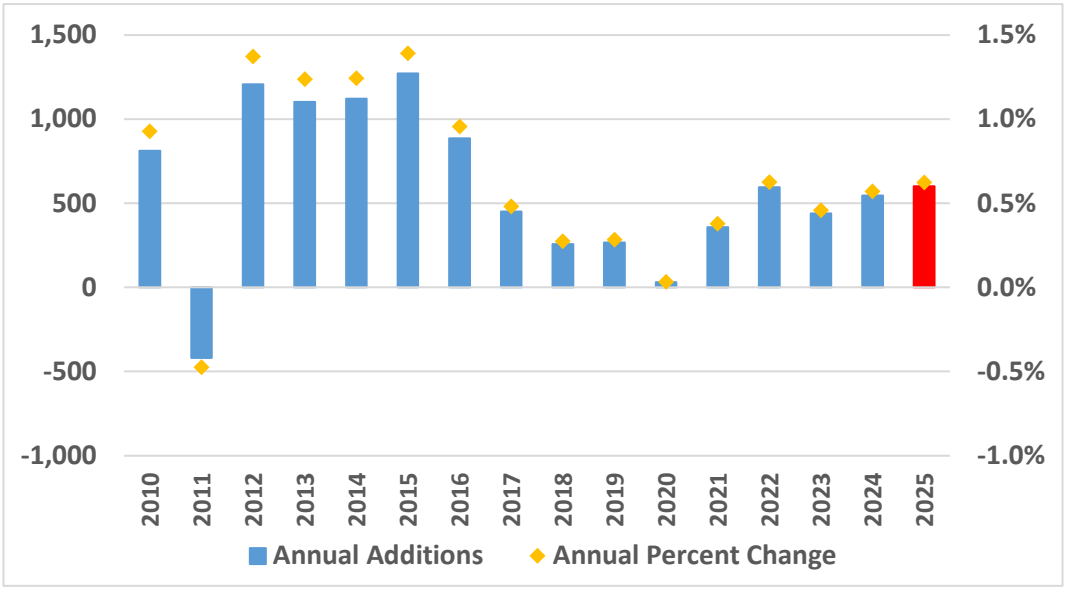
A. Exhibit___(BSL-1), Schedule 3 summarizes monthly test year MWh sales and number of customers for each customer class. North Dakota retail sales are projected to total 2,131,650 MWh for the test year, with an average of 97,048 total retail customers. For context, retail sales in 2023 were 2,135,084 MWh (2,120,422 weather normalized) with an average of 95,902 total retail customers.

Q. HOW DOES THE PROJECTED TEST YEAR CUSTOMER GROWTH COMPARE WITH HISTORICAL GROWTH?

A. Test year (2025) customer counts are expected to increase 0.6 percent or 601 customers from 2024[1], and about 1.2 percent from 2023 actuals. This projected customer increases largely reflects a continuation of observed growth in the 2021-2023 timeframe, which averaged 0.5 percent.

As shown in Figure 2 below, customer growth in the Xcel Energy North Dakota service territory slowed considerably over the last decade and stagnated in 2020. Since the pandemic however, customer growth has accelerated a bit from 0.4 percent in 2021 to 0.5 percent in 2023 with a spike to 0.6 percent in 2022. This growth, however, is still well below what the Company experienced in the early-to-mid 2010s.

Figure 2
Year-Over-Year Change in Customers (2011-2025)



[1] Includes actual customer counts through September 2024

Table 1 below provides the historical and forecast annual customer growth rate by class for the time period 2010-2025. I will explain the methodologies used to develop this forecast in the following section of my testimony.

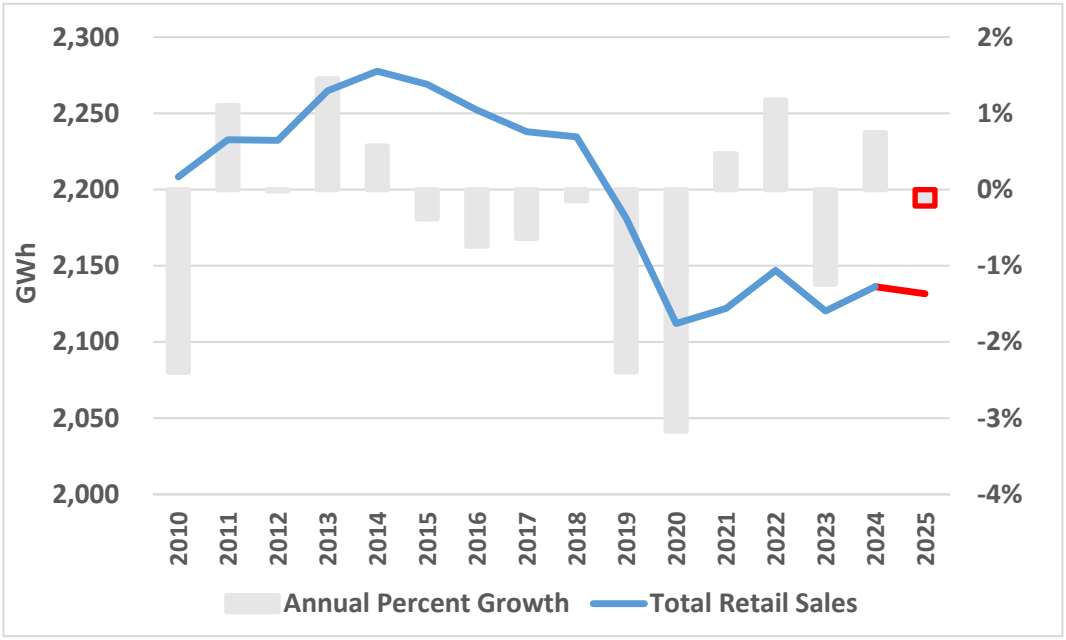
Table 1
2010-2025 Average Annual Percent Change in Customers

Customer Class	2010-2016 Avg.	2017-2019 Avg.	2020 Avg.	2021-2023 Avg.	2024 Forecast	2025 Test Year
Residential	0.9%	0.3%	0.1%	0.5%	0.6%	0.6%
Commercial & Industrial	0.9%	0.3%	-0.1%	0.4%	0.3%	0.4%
Street Lighting	9.5%	10.1%	4.9%	3.2%	1.3%	6.8%
Public Authority	0.0%	-0.9%	-13.8%	-1.9%	-1.2%	-1.7%
Total Retail	**1.0%**	**0.3%**	**0.0%**	**0.5%**	**0.6%**	**0.6%**

Q. HOW DOES THE COMPANY'S 2025 TEST YEAR FORECAST OF ELECTRIC SALES COMPARE TO HISTORICAL WEATHER NORMALIZED ELECTRIC SALES?

A. The Company's 2025 test year sales (2,131,650 MWh) reflect a continuation of observed post-2020, modest pace of growth. Figure 3 plots historical weather normalized retail sales and year-over-year percent change with the 2025 test year values highlighted for comparison.

Figure 3
2010-2025 Weather Normalized Retail Sales



The projected 2025 sales level reflects a 0.2 percent decline from forecast 2024 levels[2] and a 0.5 percent increase from 2023 weather normalized actuals. About 3,500 MWh (0.16 percent) of the increase compared to 2023 actual sales is the result of modest Electric Vehicle (EV) adoption, primarily among residential customers. Table 2 below provides the historical and forecast annual customer growth rate by class for the time period 2010-2025.

[2] Includes actuals through September 2024.

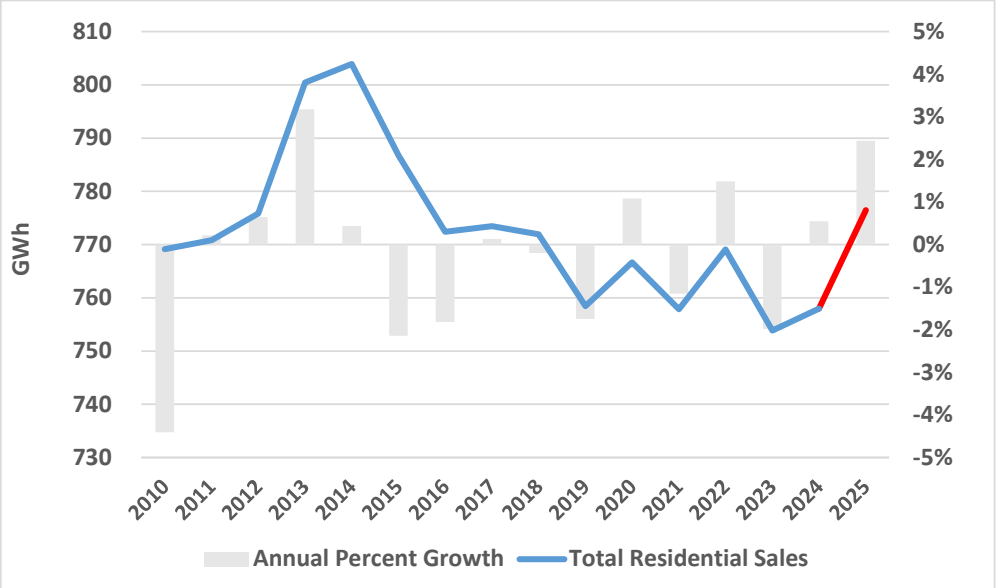
Table 2
2010-2025 Average Annual Percent Change in Weather Normalized Sales

Customer Class	2010-2016 Avg.	2017-2019 Avg.	2020 Avg.	2021-2023 Avg.	2024 Forecast	2025 Test Year
Residential	-0.6%	-0.6%	1.1%	-0.5%	0.5%	2.4%
Commercial & Industrial	0.2%	-1.4%	-5.5%	0.6%	0.9%	-1.7%
Street Lighting	-0.3%	0.5%	-1.1%	-4.8%	-3.2%	3.9%
Public Authority	4.4%	4.1%	-3.0%	-0.6%	-2.4%	2.2%
Total Retail	**-0.1%**	**-1.1%**	**-3.2%**	**0.1%**	**0.7%**	**-0.2%**

Q. PLEASE DISCUSS HISTORICAL AND PROJECTED RESIDENTIAL SALES.

A. Residential sales accounted for just over one-third (35.6 percent) of total retail sales in 2023 and have decreased at an average annual rate of 0.4 percent over the 2010 to 2023 timeframe. This decline has been driven by an average annual decline in residential use per customer of 1.1 percent, partially offset by annual growth in the number of customers of 0.7 percent. Sales to the residential class are projected to grow just 0.5 percent in 2024 and then increase about 2.4 percent in 2025. Figure 4 shows these forecast years in historical context.

Figure 4
2010-2025 Residential Sales (Weather Normalized)



Q. WHAT IS DRIVING THE INCREASE IN PROJECTED 2025 RESIDENTIAL SALES?

A. There are several factors contributing to the projected 2.4 percent increase in 2025: growth in customer count, increased consumption from electric vehicle charging, and a projected return to historical trends/level. Residential customer count is projected to increase 0.6 percent in both 2024 and 2025, and electric vehicles are projected to add about 2,276 MWh (about 11 percent of the overall 2024 to 2025 increase).

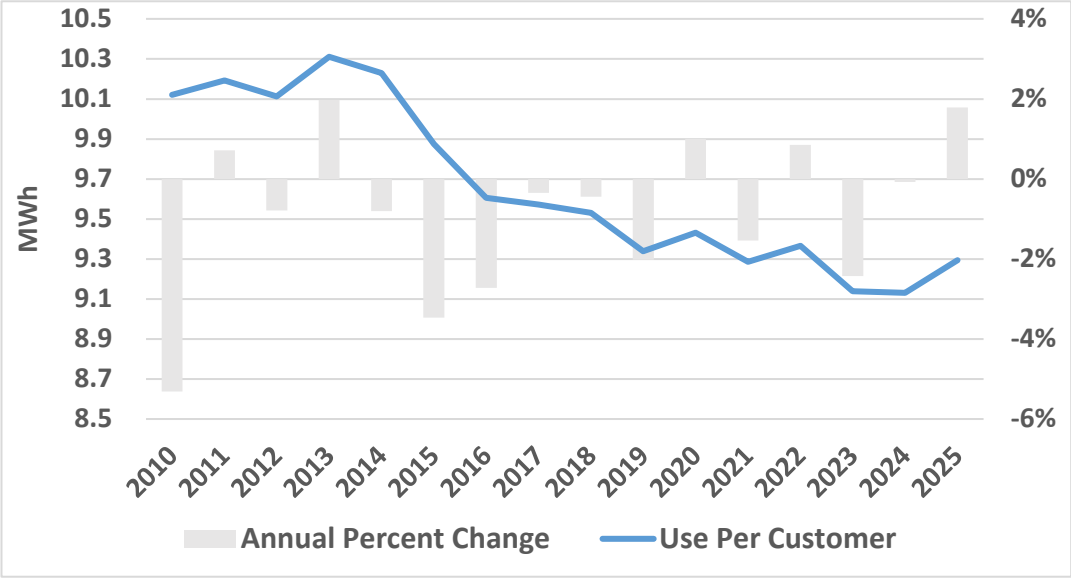
Regarding the projected return to historical trends, the Company produced the test year forecast in July 2024 using actual sales data through May 2024, and as of May the to-date weather normalized sales were 2 percent above the same period in 2023. This implied the sharp drop in observed 2023 sales was anomalous and in the process of reversing to the mostly stable, post-2015 levels. However, actual sales for June through September have come in 5.4 percent below the same

timeframe in 2023, which has reduced the 2024 year-end sales value and caused the calculated 2024 to 2025 increase to appear larger than initially projected. The cause of the 2023 sales decrease is not known at this time and may reverse in 2025 or this may be reflective of a lower "new normal" for this class. At this time, the Company believes its current forecast is appropriate for setting rates.

Q. DOES THIS PROJECTED INCREASE IN 2025 SALES PRODUCE UNREALISTIC USE PER CUSTOMER?

A. No. Figure 5 shows use per customer is expected to hold relatively constant from 2023 to 2024, and then increase only slightly in 2025 due to increased electric vehicle charging. The projected 2025 use-per customer is still 0.8 percent below actual 2022 levels. Since the reason for the low consumption in 2023 and to-date 2024 is still unknown; it would be imprudent to project low usage consistent with these recent levels.

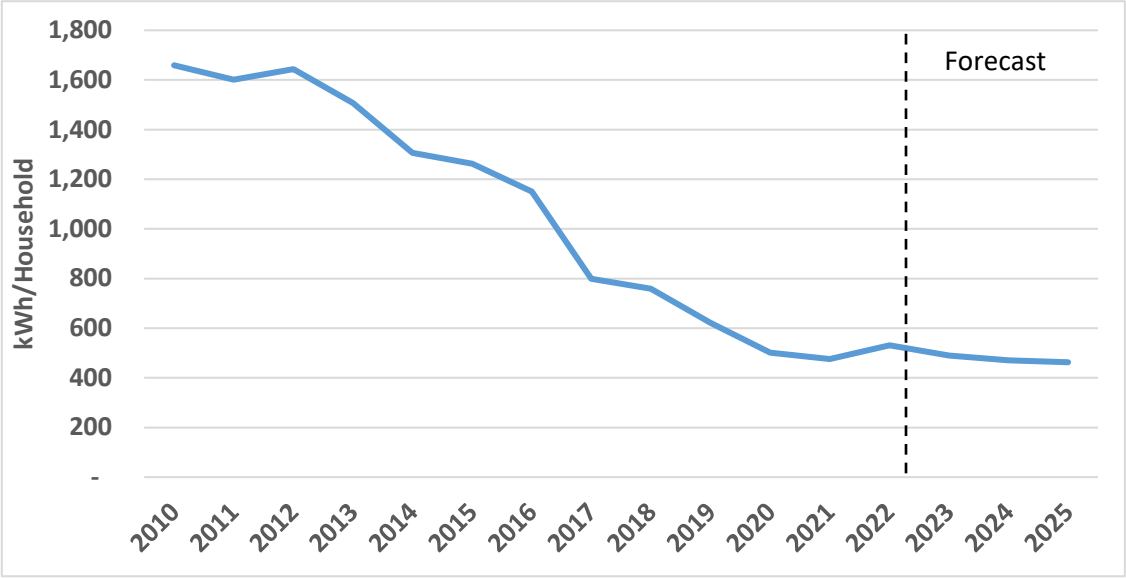
Figure 5
2010-2025 Residential Use Per Customer (Weather Normalized)



Q. WHAT DROVE THE DECLINE IN RESIDENTIAL USE PER CUSTOMER SINCE 2013?

A. The decline in use per customer is primarily driven by efficiency improvements, specifically due to the lighting standards set by the 2007 Energy Information and Security Act. As shown in Figure 6 below, U.S. residential lighting kilowatt-hour (kWh) per household is estimated to have decreased by 1,032 kWh (68 percent) from 2013 to 2021.

Figure 6
US Household Energy Use for Lighting

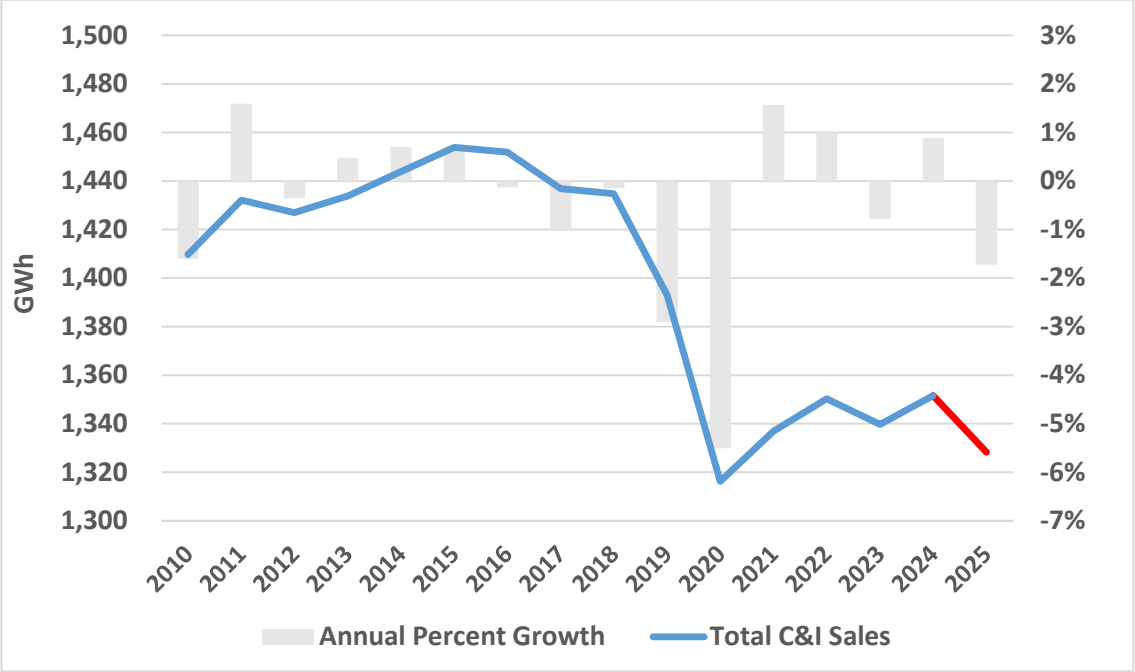


Q. PLEASE DISCUSS HISTORICAL AND PROJECTED COMMERCIAL AND INDUSTRIAL SALES.

A. Sales to the Commercial and Industrial sector accounted for the largest share of total retail sales in 2023 (63.2 percent) and have decreased at an average annual rate of 0.5 percent over the time period 2010 to 2023. As shown in Figure 7 below, Commercial and Industrial sales are projected to increase about 0.9 percent in 2024 and then decrease 1.7 percent in 2025 from 2024 resulting in a 2025 test year

estimate for Commercial and Industrial sales that are about 0.85 percent below 2023 actual sales.

Figure 7
2010-2025 Commercial and Industrial Sales

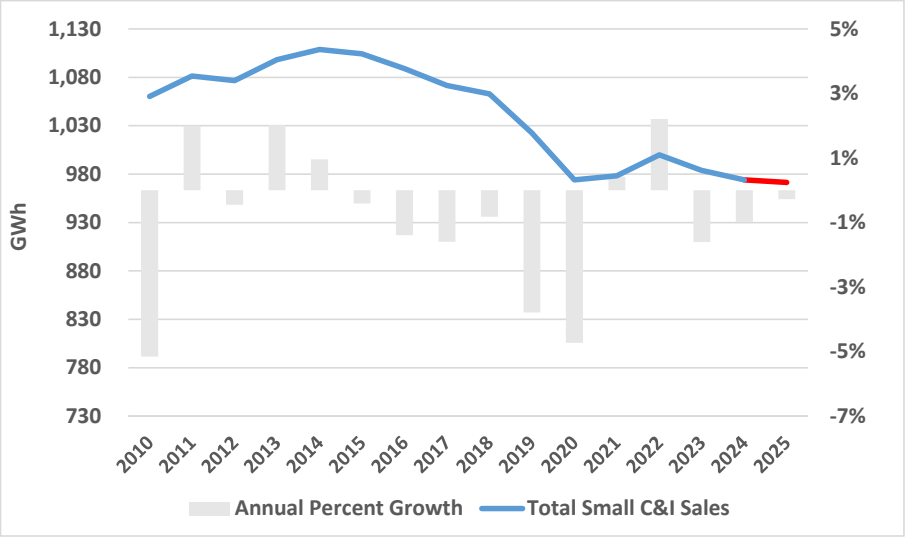


Q. WHAT IS DRIVING THE DECLINE IN PROJECTED 2025 COMMERCIAL AND INDUSTRIAL SALES?

A. Small Commercial and Industrial comprises about 80 percent of this customer class and is therefore the predominant driver of the class as a whole. The 2025 test year forecast was produced using historical sales data through May 2024, and as of May, sales were down 1 percent from the same period in the prior year. As of September 2024, year-to-date sales are down 2.1 percent from the same timeframe in 2023. The reason the 2025 test year forecast of total Commercial and Industrial sales shows declines is due to the predominant recent trend in the Small

Commercial and Industrial class. Figure 8 shows the recent stagnant to declining trend in sales to Small Commercial and Industrial.

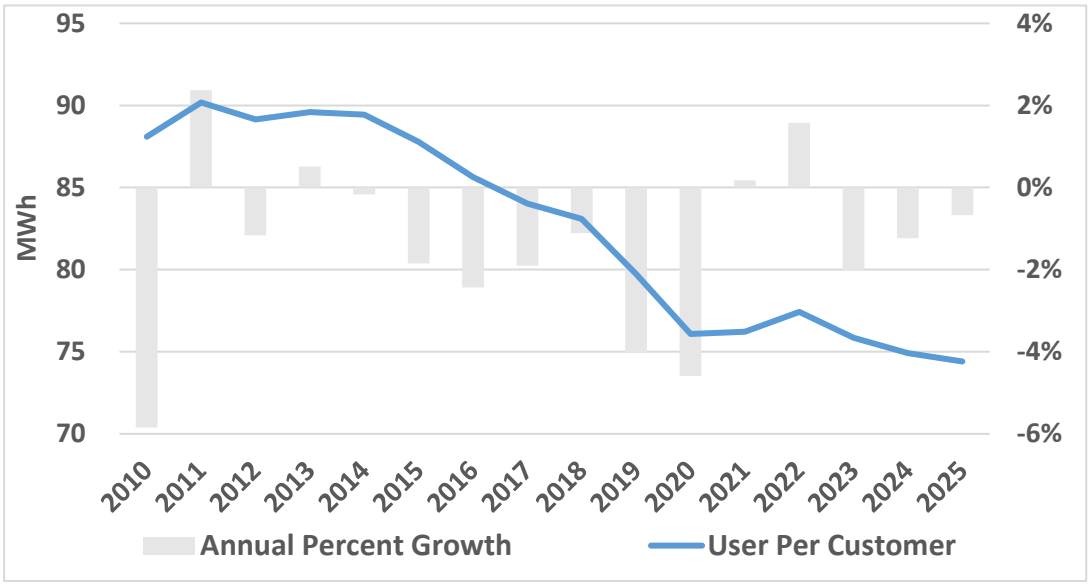
Figure 8
2010-2025 Small Commercial and Industrial Sales



Q. WHY HAVE SMALL COMMERCIAL AND INDUSTRIAL SALES STAGNATED IN RECENT YEARS?

A. Small Commercial and Industrial customer count growth has been fairly consistent since 2017 with the exception of 2020, which was impacted by the COVID-19 induced recession. These consistent increases in customer count have likely been offset by equally consistent gains in energy efficiency. Figure 9 below shows Small Commercial and Industrial annual use per customer. Projected 2025 use per customer decreases 0.7 percent from 2024, which now looks poised to show a 1.2 percent decline from 2023. The Company's forecast reflects a return to the general post 2013 trend in use per customer sales following the disruption of COVID-19.

Figure 9
2010-2025 Small Commercial and Industrial Use Per Customer
(Weather Normalized)



Q. PLEASE DISCUSS RECENT TRENDS IN STREET LIGHTING SALES.

A. Street Lighting sales accounted for 0.6 percent of total sales in 2023 and decreased at an average pace of about 1 percent per year since 2010 as more efficient light bulbs were installed. As suggested in Figure 6,[3] there were substantial gains in lighting efficiency over the last decade but limited new potential in the immediate forecast timeframe. The Company's forecast reflects this limited potential for new efficiencies combined with the expectation for customer count growth in this class. This results in a forecast for slight increases (about 0.4 percent per year, on average) in sales for 2024 and 2025.

Q. PLEASE DISCUSS SALES TRENDS IN THE PUBLIC AUTHORITY CLASS.

[3] The Energy Information Administration's (EIA) forecast of per-household energy use for lighting.

A. Sales to Public Authority customers have been volatile in their year over year percent changes, with sales dropping 8 percent one year or increasing 13 percent in another. However, this is a very small class that composed just 0.7 percent of total retail sales in 2023. Broadly speaking the large percentage changes do not translate to substantial MWh changes, and sales to this class are relatively stable. The Company's test year sales forecast for the Public Authorities class (13,946 MWh) is nearly identical to actual 2023 sales (13,974 MWh).

Q. HOW DID THE 2021 WEATHER NORMALIZED ACTUAL SALES COMPARE TO THE 2021 TEST YEAR ELECTRIC SALES FORECAST FILED IN THE COMPANY'S PREVIOUS ELECTRIC RATE CASE (CASE NO. PU-20-441)?

A. A comparison of the weather normalized 2021 actual sales and the 2021 test year forecasted sales filed in Case No. PU-20-441 is provided in Table 3 below. Weather normalized 2021 actual sales were slightly lower (just 0.7 percent) than predicted for the test year, with most of this error attributable to lower than forecast Residential class sales. This is not altogether surprising since the 2021 test year forecast was developed at the height of the COVID-19 pandemic when social distancing policies and increased working from home were expected to increase residential electricity consumption, which mostly failed to materialize as expected among NSP's North Dakota customers.

Table 3
2021 Weather Normalized Sales by Class (MWh)

Customer Class	2021 TY Forecast	2021 Actual	Variance	Percentage
Residential	779,483	757,868	21,614	2.85%
Commercial & Industrial	1,327,040	1,336,936	-9,896	-0.74%
Street Lighting	15,185	13,691	1,495	10.92%
Public Authority	14,777	13,599	1,178	8.66%
Total Retail	**2,136,485**	**2,122,093**	**14,391**	**0.68%**

Q. HAS THE COMPANY CHANGED ITS FORECASTING METHODOLOGY FOR NORTH DAKOTA SINCE THE LAST RATE CASE?

A. No. The Company used the same forecasting methodology as in the last rate case. As shown in Table 3 above, this methodology provided reasonably accurate results in the last rate case despite a global pandemic. We believe that our existing methodology is appropriate for estimating annual electric sales in North Dakota.

III. OVERVIEW OF SALES AND CUSTOMER FORECASTING METHODOLOGY

Q. IS THE TEST YEAR FORECAST THE SAME FORECAST USED BY XCEL ENERGY FOR THE 2025 FINANCIAL BUDGET?

A. Yes, it is.

Q. PLEASE DESCRIBE IN GENERAL TERMS THE METHODS USED TO FORECAST SALES AND CUSTOMERS.

A. The sales forecast for the 2025 financial budget was prepared in July 2024 using a combination of econometric and statistical forecasting techniques and analyses. The forecast was based on actual customers and sales through May 2024. In order

to provide the most up-to-date information at the time this testimony was written, we have replaced forecast values for June, July, August, and September 2024 with actual values.

Q. HOW WERE THE TEST YEAR SALES FORECASTS DEVELOPED?

A. Regression models were developed as the foundation for the sales forecasts of the Residential without Space Heating, Residential with Space Heating, and both the Small and Large Commercial and Industrial customer classes. Regression analysis is a commonly used and proven method of forecasting and is the de facto standard in the utility industry. This method delivers reliable, accurate projections that incorporates and accounts for the impacts of weather and economic/demographic indicators.

Further, regression models provide transparency. The interpretation of a utility's estimates are fairly straightforward since a regression model is simply a mathematical equation that defines sales (for example) as a function of clearly defined predictor variables (weather, economic/demographic data, etc.). Xcel Energy has been using these types of regression models since 1991.

Specifically, the Company's monthly sales and customer count forecasts for the above-mentioned customer classes were developed using independent predictor variables that included: economic and demographic indicators, 1 weather (expressed in heating-degree days (HDD) and temperature-humidity index (THI)), number of billing days, and (for energy sales) historical number of customers. All models were developed using monthly data over the historical timeframe from June 2009 through May 2024. The modeled relationships identified in this estimation timeframe were then simulated over the forecast period by assuming

normal weather (expressed in terms of 20-year-averaged HDD and THI) and the projected levels of the independent predictor variables.

Q. WHAT PROCESS WAS USED TO FORECAST SALES IN THE OTHER CUSTOMER CLASSES?

A. The test year sales forecast for Street Lighting and Public Authority classes were each developed using a simple historical two-year average (2022 and 2023). A three-year historical average would be more conventional, but the Company was concerned that residual effects from COVID-19 in 2021 may unreasonably skew the resulting forecasts and opted for a more limited, post-recovery historical timeframe.

Q. WHAT PROCESS WAS USED FOR FORECASTING NUMBER OF CUSTOMERS?

A. The number of customers by customer class were produced using regression modeling for all classes except Large Commercial and Industrial, which has consistently included 23 or 24 customers since 2017. This class's historical count was deemed too stable to model effectively using regression modeling, and the Company held the Large Commercial and Industrial customer count forecast at a constant 24 customers.

IV. STATISTICALLY MODELED FORECASTS

Q. PLEASE DESCRIBE THE REGRESSION MODELS AND ASSOCIATED ANALYSIS USED IN XCEL ENERGY'S STATISTICAL PROJECTIONS OF SALES AND CUSTOMERS.

A. The regression models and associated analysis used in Xcel Energy's statistical projections of sales are provided in Exhibit___(BSL-1), Schedule 4, and the regression models and associated analysis used in Xcel Energy's statistical projections of customers are provided in Exhibit___(BSL-1), Schedule 5. These

schedules include, by customer class, the models with their summary statistics and output and descriptions for each variable included in the model.

Q. WHAT TECHNIQUES DID XCEL ENERGY EMPLOY TO EVALUATE THE REASONABLENESS OF ITS QUANTITATIVE FORECASTING MODELS AND SALES PROJECTIONS?

A. There are a number of quantitative and qualitative validity tests that are applicable to regression analysis.

First, the coefficient of determination (R-squared and Adjusted R-squared) test statistic is a measure of the quality of the overall model's fit to the historical data. This metric represents the portion of variation in historical sales that is explained by the predictor variables included in the model. A high R-squared statistic indicates the model is effectively explaining or estimating historical sales. The regression models used to develop the test year forecast demonstrate very high R-squared statistics.

The Company also uses P-Values as a measure of individual predictor variable's efficacy. Achieving a high R-squared statistic is easy in theory; one could include thousands of series, many of them completely irrelevant and achieve a high R-Squared through spurious correlation. The P-Value essentially shows whether a variable is a statistically significant, effective predictor of sales (for example) in the context of the whole model. A P-Value less than 10 percent indicates a specific variable is statistically significant at a 90 percent level of confidence, i.e., one can be fairly certain the estimated relationship (i.e., the coefficient associated with a specific variable). A t-statistic is equally telling but does require some additional information. Whereas the p-value is clear: a p-value below 10 percent equates to

90 percent level of confidence, a p-value below 5 percent equates to a 95 percent level of confidence.

In addition, each model was inspected for the presence of first-order autocorrelation, as measured by the Durbin-Watson (DW) test statistic. Autocorrelation refers to the correlation of the model's error terms for different time periods. For example, an overestimate in one period is likely to lead to an overestimate in the succeeding period, and vice versa, under the presence of first-order autocorrelation. Thus, when forecasting with a regression model, absence of autocorrelation between the error terms is very important. The DW test statistic ranges between 0 and 4 and provides a measure to test for autocorrelation. In the absence of first-order autocorrelation, the DW test statistic equals 2.0. If autocorrelation was present in an initial regression models, the Company applied an autocorrelation correction process so that the final regression models used to develop the sales forecast tested satisfactorily for the absence of first-order autocorrelation, as measured by the DW test statistic.

Next, the Company conducted a graphical inspection of each model's error terms (*i.e.,* actual less predicted) to verify that the models were not misspecified, and that statistical assumptions pertaining to constant variance among the residual terms and their random distribution with respect to the predictor variables were not violated. Analysis of each model's residuals indicated that the residuals were homoscedastic (constant variance) and randomly distributed, indicating that the regression modeling technique was an appropriate selection for each customer class's sales that were statistically modeled.

Finally, the statistically-modeled sales forecasts for each customer class have been reviewed for reasonableness as compared to the respective monthly sales history for that class. Graphical inspection reveals that the patterns of the test year sales forecast fit well with the respective historical patterns for each customer class. The annual total forecast sales have been compared to their respective historical trends for consistency. Similar qualitative tests for reasonableness and consistency have been performed for the customer level projections.

The results of these quantitative and qualitative validity tests support the reasonableness of the quantitative forecasting models and test year customer count and sales projections.

V. WEATHER NORMALIZATION OF TEST YEAR SALES

Q. HOW DID XCEL ENERGY ADJUST ITS TEST YEAR SALES FORECAST FOR THE INFLUENCE OF WEATHER ON SALES?

A. Residential without Space Heating, Residential with Space Heating, and Small Commercial and Industrial sales projections were developed through the application of quantitative statistical models (i.e., regression models). For each of these classes, sales were not weather-adjusted prior to developing the respective statistical models. The respective regression models used to forecast sales included weather, as measured in terms of heating-degree days and temperature-humidity index, as an explanatory variable. In this way, the historical weather impact on historical consumption for each class was modeled through the respective coefficients for the HDD and THI variables included in each class's model. Test year sales were then projected by simulating the established statistical relationships and an assumption of normal weather over the forecast horizon.

Large Commercial and Industrial, Public Street and Highway Lighting, and Public Authority classes do not demonstrate statistically significant correlation with weather. As such, the forecast volumes are effectively weather normalized, but weather is not determinative since these customer classes are weather insensitive.

Q. HOW WAS NORMAL WEATHER DETERMINED?

A. Normal daily weather was calculated based on the average of historical HDD and THI for the 20-year time period 2004 to 2023. These normal HDD and THI were related to the forecasted billing month in the same manner as were the actual HDD and THI.

Q. WHAT WAS XCEL ENERGY'S MEASURE OF WEATHER, AND WHAT WAS THE SOURCE?

A. The measure of weather used was HDD and THI, using a 65-degree temperature base. This information was obtained from the National Oceanic and Atmospheric Administration (NOAA) weather station in Fargo, North Dakota, which captures the weather impact to our service area.

Q. IS IT APPROPRIATE TO USE THE FARGO WEATHER STATION TO REPRESENT XCEL ENERGY'S NORTH DAKOTA SERVICE TERRITORY?

A. Yes, it is. The majority of Xcel Energy's North Dakota electric customers reside within the Fargo area. The coefficients for the HDD and THI variables included in each class's model were determined based on the historical relationship between sales throughout Xcel Energy's North Dakota service territory and Fargo weather. Therefore, the coefficients accurately reflect the distribution of customers geographically within the North Dakota service territory. Since this geographic distribution is not expected to change during the test year, it is appropriate to use this historical relationship and Fargo weather as the driver of forecast sales.

Q. DID THE WEATHER REFLECT THE SAME BILLING DAYS AS THE SALES DATA?

A. Yes. The HDD and THI were weighted by the number of times a particular day was included in a particular billing month. These weighted HDD and THI were divided by the total billing days to arrive at average daily HDD and THI for a billing month.

VI. DATA PREPARATION

Q. PLEASE DESCRIBE THE DATA AND DATA SOURCES XCEL ENERGY USED TO DEVELOP THE TEST YEAR SALES AND CUSTOMER COUNT FORECASTS.

A. Historical billing-month sales and number of customers for the period June 2009 through May 2024 were obtained from Xcel Energy's Customer Resource System (CRS).

Q. WHAT IS THE SOURCE OF WEATHER DATA?

A. As I explained previously in my testimony, NOAA weather data measured at the Fargo weather station was my data source, and the measure of weather used was HDD and THI. Eight temperature readings per day were obtained, and the average daily temperature was determined by averaging the eight temperature readings. The Company used HDD as a measure of cold weather. HDD were calculated for each day by subtracting the average daily temperature from 65 degrees Fahrenheit. For example, if the average daily temperature was 45 degrees Fahrenheit, then 65 minus 45 or 20 HDD were calculated for that day. If the average daily temperature was greater than 65 degrees Fahrenheit, then that day recorded zero HDD.

The Company used the THI as the measure of hot weather because it combines temperature and humidity, both of which impact air conditioning load. Dew point

data was based on the same eight readings of temperature discussed above. The THI was calculated for each day using the formula:

$$THI = 17.5 + (0.55 * \text{Dry Bulb}) + (0.2 * \text{Dew Point})$$

Normal daily HDD and THI were calculated by averaging 20 years of daily data from 2004 to 2023.

Q. WHAT WAS YOUR SOURCE OF ECONOMIC AND DEMOGRAPHIC DATA?

A. The Company obtains its historical and forecast North Dakota state and Fargo metropolitan area metrics from IHS Markit, a respected economic forecasting firm frequently relied on by forecasting professionals and by the Company since the 1990s. These variables include (but are not limited to) households, Gross State Product, and Employment by industry. This information is used to determine the historical relationship between customers and sales, and economic and demographic measures. The Company used the most current economic and demographic data available from IHS Markit at the time of modeling.

VII. UNBILLED SALES

Q. PLEASE EXPLAIN THE TERM "UNBILLED SALES."

A. Xcel Energy reads electric meters each working day according to a meter-reading schedule based on 21 billing cycles per billing month. Meters read early in the month mostly reflect consumption that occurred during the previous month. Meters read late in the month mostly reflect consumption that occurred during the current month. The "billing month" sales for the current month reflect consumption that occurred in both the previous month and the current month.

Thus, billing-month sales lag calendar-month sales. Unbilled sales reflect electricity consumed in the current month that is not billed to the customer until the succeeding month.

Q. WHAT IS THE PURPOSE OF THE UNBILLED SALES ADJUSTMENT?

A. The purpose is to align the test year revenues with the relevant projected test year expenses, which have been estimated on a calendar-month basis.

Q. IS XCEL ENERGY REFLECTING UNBILLED REVENUE ON ITS BOOKS FOR ACCOUNTING AND FINANCIAL PURPOSES?

A. Yes. Xcel Energy adopted this practice during fiscal year 1992.

Q. HOW WERE THE ESTIMATED MONTHLY NET UNBILLED SALES VOLUMES DETERMINED?

A. Xcel Energy determined its test year monthly net unbilled sales as the difference between the estimated monthly calendar-month sales, and the projected billing-month sales. The projected billing-month sales were created using the statistical models and other forecasting methods previously described.

VIII. CALENDAR-MONTH SALES DERIVATION

Q. HOW WERE THE ESTIMATED MONTHLY CALENDAR-MONTH SALES DETERMINED?

A. For the Residential without Space Heating, Residential with Space Heating, and Small Commercial and Industrial classes, Xcel Energy calculated the test year calendar-month sales based on the projected billing-month sales. The test year calendar-month sales were calculated in terms of the sales load component that is not associated with weather (base load), and the sales load component that is

influenced by weather (total weather load). The weather was measured in terms of normal HDD and THI, as described above. The base-load sales and the total weather sales components were calculated for each class. The two components were then combined to provide the total calendar-month volumes.

The calendar-month base-load component was calculated as follows:

Step 1 The billing-month total weather load was calculated. This was accomplished by multiplying the billing-month sales weather normalization regression coefficients (defined in terms of billing-month HDD, THI and number of customers), times billing-month normal HDD and THI, times the projected customers.

Step 2 The billing-month base-load component was calculated by taking the difference between the projected total billing-month sales and the billing-month total weather load (as calculated in Step 1).

Step 3 The billing-month base-load sales per billing day was determined by dividing the billing-month base-load sales (from Step 2) by the average number of billing days per billing month.

Step 4 The calendar-month base-load sales were then calculated by multiplying the billing-month base-load sales per billing day (from Step 3) times the number of days in the calendar month.

The calendar-month total weather load component was calculated the same way the billing-month total weather load was calculated (as described in Step 1 above). However, the calculation was performed by substituting the calendar-month sales weather normalization regression coefficient (defined in terms of calendar-month HDD, THI, and number of customers) and the calendar-month normal HDD and

THI. The calendar-month total sales were calculated by combining the calendar-month base-load and calendar-month total weather load components.

For the Large Commercial and Industrial and Public Authority classes, Xcel Energy calculated the test year calendar-month sales simply based on the projected billing-month sales in the same manner as detailed for Residential with Space Heating, Residential without Space Heating, and Small Commercial and Industrial classes. However, for the Large Commercial and Industrial and Public Authority classes, there are no total weather load sales. The test year calendar-month total sales for this class were calculated only in terms of their base load, where the billing-month base load equaled the projected billing-month sales.

The Public Street and Highway Lighting classes are billed on a calendar-month basis. Therefore, for these classes, the calendar-month sales equal the billing-month sales.

IX. JURISDICTIONAL DEMAND ALLOCATOR

Q. HOW DOES THE COMPANY USE THE JURISDICTIONAL DEMAND ALLOCATOR?

A. As discussed in the Direct Testimony of Company witness Steven W. Wishart, in order to determine the level of investment associated with the provision of electric service to North Dakota retail customers, it is necessary to assign or allocate a portion of the total NSPM System production and transmission investment to each jurisdiction. Consistent with the methodology accepted in previous North Dakota electric rate cases, we use each jurisdiction's respective contribution to the monthly NSPM System peak demands for electricity as the basis for this jurisdictional demand allocation.

Q. PLEASE PROVIDE A HIGH-LEVEL DESCRIPTION OF THE JURISDICTIONAL DEMAND ALLOCATOR.

A. The Company uses a 12-month Coincident Peak (12 CP) jurisdictional demand allocation method that has been approved by the Commission in the last several electric rate cases going back to the early 1990s. The 12 CP demand is calculated from forecasted 2025 monthly coincident peak demands (i.e., North Dakota monthly demands at the time of the monthly NSPM System peaks). The monthly demands for North Dakota, South Dakota, and Minnesota are adjusted for transmission losses and then totaled for the year for both North Dakota and the NSPM System. The totals are then used to derive a single North Dakota demand ratio. Company witness Wishart explains why the 12 CP method is appropriate in his Direct Testimony.

Q. IS THE METHODOLOGY USED TO FORECAST THE 2025 MONTHLY CP DEMANDS THE SAME METHODOLOGY THE COMPANY HAS USED IN PAST RATE CASES?

A. No. The Company implemented an enhanced peak forecast methodology over the last year to better account for potential peak shifting due to future adoption of Distributed Solar Generation (DG Solar), managed and unmanaged EV charging, Beneficial Electrification (BE), and new Large Commercial and Industrial (LCI) customer loads. These technologies and new customer loads will, on net, shift load from typical summer peak hours (afternoon/early evening) into late evening. The Company also continues to account for the lasting effects of historical Demand Side Management (DSM) programs (Energy Efficiency), any/all planned or expected future DSM, and load from new large Commercial and Industrial customers such as data centers.

The Company's new "8760"[4] peak forecasting approach uses hourly profiles of each major component of NSP's load forecast to determine the magnitude and timing of monthly peaks. Each component (Base load by state, EV, BE, DG Solar, LCI, and DSM) grows at a different rate over the forecast timeframe, and each has a unique hourly shape that impacts overall NSP load. The "8760" modeling approach takes these effects into account, aggregates all components' load on an hourly basis, and then identifies all monthly peaks and peak-coincident effects.

The "8760" peak forecast approach is substantially more complicated to produce but is a vast improvement over the prior monthly peak methodology. The Company's prior monthly peak modeling approach could not account for peak shifting, and this almost certainly contributed to inaccuracies in the forecast timeframe. This old method required the Company to assume the peak hour before it can develop the future peak-coincident impacts of DG solar or EVs (for example). As a result, the adjustments applied for peak-coincident DG solar or DSM (for example) likely had larger load reduction impacts than were reasonable. In an example scenario with no peak shifting: a projected, unadjusted July peak of 9,000 MW would then be adjusted for 100 MW of DG solar, producing a peak of 8,900 MW. Under the same example scenario, but with peak shifting: the peak would simply shift later in the day when the unadjusted load is only 8,970 MW but DG solar's impact is 50 MW, producing a peak forecast of 8,920 MW.

The steps for executing the "8760" approach are as follows:

1. Select annual hourly load profiles for each major component (Base load by state, EV, BE, DG Solar, LCI, DSM),

[4] The number of hours in a non-leap year.

2. Extrapolate the hourly load profiles to extend through the forecast timeframe, accounting for the unique calendar of each forecast year,
3. Develop the energy and base "status quo" peak series that will be used to scale the hourly profiles,
4. Develop the "Exogenous Adjustment" energy series that will be used to scale hourly profiles for EV, BE, DG Solar, Large CI, and DSM,
5. Scale profiles using Metrix LT software,
6. Aggregate series and identify monthly peaks.

Q. PLEASE EXPLAIN STEP 1 – SELECT PROFILES.

A. The profiles used for the "8760" forecast are:

- **DSM** an aggregation of total lifetime savings and individual measure shapes from the 2024-2026 Triennial, which are based on Typical Meteorological Year (TMY)
- **Solar** a simulated shape produced using PVWatts that has been tailored to adjusted to a TMY,
- **BE** estimated Residential and Business BE curves based on specific mix of programs included in the Company's initial 2024-2026 Minnesota Electric and Natural Gas Energy Conservation and Optimization Plan (ECO Plan) (Filed June 29, 2023, Docket No. E,G002/CIP-23-92),
- **Data Center** observed load profile from a currently operating data center customer,
- **Base Loads** modeled state-level load profiles normalized to TMY weather,
- **EV Profiles** unique profiles for Residential unmanaged, Residential managed, Workplace, Public, Medium Duty, and Heavy Duty vehicle charging. Managed Light Duty profiles were developed using internal data

from Xcel customers participating in the managed charging program. The unmanaged charging profiles for LDV, MDV, and HDV were developed using data from several external public and third-party private sources.

Q. PLEASE EXPLAIN STEP 2 - EXTRAPOLATION.

A. Each of the above-mentioned profiles are initially provided to the forecasting department as a standardized shape for a single year, either 2021 or 2023. In either instance, the curves are extrapolated using a program that shifts the entire "8760" profile to align like weekdays, so the first Monday would align with the first Monday (for example). Major holidays in the input profiles are flagged, exempted from the shifting function, and re-implied to the curve on the appropriate day for any given future year. For example: Thanksgiving 2021 occurred on November 25, 2021, this daily profile is implied to the extrapolated 2030 profile on November 28, 2030, and daily profile for November 25, 2030 is replaced with the same profile as the preceding Thursday (November 18, 2030).

Q. PLEASE EXPLAIN STEP 3 - DEVELOP "STATUS QUO" OUTLOOKS FOR ENERGY AND PEAK 1.

A. "Status quo" monthly energy outlooks are projections of state-level monthly energy requirements (at generator) assuming 2023 conditions persist throughout the forecast timeframe and are used to scale the state-level Base Load profiles. These forecasts are produced using the Energy Requirements Forecasting process described previously, but exclude the incremental effects of new DSM, additional EVs, or new Data Center loads (for example), and therefore only reflect growth in energy consumption from new customers and general economic trends.

"Status quo" monthly peak outlooks are projections of state-level (MN, ND, SD, WI, and MI) monthly loads coincident with NSP's peak assuming 2023 conditions persist throughout the forecast timeframe and are defined similar to their "status quo" energy counterparts in that they reflect growth in energy consumption from new customers and general economic trends only. The peak demand outlooks are developed using regression modeling and inherently assume peak hours consistent with the historical estimation timeframe (June 2009 – May 2024). During the scaling process in MetrixLT, these monthly state NSP-CP's are assigned to the highest monthly point in the base state profiles. In the early years of the forecast this scaled point typically becomes the peak as most of the component effects are too weak to shift the peak time. However, later in the forecast timeframe increased solar penetration (for example) may reduce this CP point by enough to shift the peak later in the day.

Q. PLEASE EXPLAIN STEP 4 – DEVELOP EXOGENOUS ADJUSTMENTS.

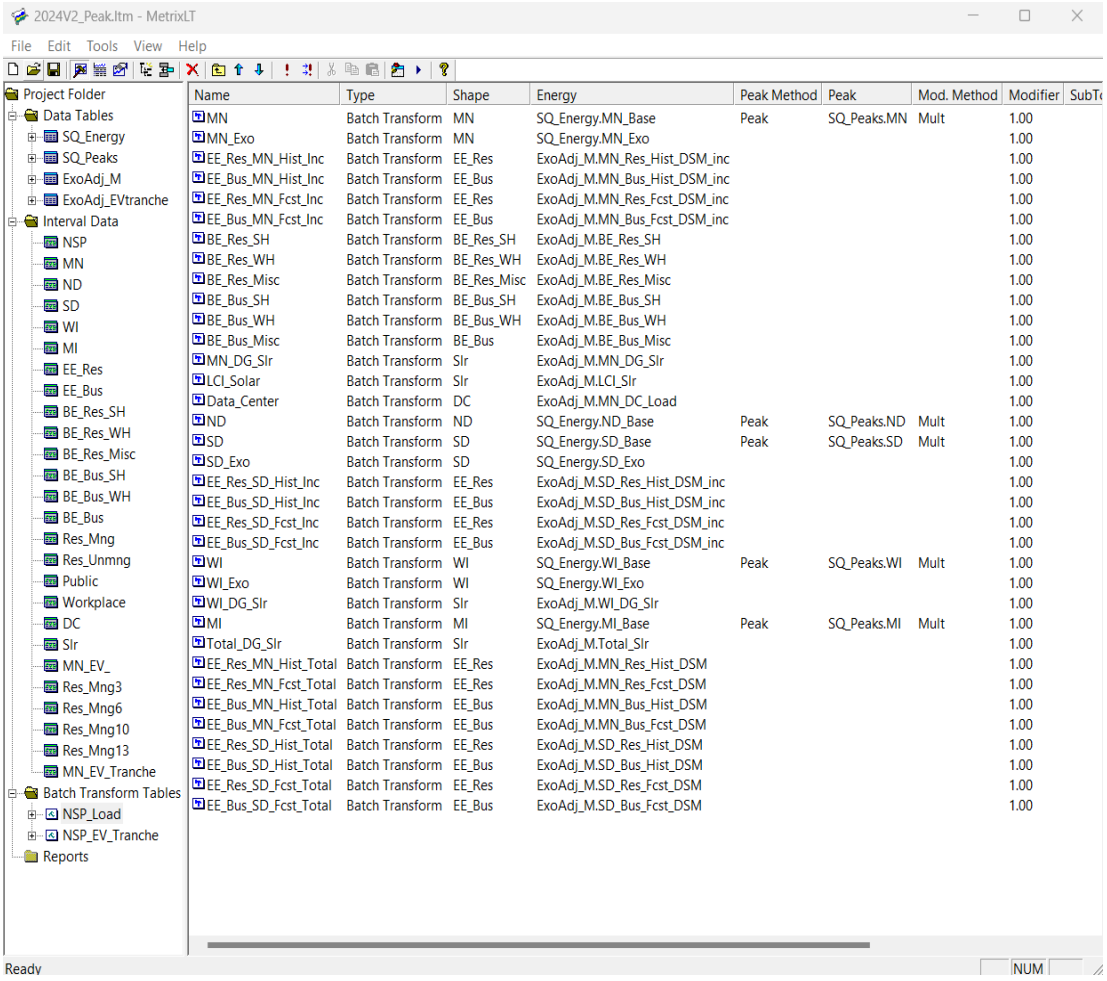
A. Exogenous Adjustments are the state-level monthly energy assumptions (at generator) for EV, BE, DG Solar, Large CI, and DSM. All series are set incremental to 2023. These series are used to scale their respective hourly load profiles. All monthly inputs for these series are developed by areas of NSP that specialize in analysis of a specific load component. In many instances these assumptions are provided at meter, and the forecasting area simply "grosses-up" for line losses.

Q. PLEASE EXPLAIN STEP 5 - SCALE PROFILES USING METRIX LT SOFTWARE.

A. Metrix LT software develops hourly load profiles using inputs for: monthly energy, monthly peak (optional), and an hourly base profile. Figure 10 below shows each

product series (Name), its assumed hourly shape (Shape), whether or not it includes an assigned peak (Peak Method), and what peak was assigned (Peak).

Figure 10



Name	Type	Shape	Energy	Peak Method	Peak	Mod. Method	Modifier	SubT
MN	Batch Transform	MN	SQ_Energy.MN_Base	Peak	SQ_Peaks.MN	Mult	1.00	
MN_Exo	Batch Transform	MN	SQ_Energy.MN_Exo				1.00	
EE_Res_MN_Hist_Inc	Batch Transform	EE_Res	ExoAdj_M.MN_Res_Hist_DSM_inc				1.00	
EE_Bus_MN_Hist_Inc	Batch Transform	EE_Bus	ExoAdj_M.MN_Bus_Hist_DSM_inc				1.00	
EE_Res_MN_Fcst_Inc	Batch Transform	EE_Res	ExoAdj_M.MN_Res_Fcst_DSM_inc				1.00	
EE_Bus_MN_Fcst_Inc	Batch Transform	EE_Bus	ExoAdj_M.MN_Bus_Fcst_DSM_inc				1.00	
BE_Res_SH	Batch Transform	BE_Res_SH	ExoAdj_M.BE_Res_SH				1.00	
BE_Res_WH	Batch Transform	BE_Res_WH	ExoAdj_M.BE_Res_WH				1.00	
BE_Res_Misc	Batch Transform	BE_Res_Misc	ExoAdj_M.BE_Res_Misc				1.00	
BE_Bus_SH	Batch Transform	BE_Bus_SH	ExoAdj_M.BE_Bus_SH				1.00	
BE_Bus_WH	Batch Transform	BE_Bus_WH	ExoAdj_M.BE_Bus_WH				1.00	
BE_Bus_Misc	Batch Transform	BE_Bus	ExoAdj_M.BE_Bus_Misc				1.00	
MN_DG_SIr	Batch Transform	SIr	ExoAdj_M.MN_DG_SIr				1.00	
LCI_Solar	Batch Transform	SIr	ExoAdj_M.LCI_SIr				1.00	
Data_Center	Batch Transform	DC	ExoAdj_M.MN_DC_Load				1.00	
ND	Batch Transform	ND	SQ_Energy.ND_Base	Peak	SQ_Peaks.ND	Mult	1.00	
SD	Batch Transform	SD	SQ_Energy.SD_Base	Peak	SQ_Peaks.SD	Mult	1.00	
SD_Exo	Batch Transform	SD	SQ_Energy.SD_Exo				1.00	
EE_Res_SD_Hist_Inc	Batch Transform	EE_Res	ExoAdj_M.SD_Res_Hist_DSM_inc				1.00	
EE_Bus_SD_Hist_Inc	Batch Transform	EE_Bus	ExoAdj_M.SD_Bus_Hist_DSM_inc				1.00	
EE_Res_SD_Fcst_Inc	Batch Transform	EE_Res	ExoAdj_M.SD_Res_Fcst_DSM_inc				1.00	
EE_Bus_SD_Fcst_Inc	Batch Transform	EE_Bus	ExoAdj_M.SD_Bus_Fcst_DSM_inc				1.00	
WI	Batch Transform	WI	SQ_Energy.WI_Base	Peak	SQ_Peaks.WI	Mult	1.00	
WI_Exo	Batch Transform	WI	SQ_Energy.WI_Exo				1.00	
WI_DG_SIr	Batch Transform	SIr	ExoAdj_M.WI_DG_SIr				1.00	
MI	Batch Transform	MI	SQ_Energy.MI_Base	Peak	SQ_Peaks.MI	Mult	1.00	
Total_DG_SIr	Batch Transform	SIr	ExoAdj_M.Total_SIr				1.00	
EE_Res_MN_Hist_Total	Batch Transform	EE_Res	ExoAdj_M.MN_Res_Hist_DSM				1.00	
EE_Res_MN_Fcst_Total	Batch Transform	EE_Res	ExoAdj_M.MN_Res_Fcst_DSM				1.00	
EE_Bus_MN_Hist_Total	Batch Transform	EE_Bus	ExoAdj_M.MN_Bus_Hist_DSM				1.00	
EE_Bus_MN_Fcst_Total	Batch Transform	EE_Bus	ExoAdj_M.MN_Bus_Fcst_DSM				1.00	
EE_Res_SD_Hist_Total	Batch Transform	EE_Res	ExoAdj_M.SD_Res_Hist_DSM				1.00	
EE_Bus_SD_Hist_Total	Batch Transform	EE_Bus	ExoAdj_M.SD_Bus_Hist_DSM				1.00	
EE_Res_SD_Fcst_Total	Batch Transform	EE_Res	ExoAdj_M.SD_Res_Fcst_DSM				1.00	
EE_Bus_SD_Fcst_Total	Batch Transform	EE_Bus	ExoAdj_M.SD_Bus_Fcst_DSM				1.00	

Q. PLEASE EXPLAIN STEP 6 – AGGREGATE SERIES AND IDENTIFY MONTHLY PEAKS.

A. Hourly profiles are exported from MetrixLT and the monthly total NSP peak is identified. These monthly NSP NCP are summarized on the "NSP_NCP" tab as "NSP_NCP_Final" in the submitted workbook "NSP_CP_Forecasts_PY25-26.xlsx." All peak-coincident load components for the "NSP_NCP_Final" series

are summarized on the "Metrix_LT_Outputs" tab, and formulae are intact to show aggregations.

Q. HOW ARE THE CP ALLOCATORS DETERMINED FROM THE PROJECTED NSP-COINCIDENT STATE LOADS?

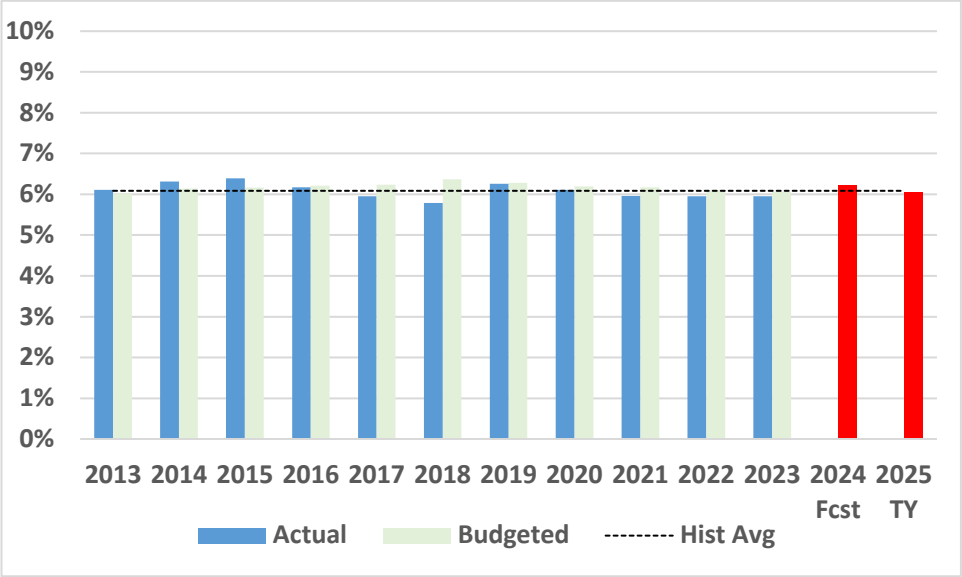
A. The Company takes the average of all 12 peaks for the year on a state-by-state basis, adjusts these state averages for transmission losses in each state[5], and then calculates the share of total NSPM. In the case of the test year, Minnesota represents 86.98 percent of NSPM, North Dakota accounts for 6.05 percent, and South Dakota is 6.97 percent[6].

Q. HOW DOES THE FORECASTED NORTH DAKOTA JURISDICTIONAL DEMAND ALLOCATOR FOR THE 2025 TEST YEAR COMPARE TO HISTORICAL ACTUALS?

A. The historical actual 12 CP demand allocator has ranged between 5.79 percent and 6.39 percent over the past ten years, and the 2025 test year demand allocator (6.05 percent) is nearly the exact center of this range (6.09 percent). Figure 11 below shows historical actual and budgeted (forecast) North Dakota 12 CP demand allocators as well as the projected allocators for 2024 and the 2025 test year.

[5] Minnesota has much higher transmission losses than North or South Dakota.
[6] CP figures are rounded and may not sum to one.

Figure 11
2015-2025 Demand Allocators



Q. IS IT ONLY ACTIVITY IN NORTH DAKOTA THAT IMPACTS THE NORTH DAKOTA JURISDICTIONAL DEMAND ALLOCATOR?

A. No. North Dakota's 12 CP allocator is impacted by multiple factors occurring in *all* three NSPM System jurisdictions, including demand-side management activity, the expiration of firm wholesale contracts, the loss of large customer loads, and weather.

Q. IS THE 2025 TEST YEAR 12 CP DEMAND ALLOCATOR REASONABLE TO USE TO ALLOCATE COSTS IN THIS PROCEEDING?

A. Yes. As I previously explained, the 2025 test year North Dakota 12 CP demand allocator was developed using the same methodology the Company has used and the Commission has accepted in past cases. All that has changed is the Company's method of peak forecasting, which is a substantial improvement. The 2025 test year 12 CP demand allocator is based on the sales forecast I discussed earlier in

my testimony, assumes normal weather, and is aligned with historical actual results. Company witness Wishart discusses the appropriateness of the 12 CP allocator at greater length in his testimony.

X. CONCLUSION

Q. IN YOUR OPINION, DO THE XCEL ENERGY SALES AND CUSTOMER FORECASTS PROVIDE A REASONABLE BASIS FOR ESTABLISHING RATES IN THIS CASE?

A. Yes. The forecast data is reasonable based on the economic conditions that were foreseeable when the budget was developed and supports the test year revenue projections.

Q. IN YOUR OPINION, DOES XCEL ENERGY'S JURISDICTIONAL DEMAND ALLOCATOR PROVIDE A REASONABLE BASIS FOR ESTABLISHING RATES IN THE CASE?

A. Yes. The methodology used to develop the jurisdictional demand allocator is the same methodology that has been accepted in previous North Dakota electric rate cases as well as by the other NSP System state commissions and provides a reasonable basis for establishing rates in this case.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Benjamin Levine

Benjamin.S.Levine@xcelenergy.com

EDUCATION

University of Wisconsin - Superior
Bachelor of Science (May 2008), **Major:** Economics, **Minor**: Philosophy

EMPLOYMENT HISTORY

Xcel Energy – Minneapolis, MN
Energy Forecasting Analyst, *December 2022 – present*

- Develop biannual sales and demand forecast for NSP Electric:
  - Input data gathering and processing.
  - Regression modeling and application of post-regression adjustments.
  - Validating and applying assumptions for demand modifiers such as DSM and Large C&I additions.
  - Process documentation and formatting deliverables.

- Support Company Filings:
  - Integrated Resource Plan (NSP): develop monthly energy and peak demand inputs, convert monthly inputs to an 8760 format, draft appendices, respond to information requests.
  - MN AAA and Fuel Forecast Filings: quantify forecast-to-actual variances, draft sections of the filing.
  - MISO Module E NSP Forecast submittal: develop and submit documentation for MISO coincident and Zone coincident peak forecasts.
  - Annual Electric Utility Report: complete required forms and update submitted documentation as necessary.

- Process Improvements:
  - Developed NSP's 8760 peak forecast methodology to provide more detailed inputs to Resource, Distribution, Generation, and Transmission Planners.
  - Built programs to automate monthly reporting projects which improved report accuracy and identified past errors.
    - Large C&I reports for all Xcel OpCo's
    - Minnesota Rate True-Up reports
  - Overhauled and streamlined the NSPM CFM (rate allocation) forecast processes to improve transparency/documentation, reduce turnaround time, and added checks to detect irregular monthly profiles by rate.
  - Overhauled and streamlined the NSPM customer count and sales forecast review working papers to increase assumption transparency and reduce turnaround time of forecast development and presentation preparation.

Minnesota Power – Duluth, MN
***Utility Load Forecaster**, March 2008 – November 2022*

- Develop and file Minnesota Power's Minnesota Annual Electric Utility Report:
  - Prior year reporting, 15-year outlook of customer counts, energy sales by class, and peak demand based on econometric modeling best-practices.

  - Assumptions for Demand-Side Management, Conservation Improvement Programs (CIP), Electric Vehicle adoption, and Distributed Solar Generation adoption.
  - Documentation of all modeling criteria and statistics, assumption development, and primary data sources.

- Support Company filings:
  - Rate Cases (5): develop the energy sales assumption, draft and file testimony in support of the sales outlook, conduct load research analysis to develop Cost of Service Study inputs, respond to information requests.
  - Integrated Resource Plans (4), Integrated Distribution Plan (2), and Certificate of Needs (2): develop energy sales and demand scenarios; translate the outlook into modeling assumptions; design, execute, and draft economic impact studies, develop and document core assumptions for new technology adoption (electric vehicles, solar), respond to information requests.
  - Develop inputs or consult on other filings such as: Fuel Adjustment Clause, Electric Vehicle Compliance, and Time of Day Rates.

- Conduct Economic and Demographic studies:
  - Low Income Customer Studies: leverage census data to approximate the total number of low-income households served by Minnesota Power, and execute a data append/filter to identify individuals for program outreach.
  - Economic Impact Studies for Resource Plans and Host Community Transition Report.

- Design tools/software for other areas of the Company:
  - Short-term load, solar, and wind generation forecast programs,
  - Battery charge and discharge algorithms,
  - Meter Alert validation and minor but chronic grid issue detection (voltage, phasing).
  - Locational Marginal Price forecasting and dispatch modeling input formatting programs – with optional wind generation sensitivities.

- Monitor and report on the state of the economy to Minnesota Power executives:
  - Track monthly economic metrics such as Unit Auto Sales or Industrial Production Indices.
  - Review and dissect forecasts from IHS Global Insight.
  - Identify key medium-term risks to the Company and customers.
  - Organize slides and present (approx. 20 mins) on a monthly basis.

Technical Skills/Software Expertise

- Proficient in most Microsoft Office software, expert in Excel
- Proficient in MetrixND and MetrixLT
- Expert SAS user/programmer
- Novice R user
- Advanced beginner in PowerBI
- Proficient REMI user

Trade group involvement

- Upper Midwest Utility Forecaster (UMUF) Group member since 2008, occasional chair and treasurer.
- Association of Edison Illuminating Companies (AEIC)
  - Load Research Course certification.
  - Load Research and Analytics Committee member (2014-2022).
  - Data Analytics Council taskforce and founding member (2018-2022).

Definition of Terms

Base Load - Component of sales not associated with weather.

Billing Days - Based on the meter reading schedule for the 21 billing cycles. For example, there are approximately 651 (21 cycles * 31 days) billing days during a typical billing month period.

Billing Month Sales - Billed sales based on the meter reading schedule for the 21 billing cycles.

Calendar Month Sales - Estimated sales, equal to the billing month sales, adjusted for the estimated unbilled sales of the current calendar month, less the estimated unbilled sales from the previous calendar month.

Commission – North Dakota Public Service Commission.

Company – Northern States Power Company, a Minnesota corporation.

CP – Coincident Peak

DW Test Statistic - Durbin-Watson test statistic; tests for the presence of first-order autocorrelation. In the absence of first-order autocorrelation, the statistic equals 2.0.

Error Terms - The difference between the actual values of the data series being modeled (customers or sales) and the regression model's predicted, or "fitted" values for that series. Also called Residual Terms.

HDD - Heating Degree Days - Measure of weather. Calculated by subtracting the average daily temperature from a base of 65 degrees Fahrenheit.

kW – Kilowatt; measure of electricity demand.

kWh – Kilowatt-hour; measure of electricity sales.

MWh – Megawatt-hour; measure of electricity sales.

NOAA – National Oceanic and Atmospheric Administration.

Normal Weather – the average of twenty years of historical weather.

Definition of Terms (continued)

NSP – Northern States Power Company.

NSPM – Northern States Power Company - Minnesota

R-squared - Coefficient of determination; measures the quality of the model's fit to the historical data. The higher the R-squared statistic, the better the model is explaining the historical data.

Regression Model - Statistical technique employing multiple independent variables to model the variation of the dependent variable about its mean value.

Residual Terms - The difference between the actual values of the data series being modeled (customers or sales) and the regression model's predicted, or "fitted" values for that series. Also called Error Terms.

t-Statistic - Measures the importance of the independent variable to the regression. The higher the absolute value of the t-statistic, the more likely it is that the variable has a relationship to the dependent variable and is making an important contribution to the equation.

Test Year – January 1, 2025-December 31, 2025.

THI – Temperature-humidity index.

Total Weather Load - Component of sales influenced by weather.

Unbilled Sales – Electricity consumed in the current month but not billed to customers until the succeeding month.

Weather Normalized – MWh sales adjusted to remove the impact of abnormal weather.

Xcel Energy – Northern States Power Company, a Minnesota corporation.

XES – Xcel Energy Services Inc.

Xcel Energy - North Dakota State
Test Year Sales and Customers by Customer Class

Weather Normalized Calendar Month Sales (MWh)

	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025	Year 2025
Residential without Space Heat	53,059	44,016	44,398	35,967	37,105	42,946	50,096	48,839	35,766	36,749	39,734	49,407	518,083
Residential with Space Heat	39,665	32,135	27,513	17,458	14,216	12,248	14,429	14,245	11,601	15,996	24,592	34,283	258,382
Small Commercial & Industrial	90,564	75,862	88,201	67,947	76,419	81,252	88,115	85,999	74,402	77,015	79,836	85,778	971,390
Large Commercial & Industrial	26,669	25,968	29,409	27,947	28,049	30,528	34,386	33,349	33,158	31,893	27,004	28,535	356,896
Public Street & Highway Lighting	1,406	1,369	1,169	1,035	927	811	767	768	1,016	1,027	1,472	1,186	12,953
Other Sales to Public Authority	1,344	1,029	1,257	1,047	1,221	1,287	1,102	1,501	996	1,160	1,120	882	13,946
Total Retail Sales	212,707	180,380	191,947	151,402	157,937	169,072	188,894	184,700	156,941	163,839	173,759	200,072	2,131,650

Number of Customers

	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025	Year 2025
Residential without Space Heat	60,723	60,744	60,764	60,784	60,803	60,823	60,842	60,860	60,878	60,896	60,914	60,931	60,830
Residential with Space Heat	22,602	22,624	22,646	22,667	22,687	22,707	22,725	22,743	22,761	22,778	22,794	22,810	22,712
Small Commercial & Industrial	13,030	13,035	13,040	13,044	13,049	13,053	13,057	13,061	13,065	13,069	13,073	13,077	13,054
Large Commercial & Industrial	24	24	24	24	24	24	24	24	24	24	24	24	24
Public Street & Highway Lighting	274	276	277	278	280	281	283	284	285	286	287	289	282
Other Sales to Public Authority	147	147	147	146	146	146	146	146	145	145	145	145	146
Total Retail Customers	96,800	96,849	96,897	96,944	96,990	97,034	97,077	97,118	97,159	97,198	97,237	97,275	97,048

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	-63956.841	25027.314	-2.555	1.15%	Constant Term
CalCust.CUST_Reswo_ND	0.691	0.301	2.298	2.28%	Residential without Space Heat Customer Count
WNC_Intensity.Total_Adj	2.533	0.865	2.927	0.39%	Appliance intensity use metric for West North Central Census Division
BinaryTrans.Bi_13_14	1581.819	463.252	3.415	0.08%	Binary variable = 1 if observation is Jan-2013 to Dec-2014
BinaryTrans.AugOct23	-10247.597	1384.163	-7.403	0.00%	Binary variable = 1 if observation is Aug-2023 to Oct-2023
BillingDayscellnet.BillDaysCellnet21	1176.105	94.207	12.484	0.00%	Billing Days
NDRXWeather.H65_bill_RX_ND_Jan	0.000	0.000	32.874	0.00%	January HDD65 * January customers
NDRXWeather.H65_bill_RX_ND_Feb	0.000	0.000	25.897	0.00%	February HDD65 * February customers
NDRXWeather.H65_bill_RX_ND_Mar	0.000	0.000	22.265	0.00%	March HDD65 * March customers
NDRXWeather.H65_bill_RX_ND_Apr	0.000	0.000	10.389	0.00%	April HDD65 * April customers
NDRXWeather.T65_bill_RX_ND_Jun	0.002	0.000	9.990	0.00%	June THI65 * June customers
NDRXWeather.T65_bill_RX_ND_Jul	0.002	0.000	24.550	0.00%	July THI65 * July customers
NDRXWeather.T65_bill_RX_ND_Aug	0.002	0.000	28.231	0.00%	August THI65 * August customers
NDRXWeather.T65_bill_RX_ND_Sep	0.002	0.000	14.915	0.00%	September THI65 * September customers
NDRXWeather.T65_bill_RX_ND_Oct	0.003	0.001	6.339	0.00%	October THI65 * October customers
NDRXWeather.H65_bill_RX_ND_Nov	0.000	0.000	3.690	0.03%	November HDD65 * November customers
NDRXWeather.H65_bill_RX_ND_Dec	0.000	0.000	16.883	0.00%	December HDD65 * December customers
AR(1)	0.221	0.078	2.831	0.52%	First order moving average term

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Model Statistics	
Iterations	11
Adjusted Observations	179
Deg. of Freedom for Error	161
R-Squared	0.956875077
Adjusted R-Squared	0.952321514
AIC	14.83889638
BIC	15.15941563
F-Statistic	210.1376472
Prob (F-Statistic)	0
Log-Likelihood	-1564.071224
Model Sum of Squares	9038297170
Sum of Squared Errors	407342482.3
Mean Squared Error	2530077.53
Std. Error of Regression	1590.621743
Mean Abs. Dev. (MAD)	1175.419096
Mean Abs. % Err. (MAPE)	0.027204719
Durbin-Watson Statistic	1.989778527
Durbin-H Statistic	
Ljung-Box Statistic	18.53095516
Prob (Ljung-Box)	0.776519075
Skewness	0.248677574
Kurtosis	3.052200866
Jarque-Bera	1.865232763
Prob (Jarque-Bera)	0.393522757

Xcel Energy North Dakota Residential without Space Heat
2025 Test Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	35,968	-	-	-	-
2009	7	42,627	42,030	597	0	0
2009	8	39,272	40,467	(1,196)	(0)	(1)
2009	9	41,096	40,776	320	0	0
2009	10	39,870	39,197	674	0	0
2009	11	34,256	33,637	618	0	0
2009	12	48,752	47,591	1,161	0	1
2010	1	55,862	56,671	(809)	(0)	(1)
2010	2	46,833	47,440	(607)	(0)	(0)
2010	3	47,356	49,101	(1,745)	(0)	(1)
2010	4	37,931	39,032	(1,101)	(0)	(1)
2010	5	32,494	32,449	45	0	0
2010	6	39,291	40,007	(715)	(0)	(0)
2010	7	46,139	46,170	(31)	(0)	(0)
2010	8	52,515	52,279	236	0	0
2010	9	41,718	42,574	(857)	(0)	(1)
2010	10	33,783	34,448	(666)	(0)	(0)
2010	11	35,044	34,765	279	0	0
2010	12	49,681	46,466	3,215	0	2
2011	1	58,057	60,093	(2,037)	(0)	(1)
2011	2	48,092	47,981	111	0	0
2011	3	51,882	50,596	1,286	0	1
2011	4	38,153	38,352	(199)	(0)	(0)
2011	5	37,175	35,745	1,430	0	1
2011	6	39,153	39,597	(444)	(0)	(0)
2011	7	43,866	44,577	(711)	(0)	(0)
2011	8	51,368	53,129	(1,761)	(0)	(1)
2011	9	42,526	39,485	3,041	0	2
2011	10	34,305	35,057	(752)	(0)	(0)
2011	11	33,823	33,757	66	0	0
2011	12	44,229	42,602	1,628	0	1
2012	1	50,920	52,586	(1,665)	(0)	(1)
2012	2	45,565	45,844	(279)	(0)	(0)
2012	3	43,500	43,792	(292)	(0)	(0)
2012	4	33,892	35,815	(1,923)	(0)	(1)
2012	5	35,053	35,405	(352)	(0)	(0)
2012	6	37,850	38,488	(638)	(0)	(0)
2012	7	52,040	51,585	455	0	0
2012	8	54,982	54,532	450	0	0
2012	9	38,559	37,133	1,426	0	1
2012	10	38,240	38,226	15	0	0
2012	11	38,684	35,277	3,408	0	2
2012	12	42,906	42,365	541	0	0
2013	1	60,613	61,514	(902)	(0)	(1)
2013	2	49,078	48,617	461	0	0
2013	3	45,376	45,061	315	0	0
2013	4	48,279	46,019	2,260	0	1
2013	5	38,834	37,855	979	0	1
2013	6	35,718	37,147	(1,430)	(0)	(1)
2013	7	51,693	52,946	(1,253)	(0)	(1)
2013	8	47,981	46,004	1,977	0	1

Xcel Energy North Dakota Residential without Space Heat
2025 Test Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	9	44,029	48,229	(4,200)	(0)	(3)
2013	10	40,744	40,210	534	0	0
2013	11	33,741	34,342	(600)	(0)	(0)
2013	12	51,400	48,106	3,295	0	2
2014	1	65,491	65,789	(297)	(0)	(0)
2014	2	50,097	49,330	767	0	0
2014	3	52,260	50,227	2,033	0	1
2014	4	44,096	43,154	942	0	1
2014	5	36,313	36,231	81	0	0
2014	6	39,796	40,938	(1,141)	(0)	(1)
2014	7	44,674	47,071	(2,397)	(0)	(2)
2014	8	45,861	46,507	(646)	(0)	(0)
2014	9	42,204	43,321	(1,117)	(0)	(1)
2014	10	39,424	41,136	(1,712)	(0)	(1)
2014	11	31,292	32,037	(745)	(0)	(0)
2014	12	52,856	49,641	3,215	0	2
2015	1	57,337	56,762	575	0	0
2015	2	45,532	44,722	810	0	1
2015	3	51,164	49,145	2,018	0	1
2015	4	39,585	40,024	(440)	(0)	(0)
2015	5	32,044	32,577	(533)	(0)	(0)
2015	6	39,687	38,811	876	0	1
2015	7	48,019	47,938	81	0	0
2015	8	49,411	50,145	(734)	(0)	(0)
2015	9	44,573	46,911	(2,338)	(0)	(1)
2015	10	38,111	39,524	(1,413)	(0)	(1)
2015	11	30,907	31,923	(1,015)	(0)	(1)
2015	12	46,039	45,491	548	0	0
2016	1	51,911	53,811	(1,901)	(0)	(1)
2016	2	46,738	46,186	551	0	0
2016	3	46,000	47,542	(1,543)	(0)	(1)
2016	4	36,790	37,494	(704)	(0)	(0)
2016	5	34,063	33,693	370	0	0
2016	6	40,337	40,335	2	0	0
2016	7	43,689	43,066	622	0	0
2016	8	56,165	56,241	(76)	(0)	(0)
2016	9	41,819	41,298	520	0	0
2016	10	33,954	35,026	(1,072)	(0)	(1)
2016	11	31,573	33,784	(2,210)	(0)	(1)
2016	12	42,254	42,639	(384)	(0)	(0)
2017	1	60,137	57,336	2,801	0	2
2017	2	43,128	43,297	(169)	(0)	(0)
2017	3	47,748	48,834	(1,086)	(0)	(1)
2017	4	34,404	35,530	(1,126)	(0)	(1)
2017	5	34,907	35,072	(165)	(0)	(0)
2017	6	39,300	40,130	(830)	(0)	(1)
2017	7	42,777	41,932	845	0	1
2017	8	51,650	49,711	1,938	0	1
2017	9	36,829	37,691	(861)	(0)	(1)
2017	10	36,411	38,101	(1,690)	(0)	(1)
2017	11	34,513	34,464	49	0	0

Xcel Energy North Dakota Residential without Space Heat
2025 Test Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	12	41,977	43,408	(1,431)	(0)	(1)
2018	1	60,638	58,836	1,802	0	1
2018	2	46,077	46,116	(39)	(0)	(0)
2018	3	48,572	48,783	(211)	(0)	(0)
2018	4	40,334	39,744	591	0	0
2018	5	36,976	35,343	1,633	0	1
2018	6	42,791	42,658	133	0	0
2018	7	50,571	50,206	365	0	0
2018	8	53,349	50,346	3,003	0	2
2018	9	35,809	37,730	(1,921)	(0)	(1)
2018	10	39,069	38,852	217	0	0
2018	11	34,416	35,018	(601)	(0)	(0)
2018	12	43,390	44,407	(1,017)	(0)	(1)
2019	1	54,811	55,645	(834)	(0)	(1)
2019	2	48,860	48,306	554	0	0
2019	3	50,617	49,156	1,461	0	1
2019	4	39,340	40,937	(1,597)	(0)	(1)
2019	5	34,746	34,919	(173)	(0)	(0)
2019	6	34,552	35,409	(857)	(0)	(1)
2019	7	47,768	48,398	(630)	(0)	(0)
2019	8	48,175	49,111	(936)	(0)	(1)
2019	9	34,745	36,205	(1,460)	(0)	(1)
2019	10	42,537	40,847	1,690	0	1
2019	11	33,122	32,720	402	0	0
2019	12	44,846	47,819	(2,973)	(0)	(2)
2020	1	55,989	55,885	105	0	0
2020	2	43,020	44,898	(1,878)	(0)	(1)
2020	3	45,601	47,667	(2,066)	(0)	(1)
2020	4	42,400	39,884	2,517	0	2
2020	5	33,666	32,243	1,423	0	1
2020	6	42,592	41,013	1,578	0	1
2020	7	54,118	54,176	(58)	(0)	(0)
2020	8	50,208	47,307	2,901	0	2
2020	9	42,811	41,440	1,372	0	1
2020	10	36,809	35,518	1,290	0	1
2020	11	32,954	32,688	266	0	0
2020	12	45,927	45,652	275	0	0
2021	1	48,693	51,697	(3,005)	(0)	(2)
2021	2	45,533	45,076	457	0	0
2021	3	50,201	49,663	537	0	0
2021	4	37,325	39,307	(1,981)	(0)	(1)
2021	5	31,617	31,237	380	0	0
2021	6	45,137	43,535	1,602	0	1
2021	7	52,314	48,055	4,259	0	3
2021	8	55,959	55,843	116	0	0
2021	9	42,618	41,920	698	0	0
2021	10	34,811	36,318	(1,507)	(0)	(1)
2021	11	33,082	33,538	(456)	(0)	(0)
2021	12	42,432	45,528	(3,096)	(0)	(2)
2022	1	56,879	56,302	576	0	0
2022	2	46,753	46,769	(16)	(0)	(0)

Xcel Energy North Dakota Residential without Space Heat
2025 Test Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2022	3	51,940	52,331	(391)	(0)	(0)
2022	4	38,169	38,624	(456)	(0)	(0)
2022	5	35,668	33,236	2,432	0	2
2022	6	40,299	40,452	(153)	(0)	(0)
2022	7	46,850	45,041	1,809	0	1
2022	8	52,503	50,432	2,071	0	1
2022	9	43,962	40,983	2,980	0	2
2022	10	32,877	35,243	(2,365)	(0)	(1)
2022	11	33,350	33,905	(555)	(0)	(0)
2022	12	43,987	47,268	(3,281)	(0)	(2)
2023	1	55,590	52,053	3,537	0	2
2023	2	44,611	43,987	624	0	0
2023	3	49,009	49,508	(499)	(0)	(0)
2023	4	38,619	35,977	2,642	0	2
2023	5	36,915	35,512	1,403	0	1
2023	6	47,775	47,952	(178)	(0)	(0)
2023	7	45,778	47,971	(2,194)	(0)	(1)
2023	8	50,421	53,179	(2,757)	(0)	(2)
2023	9	41,540	39,043	2,497	0	2
2023	10	36,435	35,495	941	0	1
2023	11	33,655	34,012	(356)	(0)	(0)
2023	12	41,504	43,551	(2,046)	(0)	(1)
2024	1	49,059	47,464	1,594	0	1
2024	2	42,954	44,953	(1,999)	(0)	(1)
2024	3	41,242	42,798	(1,556)	(0)	(1)
2024	4	38,611	39,187	(576)	(0)	(0)
2024	5	33,188	34,770	(1,583)	(0)	(1)
2024	6	-	35,921	-	-	-
2024	7	-	48,619	-	-	-
2024	8	-	49,797	-	-	-
2024	9	-	39,741	-	-	-
2024	10	-	38,994	-	-	-
2024	11	-	31,880	-	-	-
2024	12	-	48,907	-	-	-
2025	1	-	53,752	-	-	-
2025	2	-	47,411	-	-	-
2025	3	-	46,463	-	-	-
2025	4	-	39,952	-	-	-
2025	5	-	33,384	-	-	-
2025	6	-	38,215	-	-	-
2025	7	-	48,727	-	-	-
2025	8	-	47,706	-	-	-
2025	9	-	41,956	-	-	-
2025	10	-	38,732	-	-	-
2025	11	-	30,155	-	-	-
2025	12	-	50,948	-	-	-

Xcel Energy North Dakota Residential with Space Heat
2025 Test Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	-11342.696	4308.353	-2.633	0.93%	Constant Term
ND.CYPNR_ND	64.688	31.927	2.026	4.44%	ND Real Per Capita Income (thousands 2017$)
WNC_Intensity.Total_Adj	1.031	0.271	3.808	0.02%	Appliance intensity use metric for West North Central Census Division
BillingDayscellnet.BillDaysCellnet21	280.081	58.465	4.791	0.00%	Billing Days
NDRHWeather.H65_bill_RH_ND_Jan	0.001	0.000	58.522	0.00%	January HDD65 * January customers
NDRHWeather.H65_bill_RH_ND_Feb	0.001	0.000	53.836	0.00%	February HDD65 * February customers
NDRHWeather.H65_bill_RH_ND_Mar	0.001	0.000	45.539	0.00%	March HDD65 * March customers
NDRHWeather.H65_bill_RH_ND_Apr	0.001	0.000	26.883	0.00%	April HDD65 * April customers
NDRHWeather.H65_bill_RH_ND_May	0.001	0.000	11.430	0.00%	May HDD65 * April customers
NDRHWeather.H65_bill_RH_ND_Jun	0.000	0.000	2.423	1.65%	June HDD65 * June customers
NDRHWeather.T65_bill_RH_ND_Jun	0.001	0.000	3.607	0.04%	June THI65 * June customers
NDRHWeather.T65_bill_RH_ND_Jul	0.001	0.000	7.793	0.00%	July THI65 * July customers
NDRHWeather.T65_bill_RH_ND_Aug	0.001	0.000	7.903	0.00%	August THI65 * August customers
NDRHWeather.T65_bill_RH_ND_Sep	0.001	0.000	4.945	0.00%	September THI65 * September customers
NDRHWeather.H65_bill_RH_ND_Oct	0.000	0.000	5.907	0.00%	October THI65 * October customers
NDRHWeather.H65_bill_RH_ND_Nov	0.001	0.000	19.482	0.00%	November HDD65 * November customers
NDRHWeather.H65_bill_RH_ND_Dec	0.001	0.000	40.054	0.00%	December HDD65 * December customers
AR(1)	0.350	0.074	4.727	0.00%	First order autoregressive term

Xcel Energy North Dakota Residential with Space Heat
2025 Test Year Sales Forecast

Model Statistics	
Iterations	8
Adjusted Observations	179
Deg. of Freedom for Error	161
R-Squared	0.9898383
Adjusted R-Squared	0.988765325
AIC	13.96069675
BIC	14.28121599
F-Statistic	922.5179674
Prob (F-Statistic)	0
Log-Likelihood	-1485.472356
Model Sum of Squares	16487709557
Sum of Squared Errors	169263162
Mean Squared Error	1051323.988
Std. Error of Regression	1025.340913
Mean Abs. Dev. (MAD)	709.7627783
Mean Abs. % Err. (MAPE)	0.03485555
Durbin-Watson Statistic	1.984799235
Durbin-H Statistic	#NA
Ljung-Box Statistic	45.68250973
Prob (Ljung-Box)	0.004832387
Skewness	0.295110642
Kurtosis	4.601555522
Jarque-Bera	21.72867018
Prob (Jarque-Bera)	1.91284E-05

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	11,954	-	-	-	-
2009	7	12,440	12,042	398	0	0
2009	8	11,279	11,655	(377)	(0)	(0)
2009	9	11,671	11,792	(122)	(0)	(0)
2009	10	14,214	13,602	613	0	1
2009	11	17,214	16,998	216	0	0
2009	12	29,728	28,660	1,068	0	1
2010	1	39,659	39,191	468	0	0
2010	2	33,670	33,383	287	0	0
2010	3	29,353	30,940	(1,588)	(0)	(2)
2010	4	17,883	18,175	(292)	(0)	(0)
2010	5	12,717	13,410	(693)	(0)	(1)
2010	6	12,294	12,363	(69)	(0)	(0)
2010	7	13,432	13,440	(7)	(0)	(0)
2010	8	13,980	14,176	(196)	(0)	(0)
2010	9	12,287	12,336	(49)	(0)	(0)
2010	10	11,110	12,451	(1,341)	(0)	(1)
2010	11	16,403	16,879	(477)	(0)	(0)
2010	12	33,289	30,574	2,715	0	3
2011	1	41,094	42,680	(1,585)	(0)	(2)
2011	2	35,261	34,755	506	0	0
2011	3	34,389	33,990	399	0	0
2011	4	21,397	22,050	(654)	(0)	(1)
2011	5	16,100	16,042	58	0	0
2011	6	12,618	13,125	(507)	(0)	(0)
2011	7	13,417	14,041	(624)	(0)	(1)
2011	8	14,158	14,922	(765)	(0)	(1)
2011	9	12,807	12,100	707	0	1
2011	10	12,193	12,602	(409)	(0)	(0)
2011	11	17,634	17,988	(354)	(0)	(0)
2011	12	29,084	27,424	1,660	0	2
2012	1	33,886	35,144	(1,258)	(0)	(1)
2012	2	32,051	32,357	(306)	(0)	(0)
2012	3	27,305	27,240	65	0	0
2012	4	16,147	17,361	(1,214)	(0)	(1)
2012	5	13,868	14,501	(633)	(0)	(1)
2012	6	12,364	12,741	(377)	(0)	(0)
2012	7	15,574	15,480	93	0	0
2012	8	15,128	15,364	(236)	(0)	(0)
2012	9	12,264	11,651	613	0	1
2012	10	14,013	15,220	(1,207)	(0)	(1)
2012	11	20,551	19,305	1,247	0	1
2012	12	28,073	27,254	819	0	1
2013	1	41,910	42,421	(511)	(0)	(0)
2013	2	35,563	34,907	656	0	1
2013	3	30,343	30,361	(18)	(0)	(0)
2013	4	29,173	28,610	563	0	1
2013	5	18,174	17,644	530	0	1
2013	6	11,519	12,287	(769)	(0)	(1)
2013	7	14,974	15,130	(155)	(0)	(0)
2013	8	13,082	12,845	236	0	0

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	9	13,400	13,546	(146)	(0)	(0)
2013	10	12,937	13,500	(563)	(0)	(1)
2013	11	18,801	18,105	696	0	1
2013	12	35,027	32,445	2,581	0	3
2014	1	48,035	48,439	(404)	(0)	(0)
2014	2	37,200	37,045	155	0	0
2014	3	36,886	34,747	2,139	0	2
2014	4	25,571	25,037	534	0	1
2014	5	16,573	17,021	(448)	(0)	(0)
2014	6	12,965	12,986	(21)	(0)	(0)
2014	7	13,187	13,612	(426)	(0)	(0)
2014	8	12,896	12,853	43	0	0
2014	9	12,370	12,455	(85)	(0)	(0)
2014	10	12,789	13,856	(1,066)	(0)	(1)
2014	11	16,977	16,630	347	0	0
2014	12	35,199	32,965	2,234	0	2
2015	1	39,754	40,028	(273)	(0)	(0)
2015	2	32,624	32,258	366	0	0
2015	3	34,598	33,479	1,119	0	1
2015	4	20,516	20,821	(305)	(0)	(0)
2015	5	13,397	13,800	(403)	(0)	(0)
2015	6	13,021	12,768	254	0	0
2015	7	13,782	13,887	(105)	(0)	(0)
2015	8	13,893	13,585	308	0	0
2015	9	12,874	13,357	(483)	(0)	(0)
2015	10	12,024	12,236	(212)	(0)	(0)
2015	11	14,305	15,567	(1,262)	(0)	(1)
2015	12	27,188	27,143	45	0	0
2016	1	35,495	37,054	(1,559)	(0)	(2)
2016	2	32,495	31,950	545	0	1
2016	3	27,650	28,174	(524)	(0)	(1)
2016	4	19,824	19,637	187	0	0
2016	5	13,789	13,894	(105)	(0)	(0)
2016	6	12,564	12,105	460	0	0
2016	7	12,616	12,522	94	0	0
2016	8	15,116	14,787	329	0	0
2016	9	12,329	11,776	552	0	1
2016	10	11,892	12,100	(207)	(0)	(0)
2016	11	14,555	15,920	(1,364)	(0)	(1)
2016	12	25,676	26,413	(737)	(0)	(1)
2017	1	42,185	40,877	1,309	0	1
2017	2	29,517	29,781	(263)	(0)	(0)
2017	3	31,152	30,709	444	0	0
2017	4	18,051	19,096	(1,045)	(0)	(1)
2017	5	14,794	15,017	(224)	(0)	(0)
2017	6	12,638	12,524	115	0	0
2017	7	12,410	12,100	310	0	0
2017	8	14,011	13,372	640	0	1
2017	9	11,216	10,901	315	0	0
2017	10	12,170	12,616	(446)	(0)	(0)
2017	11	20,206	19,287	919	0	1

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	12	26,590	28,067	(1,476)	(0)	(1)
2018	1	45,056	43,402	1,654	0	2
2018	2	35,205	34,957	247	0	0
2018	3	31,881	33,426	(1,544)	(0)	(2)
2018	4	24,673	24,607	66	0	0
2018	5	15,295	14,986	309	0	0
2018	6	12,900	12,670	230	0	0
2018	7	14,390	14,267	124	0	0
2018	8	14,352	13,440	912	0	1
2018	9	11,013	10,921	92	0	0
2018	10	16,005	14,868	1,137	0	1
2018	11	20,588	20,908	(320)	(0)	(0)
2018	12	29,175	30,125	(950)	(0)	(1)
2019	1	38,781	38,761	19	0	0
2019	2	40,210	39,115	1,095	0	1
2019	3	35,989	36,927	(938)	(0)	(1)
2019	4	22,238	23,291	(1,053)	(0)	(1)
2019	5	15,493	15,494	(0)	(0)	(0)
2019	6	11,683	11,424	259	0	0
2019	7	13,903	13,637	266	0	0
2019	8	13,506	13,115	391	0	0
2019	9	10,247	10,485	(239)	(0)	(0)
2019	10	15,687	13,542	2,145	0	2
2019	11	20,188	19,743	445	0	0
2019	12	30,373	32,228	(1,856)	(0)	(2)
2020	1	39,698	39,557	141	0	0
2020	2	31,616	33,121	(1,505)	(0)	(1)
2020	3	30,354	31,876	(1,522)	(0)	(1)
2020	4	23,924	23,338	586	0	1
2020	5	15,020	15,149	(129)	(0)	(0)
2020	6	13,593	12,777	817	0	1
2020	7	15,651	15,542	109	0	0
2020	8	14,337	12,887	1,450	0	1
2020	9	12,603	12,148	455	0	0
2020	10	13,413	13,467	(54)	(0)	(0)
2020	11	18,752	18,807	(55)	(0)	(0)
2020	12	27,784	28,793	(1,010)	(0)	(1)
2021	1	31,981	34,979	(2,998)	(0)	(3)
2021	2	33,855	33,602	253	0	0
2021	3	32,039	32,706	(667)	(0)	(1)
2021	4	20,031	20,642	(612)	(0)	(1)
2021	5	14,094	14,516	(422)	(0)	(0)
2021	6	14,150	13,477	673	0	1
2021	7	14,886	13,912	974	0	1
2021	8	15,474	14,865	610	0	1
2021	9	12,415	12,168	246	0	0
2021	10	11,041	11,240	(199)	(0)	(0)
2021	11	16,135	17,447	(1,312)	(0)	(1)
2021	12	26,889	28,969	(2,081)	(0)	(2)
2022	1	42,020	42,198	(177)	(0)	(0)
2022	2	35,708	36,530	(821)	(0)	(1)

Xcel Energy North Dakota Residential with Space Heat
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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2022	3	36,887	36,867	20	0	0
2022	4	22,895	23,236	(341)	(0)	(0)
2022	5	17,425	16,709	716	0	1
2022	6	13,112	13,214	(103)	(0)	(0)
2022	7	13,852	13,171	682	0	1
2022	8	14,841	13,836	1,005	0	1
2022	9	12,728	12,075	654	0	1
2022	10	11,799	12,774	(975)	(0)	(1)
2022	11	17,533	18,639	(1,107)	(0)	(1)
2022	12	30,240	32,818	(2,577)	(0)	(3)
2023	1	39,630	35,871	3,760	0	4
2023	2	32,460	32,191	269	0	0
2023	3	34,691	32,606	2,085	0	2
2023	4	23,903	21,527	2,376	0	2
2023	5	16,809	15,249	1,560	0	2
2023	6	14,307	14,978	(671)	(0)	(1)
2023	7	13,431	13,990	(559)	(0)	(1)
2023	8	14,383	16,333	(1,950)	(0)	(2)
2023	9	12,402	13,138	(736)	(0)	(1)
2023	10	12,325	10,985	1,340	0	1
2023	11	18,049	16,971	1,079	0	1
2023	12	25,493	25,694	(201)	(0)	(0)
2024	1	33,266	32,443	824	0	1
2024	2	27,741	30,078	(2,337)	(0)	(2)
2024	3	25,755	25,613	142	0	0
2024	4	21,835	21,482	354	0	0
2024	5	13,564	14,121	(557)	(0)	(1)
2024	6	-	11,464	-	-	-
2024	7	-	13,723	-	-	-
2024	8	-	13,240	-	-	-
2024	9	-	11,240	-	-	-
2024	10	-	13,111	-	-	-
2024	11	-	17,261	-	-	-
2024	12	-	32,504	-	-	-
2025	1	-	39,157	-	-	-
2025	2	-	36,125	-	-	-
2025	3	-	32,193	-	-	-
2025	4	-	22,828	-	-	-
2025	5	-	15,005	-	-	-
2025	6	-	12,220	-	-	-
2025	7	-	13,853	-	-	-
2025	8	-	12,838	-	-	-
2025	9	-	11,835	-	-	-
2025	10	-	13,196	-	-	-
2025	11	-	16,541	-	-	-
2025	12	-	33,953	-	-	-

Xcel Energy North Dakota Small Commercial and Industrial
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	(127,014.81)	176,588.41	(0.72)	0.47	Constant Term
ND.EE_ND	89.82	13.68	6.57	0.00	North Dakota Non-Farm Employment
Covid_Binary.Post_2020	(2,320.58)	1,166.00	(1.99)	0.05	Binary variable = 1 if observation is on or after Apr-2020
NDSmCIWeather.H65_bill_SmCI_ND_JanFebNovDec	0.00	0.00	5.25	0.00	Jan, Feb, Nov, Dec HDD65 * Customers
NDSmCIWeather.H65_bill_SmCI_ND_MarAprMay	0.00	0.00	4.28	0.00	Mar, Apr, May HDD65 * Customers
NDSmCIWeather.Summer_THI	0.00	0.00	4.23	0.00	Jun, Jul, Aug, Sep THI65 * Customers
BillingDayscellnet.BillDaysCellnet21	2,379.43	212.98	11.17	0.00	Billing Days
ND_SCI_Sales2.LagDep(1)	(0.13)	0.05	(2.50)	0.01	Lagged Dependent term
SAR(1)	0.99	0.01	74.06	0.00	First order seasonal autoregressive term
SMA(1)	(0.64)	0.09	(7.55)	0.00	First order seasonal moving average term
SMA(2)	(0.16)	0.09	(1.82)	0.07	Second order seasonal moving average term

Xcel Energy North Dakota Small Commercial and Industrial
2025 Test-Year Sales Forecast

Model Statistics	
Iterations	28
Adjusted Observations	168
Deg. of Freedom for Error	157
R-Squared	0.892314262
Adjusted R-Squared	0.885455298
AIC	16.24476336
BIC	16.44930862
F-Statistic	130.0946081
Prob (F-Statistic)	0
Log-Likelihood	-1591.941796
Model Sum of Squares	13861432610
Sum of Squared Errors	1672817153
Mean Squared Error	10654886.33
Std. Error of Regression	3264.182337
Mean Abs. Dev. (MAD)	2522.488392
Mean Abs. % Err. (MAPE)	0.029172119
Durbin-Watson Statistic	1.959956099
Durbin-H Statistic	0.349493482
Ljung-Box Statistic	32.04577021
Prob (Ljung-Box)	0.125861699
Skewness	0.370686716
Kurtosis	4.230847586
Jarque-Bera	14.45234242
Prob (Jarque-Bera)	0.0007273

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	84,627.0	-	-	-	-
2009	7	93,294.7	-	-	-	-
2009	8	88,196.9	-	-	-	-
2009	9	86,107.7	-	-	-	-
2009	10	86,988.3	-	-	-	-
2009	11	76,950.7	-	-	-	-
2009	12	96,442.7	-	-	-	-
2010	1	97,352.0	-	-	-	-
2010	2	85,307.5	-	-	-	-
2010	3	104,359.7	-	-	-	-
2010	4	81,558.8	-	-	-	-
2010	5	72,245.9	-	-	-	-
2010	6	89,269.6	86,822.5	2,447.1	0.0	0.7
2010	7	89,544.4	91,597.3	(2,052.9)	(0.0)	(0.6)
2010	8	94,376.1	96,169.2	(1,793.1)	(0.0)	(0.5)
2010	9	86,916.2	86,287.4	628.8	0.0	0.2
2010	10	81,375.9	83,767.6	(2,391.7)	(0.0)	(0.7)
2010	11	80,187.9	81,721.4	(1,533.4)	(0.0)	(0.5)
2010	12	93,915.4	94,964.4	(1,049.0)	(0.0)	(0.3)
2011	1	107,998.0	103,649.4	4,348.6	0.0	1.3
2011	2	86,683.5	85,749.1	934.5	0.0	0.3
2011	3	105,512.1	106,540.6	(1,028.4)	(0.0)	(0.3)
2011	4	78,569.1	78,992.8	(423.7)	(0.0)	(0.1)
2011	5	85,098.9	80,971.1	4,127.8	0.0	1.3
2011	6	84,248.7	86,193.8	(1,945.1)	(0.0)	(0.6)
2011	7	87,765.6	92,597.7	(4,832.0)	(0.1)	(1.5)
2011	8	100,922.6	98,684.9	2,237.8	0.0	0.7
2011	9	91,868.8	86,569.7	5,299.1	0.1	1.6
2011	10	84,520.6	83,485.0	1,035.6	0.0	0.3
2011	11	79,708.9	82,455.1	(2,746.3)	(0.0)	(0.8)
2011	12	87,828.3	91,767.4	(3,939.0)	(0.0)	(1.2)
2012	1	100,666.9	101,570.7	(903.8)	(0.0)	(0.3)
2012	2	91,748.8	89,190.3	2,558.5	0.0	0.8
2012	3	93,685.8	99,499.3	(5,813.5)	(0.1)	(1.8)
2012	4	79,543.7	80,722.3	(1,178.6)	(0.0)	(0.4)
2012	5	84,552.7	84,525.5	27.1	0.0	0.0
2012	6	83,271.1	84,870.1	(1,599.0)	(0.0)	(0.5)
2012	7	96,160.8	96,645.2	(484.4)	(0.0)	(0.1)
2012	8	100,833.1	102,165.1	(1,331.9)	(0.0)	(0.4)
2012	9	85,468.4	83,184.0	2,284.3	0.0	0.7
2012	10	89,875.2	93,275.9	(3,400.7)	(0.0)	(1.0)
2012	11	77,849.2	84,486.9	(6,637.8)	(0.1)	(2.0)
2012	12	93,924.9	88,458.5	5,466.5	0.1	1.7
2013	1	107,326.4	109,761.5	(2,435.1)	(0.0)	(0.7)
2013	2	89,040.1	89,277.7	(237.6)	(0.0)	(0.1)
2013	3	94,294.9	94,705.7	(410.7)	(0.0)	(0.1)
2013	4	90,914.4	95,905.6	(4,991.2)	(0.1)	(1.5)
2013	5	87,710.9	84,693.2	3,017.7	0.0	0.9
2013	6	78,255.9	80,117.7	(1,861.8)	(0.0)	(0.6)
2013	7	100,534.5	100,687.0	(152.6)	(0.0)	(0.0)
2013	8	92,033.6	94,753.9	(2,720.3)	(0.0)	(0.8)

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	9	95,121.9	91,325.0	3,796.8	0.0	1.2
2013	10	92,558.2	90,859.2	1,699.0	0.0	0.5
2013	11	79,608.0	77,698.9	1,909.1	0.0	0.6
2013	12	97,441.5	100,550.1	(3,108.5)	(0.0)	(1.0)
2014	1	115,422.9	113,002.7	2,420.2	0.0	0.7
2014	2	90,792.1	87,722.6	3,069.5	0.0	0.9
2014	3	106,604.3	103,862.2	2,742.1	0.0	0.8
2014	4	86,412.1	86,991.8	(579.7)	(0.0)	(0.2)
2014	5	82,498.6	83,298.7	(800.1)	(0.0)	(0.2)
2014	6	87,548.1	85,713.5	1,834.7	0.0	0.6
2014	7	94,865.8	97,175.9	(2,310.2)	(0.0)	(0.7)
2014	8	90,359.0	92,961.9	(2,602.9)	(0.0)	(0.8)
2014	9	90,374.9	94,297.3	(3,922.4)	(0.0)	(1.2)
2014	10	94,524.2	93,092.2	1,432.1	0.0	0.4
2014	11	72,389.9	75,529.2	(3,139.2)	(0.0)	(1.0)
2014	12	107,510.0	103,707.0	3,803.1	0.0	1.2
2015	1	104,121.5	103,814.1	307.4	0.0	0.1
2015	2	85,959.7	86,776.5	(816.8)	(0.0)	(0.3)
2015	3	109,195.2	107,212.0	1,983.2	0.0	0.6
2015	4	85,722.8	83,843.0	1,879.9	0.0	0.6
2015	5	75,942.7	76,298.2	(355.5)	(0.0)	(0.1)
2015	6	90,882.0	88,300.2	2,581.8	0.0	0.8
2015	7	96,599.5	95,097.8	1,501.8	0.0	0.5
2015	8	96,491.7	91,885.4	4,606.2	0.0	1.4
2015	9	92,185.5	90,344.8	1,840.7	0.0	0.6
2015	10	89,500.9	87,658.3	1,842.6	0.0	0.6
2015	11	76,127.1	74,279.8	1,847.4	0.0	0.6
2015	12	96,259.5	97,630.4	(1,370.9)	(0.0)	(0.4)
2016	1	96,460.8	97,409.9	(949.0)	(0.0)	(0.3)
2016	2	92,639.0	87,766.2	4,872.8	0.1	1.5
2016	3	100,669.9	103,078.1	(2,408.2)	(0.0)	(0.7)
2016	4	75,851.7	79,623.2	(3,771.6)	(0.0)	(1.2)
2016	5	86,687.4	78,182.4	8,505.0	0.1	2.6
2016	6	88,633.3	85,903.5	2,729.8	0.0	0.8
2016	7	89,307.7	86,636.9	2,670.9	0.0	0.8
2016	8	101,340.3	100,678.2	662.1	0.0	0.2
2016	9	91,056.3	86,823.3	4,233.0	0.0	1.3
2016	10	85,977.3	82,705.3	3,272.0	0.0	1.0
2016	11	75,797.1	77,918.4	(2,121.3)	(0.0)	(0.6)
2016	12	91,216.6	90,296.6	920.0	0.0	0.3
2017	1	107,209.8	102,581.2	4,628.6	0.0	1.4
2017	2	80,244.1	80,931.8	(687.7)	(0.0)	(0.2)
2017	3	104,085.8	104,284.6	(198.7)	(0.0)	(0.1)
2017	4	75,356.1	73,005.1	2,351.0	0.0	0.7
2017	5	85,619.8	84,666.1	953.8	0.0	0.3
2017	6	84,970.1	85,480.2	(510.1)	(0.0)	(0.2)
2017	7	91,112.8	86,272.2	4,840.7	0.1	1.5
2017	8	93,183.6	95,952.7	(2,769.1)	(0.0)	(0.8)
2017	9	85,082.0	83,644.8	1,437.2	0.0	0.4
2017	10	87,408.5	86,514.2	894.3	0.0	0.3
2017	11	76,925.9	79,665.9	(2,740.0)	(0.0)	(0.8)

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	12	88,131.7	90,515.3	(2,383.7)	(0.0)	(0.7)
2018	1	111,454.4	105,899.4	5,555.0	0.0	1.7
2018	2	84,685.2	82,550.8	2,134.4	0.0	0.7
2018	3	100,833.5	101,846.2	(1,012.6)	(0.0)	(0.3)
2018	4	82,832.8	81,862.6	970.2	0.0	0.3
2018	5	84,776.0	81,728.3	3,047.6	0.0	0.9
2018	6	85,136.7	82,953.1	2,183.6	0.0	0.7
2018	7	92,385.7	93,415.8	(1,030.2)	(0.0)	(0.3)
2018	8	98,203.9	94,349.9	3,854.0	0.0	1.2
2018	9	81,246.8	79,717.9	1,528.9	0.0	0.5
2018	10	87,218.9	89,752.5	(2,533.5)	(0.0)	(0.8)
2018	11	76,786.1	80,265.0	(3,478.9)	(0.0)	(1.1)
2018	12	91,595.7	91,562.4	33.3	0.0	0.0
2019	1	99,374.5	102,709.6	(3,335.1)	(0.0)	(1.0)
2019	2	86,132.2	88,388.2	(2,255.9)	(0.0)	(0.7)
2019	3	97,801.3	100,188.0	(2,386.7)	(0.0)	(0.7)
2019	4	84,956.1	83,990.9	965.3	0.0	0.3
2019	5	77,852.1	83,075.8	(5,223.7)	(0.1)	(1.6)
2019	6	74,288.0	78,281.5	(3,993.5)	(0.1)	(1.2)
2019	7	93,325.2	95,103.2	(1,778.0)	(0.0)	(0.5)
2019	8	89,472.7	92,458.4	(2,985.7)	(0.0)	(0.9)
2019	9	77,541.1	83,154.2	(5,613.1)	(0.1)	(1.7)
2019	10	89,224.2	87,964.3	1,259.9	0.0	0.4
2019	11	69,368.9	73,015.2	(3,646.3)	(0.1)	(1.1)
2019	12	90,559.7	98,558.5	(7,998.8)	(0.1)	(2.5)
2020	1	102,091.9	101,916.8	175.1	0.0	0.1
2020	2	80,021.8	81,789.8	(1,768.0)	(0.0)	(0.5)
2020	3	96,302.3	98,109.5	(1,807.2)	(0.0)	(0.6)
2020	4	73,465.6	76,621.7	(3,156.1)	(0.0)	(1.0)
2020	5	64,156.2	67,558.9	(3,402.7)	(0.1)	(1.0)
2020	6	78,237.6	78,938.8	(701.2)	(0.0)	(0.2)
2020	7	88,756.2	89,897.8	(1,141.6)	(0.0)	(0.3)
2020	8	85,176.1	81,834.4	3,341.7	0.0	1.0
2020	9	80,971.4	79,351.3	1,620.0	0.0	0.5
2020	10	77,037.1	79,551.9	(2,514.8)	(0.0)	(0.8)
2020	11	68,416.2	67,653.5	762.8	0.0	0.2
2020	12	84,415.4	86,309.8	(1,894.4)	(0.0)	(0.6)
2021	1	83,176.1	89,455.9	(6,279.8)	(0.1)	(1.9)
2021	2	79,235.7	79,072.8	162.9	0.0	0.0
2021	3	97,759.7	97,117.1	642.6	0.0	0.2
2021	4	75,215.7	74,093.1	1,122.6	0.0	0.3
2021	5	66,769.7	67,696.4	(926.7)	(0.0)	(0.3)
2021	6	84,854.3	81,729.4	3,124.8	0.0	1.0
2021	7	88,272.4	83,632.5	4,639.9	0.1	1.4
2021	8	92,605.7	89,452.8	3,152.9	0.0	1.0
2021	9	80,957.0	80,503.6	453.4	0.0	0.1
2021	10	74,326.9	75,259.7	(932.8)	(0.0)	(0.3)
2021	11	75,412.5	71,315.5	4,097.0	0.1	1.3
2021	12	82,660.6	86,532.1	(3,871.4)	(0.0)	(1.2)
2022	1	97,450.2	93,786.4	3,663.8	0.0	1.1
2022	2	79,611.7	79,207.7	404.0	0.0	0.1

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2022	3	101,797.4	101,105.1	692.3	0.0	0.2
2022	4	72,837.6	73,485.0	(647.4)	(0.0)	(0.2)
2022	5	74,261.9	73,520.9	741.0	0.0	0.2
2022	6	81,173.4	79,974.0	1,199.3	0.0	0.4
2022	7	80,527.1	82,236.4	(1,709.3)	(0.0)	(0.5)
2022	8	90,161.5	91,906.4	(1,744.9)	(0.0)	(0.5)
2022	9	81,663.3	80,356.2	1,307.0	0.0	0.4
2022	10	76,496.8	75,412.7	1,084.1	0.0	0.3
2022	11	87,642.9	73,991.9	13,651.0	0.2	4.2
2022	12	80,663.3	87,157.5	(6,494.2)	(0.1)	(2.0)
2023	1	96,889.3	92,015.6	4,873.6	0.1	1.5
2023	2	77,124.9	75,517.9	1,606.9	0.0	0.5
2023	3	94,551.4	98,025.0	(3,473.6)	(0.0)	(1.1)
2023	4	73,120.4	69,149.8	3,970.6	0.1	1.2
2023	5	80,276.7	74,543.2	5,733.5	0.1	1.8
2023	6	84,956.9	83,100.5	1,856.4	0.0	0.6
2023	7	81,571.4	81,867.4	(295.9)	(0.0)	(0.1)
2023	8	89,384.8	95,638.3	(6,253.5)	(0.1)	(1.9)
2023	9	80,051.7	82,074.0	(2,022.3)	(0.0)	(0.6)
2023	10	82,150.1	79,405.9	2,744.2	0.0	0.8
2023	11	72,907.0	75,262.4	(2,355.4)	(0.0)	(0.7)
2023	12	78,590.5	80,692.6	(2,102.2)	(0.0)	(0.6)
2024	1	88,956.2	85,609.0	3,347.2	0.0	1.0
2024	2	81,047.0	80,098.5	948.4	0.0	0.3
2024	3	80,315.9	85,690.2	(5,374.3)	(0.1)	(1.6)
2024	4	75,171.2	79,192.0	(4,020.8)	(0.1)	(1.2)
2024	5	70,862.5	75,905.3	(5,042.7)	(0.1)	(1.5)
2024	6	-	73,330.3	-	-	-
2024	7	-	88,553.5	-	-	-
2024	8	-	83,993.8	-	-	-
2024	9	-	77,254.2	-	-	-
2024	10	-	82,835.5	-	-	-
2024	11	-	68,107.1	-	-	-
2024	12	-	90,644.2	-	-	-
2025	1	-	91,453.8	-	-	-
2025	2	-	81,573.3	-	-	-
2025	3	-	87,661.5	-	-	-
2025	4	-	76,307.5	-	-	-
2025	5	-	70,423.9	-	-	-
2025	6	-	76,140.6	-	-	-
2025	7	-	87,477.2	-	-	-
2025	8	-	81,077.8	-	-	-
2025	9	-	81,133.4	-	-	-
2025	10	-	80,895.4	-	-	-
2025	11	-	64,413.6	-	-	-
2025	12	-	94,932.4	-	-	-

Xcel Energy North Dakota Large Commercial and Industrial
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Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	11130.36588	5666.171291	1.964353936	0.051135983	Constant Term
ND_LCI_Sales2.MA24_EE_ND	15.92826952	7.432884753	2.142945848	0.033548226	North Dakota Non-Farm Employment, Moving Average 24
BillingDayscellnet.BillDaysCellnet21	315.915217	153.9385593	2.052216277	0.04169415	Billing Days
Binary.Mar	2669.185511	893.9603515	2.985798538	0.003256476	Binary variable March
Binary.Jun	4046.969631	907.909402	4.457459767	1.7534E-05	Binary variable June
Binary.Jul	3957.825384	861.6998062	4.593044301	1.02765E-05	Binary variable July
Binary.Aug	2814.872383	868.9355476	3.239448991	0.001453141	Binary variable August
Binary.Sep	4609.344333	866.0567245	5.3222199	5.33858E-07	Binary variable September
Binary.Oct	1790.09836	862.3450588	2.07584927	0.039424333	Binary variable October
Binary.Nov	1714.045003	954.9551441	1.794895827	0.074472436	Binary variable November
AR(1)	-0.155312451	0.075939565	-2.04521124	0.042388023	First order autoregressive term

Xcel Energy North Dakota Large Commercial and Industrial 2025 Test-Year Sales Forecast

Model Statistics	
Iterations	8
Adjusted Observations	179
Deg. of Freedom for Error	168
R-Squared	0.303596577
Adjusted R-Squared	0.262143992
AIC	16.11264708
BIC	16.30851995
F-Statistic	7.323948044
Prob (F-Statistic)	1.39734E-09
Log-Likelihood	-1685.071911
Model Sum of Squares	686350169.8
Sum of Squared Errors	1574380755
Mean Squared Error	9371314.019
Std. Error of Regression	3061.260201
Mean Abs. Dev. (MAD)	2238.931613
Mean Abs. % Err. (MAPE)	0.080515095
Durbin-Watson Statistic	1.971495293
Durbin-H Statistic	#NA
Ljung-Box Statistic	20.27177329
Prob (Ljung-Box)	0.681220652
Skewness	-0.422798137
Kurtosis	4.021676617
Jarque-Bera	13.11813559
Prob (Jarque-Bera)	0.001417206

Xcel Energy North Dakota Large Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	33,624.2	-	-	-	-
2009	7	27,791.7	30,664.6	(2,872.9)	(0.1)	(0.9)
2009	8	23,736.1	29,609.9	(5,873.8)	(0.2)	(1.9)
2009	9	22,398.3	32,037.4	(9,639.1)	(0.4)	(3.1)
2009	10	33,007.9	29,937.9	3,070.0	0.1	1.0
2009	11	23,048.2	26,470.7	(3,422.5)	(0.1)	(1.1)
2009	12	20,607.6	27,923.7	(7,316.1)	(0.4)	(2.4)
2010	1	21,922.1	27,978.6	(6,056.5)	(0.3)	(2.0)
2010	2	31,622.3	26,626.0	4,996.4	0.2	1.6
2010	3	35,652.6	28,946.5	6,706.1	0.2	2.2
2010	4	27,354.2	25,811.5	1,542.7	0.1	0.5
2010	5	21,811.7	25,747.5	(3,935.8)	(0.2)	(1.3)
2010	6	35,886.4	31,865.2	4,021.2	0.1	1.3
2010	7	28,730.9	29,905.5	(1,174.6)	(0.0)	(0.4)
2010	8	29,258.4	29,935.0	(676.5)	(0.0)	(0.2)
2010	9	31,418.8	31,335.7	83.1	0.0	0.0
2010	10	29,921.2	28,157.4	1,763.9	0.1	0.6
2010	11	28,240.8	27,451.5	789.3	0.0	0.3
2010	12	28,764.1	26,781.0	1,983.1	0.1	0.6
2011	1	23,697.5	27,210.7	(3,513.2)	(0.1)	(1.1)
2011	2	26,911.5	26,517.0	394.6	0.0	0.1
2011	3	32,099.2	29,765.3	2,333.9	0.1	0.8
2011	4	29,454.3	25,723.0	3,731.3	0.1	1.2
2011	5	27,866.0	26,259.3	1,606.7	0.1	0.5
2011	6	32,360.4	31,165.8	1,194.6	0.0	0.4
2011	7	29,744.8	30,518.6	(773.9)	(0.0)	(0.3)
2011	8	29,745.5	30,063.1	(317.7)	(0.0)	(0.1)
2011	9	32,012.5	31,507.1	505.4	0.0	0.2
2011	10	29,051.9	28,316.9	735.0	0.0	0.2
2011	11	28,125.9	27,872.8	253.1	0.0	0.1
2011	12	31,722.0	26,987.8	4,734.2	0.1	1.5
2012	1	28,034.4	27,064.5	969.9	0.0	0.3
2012	2	26,847.7	26,604.5	243.2	0.0	0.1
2012	3	28,793.1	29,749.4	(956.3)	(0.0)	(0.3)
2012	4	26,756.0	26,789.7	(33.7)	(0.0)	(0.0)
2012	5	29,687.4	27,315.4	2,372.0	0.1	0.8
2012	6	27,005.7	30,856.2	(3,850.5)	(0.1)	(1.3)
2012	7	30,323.0	31,870.0	(1,547.0)	(0.1)	(0.5)
2012	8	29,153.3	30,714.0	(1,560.6)	(0.1)	(0.5)
2012	9	35,149.5	31,227.4	3,922.1	0.1	1.3
2012	10	30,032.6	29,037.3	995.3	0.0	0.3
2012	11	27,706.6	28,395.6	(689.0)	(0.0)	(0.2)
2012	12	28,064.6	27,051.5	1,013.0	0.0	0.3
2013	1	26,083.3	28,480.4	(2,397.1)	(0.1)	(0.8)
2013	2	26,495.9	27,028.9	(533.0)	(0.0)	(0.2)
2013	3	26,990.3	29,353.4	(2,363.1)	(0.1)	(0.8)
2013	4	27,019.9	28,400.0	(1,380.1)	(0.1)	(0.5)
2013	5	28,464.1	27,821.1	642.9	0.0	0.2
2013	6	28,978.9	31,062.0	(2,083.1)	(0.1)	(0.7)
2013	7	33,770.5	32,405.3	1,365.2	0.0	0.4
2013	8	24,850.8	30,279.7	(5,428.8)	(0.2)	(1.8)

Xcel Energy North Dakota Large Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	9	31,477.8	32,772.9	(1,295.1)	(0.0)	(0.4)
2013	10	23,280.9	30,095.7	(6,814.8)	(0.3)	(2.2)
2013	11	33,173.6	29,242.2	3,931.5	0.1	1.3
2013	12	24,742.8	27,191.2	(2,448.4)	(0.1)	(0.8)
2014	1	31,904.6	29,526.0	2,378.6	0.1	0.8
2014	2	26,074.9	26,268.4	(193.5)	(0.0)	(0.1)
2014	3	26,902.0	30,513.3	(3,611.3)	(0.1)	(1.2)
2014	4	26,900.3	28,445.1	(1,544.8)	(0.1)	(0.5)
2014	5	24,900.3	27,698.9	(2,798.5)	(0.1)	(0.9)
2014	6	28,533.4	32,367.9	(3,834.5)	(0.1)	(1.3)
2014	7	32,156.4	32,857.9	(701.5)	(0.0)	(0.2)
2014	8	27,204.8	30,419.3	(3,214.5)	(0.1)	(1.1)
2014	9	29,288.1	33,141.1	(3,853.0)	(0.1)	(1.3)
2014	10	31,422.9	30,778.1	644.7	0.0	0.2
2014	11	28,478.8	27,840.5	638.3	0.0	0.2
2014	12	25,462.8	28,649.1	(3,186.2)	(0.1)	(1.0)
2015	1	29,399.1	29,290.3	108.8	0.0	0.0
2015	2	26,429.3	26,870.4	(441.2)	(0.0)	(0.1)
2015	3	29,766.7	31,177.0	(1,410.4)	(0.0)	(0.5)
2015	4	27,544.1	28,341.8	(797.7)	(0.0)	(0.3)
2015	5	28,156.5	27,424.6	731.9	0.0	0.2
2015	6	30,032.2	32,477.2	(2,445.0)	(0.1)	(0.8)
2015	7	29,061.7	32,934.6	(3,873.0)	(0.1)	(1.3)
2015	8	29,676.0	31,121.2	(1,445.2)	(0.0)	(0.5)
2015	9	31,957.7	32,818.0	(860.3)	(0.0)	(0.3)
2015	10	29,299.4	30,149.3	(849.9)	(0.0)	(0.3)
2015	11	28,068.8	28,733.7	(664.9)	(0.0)	(0.2)
2015	12	29,831.6	28,819.6	1,012.0	0.0	0.3
2016	1	26,254.2	28,208.6	(1,954.4)	(0.1)	(0.6)
2016	2	28,790.9	27,810.2	980.6	0.0	0.3
2016	3	30,275.7	31,271.7	(996.0)	(0.0)	(0.3)
2016	4	25,677.5	27,848.7	(2,171.2)	(0.1)	(0.7)
2016	5	29,553.3	27,999.3	1,554.1	0.1	0.5
2016	6	32,546.4	32,243.6	302.8	0.0	0.1
2016	7	31,832.3	31,505.8	326.5	0.0	0.1
2016	8	33,972.5	31,318.0	2,654.5	0.1	0.9
2016	9	32,787.2	32,150.6	636.6	0.0	0.2
2016	10	27,128.7	29,390.4	(2,261.7)	(0.1)	(0.7)
2016	11	32,718.0	29,307.4	3,410.7	0.1	1.1
2016	12	27,416.8	27,350.1	66.7	0.0	0.0
2017	1	28,841.6	28,743.8	97.8	0.0	0.0
2017	2	26,530.6	26,673.0	(142.4)	(0.0)	(0.0)
2017	3	31,090.4	31,317.6	(227.2)	(0.0)	(0.1)
2017	4	28,505.1	27,012.4	1,492.7	0.1	0.5
2017	5	31,349.5	27,662.6	3,686.9	0.1	1.2
2017	6	30,346.5	31,742.4	(1,396.0)	(0.0)	(0.5)
2017	7	32,921.0	31,603.6	1,317.4	0.0	0.4
2017	8	32,759.9	30,860.0	1,899.9	0.1	0.6
2017	9	32,948.3	31,645.6	1,302.7	0.0	0.4
2017	10	31,330.3	29,495.7	1,834.6	0.1	0.6
2017	11	29,005.1	28,531.6	473.4	0.0	0.2

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	12	30,118.1	27,699.8	2,418.3	0.1	0.8
2018	1	28,888.8	28,126.9	761.9	0.0	0.2
2018	2	29,842.3	26,524.4	3,317.9	0.1	1.1
2018	3	28,845.4	30,221.9	(1,376.4)	(0.0)	(0.4)
2018	4	27,926.0	27,644.2	281.9	0.0	0.1
2018	5	30,457.0	27,714.3	2,742.7	0.1	0.9
2018	6	33,280.9	31,348.3	1,932.6	0.1	0.6
2018	7	33,940.8	31,479.9	2,460.9	0.1	0.8
2018	8	34,287.8	30,694.4	3,593.4	0.1	1.2
2018	9	32,775.9	30,932.6	1,843.3	0.1	0.6
2018	10	28,835.1	29,872.3	(1,037.1)	(0.0)	(0.3)
2018	11	27,597.5	29,013.1	(1,415.6)	(0.1)	(0.5)
2018	12	36,309.6	27,961.8	8,347.7	0.2	2.7
2019	1	29,843.4	27,128.4	2,715.0	0.1	0.9
2019	2	21,756.2	26,408.5	(4,652.3)	(0.2)	(1.5)
2019	3	36,660.1	31,062.4	5,597.8	0.2	1.8
2019	4	29,568.6	26,835.1	2,733.5	0.1	0.9
2019	5	27,532.6	27,585.5	(52.9)	(0.0)	(0.0)
2019	6	31,146.3	31,402.8	(256.4)	(0.0)	(0.1)
2019	7	34,565.3	32,234.2	2,331.0	0.1	0.8
2019	8	34,250.4	30,292.0	3,958.4	0.1	1.3
2019	9	32,726.2	31,419.8	1,306.3	0.0	0.4
2019	10	31,130.5	29,979.4	1,151.1	0.0	0.4
2019	11	29,086.2	28,074.9	1,011.3	0.0	0.3
2019	12	30,774.1	28,381.7	2,392.3	0.1	0.8
2020	1	29,949.5	28,147.2	1,802.3	0.1	0.6
2020	2	28,752.8	26,486.7	2,266.0	0.1	0.7
2020	3	28,249.3	30,500.4	(2,251.0)	(0.1)	(0.7)
2020	4	20,211.9	28,217.5	(8,005.6)	(0.4)	(2.6)
2020	5	26,480.9	28,158.4	(1,677.5)	(0.1)	(0.5)
2020	6	28,502.2	32,294.2	(3,792.0)	(0.1)	(1.2)
2020	7	32,729.9	32,699.3	30.6	0.0	0.0
2020	8	29,902.5	30,053.6	(151.1)	(0.0)	(0.0)
2020	9	33,655.0	32,261.8	1,393.2	0.0	0.5
2020	10	29,716.7	29,343.1	373.6	0.0	0.1
2020	11	28,254.9	28,107.2	147.7	0.0	0.0
2020	12	27,478.8	28,213.3	(734.5)	(0.0)	(0.2)
2021	1	26,460.1	27,984.6	(1,524.5)	(0.1)	(0.5)
2021	2	25,411.6	26,698.6	(1,287.0)	(0.1)	(0.4)
2021	3	28,220.1	31,162.4	(2,942.3)	(0.1)	(1.0)
2021	4	29,213.6	28,003.5	1,210.2	0.0	0.4
2021	5	27,558.5	26,427.5	1,130.9	0.0	0.4
2021	6	31,277.3	31,915.8	(638.5)	(0.0)	(0.2)
2021	7	35,191.8	31,540.6	3,651.2	0.1	1.2
2021	8	31,916.8	29,827.5	2,089.3	0.1	0.7
2021	9	34,057.0	31,795.0	2,262.1	0.1	0.7
2021	10	30,556.1	28,596.7	1,959.4	0.1	0.6
2021	11	28,054.8	28,175.8	(121.0)	(0.0)	(0.0)
2021	12	26,904.6	28,010.4	(1,105.8)	(0.0)	(0.4)
2022	1	26,579.0	27,866.8	(1,287.9)	(0.0)	(0.4)
2022	2	32,232.6	26,408.1	5,824.5	0.2	1.9

Xcel Energy North Dakota Large Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2022	3	24,494.0	29,957.7	(5,463.7)	(0.2)	(1.8)
2022	4	33,408.0	28,001.8	5,406.1	0.2	1.8
2022	5	23,616.5	26,083.0	(2,466.5)	(0.1)	(0.8)
2022	6	35,750.3	32,493.5	3,256.8	0.1	1.1
2022	7	33,411.0	30,376.3	3,034.7	0.1	1.0
2022	8	32,663.6	30,480.5	2,183.1	0.1	0.7
2022	9	33,014.7	31,803.1	1,211.6	0.0	0.4
2022	10	26,713.7	28,848.2	(2,134.5)	(0.1)	(0.7)
2022	11	22,354.2	28,910.3	(6,556.0)	(0.3)	(2.1)
2022	12	28,940.6	29,024.7	(84.1)	(0.0)	(0.0)
2023	1	31,052.1	27,700.8	3,351.4	0.1	1.1
2023	2	24,273.4	25,924.8	(1,651.4)	(0.1)	(0.5)
2023	3	36,885.1	31,383.1	5,502.0	0.1	1.8
2023	4	16,132.2	25,862.8	(9,730.6)	(0.6)	(3.2)
2023	5	28,895.4	29,367.6	(472.1)	(0.0)	(0.2)
2023	6	39,526.7	31,938.5	7,588.2	0.2	2.5
2023	7	26,447.5	30,022.8	(3,575.3)	(0.1)	(1.2)
2023	8	34,033.2	31,739.3	2,293.9	0.1	0.7
2023	9	32,502.4	31,349.5	1,152.9	0.0	0.4
2023	10	30,247.4	29,494.1	753.2	0.0	0.2
2023	11	29,690.8	28,653.9	1,037.0	0.0	0.3
2023	12	28,595.9	28,110.4	485.6	0.0	0.2
2024	1	28,913.7	27,356.9	1,556.8	0.1	0.5
2024	2	21,272.9	27,006.6	(5,733.7)	(0.3)	(1.9)
2024	3	34,304.0	31,222.9	3,081.2	0.1	1.0
2024	4	24,009.3	27,195.3	(3,186.0)	(0.1)	(1.0)
2024	5	27,255.7	28,449.1	(1,193.4)	(0.0)	(0.4)
2024	6	-	31,450.5	-	-	-
2024	7	-	32,194.1	-	-	-
2024	8	-	30,669.6	-	-	-
2024	9	-	31,987.7	-	-	-
2024	10	-	30,109.3	-	-	-
2024	11	-	28,250.1	-	-	-
2024	12	-	28,859.2	-	-	-
2025	1	-	27,901.7	-	-	-
2025	2	-	26,989.4	-	-	-
2025	3	-	30,401.2	-	-	-
2025	4	-	27,873.3	-	-	-
2025	5	-	27,502.8	-	-	-
2025	6	-	31,901.1	-	-	-
2025	7	-	32,253.1	-	-	-
2025	8	-	30,302.2	-	-	-
2025	9	-	32,536.9	-	-	-
2025	10	-	30,127.0	-	-	-
2025	11	-	27,872.8	-	-	-
2025	12	-	29,351.5	-	-	-

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	39847.014	1110.984	35.866	0.00%	Constant Term
ND_RX_Custs.MA18_NR_FGO	78.336	4.630	16.919	0.00%	Fargo Population, Moving Average 18
Binary.T_2011	83.514	39.116	2.135	3.41%	Trend starting in Jul 2011 ending in Dec 2012
Binary.T2_2011	-16.612	2.159	-7.696	0.00%	Squared trend starting in Jul 2011 ending in Dec 2012
AR(1)	0.916	0.034	27.078	0.00%	First order moving average term

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Model Statistics	
Iterations	30
Adjusted Observations	179
Deg. of Freedom for Error	174
R-Squared	0.996919572
Adjusted R-Squared	0.996848757
AIC	8.996662036
BIC	9.085695159
F-Statistic	14077.91265
Prob (F-Statistic)	0
Log-Likelihood	-1054.19125
Model Sum of Squares	442425811.7
Sum of Squared Errors	1367072.185
Mean Squared Error	7856.736694
Std. Error of Regression	88.63823495
Mean Abs. Dev. (MAD)	48.17333587
Mean Abs. % Err. (MAPE)	0.000838613
Durbin-Watson Statistic	1.769994713
Durbin-H Statistic	
Ljung-Box Statistic	22.39993267
Prob (Ljung-Box)	0.555409495
Skewness	4.657170618
Kurtosis	48.07161717
Jarque-Bera	15798.29855
Prob (Jarque-Bera)	0

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	56,045	-	-	-	-
2009	7	56,026	56,051	(25)	(0)	(0)
2009	8	56,065	56,036	29	0	0
2009	9	56,105	56,074	31	0	0
2009	10	56,132	56,113	19	0	0
2009	11	56,158	56,140	18	0	0
2009	12	56,242	56,165	77	0	1
2010	1	56,235	56,244	(9)	(0)	(0)
2010	2	56,270	56,239	31	0	0
2010	3	56,289	56,273	16	0	0
2010	4	56,258	56,292	(34)	(0)	(0)
2010	5	56,223	56,265	(42)	(0)	(0)
2010	6	56,209	56,235	(26)	(0)	(0)
2010	7	56,275	56,224	51	0	1
2010	8	56,309	56,286	23	0	0
2010	9	56,323	56,319	4	0	0
2010	10	56,356	56,333	23	0	0
2010	11	56,420	56,365	55	0	1
2010	12	56,472	56,426	46	0	1
2011	1	56,523	56,475	48	0	1
2011	2	56,548	56,524	24	0	0
2011	3	56,545	56,549	(4)	(0)	(0)
2011	4	56,570	56,549	21	0	0
2011	5	56,567	56,574	(7)	(0)	(0)
2011	6	56,489	56,574	(85)	(0)	(1)
2011	7	52,599	52,625	(26)	(0)	(0)
2011	8	53,952	53,116	836	0	9
2011	9	54,292	54,366	(74)	(0)	(1)
2011	10	54,608	54,687	(79)	(0)	(1)
2011	11	54,919	54,982	(63)	(0)	(1)
2011	12	55,144	55,269	(125)	(0)	(1)
2012	1	55,341	55,476	(135)	(0)	(2)
2012	2	55,499	55,653	(154)	(0)	(2)
2012	3	55,608	55,792	(184)	(0)	(2)
2012	4	55,661	55,884	(223)	(0)	(3)
2012	5	55,808	55,921	(113)	(0)	(1)
2012	6	55,808	56,043	(235)	(0)	(3)
2012	7	55,895	56,026	(131)	(0)	(1)
2012	8	56,066	56,087	(21)	(0)	(0)
2012	9	56,261	56,222	39	0	0
2012	10	56,425	56,377	48	0	1
2012	11	56,499	56,500	(1)	(0)	(0)
2012	12	56,565	56,538	27	0	0
2013	1	56,550	56,565	(15)	(0)	(0)
2013	2	56,601	56,616	(15)	(0)	(0)
2013	3	56,681	56,666	15	0	0
2013	4	56,761	56,743	18	0	0
2013	5	56,830	56,820	10	0	0

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	6	56,828	56,886	(58)	(0)	(1)
2013	7	56,809	56,887	(78)	(0)	(1)
2013	8	56,924	56,873	51	0	1
2013	9	56,986	56,981	5	0	0
2013	10	57,048	57,041	7	0	0
2013	11	57,196	57,101	95	0	1
2013	12	57,284	57,239	45	0	1
2014	1	57,270	57,322	(52)	(0)	(1)
2014	2	57,314	57,312	2	0	0
2014	3	57,348	57,354	(6)	(0)	(0)
2014	4	57,320	57,388	(68)	(0)	(1)
2014	5	57,485	57,365	120	0	1
2014	6	57,464	57,518	(54)	(0)	(1)
2014	7	57,533	57,502	31	0	0
2014	8	57,550	57,567	(17)	(0)	(0)
2014	9	57,541	57,585	(44)	(0)	(0)
2014	10	57,663	57,579	84	0	1
2014	11	57,632	57,694	(62)	(0)	(1)
2014	12	57,674	57,668	6	0	0
2015	1	57,705	57,710	(5)	(0)	(0)
2015	2	57,696	57,741	(45)	(0)	(1)
2015	3	57,823	57,736	87	0	1
2015	4	57,893	57,855	38	0	0
2015	5	57,954	57,922	32	0	0
2015	6	57,993	57,981	12	0	0
2015	7	57,992	58,019	(27)	(0)	(0)
2015	8	58,124	58,021	103	0	1
2015	9	58,218	58,145	73	0	1
2015	10	58,224	58,234	(10)	(0)	(0)
2015	11	58,283	58,242	41	0	0
2015	12	58,464	58,298	166	0	2
2016	1	58,526	58,466	60	0	1
2016	2	58,487	58,526	(39)	(0)	(0)
2016	3	58,482	58,492	(10)	(0)	(0)
2016	4	58,481	58,490	(9)	(0)	(0)
2016	5	58,539	58,492	47	0	1
2016	6	58,464	58,547	(83)	(0)	(1)
2016	7	58,416	58,481	(65)	(0)	(1)
2016	8	58,462	58,439	23	0	0
2016	9	58,450	58,483	(33)	(0)	(0)
2016	10	58,467	58,474	(7)	(0)	(0)
2016	11	58,527	58,492	35	0	0
2016	12	58,582	58,550	32	0	0
2017	1	58,607	58,602	5	0	0
2017	2	58,658	58,628	30	0	0
2017	3	58,653	58,677	(24)	(0)	(0)
2017	4	58,697	58,675	22	0	0
2017	5	58,688	58,717	(29)	(0)	(0)

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	6	58,694	58,711	(17)	(0)	(0)
2017	7	58,751	58,719	32	0	0
2017	8	58,775	58,773	2	0	0
2017	9	58,729	58,796	(67)	(0)	(1)
2017	10	58,839	58,756	83	0	1
2017	11	58,872	58,858	14	0	0
2017	12	58,922	58,890	32	0	0
2018	1	58,963	58,938	25	0	0
2018	2	59,023	58,977	46	0	1
2018	3	59,054	59,034	20	0	0
2018	4	59,022	59,064	(42)	(0)	(0)
2018	5	59,018	59,036	(18)	(0)	(0)
2018	6	58,927	59,033	(106)	(0)	(1)
2018	7	58,900	58,951	(51)	(0)	(1)
2018	8	58,931	58,927	4	0	0
2018	9	58,938	58,956	(18)	(0)	(0)
2018	10	58,972	58,963	9	0	0
2018	11	58,996	58,995	1	0	0
2018	12	59,024	59,018	6	0	0
2019	1	59,117	59,045	72	0	1
2019	2	59,109	59,131	(22)	(0)	(0)
2019	3	59,195	59,124	71	0	1
2019	4	59,214	59,204	10	0	0
2019	5	59,254	59,222	32	0	0
2019	6	59,155	59,260	(105)	(0)	(1)
2019	7	59,175	59,170	5	0	0
2019	8	59,193	59,190	3	0	0
2019	9	59,225	59,207	18	0	0
2019	10	59,209	59,237	(28)	(0)	(0)
2019	11	59,249	59,224	25	0	0
2019	12	59,284	59,262	22	0	0
2020	1	59,316	59,296	20	0	0
2020	2	59,316	59,327	(11)	(0)	(0)
2020	3	59,320	59,328	(8)	(0)	(0)
2020	4	59,322	59,331	(9)	(0)	(0)
2020	5	59,285	59,335	(50)	(0)	(1)
2020	6	59,267	59,304	(37)	(0)	(0)
2020	7	59,222	59,290	(68)	(0)	(1)
2020	8	59,235	59,251	(16)	(0)	(0)
2020	9	59,195	59,266	(71)	(0)	(1)
2020	10	59,248	59,231	17	0	0
2020	11	59,205	59,282	(77)	(0)	(1)
2020	12	59,215	59,245	(30)	(0)	(0)
2021	1	59,321	59,257	64	0	1
2021	2	59,551	59,357	194	0	2
2021	3	59,567	59,570	(3)	(0)	(0)
2021	4	59,592	59,588	4	0	0
2021	5	59,676	59,614	62	0	1

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	6	59,601	59,693	(92)	(0)	(1)
2021	7	59,569	59,626	(57)	(0)	(1)
2021	8	59,593	59,600	(7)	(0)	(0)
2021	9	59,563	59,625	(62)	(0)	(1)
2021	10	59,580	59,601	(21)	(0)	(0)
2021	11	59,625	59,619	6	0	0
2021	12	59,668	59,661	7	0	0
2022	1	59,752	59,702	50	0	1
2022	2	59,740	59,781	(41)	(0)	(0)
2022	3	59,925	59,773	152	0	2
2022	4	59,953	59,945	8	0	0
2022	5	59,980	59,972	8	0	0
2022	6	60,041	59,999	42	0	0
2022	7	60,028	60,056	(28)	(0)	(0)
2022	8	60,100	60,046	54	0	1
2022	9	60,078	60,113	(35)	(0)	(0)
2022	10	60,087	60,094	(7)	(0)	(0)
2022	11	60,074	60,105	(31)	(0)	(0)
2022	12	60,076	60,095	(19)	(0)	(0)
2023	1	60,091	60,099	(8)	(0)	(0)
2023	2	60,112	60,116	(4)	(0)	(0)
2023	3	60,189	60,137	52	0	1
2023	4	60,190	60,211	(21)	(0)	(0)
2023	5	60,212	60,214	(2)	(0)	(0)
2023	6	60,118	60,237	(119)	(0)	(1)
2023	7	60,050	60,153	(103)	(0)	(1)
2023	8	60,098	60,093	5	0	0
2023	9	60,038	60,139	(101)	(0)	(1)
2023	10	60,097	60,086	11	0	0
2023	11	60,192	60,142	50	0	1
2023	12	60,233	60,232	1	0	0
2024	1	60,253	60,272	(19)	(0)	(0)
2024	2	60,425	60,292	133	0	1
2024	3	60,479	60,452	27	0	0
2024	4	60,553	60,504	49	0	1
2024	5	60,546	60,573	(27)	(0)	(0)
2024	6	-	60,569	-	-	-
2024	7	-	60,592	-	-	-
2024	8	-	60,614	-	-	-
2024	9	-	60,637	-	-	-
2024	10	-	60,659	-	-	-
2024	11	-	60,681	-	-	-
2024	12	-	60,702	-	-	-
2025	1	-	60,723	-	-	-
2025	2	-	60,744	-	-	-
2025	3	-	60,764	-	-	-
2025	4	-	60,784	-	-	-
2025	5	-	60,803	-	-	-

Xcel Energy North Dakota Residential without Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2025	6	-	60,823	-	-	-
2025	7	-	60,842	-	-	-
2025	8	-	60,860	-	-	-
2025	9	-	60,878	-	-	-
2025	10	-	60,896	-	-	-
2025	11	-	60,914	-	-	-
2025	12	-	60,931	-	-	-

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	586.906	218.876	2.681	0.80%	Constant Term
ND.HH_ND	5.529	2.713	2.038	4.30%	North Dakota Household Count
ND_RH_Custs.LagDep(1)	0.894	0.045	20.082	0.00%	Lagged Dependent term
AR(1)	0.457	0.089	5.123	0.00%	First order moving average term

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Model Statistics	
Iterations	12
Adjusted Observations	179
Deg. of Freedom for Error	175
R-Squared	0.995741488
Adjusted R-Squared	0.995668485
AIC	8.178592964
BIC	8.249819462
F-Statistic	13639.72214
Prob (F-Statistic)	0
Log-Likelihood	-981.9740677
Model Sum of Squares	142642763.7
Sum of Squared Errors	610043.7971
Mean Squared Error	3485.964555
Std. Error of Regression	59.04205751
Mean Abs. Dev. (MAD)	32.12614235
Mean Abs. % Err. (MAPE)	0.001521318
Durbin-Watson Statistic	1.941321293
Durbin-H Statistic	0.488566535
Ljung-Box Statistic	10.89641596
Prob (Ljung-Box)	0.989731654
Skewness	3.33907353
Kurtosis	25.58881447
Jarque-Bera	4138.272563
Prob (Jarque-Bera)	0

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	19,231	-	-	-	-
2009	7	19,249	19,288	(39)	(0)	(1)
2009	8	19,256	19,305	(49)	(0)	(1)
2009	9	19,248	19,308	(60)	(0)	(1)
2009	10	19,269	19,295	(26)	(0)	(0)
2009	11	19,324	19,327	(3)	(0)	(0)
2009	12	19,368	19,393	(25)	(0)	(0)
2010	1	19,507	19,431	76	0	1
2010	2	19,599	19,601	(2)	(0)	(0)
2010	3	19,687	19,669	18	0	0
2010	4	19,700	19,750	(50)	(0)	(1)
2010	5	19,687	19,733	(46)	(0)	(1)
2010	6	19,693	19,711	(18)	(0)	(0)
2010	7	19,686	19,725	(39)	(0)	(1)
2010	8	19,708	19,714	(6)	(0)	(0)
2010	9	19,704	19,747	(43)	(0)	(1)
2010	10	19,730	19,733	(3)	(0)	(0)
2010	11	19,835	19,771	64	0	1
2010	12	19,849	19,903	(54)	(0)	(1)
2011	1	19,875	19,880	(5)	(0)	(0)
2011	2	19,894	19,910	(16)	(0)	(0)
2011	3	19,934	19,925	9	0	0
2011	4	19,926	19,971	(45)	(0)	(1)
2011	5	19,957	19,947	10	0	0
2011	6	19,954	19,994	(40)	(0)	(1)
2011	7	19,740	19,979	(239)	(0)	(4)
2011	8	20,124	19,694	430	0	7
2011	9	20,600	20,301	299	0	5
2011	10	20,856	20,789	67	0	1
2011	11	20,938	20,942	(4)	(0)	(0)
2011	12	20,984	20,951	33	0	1
2012	1	20,988	20,981	7	0	0
2012	2	20,992	20,970	22	0	0
2012	3	20,922	20,975	(53)	(0)	(1)
2012	4	20,874	20,881	(7)	(0)	(0)
2012	5	20,837	20,847	(10)	(0)	(0)
2012	6	20,757	20,818	(61)	(0)	(1)
2012	7	20,686	20,727	(41)	(0)	(1)
2012	8	20,647	20,666	(19)	(0)	(0)
2012	9	20,601	20,644	(43)	(0)	(1)
2012	10	20,590	20,600	(10)	(0)	(0)
2012	11	20,650	20,605	45	0	1
2012	12	20,668	20,693	(25)	(0)	(0)
2013	1	20,685	20,694	(9)	(0)	(0)
2013	2	20,673	20,712	(39)	(0)	(1)
2013	3	20,667	20,691	(24)	(0)	(0)
2013	4	20,707	20,690	17	0	0
2013	5	20,688	20,747	(59)	(0)	(1)

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	6	20,674	20,706	(32)	(0)	(1)
2013	7	20,714	20,696	18	0	0
2013	8	20,780	20,757	23	0	0
2013	9	20,812	20,831	(19)	(0)	(0)
2013	10	20,845	20,849	(4)	(0)	(0)
2013	11	20,857	20,882	(25)	(0)	(0)
2013	12	20,872	20,886	(14)	(0)	(0)
2014	1	20,917	20,903	14	0	0
2014	2	20,936	20,959	(23)	(0)	(0)
2014	3	20,956	20,967	(11)	(0)	(0)
2014	4	21,037	20,987	50	0	1
2014	5	21,056	21,091	(35)	(0)	(1)
2014	6	21,059	21,086	(27)	(0)	(0)
2014	7	21,095	21,084	11	0	0
2014	8	21,086	21,134	(48)	(0)	(1)
2014	9	21,111	21,109	2	0	0
2014	10	21,128	21,148	(20)	(0)	(0)
2014	11	21,447	21,163	284	0	5
2014	12	21,532	21,589	(57)	(0)	(1)
2015	1	21,541	21,575	(34)	(0)	(1)
2015	2	21,563	21,555	8	0	0
2015	3	21,585	21,583	2	0	0
2015	4	21,580	21,608	(28)	(0)	(0)
2015	5	21,572	21,591	(19)	(0)	(0)
2015	6	21,539	21,582	(43)	(0)	(1)
2015	7	21,674	21,542	132	0	2
2015	8	21,708	21,738	(30)	(0)	(0)
2015	9	21,705	21,729	(24)	(0)	(0)
2015	10	21,729	21,711	18	0	0
2015	11	21,742	21,745	(3)	(0)	(0)
2015	12	21,781	21,754	27	0	0
2016	1	21,788	21,801	(13)	(0)	(0)
2016	2	21,851	21,795	56	0	1
2016	3	21,855	21,878	(23)	(0)	(0)
2016	4	21,890	21,858	32	0	1
2016	5	21,918	21,904	14	0	0
2016	6	21,891	21,928	(37)	(0)	(1)
2016	7	21,843	21,880	(37)	(0)	(1)
2016	8	21,971	21,827	144	0	2
2016	9	21,991	22,019	(28)	(0)	(0)
2016	10	21,982	21,995	(13)	(0)	(0)
2016	11	22,015	21,975	40	0	1
2016	12	22,041	22,023	18	0	0
2017	1	22,049	22,045	4	0	0
2017	2	22,070	22,045	25	0	0
2017	3	22,101	22,071	30	0	1
2017	4	22,101	22,104	(3)	(0)	(0)
2017	5	22,115	22,092	23	0	0

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	6	22,042	22,112	(70)	(0)	(1)
2017	7	22,023	22,009	14	0	0
2017	8	22,038	22,014	24	0	0
2017	9	22,036	22,042	(6)	(0)	(0)
2017	10	22,022	22,034	(12)	(0)	(0)
2017	11	22,039	22,017	22	0	0
2017	12	22,063	22,046	17	0	0
2018	1	22,070	22,073	(3)	(0)	(0)
2018	2	22,081	22,073	8	0	0
2018	3	22,110	22,086	24	0	0
2018	4	22,104	22,121	(17)	(0)	(0)
2018	5	22,060	22,102	(42)	(0)	(1)
2018	6	21,976	22,046	(70)	(0)	(1)
2018	7	21,944	21,952	(8)	(0)	(0)
2018	8	21,948	21,944	4	0	0
2018	9	21,941	21,964	(23)	(0)	(0)
2018	10	21,981	21,954	27	0	0
2018	11	21,993	22,011	(18)	(0)	(0)
2018	12	21,999	22,012	(13)	(0)	(0)
2019	1	22,013	22,017	(4)	(0)	(0)
2019	2	22,017	22,034	(17)	(0)	(0)
2019	3	22,069	22,035	34	0	1
2019	4	22,075	22,105	(30)	(0)	(1)
2019	5	22,069	22,092	(23)	(0)	(0)
2019	6	21,997	22,083	(86)	(0)	(1)
2019	7	22,000	21,988	12	0	0
2019	8	22,003	22,024	(21)	(0)	(0)
2019	9	21,999	22,028	(29)	(0)	(0)
2019	10	21,997	22,027	(30)	(0)	(1)
2019	11	22,017	22,020	(3)	(0)	(0)
2019	12	22,037	22,044	(7)	(0)	(0)
2020	1	22,047	22,059	(12)	(0)	(0)
2020	2	22,063	22,063	(0)	(0)	(0)
2020	3	22,061	22,080	(19)	(0)	(0)
2020	4	22,060	22,068	(8)	(0)	(0)
2020	5	22,044	22,066	(22)	(0)	(0)
2020	6	22,030	22,043	(13)	(0)	(0)
2020	7	22,020	22,029	(9)	(0)	(0)
2020	8	22,023	22,018	5	0	0
2020	9	21,963	22,024	(61)	(0)	(1)
2020	10	21,996	21,938	58	0	1
2020	11	21,981	22,006	(25)	(0)	(0)
2020	12	22,008	21,971	37	0	1
2021	1	22,015	22,012	3	0	0
2021	2	22,063	22,007	56	0	1
2021	3	22,076	22,067	9	0	0
2021	4	22,084	22,058	26	0	0
2021	5	22,071	22,069	2	0	0

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	6	22,031	22,052	(21)	(0)	(0)
2021	7	21,975	22,004	(29)	(0)	(0)
2021	8	21,996	21,947	49	0	1
2021	9	21,982	22,000	(18)	(0)	(0)
2021	10	22,016	21,974	42	0	1
2021	11	22,020	22,028	(8)	(0)	(0)
2021	12	22,075	22,021	54	0	1
2022	1	22,099	22,095	4	0	0
2022	2	22,114	22,108	6	0	0
2022	3	22,145	22,120	25	0	0
2022	4	22,163	22,160	3	0	0
2022	5	22,168	22,171	(3)	(0)	(0)
2022	6	22,137	22,171	(34)	(0)	(1)
2022	7	22,117	22,127	(10)	(0)	(0)
2022	8	22,128	22,114	14	0	0
2022	9	22,112	22,138	(26)	(0)	(0)
2022	10	22,109	22,113	(4)	(0)	(0)
2022	11	22,142	22,116	26	0	0
2022	12	22,194	22,162	32	0	1
2023	1	22,232	22,219	13	0	0
2023	2	22,285	22,251	34	0	1
2023	3	22,340	22,309	31	0	1
2023	4	22,344	22,364	(20)	(0)	(0)
2023	5	22,374	22,348	26	0	0
2023	6	22,358	22,389	(31)	(0)	(1)
2023	7	22,359	22,357	2	0	0
2023	8	22,409	22,366	43	0	1
2023	9	22,401	22,435	(34)	(0)	(1)
2023	10	22,415	22,406	9	0	0
2023	11	22,416	22,429	(13)	(0)	(0)
2023	12	22,429	22,426	3	0	0
2024	1	22,441	22,444	(3)	(0)	(0)
2024	2	22,464	22,456	8	0	0
2024	3	22,472	22,483	(11)	(0)	(0)
2024	4	22,478	22,485	(7)	(0)	(0)
2024	5	22,451	22,491	(40)	(0)	(1)
2024	6	-	22,453	-	-	-
2024	7	-	22,468	-	-	-
2024	8	-	22,488	-	-	-
2024	9	-	22,511	-	-	-
2024	10	-	22,533	-	-	-
2024	11	-	22,556	-	-	-
2024	12	-	22,579	-	-	-
2025	1	-	22,602	-	-	-
2025	2	-	22,624	-	-	-
2025	3	-	22,646	-	-	-
2025	4	-	22,667	-	-	-
2025	5	-	22,687	-	-	-

Xcel Energy North Dakota Residential with Space Heat
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2025	6	-	22,707	-	-	-
2025	7	-	22,725	-	-	-
2025	8	-	22,743	-	-	-
2025	9	-	22,761	-	-	-
2025	10	-	22,778	-	-	-
2025	11	-	22,794	-	-	-
2025	12	-	22,810	-	-	-

Xcel Energy North Dakota Small Commercial and Industrial
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	3,593.46	280.50	12.81	0.00	Constant Term
ND_SCI.ND_ResCount	0.11	0.00	34.13	0.00	Residential Customer Count
AR(1)	0.98	0.01	73.38	0.00	First order moving average term

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Model Statistics	
Iterations	12
Adjusted Observations	179
Deg. of Freedom for Error	176
R-Squared	0.998087273
Adjusted R-Squared	0.998065537
AIC	5.505493036
BIC	5.55891291
F-Statistic	45919.60956
Prob (F-Statistic)	0
Log-Likelihood	-743.7316242
Model Sum of Squares	22223703.5
Sum of Squared Errors	42589.34095
Mean Squared Error	241.9848918
Std. Error of Regression	15.55586358
Mean Abs. Dev. (MAD)	11.35400112
Mean Abs. % Err. (MAPE)	0.00091055
Durbin-Watson Statistic	1.874296679
Durbin-H Statistic	#NA
Ljung-Box Statistic	18.8122717
Prob (Ljung-Box)	0.761925665
Skewness	-0.909060008
Kurtosis	9.22096738
Jarque-Bera	313.2947167
Prob (Jarque-Bera)	0

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	11,951.0	-	-	-	-
2009	7	11,937.0	11,954.2	(17.2)	(0.0)	(1.1)
2009	8	11,950.0	11,945.8	4.2	0.0	0.3
2009	9	11,965.0	11,957.0	8.0	0.0	0.5
2009	10	11,975.0	11,973.6	1.4	0.0	0.1
2009	11	11,995.0	11,987.3	7.7	0.0	0.5
2009	12	11,991.0	12,012.4	(21.4)	(0.0)	(1.4)
2010	1	11,996.0	12,009.2	(13.2)	(0.0)	(0.8)
2010	2	12,001.0	12,013.8	(12.8)	(0.0)	(0.8)
2010	3	12,006.0	12,016.7	(10.7)	(0.0)	(0.7)
2010	4	12,000.0	12,007.7	(7.7)	(0.0)	(0.5)
2010	5	12,017.0	11,998.4	18.6	0.0	1.2
2010	6	12,039.0	12,019.5	19.5	0.0	1.3
2010	7	12,050.0	12,048.6	1.4	0.0	0.1
2010	8	12,047.0	12,059.2	(12.2)	(0.0)	(0.8)
2010	9	12,045.0	12,051.2	(6.2)	(0.0)	(0.4)
2010	10	12,052.0	12,054.8	(2.8)	(0.0)	(0.2)
2010	11	12,068.0	12,074.2	(6.2)	(0.0)	(0.4)
2010	12	12,078.0	12,078.6	(0.6)	(0.0)	(0.0)
2011	1	12,084.0	12,089.8	(5.8)	(0.0)	(0.4)
2011	2	12,090.0	12,092.1	(2.1)	(0.0)	(0.1)
2011	3	12,111.0	12,097.3	13.7	0.0	0.9
2011	4	12,122.0	12,115.7	6.3	0.0	0.4
2011	5	12,135.0	12,127.8	7.2	0.0	0.5
2011	6	12,135.0	12,128.3	6.7	0.0	0.4
2011	7	11,632.0	11,672.7	(40.7)	(0.0)	(2.6)
2011	8	11,740.0	11,831.6	(91.6)	(0.0)	(5.9)
2011	9	11,879.0	11,837.2	41.8	0.0	2.7
2011	10	11,932.0	11,947.6	(15.6)	(0.0)	(1.0)
2011	11	11,993.0	11,980.6	12.4	0.0	0.8
2011	12	12,033.0	12,027.4	5.6	0.0	0.4
2012	1	12,033.0	12,059.3	(26.3)	(0.0)	(1.7)
2012	2	12,025.0	12,055.4	(30.4)	(0.0)	(2.0)
2012	3	12,037.0	12,034.0	3.0	0.0	0.2
2012	4	12,040.0	12,042.0	(2.0)	(0.0)	(0.1)
2012	5	12,038.0	12,056.8	(18.8)	(0.0)	(1.2)
2012	6	12,037.0	12,033.6	3.4	0.0	0.2
2012	7	12,058.0	12,043.3	14.7	0.0	0.9
2012	8	12,087.0	12,077.0	10.0	0.0	0.6
2012	9	12,096.0	12,107.7	(11.7)	(0.0)	(0.8)
2012	10	12,130.0	12,117.3	12.7	0.0	0.8
2012	11	12,159.0	12,148.8	10.2	0.0	0.7
2012	12	12,182.0	12,171.9	10.1	0.0	0.7
2013	1	12,208.0	12,185.3	22.7	0.0	1.5
2013	2	12,202.0	12,215.0	(13.0)	(0.0)	(0.8)
2013	3	12,203.0	12,213.2	(10.2)	(0.0)	(0.7)
2013	4	12,206.0	12,219.5	(13.5)	(0.0)	(0.9)
2013	5	12,231.0	12,214.8	16.2	0.0	1.0

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	6	12,239.0	12,231.9	7.1	0.0	0.5
2013	7	12,267.0	12,243.9	23.1	0.0	1.5
2013	8	12,290.0	12,289.5	0.5	0.0	0.0
2013	9	12,285.0	12,302.6	(17.6)	(0.0)	(1.1)
2013	10	12,322.0	12,298.1	23.9	0.0	1.5
2013	11	12,328.0	12,341.9	(13.9)	(0.0)	(0.9)
2013	12	12,317.0	12,341.7	(24.7)	(0.0)	(1.6)
2014	1	12,339.0	12,323.0	16.0	0.0	1.0
2014	2	12,348.0	12,348.2	(0.2)	(0.0)	(0.0)
2014	3	12,368.0	12,356.2	11.8	0.0	0.8
2014	4	12,355.0	12,375.8	(20.8)	(0.0)	(1.3)
2014	5	12,365.0	12,378.0	(13.0)	(0.0)	(0.8)
2014	6	12,378.0	12,365.4	12.6	0.0	0.8
2014	7	12,399.0	12,392.0	7.0	0.0	0.5
2014	8	12,403.0	12,401.8	1.2	0.0	0.1
2014	9	12,420.0	12,406.7	13.3	0.0	0.9
2014	10	12,453.0	12,437.3	15.7	0.0	1.0
2014	11	12,458.0	12,486.8	(28.8)	(0.0)	(1.9)
2014	12	12,475.0	12,474.1	0.9	0.0	0.1
2015	1	12,498.0	12,481.2	16.8	0.0	1.1
2015	2	12,520.0	12,500.8	19.2	0.0	1.2
2015	3	12,530.0	12,537.8	(7.8)	(0.0)	(0.5)
2015	4	12,525.0	12,538.4	(13.4)	(0.0)	(0.9)
2015	5	12,549.0	12,532.3	16.7	0.0	1.1
2015	6	12,547.0	12,550.6	(3.6)	(0.0)	(0.2)
2015	7	12,574.0	12,563.2	10.8	0.0	0.7
2015	8	12,595.0	12,593.5	1.5	0.0	0.1
2015	9	12,605.0	12,606.0	(1.0)	(0.0)	(0.1)
2015	10	12,623.0	12,609.1	13.9	0.0	0.9
2015	11	12,675.0	12,631.6	43.4	0.0	2.8
2015	12	12,705.0	12,699.5	5.5	0.0	0.4
2016	1	12,700.0	12,712.3	(12.3)	(0.0)	(0.8)
2016	2	12,705.0	12,702.4	2.6	0.0	0.2
2016	3	12,698.0	12,704.5	(6.5)	(0.0)	(0.4)
2016	4	12,690.0	12,701.6	(11.6)	(0.0)	(0.7)
2016	5	12,703.0	12,699.8	3.2	0.0	0.2
2016	6	12,711.0	12,691.4	19.6	0.0	1.3
2016	7	12,695.0	12,699.7	(4.7)	(0.0)	(0.3)
2016	8	12,714.0	12,714.4	(0.4)	(0.0)	(0.0)
2016	9	12,723.0	12,714.6	8.4	0.0	0.5
2016	10	12,729.0	12,723.4	5.6	0.0	0.4
2016	11	12,748.0	12,739.0	9.0	0.0	0.6
2016	12	12,746.0	12,756.4	(10.4)	(0.0)	(0.7)
2017	1	12,752.0	12,749.2	2.8	0.0	0.2
2017	2	12,761.0	12,759.6	1.4	0.0	0.1
2017	3	12,767.0	12,763.4	3.6	0.0	0.2
2017	4	12,751.0	12,771.3	(20.3)	(0.0)	(1.3)
2017	5	12,760.0	12,751.3	8.7	0.0	0.6

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	6	12,757.0	12,752.0	5.0	0.0	0.3
2017	7	12,755.0	12,760.8	(5.8)	(0.0)	(0.4)
2017	8	12,748.0	12,759.1	(11.1)	(0.0)	(0.7)
2017	9	12,746.0	12,742.4	3.6	0.0	0.2
2017	10	12,746.0	12,756.7	(10.7)	(0.0)	(0.7)
2017	11	12,747.0	12,751.7	(4.7)	(0.0)	(0.3)
2017	12	12,753.0	12,755.5	(2.5)	(0.0)	(0.2)
2018	1	12,759.0	12,758.6	0.4	0.0	0.0
2018	2	12,769.0	12,767.2	1.8	0.0	0.1
2018	3	12,777.0	12,775.9	1.1	0.0	0.1
2018	4	12,770.0	12,772.8	(2.8)	(0.0)	(0.2)
2018	5	12,795.0	12,764.7	30.3	0.0	1.9
2018	6	12,794.0	12,774.7	19.3	0.0	1.2
2018	7	12,801.0	12,786.5	14.5	0.0	0.9
2018	8	12,791.0	12,803.8	(12.8)	(0.0)	(0.8)
2018	9	12,785.0	12,790.2	(5.2)	(0.0)	(0.3)
2018	10	12,797.0	12,792.7	4.3	0.0	0.3
2018	11	12,828.0	12,800.3	27.7	0.0	1.8
2018	12	12,826.0	12,830.5	(4.5)	(0.0)	(0.3)
2019	1	12,859.0	12,836.9	22.1	0.0	1.4
2019	2	12,846.0	12,856.9	(10.9)	(0.0)	(0.7)
2019	3	12,838.0	12,860.2	(22.2)	(0.0)	(1.4)
2019	4	12,834.0	12,839.9	(5.9)	(0.0)	(0.4)
2019	5	12,821.0	12,837.1	(16.1)	(0.0)	(1.0)
2019	6	12,812.0	12,801.2	10.8	0.0	0.7
2019	7	12,818.0	12,814.0	4.0	0.0	0.3
2019	8	12,809.0	12,819.7	(10.7)	(0.0)	(0.7)
2019	9	12,805.0	12,811.7	(6.7)	(0.0)	(0.4)
2019	10	12,794.0	12,802.6	(8.6)	(0.0)	(0.6)
2019	11	12,800.0	12,800.6	(0.6)	(0.0)	(0.0)
2019	12	12,823.0	12,806.1	16.9	0.0	1.1
2020	1	12,823.0	12,827.3	(4.3)	(0.0)	(0.3)
2020	2	12,833.0	12,824.4	8.6	0.0	0.6
2020	3	12,828.0	12,832.7	(4.7)	(0.0)	(0.3)
2020	4	12,819.0	12,827.7	(8.7)	(0.0)	(0.6)
2020	5	12,805.0	12,812.7	(7.7)	(0.0)	(0.5)
2020	6	12,798.0	12,801.3	(3.3)	(0.0)	(0.2)
2020	7	12,781.0	12,791.7	(10.7)	(0.0)	(0.7)
2020	8	12,769.0	12,783.0	(14.0)	(0.0)	(0.9)
2020	9	12,776.0	12,758.1	17.9	0.0	1.1
2020	10	12,820.0	12,785.8	34.2	0.0	2.2
2020	11	12,804.0	12,812.8	(8.8)	(0.0)	(0.6)
2020	12	12,788.0	12,807.8	(19.8)	(0.0)	(1.3)
2021	1	12,800.0	12,800.8	(0.8)	(0.0)	(0.1)
2021	2	12,802.0	12,831.5	(29.5)	(0.0)	(1.9)
2021	3	12,809.0	12,805.9	3.1	0.0	0.2
2021	4	12,801.0	12,813.3	(12.3)	(0.0)	(0.8)
2021	5	12,796.0	12,809.8	(13.8)	(0.0)	(0.9)

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	6	12,821.0	12,784.0	37.0	0.0	2.4
2021	7	12,828.0	12,811.3	16.7	0.0	1.1
2021	8	12,844.0	12,833.0	11.0	0.0	0.7
2021	9	12,846.0	12,838.7	7.3	0.0	0.5
2021	10	12,870.0	12,851.3	18.7	0.0	1.2
2021	11	12,890.0	12,874.8	15.2	0.0	1.0
2021	12	12,907.0	12,900.0	7.0	0.0	0.4
2022	1	12,905.0	12,918.0	(13.0)	(0.0)	(0.8)
2022	2	12,895.0	12,904.4	(9.4)	(0.0)	(0.6)
2022	3	12,911.0	12,918.7	(7.7)	(0.0)	(0.5)
2022	4	12,910.0	12,915.7	(5.7)	(0.0)	(0.4)
2022	5	12,911.0	12,913.2	(2.2)	(0.0)	(0.1)
2022	6	12,905.0	12,914.0	(9.0)	(0.0)	(0.6)
2022	7	12,896.0	12,901.1	(5.1)	(0.0)	(0.3)
2022	8	12,918.0	12,905.3	12.7	0.0	0.8
2022	9	12,911.0	12,913.4	(2.4)	(0.0)	(0.2)
2022	10	12,933.0	12,911.4	21.6	0.0	1.4
2022	11	12,933.0	12,934.6	(1.6)	(0.0)	(0.1)
2022	12	12,943.0	12,938.5	4.5	0.0	0.3
2023	1	12,971.0	12,948.3	22.7	0.0	1.5
2023	2	12,984.0	12,978.2	5.8	0.0	0.4
2023	3	12,986.0	12,997.7	(11.7)	(0.0)	(0.8)
2023	4	12,980.0	12,985.6	(5.6)	(0.0)	(0.4)
2023	5	12,984.0	12,985.0	(1.0)	(0.0)	(0.1)
2023	6	12,982.0	12,970.7	11.3	0.0	0.7
2023	7	12,959.0	12,973.4	(14.4)	(0.0)	(0.9)
2023	8	12,951.0	12,969.4	(18.4)	(0.0)	(1.2)
2023	9	12,946.0	12,942.9	3.1	0.0	0.2
2023	10	12,948.0	12,953.9	(5.9)	(0.0)	(0.4)
2023	11	12,964.0	12,958.6	5.4	0.0	0.3
2023	12	12,973.0	12,969.7	3.3	0.0	0.2
2024	1	12,976.0	12,976.2	(0.2)	(0.0)	(0.0)
2024	2	12,991.0	12,997.6	(6.6)	(0.0)	(0.4)
2024	3	12,997.0	12,997.7	(0.7)	(0.0)	(0.0)
2024	4	12,994.0	13,005.8	(11.8)	(0.0)	(0.8)
2024	5	12,994.0	12,990.1	3.9	0.0	0.2
2024	6	-	12,996.7	-	-	-
2024	7	-	13,000.9	-	-	-
2024	8	-	13,005.7	-	-	-
2024	9	-	13,010.6	-	-	-
2024	10	-	13,015.6	-	-	-
2024	11	-	13,020.5	-	-	-
2024	12	-	13,025.4	-	-	-
2025	1	-	13,030.3	-	-	-
2025	2	-	13,035.1	-	-	-
2025	3	-	13,039.8	-	-	-
2025	4	-	13,044.4	-	-	-
2025	5	-	13,048.8	-	-	-

Xcel Energy North Dakota Small Commercial and Industrial 2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2025	6	-	13,053.1	-	-	-
2025	7	-	13,057.2	-	-	-
2025	8	-	13,061.3	-	-	-
2025	9	-	13,065.3	-	-	-
2025	10	-	13,069.1	-	-	-
2025	11	-	13,072.9	-	-	-
2025	12	-	13,076.6	-	-	-

Xcel Energy North Dakota Street Lighting
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Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	-558.2914547	38.71554604	-14.42034304	1.01026E-20	Constant Term
ND_StLt_Custs.FGO_Pop_18Lag	3.182304494	0.163848237	19.42226877	1.16072E-25	Fargo Population Lagged 18
AR(1)	0.915318433	0.030578728	29.93317574	5.09901E-33	First order moving average term

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Model Statistics	
Iterations	6
Adjusted Observations	179
Deg. of Freedom for Error	176
R-Squared	0.996833434
Adjusted R-Squared	0.99679745
AIC	2.394620698
BIC	2.448040572
F-Statistic	27702.35395
Prob (F-Statistic)	0
Log-Likelihood	-465.30855
Model Sum of Squares	597448.1645
Sum of Squared Errors	1897.868989
Mean Squared Error	10.78334653
Std. Error of Regression	3.283800622
Mean Abs. Dev. (MAD)	1.633636509
Mean Abs. % Err. (MAPE)	0.009347435
Durbin-Watson Statistic	1.874822032
Durbin-H Statistic	#NA
Ljung-Box Statistic	13.67118022
Prob (Ljung-Box)	0.953731701
Skewness	2.490602355
Kurtosis	28.71401472
Jarque-Bera	5116.587862
Prob (Jarque-Bera)	0

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	90.0	-	-	-	-
2009	7	91.0	90.0	1.0	0.0	0.3
2009	8	91.0	91.0	0.0	0.0	0.0
2009	9	92.0	91.1	0.9	0.0	0.3
2009	10	93.0	92.0	1.0	0.0	0.3
2009	11	93.0	93.2	(0.2)	(0.0)	(0.1)
2009	12	93.0	93.4	(0.4)	(0.0)	(0.1)
2010	1	93.0	93.5	(0.5)	(0.0)	(0.2)
2010	2	93.0	93.6	(0.6)	(0.0)	(0.2)
2010	3	94.0	93.7	0.3	0.0	0.1
2010	4	94.0	94.8	(0.8)	(0.0)	(0.2)
2010	5	94.0	94.8	(0.8)	(0.0)	(0.3)
2010	6	94.0	95.0	(1.0)	(0.0)	(0.3)
2010	7	95.0	95.0	(0.0)	(0.0)	(0.0)
2010	8	95.0	96.2	(1.2)	(0.0)	(0.4)
2010	9	95.0	96.2	(1.2)	(0.0)	(0.4)
2010	10	95.0	96.6	(1.6)	(0.0)	(0.5)
2010	11	96.0	96.2	(0.2)	(0.0)	(0.1)
2010	12	96.0	97.0	(1.0)	(0.0)	(0.3)
2011	1	98.0	97.2	0.8	0.0	0.3
2011	2	98.0	99.0	(1.0)	(0.0)	(0.3)
2011	3	99.0	99.1	(0.1)	(0.0)	(0.0)
2011	4	99.0	100.1	(1.1)	(0.0)	(0.3)
2011	5	99.0	100.2	(1.2)	(0.0)	(0.4)
2011	6	99.0	100.3	(1.3)	(0.0)	(0.4)
2011	7	98.0	100.5	(2.5)	(0.0)	(0.8)
2011	8	98.0	99.4	(1.4)	(0.0)	(0.4)
2011	9	99.0	99.4	(0.4)	(0.0)	(0.1)
2011	10	100.0	100.2	(0.2)	(0.0)	(0.1)
2011	11	100.0	101.6	(1.6)	(0.0)	(0.5)
2011	12	100.0	101.8	(1.8)	(0.0)	(0.5)
2012	1	100.0	101.8	(1.8)	(0.0)	(0.6)
2012	2	101.0	102.0	(1.0)	(0.0)	(0.3)
2012	3	103.0	102.9	0.1	0.0	0.0
2012	4	126.0	104.9	21.1	0.2	6.4
2012	5	126.0	126.0	(0.0)	(0.0)	(0.0)
2012	6	127.0	126.1	0.9	0.0	0.3
2012	7	128.0	127.1	0.9	0.0	0.3
2012	8	130.0	128.1	1.9	0.0	0.6
2012	9	130.0	130.0	(0.0)	(0.0)	(0.0)
2012	10	133.0	130.0	3.0	0.0	0.9
2012	11	134.0	133.1	0.9	0.0	0.3
2012	12	134.0	134.1	(0.1)	(0.0)	(0.0)
2013	1	134.0	134.2	(0.2)	(0.0)	(0.1)
2013	2	135.0	134.3	0.7	0.0	0.2
2013	3	135.0	135.3	(0.3)	(0.0)	(0.1)
2013	4	136.0	135.4	0.6	0.0	0.2
2013	5	136.0	136.5	(0.5)	(0.0)	(0.1)

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	6	136.0	136.6	(0.6)	(0.0)	(0.2)
2013	7	139.0	136.7	2.3	0.0	0.7
2013	8	140.0	139.4	0.6	0.0	0.2
2013	9	141.0	140.5	0.5	0.0	0.2
2013	10	142.0	141.3	0.7	0.0	0.2
2013	11	143.0	142.8	0.2	0.0	0.1
2013	12	142.0	144.0	(2.0)	(0.0)	(0.6)
2014	1	142.0	143.2	(1.2)	(0.0)	(0.4)
2014	2	142.0	143.3	(1.3)	(0.0)	(0.4)
2014	3	145.0	143.4	1.6	0.0	0.5
2014	4	145.0	146.3	(1.3)	(0.0)	(0.4)
2014	5	146.0	146.4	(0.4)	(0.0)	(0.1)
2014	6	147.0	147.5	(0.5)	(0.0)	(0.1)
2014	7	148.0	148.5	(0.5)	(0.0)	(0.2)
2014	8	146.0	149.6	(3.6)	(0.0)	(1.1)
2014	9	150.0	147.9	2.1	0.0	0.6
2014	10	152.0	152.0	0.0	0.0	0.0
2014	11	153.0	153.4	(0.4)	(0.0)	(0.1)
2014	12	153.0	154.3	(1.3)	(0.0)	(0.4)
2015	1	153.0	154.5	(1.5)	(0.0)	(0.4)
2015	2	153.0	154.5	(1.5)	(0.0)	(0.5)
2015	3	153.0	154.7	(1.7)	(0.0)	(0.5)
2015	4	153.0	154.8	(1.8)	(0.0)	(0.5)
2015	5	151.0	154.9	(3.9)	(0.0)	(1.2)
2015	6	152.0	153.1	(1.1)	(0.0)	(0.3)
2015	7	152.0	154.2	(2.2)	(0.0)	(0.7)
2015	8	152.0	154.2	(2.2)	(0.0)	(0.7)
2015	9	156.0	154.4	1.6	0.0	0.5
2015	10	155.0	158.0	(3.0)	(0.0)	(0.9)
2015	11	158.0	157.4	0.6	0.0	0.2
2015	12	159.0	160.4	(1.4)	(0.0)	(0.4)
2016	1	160.0	161.4	(1.4)	(0.0)	(0.4)
2016	2	160.0	162.4	(2.4)	(0.0)	(0.7)
2016	3	162.0	162.5	(0.5)	(0.0)	(0.2)
2016	4	164.0	164.5	(0.5)	(0.0)	(0.2)
2016	5	164.0	166.4	(2.4)	(0.0)	(0.7)
2016	6	161.0	166.6	(5.6)	(0.0)	(1.7)
2016	7	168.0	163.9	4.1	0.0	1.2
2016	8	170.0	170.5	(0.5)	(0.0)	(0.2)
2016	9	177.0	172.4	4.6	0.0	1.4
2016	10	177.0	179.1	(2.1)	(0.0)	(0.6)
2016	11	185.0	178.9	6.1	0.0	1.9
2016	12	188.0	186.3	1.7	0.0	0.5
2017	1	188.0	189.1	(1.1)	(0.0)	(0.3)
2017	2	188.0	189.2	(1.2)	(0.0)	(0.4)
2017	3	188.0	189.3	(1.3)	(0.0)	(0.4)
2017	4	188.0	189.4	(1.4)	(0.0)	(0.4)
2017	5	190.0	189.5	0.5	0.0	0.1

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Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	6	191.0	191.5	(0.5)	(0.0)	(0.1)
2017	7	191.0	192.5	(1.5)	(0.0)	(0.5)
2017	8	193.0	192.6	0.4	0.0	0.1
2017	9	195.0	194.5	0.5	0.0	0.1
2017	10	196.0	196.5	(0.5)	(0.0)	(0.1)
2017	11	203.0	197.4	5.6	0.0	1.7
2017	12	205.0	203.9	1.1	0.0	0.3
2018	1	207.0	205.9	1.1	0.0	0.3
2018	2	207.0	207.8	(0.8)	(0.0)	(0.2)
2018	3	207.0	207.9	(0.9)	(0.0)	(0.3)
2018	4	208.0	208.0	(0.0)	(0.0)	(0.0)
2018	5	210.0	209.0	1.0	0.0	0.3
2018	6	212.0	210.9	1.1	0.0	0.3
2018	7	216.0	212.8	3.2	0.0	1.0
2018	8	218.0	216.7	1.3	0.0	0.4
2018	9	219.0	218.6	0.4	0.0	0.1
2018	10	221.0	219.9	1.1	0.0	0.3
2018	11	219.0	221.3	(2.3)	(0.0)	(0.7)
2018	12	219.0	219.4	(0.4)	(0.0)	(0.1)
2019	1	220.0	219.5	0.5	0.0	0.1
2019	2	220.0	220.5	(0.5)	(0.0)	(0.1)
2019	3	220.0	220.6	(0.6)	(0.0)	(0.2)
2019	4	221.0	220.6	0.4	0.0	0.1
2019	5	219.0	221.6	(2.6)	(0.0)	(0.8)
2019	6	227.0	219.8	7.2	0.0	2.2
2019	7	228.0	227.2	0.8	0.0	0.2
2019	8	233.0	228.3	4.7	0.0	1.4
2019	9	232.0	232.9	(0.9)	(0.0)	(0.3)
2019	10	232.0	232.3	(0.3)	(0.0)	(0.1)
2019	11	231.0	231.9	(0.9)	(0.0)	(0.3)
2019	12	232.0	230.9	1.1	0.0	0.3
2020	1	232.0	231.9	0.1	0.0	0.0
2020	2	232.0	231.9	0.1	0.0	0.0
2020	3	232.0	232.0	0.0	0.0	0.0
2020	4	231.0	232.0	(1.0)	(0.0)	(0.3)
2020	5	231.0	231.2	(0.2)	(0.0)	(0.0)
2020	6	233.0	231.2	1.8	0.0	0.6
2020	7	238.0	233.1	4.9	0.0	1.5
2020	8	237.0	237.6	(0.6)	(0.0)	(0.2)
2020	9	240.0	236.8	3.2	0.0	1.0
2020	10	247.0	239.4	7.6	0.0	2.3
2020	11	247.0	246.2	0.8	0.0	0.2
2020	12	247.0	246.4	0.6	0.0	0.2
2021	1	247.0	246.4	0.6	0.0	0.2
2021	2	245.0	246.4	(1.4)	(0.0)	(0.4)
2021	3	245.0	244.7	0.3	0.0	0.1
2021	4	245.0	244.7	0.3	0.0	0.1
2021	5	245.0	244.9	0.1	0.0	0.0

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	6	245.0	244.9	0.1	0.0	0.0
2021	7	243.0	245.2	(2.2)	(0.0)	(0.7)
2021	8	244.0	242.7	1.3	0.0	0.4
2021	9	244.0	243.7	0.3	0.0	0.1
2021	10	245.0	243.1	1.9	0.0	0.6
2021	11	248.0	245.4	2.6	0.0	0.8
2021	12	249.0	248.6	0.4	0.0	0.1
2022	1	249.0	249.8	(0.8)	(0.0)	(0.2)
2022	2	249.0	249.5	(0.5)	(0.0)	(0.1)
2022	3	249.0	249.4	(0.4)	(0.0)	(0.1)
2022	4	248.0	249.3	(1.3)	(0.0)	(0.4)
2022	5	248.0	248.9	(0.9)	(0.0)	(0.3)
2022	6	248.0	249.1	(1.1)	(0.0)	(0.3)
2022	7	249.0	249.2	(0.2)	(0.0)	(0.1)
2022	8	248.0	250.4	(2.4)	(0.0)	(0.7)
2022	9	247.0	249.5	(2.5)	(0.0)	(0.8)
2022	10	249.0	249.0	(0.0)	(0.0)	(0.0)
2022	11	251.0	250.3	0.7	0.0	0.2
2022	12	251.0	252.0	(1.0)	(0.0)	(0.3)
2023	1	251.0	252.2	(1.2)	(0.0)	(0.4)
2023	2	251.0	252.1	(1.1)	(0.0)	(0.3)
2023	3	252.0	252.2	(0.2)	(0.0)	(0.1)
2023	4	252.0	253.1	(1.1)	(0.0)	(0.3)
2023	5	253.0	253.3	(0.3)	(0.0)	(0.1)
2023	6	254.0	254.4	(0.4)	(0.0)	(0.1)
2023	7	254.0	255.2	(1.2)	(0.0)	(0.4)
2023	8	255.0	255.6	(0.6)	(0.0)	(0.2)
2023	9	279.0	256.7	22.3	0.1	6.8
2023	10	279.0	278.8	0.2	0.0	0.0
2023	11	282.0	278.7	3.3	0.0	1.0
2023	12	263.0	281.5	(18.5)	(0.1)	(5.6)
2024	1	259.0	264.1	(5.1)	(0.0)	(1.6)
2024	2	259.0	260.6	(1.6)	(0.0)	(0.5)
2024	3	259.0	260.8	(1.8)	(0.0)	(0.5)
2024	4	259.0	260.8	(1.8)	(0.0)	(0.5)
2024	5	259.0	261.0	(2.0)	(0.0)	(0.6)
2024	6	-	261.1	-	-	-
2024	7	-	263.1	-	-	-
2024	8	-	265.1	-	-	-
2024	9	-	267.0	-	-	-
2024	10	-	268.9	-	-	-
2024	11	-	270.7	-	-	-
2024	12	-	272.3	-	-	-
2025	1	-	274.0	-	-	-
2025	2	-	275.5	-	-	-
2025	3	-	277.0	-	-	-
2025	4	-	278.5	-	-	-
2025	5	-	279.9	-	-	-

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2025	6	-	281.2	-	-	-
2025	7	-	282.6	-	-	-
2025	8	-	283.9	-	-	-
2025	9	-	285.1	-	-	-
2025	10	-	286.3	-	-	-
2025	11	-	287.4	-	-	-
2025	12	-	288.5	-	-	-

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	186.9921875	0.289534607	645.8370871	2.90876E-86	Constant Term
Binary.Post_Feb20	-28.07689338	0.975022231	-28.79615714	2.35099E-32	Binary variable =1 after Feb 2020
Binary.Post_Feb20T	-0.198099548	0.031161929	-6.357101656	6.94874E-09	Trend variable starting Feb 2020

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Model Statistics	
Iterations	1
Adjusted Observations	179
Deg. of Freedom for Error	176
R-Squared	0.955654429
Adjusted R-Squared	0.955150502
AIC	2.389687112
BIC	2.443106986
F-Statistic	1896.414612
Prob (F-Statistic)	0
Log-Likelihood	-464.866994
Model Sum of Squares	40698.10812
Sum of Squared Errors	1888.528749
Mean Squared Error	10.73027698
Std. Error of Regression	3.275710149
Mean Abs. Dev. (MAD)	2.000800371
Mean Abs. % Err. (MAPE)	0.01110716
Durbin-Watson Statistic	0.575644908
Durbin-H Statistic	#NA
Ljung-Box Statistic	416.9174808
Prob (Ljung-Box)	0
Skewness	-2.256311678
Kurtosis	15.70545609
Jarque-Bera	1355.868198
Prob (Jarque-Bera)	0

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2009	6	190.0	187.0	3.0	0.0	0.9
2009	7	189.0	187.0	2.0	0.0	0.6
2009	8	189.0	187.0	2.0	0.0	0.6
2009	9	188.0	187.0	1.0	0.0	0.3
2009	10	188.0	187.0	1.0	0.0	0.3
2009	11	189.0	187.0	2.0	0.0	0.6
2009	12	190.0	187.0	3.0	0.0	0.9
2010	1	189.0	187.0	2.0	0.0	0.6
2010	2	189.0	187.0	2.0	0.0	0.6
2010	3	189.0	187.0	2.0	0.0	0.6
2010	4	188.0	187.0	1.0	0.0	0.3
2010	5	191.0	187.0	4.0	0.0	1.2
2010	6	192.0	187.0	5.0	0.0	1.5
2010	7	189.0	187.0	2.0	0.0	0.6
2010	8	189.0	187.0	2.0	0.0	0.6
2010	9	188.0	187.0	1.0	0.0	0.3
2010	10	188.0	187.0	1.0	0.0	0.3
2010	11	188.0	187.0	1.0	0.0	0.3
2010	12	188.0	187.0	1.0	0.0	0.3
2011	1	188.0	187.0	1.0	0.0	0.3
2011	2	188.0	187.0	1.0	0.0	0.3
2011	3	188.0	187.0	1.0	0.0	0.3
2011	4	188.0	187.0	1.0	0.0	0.3
2011	5	188.0	187.0	1.0	0.0	0.3
2011	6	188.0	187.0	1.0	0.0	0.3
2011	7	165.0	187.0	(22.0)	(0.1)	(6.7)
2011	8	175.0	187.0	(12.0)	(0.1)	(3.7)
2011	9	177.0	187.0	(10.0)	(0.1)	(3.1)
2011	10	177.0	187.0	(10.0)	(0.1)	(3.1)
2011	11	178.0	187.0	(9.0)	(0.1)	(2.7)
2011	12	180.0	187.0	(7.0)	(0.0)	(2.1)
2012	1	180.0	187.0	(7.0)	(0.0)	(2.1)
2012	2	180.0	187.0	(7.0)	(0.0)	(2.1)
2012	3	182.0	187.0	(5.0)	(0.0)	(1.5)
2012	4	183.0	187.0	(4.0)	(0.0)	(1.2)
2012	5	183.0	187.0	(4.0)	(0.0)	(1.2)
2012	6	184.0	187.0	(3.0)	(0.0)	(0.9)
2012	7	184.0	187.0	(3.0)	(0.0)	(0.9)
2012	8	186.0	187.0	(1.0)	(0.0)	(0.3)
2012	9	187.0	187.0	0.0	0.0	0.0
2012	10	188.0	187.0	1.0	0.0	0.3
2012	11	188.0	187.0	1.0	0.0	0.3
2012	12	188.0	187.0	1.0	0.0	0.3
2013	1	188.0	187.0	1.0	0.0	0.3
2013	2	188.0	187.0	1.0	0.0	0.3
2013	3	188.0	187.0	1.0	0.0	0.3
2013	4	188.0	187.0	1.0	0.0	0.3
2013	5	189.0	187.0	2.0	0.0	0.6

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2013	6	188.0	187.0	1.0	0.0	0.3
2013	7	187.0	187.0	0.0	0.0	0.0
2013	8	187.0	187.0	0.0	0.0	0.0
2013	9	187.0	187.0	0.0	0.0	0.0
2013	10	187.0	187.0	0.0	0.0	0.0
2013	11	187.0	187.0	0.0	0.0	0.0
2013	12	188.0	187.0	1.0	0.0	0.3
2014	1	189.0	187.0	2.0	0.0	0.6
2014	2	189.0	187.0	2.0	0.0	0.6
2014	3	189.0	187.0	2.0	0.0	0.6
2014	4	188.0	187.0	1.0	0.0	0.3
2014	5	188.0	187.0	1.0	0.0	0.3
2014	6	187.0	187.0	0.0	0.0	0.0
2014	7	188.0	187.0	1.0	0.0	0.3
2014	8	188.0	187.0	1.0	0.0	0.3
2014	9	189.0	187.0	2.0	0.0	0.6
2014	10	189.0	187.0	2.0	0.0	0.6
2014	11	188.0	187.0	1.0	0.0	0.3
2014	12	189.0	187.0	2.0	0.0	0.6
2015	1	189.0	187.0	2.0	0.0	0.6
2015	2	189.0	187.0	2.0	0.0	0.6
2015	3	189.0	187.0	2.0	0.0	0.6
2015	4	190.0	187.0	3.0	0.0	0.9
2015	5	190.0	187.0	3.0	0.0	0.9
2015	6	190.0	187.0	3.0	0.0	0.9
2015	7	191.0	187.0	4.0	0.0	1.2
2015	8	191.0	187.0	4.0	0.0	1.2
2015	9	191.0	187.0	4.0	0.0	1.2
2015	10	191.0	187.0	4.0	0.0	1.2
2015	11	192.0	187.0	5.0	0.0	1.5
2015	12	192.0	187.0	5.0	0.0	1.5
2016	1	192.0	187.0	5.0	0.0	1.5
2016	2	192.0	187.0	5.0	0.0	1.5
2016	3	192.0	187.0	5.0	0.0	1.5
2016	4	192.0	187.0	5.0	0.0	1.5
2016	5	191.0	187.0	4.0	0.0	1.2
2016	6	191.0	187.0	4.0	0.0	1.2
2016	7	190.0	187.0	3.0	0.0	0.9
2016	8	189.0	187.0	2.0	0.0	0.6
2016	9	187.0	187.0	0.0	0.0	0.0
2016	10	186.0	187.0	(1.0)	(0.0)	(0.3)
2016	11	187.0	187.0	0.0	0.0	0.0
2016	12	187.0	187.0	0.0	0.0	0.0
2017	1	187.0	187.0	0.0	0.0	0.0
2017	2	187.0	187.0	0.0	0.0	0.0
2017	3	187.0	187.0	0.0	0.0	0.0
2017	4	187.0	187.0	0.0	0.0	0.0
2017	5	187.0	187.0	0.0	0.0	0.0

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	6	187.0	187.0	0.0	0.0	0.0
2017	7	186.0	187.0	(1.0)	(0.0)	(0.3)
2017	8	186.0	187.0	(1.0)	(0.0)	(0.3)
2017	9	186.0	187.0	(1.0)	(0.0)	(0.3)
2017	10	186.0	187.0	(1.0)	(0.0)	(0.3)
2017	11	185.0	187.0	(2.0)	(0.0)	(0.6)
2017	12	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	1	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	2	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	3	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	4	187.0	187.0	0.0	0.0	0.0
2018	5	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	6	186.0	187.0	(1.0)	(0.0)	(0.3)
2018	7	185.0	187.0	(2.0)	(0.0)	(0.6)
2018	8	185.0	187.0	(2.0)	(0.0)	(0.6)
2018	9	185.0	187.0	(2.0)	(0.0)	(0.6)
2018	10	198.0	187.0	11.0	0.1	3.4
2018	11	185.0	187.0	(2.0)	(0.0)	(0.6)
2018	12	187.0	187.0	0.0	0.0	0.0
2019	1	187.0	187.0	0.0	0.0	0.0
2019	2	187.0	187.0	0.0	0.0	0.0
2019	3	186.0	187.0	(1.0)	(0.0)	(0.3)
2019	4	185.0	187.0	(2.0)	(0.0)	(0.6)
2019	5	183.0	187.0	(4.0)	(0.0)	(1.2)
2019	6	184.0	187.0	(3.0)	(0.0)	(0.9)
2019	7	185.0	187.0	(2.0)	(0.0)	(0.6)
2019	8	185.0	187.0	(2.0)	(0.0)	(0.6)
2019	9	183.0	187.0	(4.0)	(0.0)	(1.2)
2019	10	184.0	187.0	(3.0)	(0.0)	(0.9)
2019	11	183.0	187.0	(4.0)	(0.0)	(1.2)
2019	12	183.0	187.0	(4.0)	(0.0)	(1.2)
2020	1	183.0	187.0	(4.0)	(0.0)	(1.2)
2020	2	158.0	158.7	(0.7)	(0.0)	(0.2)
2020	3	157.0	158.5	(1.5)	(0.0)	(0.5)
2020	4	157.0	158.3	(1.3)	(0.0)	(0.4)
2020	5	157.0	158.1	(1.1)	(0.0)	(0.3)
2020	6	157.0	157.9	(0.9)	(0.0)	(0.3)
2020	7	157.0	157.7	(0.7)	(0.0)	(0.2)
2020	8	157.0	157.5	(0.5)	(0.0)	(0.2)
2020	9	157.0	157.3	(0.3)	(0.0)	(0.1)
2020	10	157.0	157.1	(0.1)	(0.0)	(0.0)
2020	11	156.0	156.9	(0.9)	(0.0)	(0.3)
2020	12	156.0	156.7	(0.7)	(0.0)	(0.2)
2021	1	156.0	156.5	(0.5)	(0.0)	(0.2)
2021	2	156.0	156.3	(0.3)	(0.0)	(0.1)
2021	3	156.0	156.1	(0.1)	(0.0)	(0.0)
2021	4	156.0	155.9	0.1	0.0	0.0
2021	5	156.0	155.7	0.3	0.0	0.1

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	6	156.0	155.5	0.5	0.0	0.1
2021	7	156.0	155.3	0.7	0.0	0.2
2021	8	156.0	155.2	0.8	0.0	0.3
2021	9	156.0	155.0	1.0	0.0	0.3
2021	10	157.0	154.8	2.2	0.0	0.7
2021	11	156.0	154.6	1.4	0.0	0.4
2021	12	156.0	154.4	1.6	0.0	0.5
2022	1	155.0	154.2	0.8	0.0	0.3
2022	2	155.0	154.0	1.0	0.0	0.3
2022	3	155.0	153.8	1.2	0.0	0.4
2022	4	155.0	153.6	1.4	0.0	0.4
2022	5	155.0	153.4	1.6	0.0	0.5
2022	6	154.0	153.2	0.8	0.0	0.3
2022	7	154.0	153.0	1.0	0.0	0.3
2022	8	154.0	152.8	1.2	0.0	0.4
2022	9	153.0	152.6	0.4	0.0	0.1
2022	10	153.0	152.4	0.6	0.0	0.2
2022	11	152.0	152.2	(0.2)	(0.0)	(0.1)
2022	12	152.0	152.0	0.0	0.0	0.0
2023	1	152.0	151.8	0.2	0.0	0.1
2023	2	152.0	151.6	0.4	0.0	0.1
2023	3	153.0	151.4	1.6	0.0	0.5
2023	4	151.0	151.2	(0.2)	(0.0)	(0.1)
2023	5	150.0	151.0	(1.0)	(0.0)	(0.3)
2023	6	150.0	150.8	(0.8)	(0.0)	(0.2)
2023	7	149.0	150.6	(1.6)	(0.0)	(0.5)
2023	8	149.0	150.4	(1.4)	(0.0)	(0.4)
2023	9	149.0	150.2	(1.2)	(0.0)	(0.4)
2023	10	149.0	150.0	(1.0)	(0.0)	(0.3)
2023	11	149.0	149.8	(0.8)	(0.0)	(0.2)
2023	12	149.0	149.6	(0.6)	(0.0)	(0.2)
2024	1	148.0	149.4	(1.4)	(0.0)	(0.4)
2024	2	148.0	149.2	(1.2)	(0.0)	(0.4)
2024	3	149.0	149.0	(0.0)	(0.0)	(0.0)
2024	4	149.0	148.8	0.2	0.0	0.1
2024	5	-	148.6	-	-	-
2024	6	-	148.4	-	-	-
2024	7	-	148.2	-	-	-
2024	8	-	148.0	-	-	-
2024	9	-	147.8	-	-	-
2024	10	-	147.6	-	-	-
2024	11	-	147.4	-	-	-
2024	12	-	147.2	-	-	-
2025	1	-	147.0	-	-	-
2025	2	-	146.8	-	-	-
2025	3	-	146.6	-	-	-
2025	4	-	146.4	-	-	-
2025	5	-	146.2	-	-	-

Xcel Energy North Dakota Street Lighting
2025 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2025	6	-	146.0	-	-	-
2025	7	-	145.8	-	-	-
2025	8	-	145.6	-	-	-
2025	9	-	145.4	-	-	-
2025	10	-	145.2	-	-	-
2025	11	-	145.0	-	-	-
2025	12	-	144.9	-	-	-

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

NORTHERN STATES POWER COMPANY 2025 ELECTRIC RATE INCREASE APPLICATION	)))	Case No. PU-24-___

AFFIDAVIT OF
Benjamin S. Levine

I, the undersigned, being first duly sworn, depose and say that the foregoing is the Direct Testimony of the undersigned, and that such Direct Testimony and the exhibits or schedules sponsored by me to the best of my knowledge, information and belief, are true, correct, accurate and complete, and I hereby adopt said testimony as if given by me in formal hearing, under oath.

Benjamin S. Levine

Subscribed and sworn to before me, this 20 day of November, 2024.

Notary Public
My Commission Expires: January 31st 2027

CADE J KOWALCZAK
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2027