

Direct Testimony and Schedules  
Jannell E. Marks

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-20-\_\_\_\_  
Exhibit\_\_\_\_(JEM-1)

**Sales Forecast**

November 6, 2020

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 Q. PLEASE STATE YOUR NAME AND OCCUPATION.

4 A. My name is Jannell E. Marks. I am the Director of the Sales, Energy and  
5 Demand Forecasting department for Xcel Energy Services Inc. (XES), which  
6 provides services to Northern States Power Company–Minnesota (Xcel Energy,  
7 NSPM or the Company).

8

9 Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

10 A. I graduated from Colorado State University with a Bachelor of Science degree in  
11 statistics. I began my employment with Public Service Company of Colorado in  
12 1982 in the Economics and Forecasting department, and in August 2000,  
13 following the merger of New Centuries Energy Inc. and NSPM, I assumed the  
14 position of Manager, Economics and Energy Forecasting with XES. I was  
15 promoted to my current position with XES in February 2007. My resume is  
16 included as Exhibit\_\_\_(JEM-1), Schedule 1.

17

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

19 A. I sponsor the Company’s forecasts of sales and customers for the 2021 test year.  
20 I also sponsor the Company’s jurisdictional demand allocator for the 2021 test  
21 year. I recommend that the North Dakota Public Service Commission  
22 (Commission) adopt my forecasts of sales and customers for the purpose of  
23 determining the revenue requirement and final rates in this proceeding. In  
24 support of my recommended forecasts, I first compare our customer and sales  
25 forecast to historical customer and megawatt-hour (MWh) sales trends for Xcel  
26 Energy’s North Dakota service territory. Then I present details of the methods I  
27 used to develop the electric MWh sales and customer forecasts and the results. I

1 also recommend that the Commission adopt my jurisdictional demand allocator  
2 for the 2021 test year.

3  
4 Q. ARE THERE DEFINED TERMS YOU PLAN TO USE IN YOUR TESTIMONY?

5 A. Yes. The definitions of terms that are included in my testimony are provided in  
6 Exhibit\_\_\_\_(JEM-1), Schedule 2.

7  
8 **II. CUSTOMER AND SALES FORECAST**

9  
10 Q. WHAT GEOGRAPHICAL AREA DO THE TEST YEAR SALES REFLECT?

11 A. My testimony and exhibits reflect electric usage and customers in Xcel Energy's  
12 North Dakota service territory. Xcel Energy's North Dakota service territory  
13 includes approximately 94,000 customers in and around Fargo, Minot, and  
14 Grand Forks, North Dakota.

15  
16 Q. PLEASE DESCRIBE THE CUSTOMER CATEGORIES INCLUDED IN XCEL ENERGY'S  
17 CUSTOMER AND SALES FORECASTS.

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

- 20 • *Residential without Space Heating* – residential service for domestic purposes  
21 excluding space heating. This class provided 62.7 percent of customers  
22 and 23.3 percent of sales in 2019.
- 23 • *Residential with Space Heating* – residential service for domestic purposes  
24 including space heating. This class provided 23.3 percent of customers  
25 and 11.5 percent of sales in 2019.
- 26 • *Small Commercial and Industrial* – commercial and industrial service requiring  
27 less than 1,000 kilowatts (kW) billing demand per month on average per

1 year. This class provided 13.6 percent of customers and 46.9 percent of  
2 sales in 2019.

3 • *Large Commercial and Industrial* – commercial and industrial service requiring  
4 1,000 kW or more billing demand per month on average per year. This  
5 class provided 0.03 percent of customers and 17.0 percent of sales in  
6 2019.

7 • *Public Street and Highway Lighting* – street lighting service available for year-  
8 round illumination of public streets, parkways, and highways. This class  
9 provided 0.2 percent of customers and 0.7 percent of sales in 2019.

10 • *Other Sales to Public Authorities* – public authority service including  
11 municipal pumping service and fire and civil defense siren service. This  
12 class provided 0.2 percent of customers and 0.7 percent of sales in 2019.

13

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

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

16 1) The monthly and annual electric supply requirements;

17 2) Test year revenue under present rates; and

18 3) Test year revenue under proposed rates.

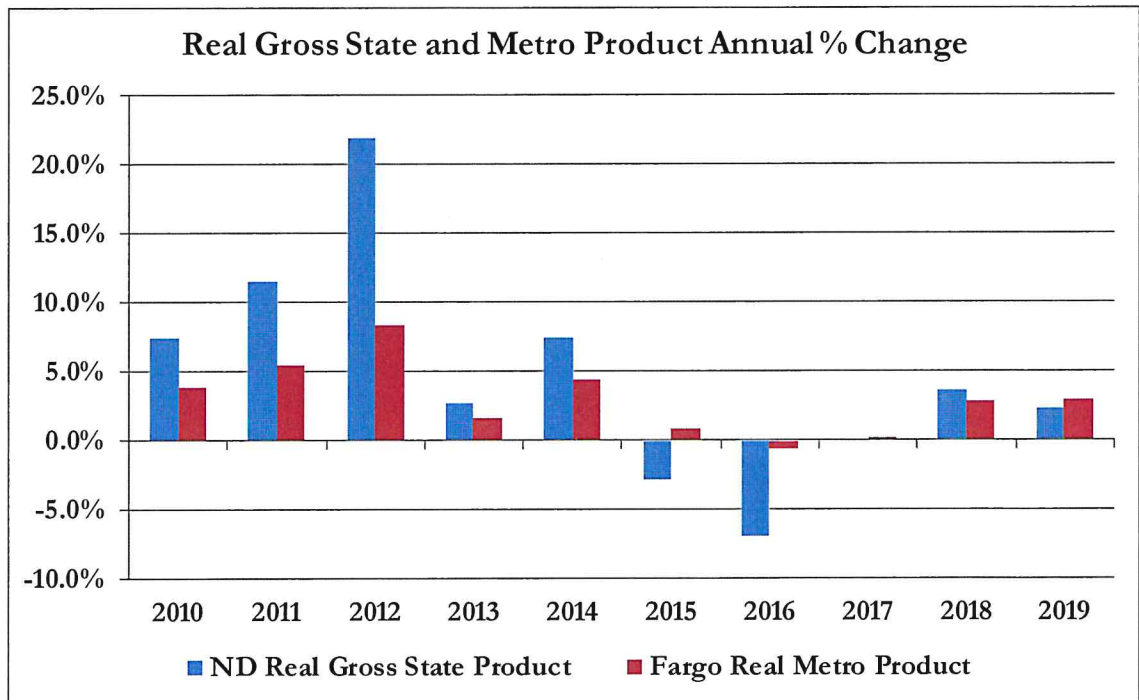
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20 Q. PLEASE PROVIDE AN OVERVIEW OF THE ECONOMIC LANDSCAPE OF XCEL  
21 ENERGY'S NORTH DAKOTA SERVICE TERRITORY.

22 A. Xcel Energy's North Dakota customers are primarily located in Fargo, West  
23 Fargo, Grand Forks, and Minot, with 93 percent of the customer base in these  
24 four locations. Just over one-half of the customers are located in Fargo and  
25 West Fargo, 24 percent are in Grand Forks, and 20 percent are in Minot. These  
26 urban areas generally are surrounded by rural electric cooperatives, limiting  
27 opportunities to expand the Xcel Energy service territory through customer

1 growth. In addition, much of the economic growth in the state has been driven  
 2 by oil and natural gas extraction activity in the Bakken region, which is closest to  
 3 Minot but well outside of the Xcel Energy service territory. As shown in Figure  
 4 1 below, from 2010 through 2014, when oil prices were high and oil and natural  
 5 gas extraction activity was booming, the state's economic growth exceeded the  
 6 economic growth in the eastern portion of the state. As oil prices dropped  
 7 towards the end of 2014, and continued dropping in 2015 and 2016, the state's  
 8 economy declined, but the impact of the slowdown was not as pronounced in  
 9 eastern North Dakota, where the Fargo and Grand Forks economies remained  
 10 virtually flat. In 2018 and 2019, as oil prices stabilized and slowly increased,  
 11 economic activity improved both at the state level and in the Red River Valley –  
 12 albeit at a modest rate.

13  
 14 **Figure 1**  
 15 **North Dakota and Fargo Gross Product**



1 Q. WHAT IMPACT HAS THE COVID-19 PANDEMIC HAD ON THE NORTH DAKOTA  
2 ECONOMY?

3 A. Like most areas of the country, the COVID-19 pandemic has significantly  
4 impacted the North Dakota economy in 2020. Total nonfarm employment for  
5 the state, as reported by the U.S. Bureau of Labor Statistics, declined 10.1  
6 percent from 441,100 in February 2020 to 396,500 in April 2020 and has  
7 improved slightly to 403,100 in July,<sup>1</sup> which is 8.6 percent below February levels.  
8 Fargo non-farm employment declined 9.3 percent from 144,800 in February  
9 2020 to 131,400 in April, and has recovered to 136,600 in July,<sup>2</sup> which is 5.7  
10 percent below February 2020 levels.

11  
12 Q. WHAT ECONOMIC EFFECTS ARE EXPECTED FROM COVID-19 DURING THE 2021  
13 TEST YEAR?

14 A. While we expect 2020 to experience the greatest economic impact from the  
15 pandemic, we anticipate feeling the effects throughout the 2021 test year and  
16 beyond. We expect many businesses to continue to be negatively impacted due  
17 to the uncertainty of the pandemic and to operate at lower than normal levels  
18 through much of 2021. Some business will not remain viable at lower operating  
19 levels and will close permanently. With time, the economy will recover, and  
20 businesses will return to normal operations, or new businesses will be established  
21 to replace those that closed.

22  
23 This outlook is consistent with the outlook of the Congressional Budget Office  
24 (CBO), as shown in Figure 2 below. Figure 2 provides the CBO's projected  
25 change in Gross Domestic Product (GDP) compared to the fourth quarter of

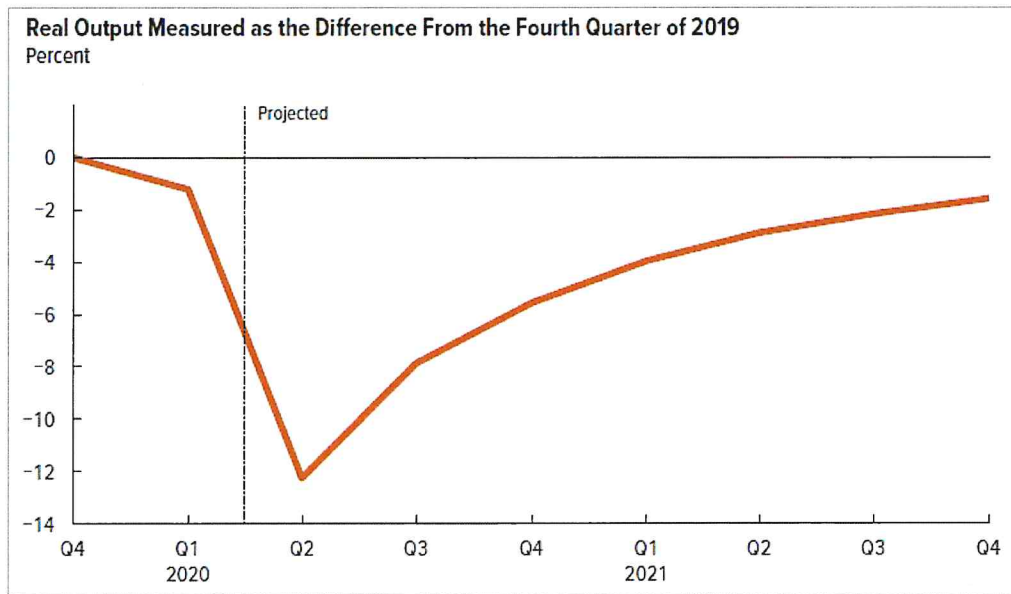
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<sup>1</sup> <https://www.bls.gov/eag/eag.nd.htm>, accessed September 15, 2020.

<sup>2</sup> [https://www.bls.gov/eag/eag.nd\\_fargo\\_msa.htm](https://www.bls.gov/eag/eag.nd_fargo_msa.htm), accessed September 15, 2020.

1 2019, and shows that GDP is expected to be lower than 2019 levels throughout  
2 2021. To develop the customer and sales forecast, the Company relies on  
3 historical and forecasted economic and demographic data for the state and the  
4 Fargo metropolitan area that are obtained from IHS Markit (formerly IHS  
5 Global Insight, Inc.), a respected economic forecasting firm frequently relied on  
6 by forecasting professionals and by the Company since the 1990s. Similar to the  
7 CBO outlook, economic data from IHS Markit for 2021 forecasts a slight  
8 improvement from 2020, but the economy is not expected to be at or above pre-  
9 pandemic levels for several years, as I described above.

10  
11 **Figure 2<sup>3</sup>**



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<sup>3</sup> Congress of the United States Congressional Budget Office, “CBO Interim Economic Projections for 2020 and 2021,” May 2020, <https://www.cbo.gov/system/files/2020-05/56351-CBO-interim-projections.pdf>.

1 Q. AT A HIGH LEVEL, HOW DO YOU EXPECT THE PANDEMIC TO AFFECT SALES AND  
2 CUSTOMER GROWTH IN 2020 AND 2021?

3 A. In summary, while we expect Residential sales to be strong in 2020, they will not  
4 be strong enough to offset the decline in sales in the larger Commercial and  
5 Industrial sector. We expect growth in Residential sales to slow in 2021, and  
6 Commercial and Industrial sales to improve slightly from the very weak 2020  
7 levels. When Residential and Commercial and Industrial sales are combined, we  
8 expect to see modest overall sales growth during 2021 from 2020 levels, but  
9 overall sales levels will remain well below 2019 sales.

10

11 To elaborate further, based on actual sales to-date in 2020 in the Residential  
12 sector, use per customer is expected to increase in 2020 as more people are  
13 spending time at home and in some cases working from home. However, the  
14 slowdown in the economy has already resulted in lower Residential customer  
15 growth, with August 2020 customer counts only 62 higher than a year ago  
16 compared to nearly 300 higher than prior year at the end of 2019.

17

18 In the Small Commercial and Industrial sector, use per customer to-date in 2020  
19 has been negatively impacted as businesses currently are not operating at full  
20 capacity. We expect some businesses will close this year and have seen a year-  
21 over-year loss of 40 customers in this class as of August, compared to flat year-  
22 over-year customer counts as of December 2019. We expect even more  
23 businesses in this customer class will close in 2021, and use per customer will  
24 improve only slightly. The net effect is expected to be overall flat Small  
25 Commercial and Industrial sales in 2021 compared to 2020 levels.

1 Many business sectors included in the Large Commercial and Industrial sector  
2 have seen year-to-date 2020 slowdowns. We expect 2020 sales in the Large  
3 Commercial and Industrial sector to be much weaker than 2019, followed by a  
4 small improvement in 2021.

5  
6 Q. WHAT IS XCEL ENERGY'S FORECAST OF ELECTRIC SALES AND CUSTOMERS FOR  
7 THE TEST YEAR ENDING DECEMBER 31, 2021?

8 A. Exhibit\_\_\_(JEM-1), Schedule 3 summarizes monthly test year MWh sales and  
9 number of customers for each customer class. Retail sales are projected to total  
10 2,136,485 MWh for the test year, with an average of 94,349 total retail customers.  
11 For context, retail sales in 2019 were 2,181,276 MWh with an average of 94,479  
12 total retail customers.

13  
14 Q. WHAT HAS BEEN THE HISTORICAL CUSTOMER GROWTH IN NORTH DAKOTA?

15 A. The total number of electric retail customers in the Xcel Energy North Dakota  
16 service territory increased at an average annual rate of 0.8 percent from 2010  
17 through 2019, or 695 customers per year on average. The largest class of  
18 customers is the Residential class, which represented 86 percent of total  
19 customers in 2019 and has averaged growth of 0.8 percent or 594 additions per  
20 year on average during the period from 2010 through 2019. The Commercial  
21 and Industrial class accounted for 13.6 percent of total customers in 2019, and  
22 averaged growth of 0.7 percent or 88 additions per year on average from 2010  
23 through 2019. The Street Lighting and Public Authority classes each accounted  
24 for 0.2 percent of total customers in 2019. The Street Lighting class has added  
25 an average of 14 customers per year during the 2010 to 2019 time period due to  
26 cities and other customers such as homeowners' associations adding  
27 streetlighting systems, while the Public Authority class has remained basically flat.

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

3 A. Test year total retail customer growth is expected to be much weaker than  
4 historical growth. As shown in Figure 3 below, prior to the pandemic in 2020,  
5 customer growth in the Xcel Energy North Dakota service territory had slowed  
6 over the past three years as compared to growth prior to 2017, reflecting the  
7 geographical limits of the Company's service territory to accommodate new  
8 customers. After adding over 1,000 customers per year in 2012 through 2015,  
9 customer additions dropped below 1,000 additions in 2016 and then dropped  
10 even further to below 500 additions in 2017 and less than 300 additions per year  
11 in both 2018 and 2019. Based on actual data through May 2020, customer  
12 additions in 2020 are forecasted to be much lower than 2019 – in fact, 2020  
13 customer growth is projected to be only 29 customers.<sup>4</sup> Test year (2021)  
14 customer counts are expected to decline by 0.2 percent or 159 customers. The  
15 projected decline in test year customer counts is due to the expected lingering  
16 economic impacts of the COVID-19 pandemic, as I discussed earlier in my  
17 testimony, with slow growth in the Residential sector and declines in the Small  
18 Commercial and Industrial sector expected due to businesses closings in light of  
19 the length of the pandemic.

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<sup>4</sup> I note that actual customer counts and MWh sales for the full year of 2020 have not yet been compiled.

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**Figure 3**  
**2010-2021 Average Annual Change in Customers**

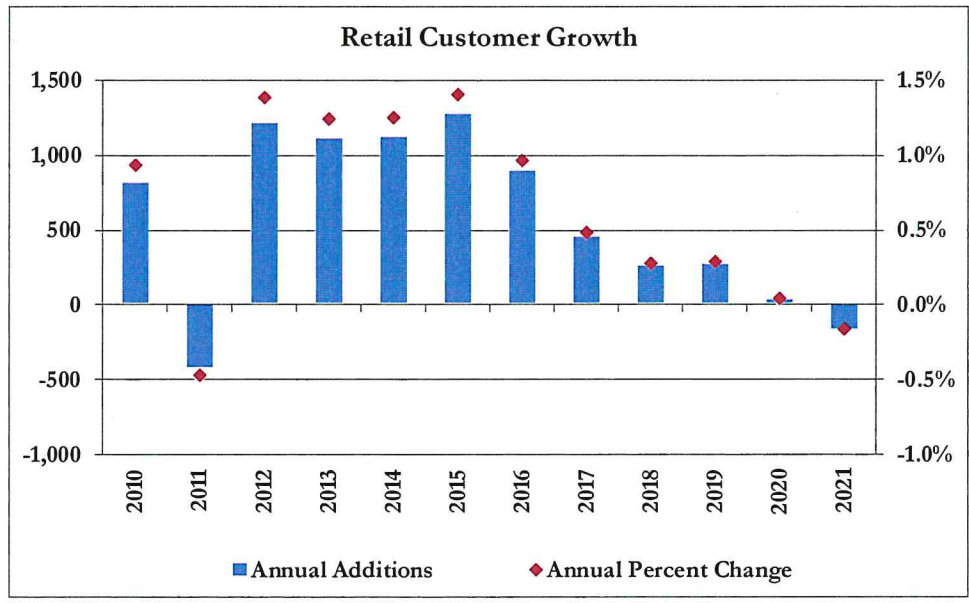


Table 1 below provides the historical and forecast annual customer growth rate by class for the time period 2010-2021. I will explain the methodologies used to develop this forecast in the following section of my testimony.

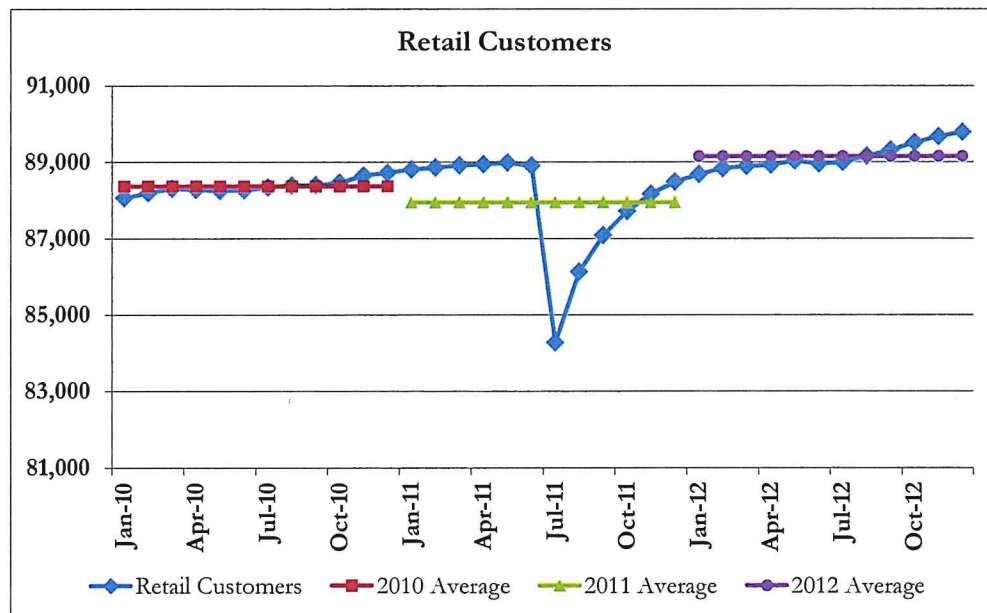
**Table 1**  
**2010-2021 Average Annual Percent Change in Customers**

Customer Class	2010-2016 Average	2017-2019 Average	2020 Forecast	2021 Test Year
Residential	0.9%	0.3%	0.1%	0.0%
Commercial & Industrial	0.9%	0.3%	-0.3%	-1.6%
Street Lighting	9.3%	10.0%	3.5%	3.8%
Public Authority	0.1%	-0.9%	-14.1%	-1.3%
<b>Total Retail</b>	<b>0.9%</b>	<b>0.3%</b>	<b>0.0%</b>	<b>-0.2%</b>

1 Q. PLEASE EXPLAIN WHY THE AVERAGE NUMBER OF RETAIL CUSTOMERS DECLINED  
2 IN 2011.

3 A. As shown in Figure 3 above, the 2011 average number of retail customers  
4 declined by more than 400 customers, or 0.5 percent. This decline is due to the  
5 flood in the Minot area in late June 2011. The flood swamped more than 4,000  
6 homes and businesses in Minot and led to a loss of over 4,600 Xcel Energy  
7 customers (over 5 percent of the number of total retail customers), as shown in  
8 Figure 4 below. Customer counts increased significantly in the months following  
9 the flood but were still below June 2011 counts by December 2011. The  
10 recovery continued throughout 2012, and the total retail customer counts as of  
11 December 2012 were 873 customers or 1.0 percent higher than the June 2011  
12 counts.

13  
14 **Figure 4**  
15 **2010-2012 Monthly Retail Customer Counts**



1 Q. WHY DID CUSTOMER GROWTH SLOW BEGINNING IN 2016?

2 A. The slowdown in customer growth beginning in 2016 correlates with a  
3 slowdown in household growth in the state. The number of households in  
4 North Dakota increased by 2 percent per year or more in 2012, 2013, 2014, and  
5 2015, but slowed to less than 1 percent per year beginning in 2016 and is  
6 expected to be even weaker than in both 2020 and 2021. In addition, as time  
7 goes on, the Company's service areas in North Dakota – generally bounded by  
8 electric cooperative service areas – become increasingly saturated, leading to  
9 progressively lower annual customer growth.

10

11 Q. WHY DOES THE 2020 FORECAST OF PUBLIC AUTHORITY CUSTOMER COUNTS  
12 DECLINE BY 14.1 PERCENT?

13 A. Beginning in February 2020, customer counts in this class were reduced by 25  
14 customers to remove Fire Siren service counts, which are no longer included in  
15 customer counts.

16

17 Q. WHAT HAS BEEN THE HISTORICAL WEATHER NORMALIZED ELECTRIC SALES  
18 GROWTH IN NORTH DAKOTA?

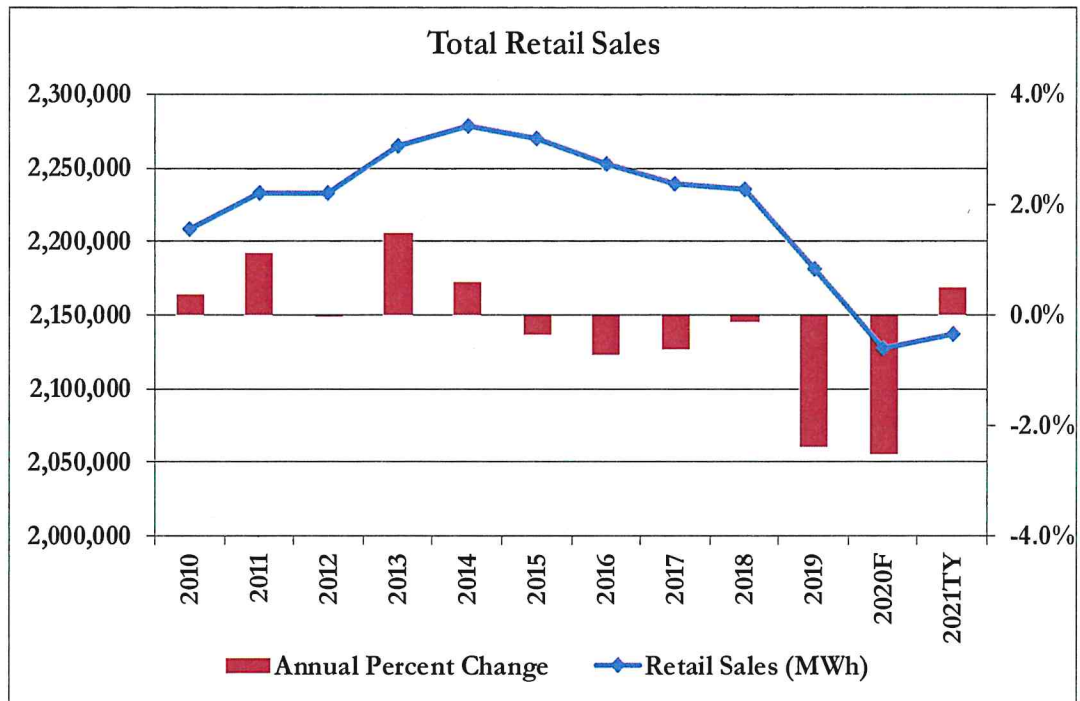
19 A. After normalizing for weather,<sup>5</sup> Xcel Energy's North Dakota service territory  
20 total electric retail sales have decreased an average of 0.1 percent per year during  
21 the period of 2010 through 2019. Sales declines have been recorded in six of the  
22 past 10 years, and in each of the most recent past five years, as shown in Figure 5  
23 below. Residential sales have averaged annual declines of 0.2 percent, while total

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<sup>5</sup> In order to calculate sales growth from year to year not influenced by weather, the Company estimates the MWh impact of abnormal weather to arrive at "weather normalized" (W/N) sales. The Company uses actual and normal weather, along with the actual number of customers and weather response coefficients to conduct this weather normalization of historical sales. The weather normalization is only performed for the Residential and Small Commercial and Industrial sales classes.

1 Commercial and Industrial sales have decreased at an average annual rate of 0.1  
 2 percent during the period of 2010 through 2019.

3  
 4 **Figure 5**  
 5 **2010-2021 W/N Retail Sales**



20 Q. HOW DO 2021 TEST YEAR SALES COMPARE TO HISTORICAL SALES?

21 A. Retail MWh sales reflected in the 2021 test year are expected to improve 0.5  
 22 percent from 2020 weather normalized projected levels but will be lower than  
 23 any year in the recent past except for 2020. Table 2 below provides the historical  
 24 and forecast annual weather normalized sales growth rate by class for the time  
 25 period 2010-2021. I will explain the methodologies used to develop this forecast  
 26 in the following section of my testimony.

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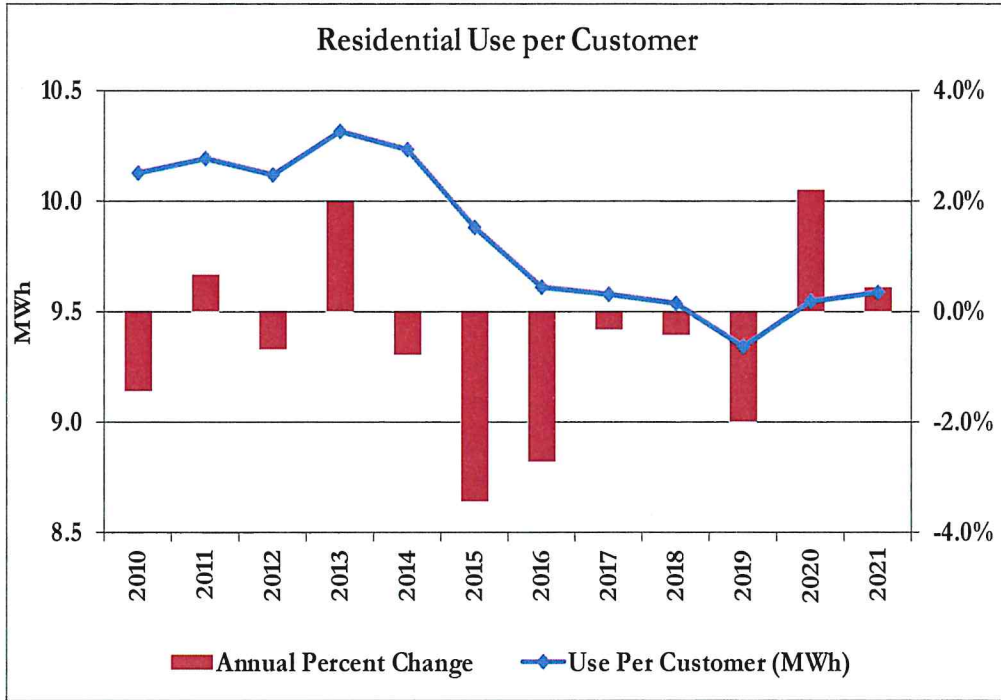
**Table 2**  
**2010-2021 Average Annual Percent Change in W/N Sales**

<b>Customer Class</b>	<b>2010-2014 Average</b>	<b>2015-2018 Average</b>	<b>2019 Actual</b>	<b>2020 Forecast</b>	<b>2021 Test Year</b>
Residential	0.8%	-1.0%	-1.7%	2.3%	0.5%
Small Commercial & Industrial	0.4%	-1.1%	-3.8%	-4.4%	-0.2%
Large Commercial & Industrial	1.3%	2.6%	-0.4%	-7.5%	2.6%
Street Lighting	1.2%	-1.6%	1.4%	-0.4%	0.9%
Public Authority	3.5%	-1.6%	12.2%	-3.0%	3.5%
<b>Total Retail</b>	<b>0.7%</b>	<b>-0.5%</b>	<b>-2.4%</b>	<b>-2.6%</b>	<b>0.5%</b>

- Q. PLEASE DISCUSS HISTORICAL AND PROJECTED RESIDENTIAL SALES.
- A. Residential sales accounted for about one-third (34.8 percent) of total retail sales in 2019 and have decreased at an average annual rate of 0.2 percent over the 2010 to 2019 time period. This decline has been driven by an average annual decline in residential use per customer of 0.9 percent, partially offset by annual growth in the number of customers of 0.8 percent. The annual residential customer growth follows the pattern of retail customer growth that I previously discussed. Residential use per customer is provided in Figure 6 below. From 2010 to 2013, use per customer was flat to slightly increasing each year. From 2013 to 2019, use per customer has declined each year. Use per customer is expected to increase in 2020 and then increase again in 2021 due to more people staying at home due to the pandemic.

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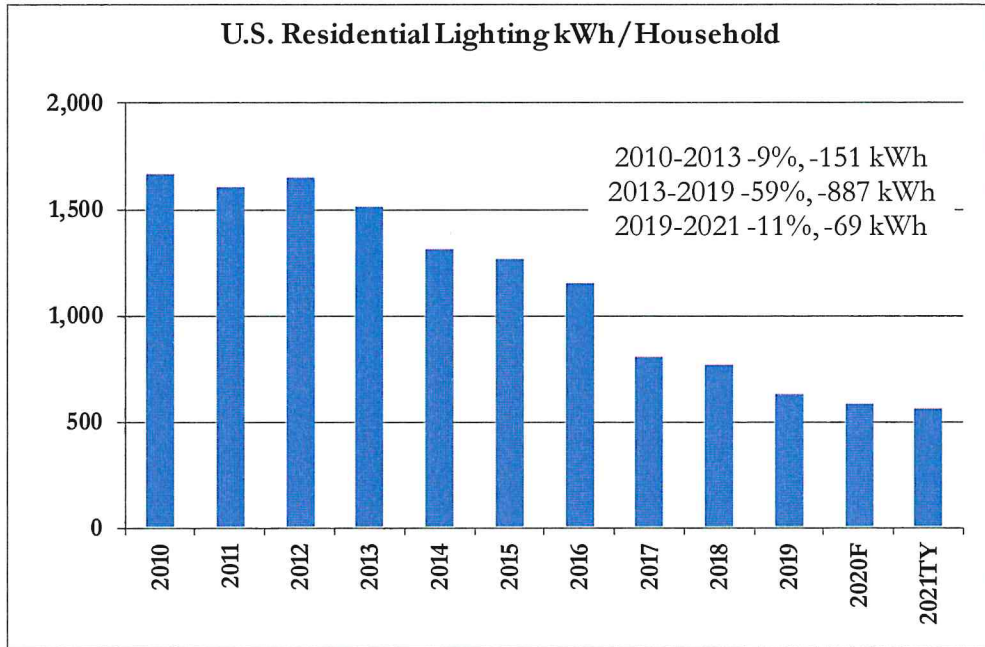
**Figure 6**  
**2010-2021 Residential Use Per Customer (W/N)**



- Q. WHAT IS DRIVING THE DECLINE IN RESIDENTIAL USE PER CUSTOMER SINCE 2013?
- A. The decline in use per customer is driven by efficiency improvements, primarily lighting efficiency. As shown in Figure 7 below, U.S. residential lighting kilowatt-hour (kWh) per household is estimated to have decreased by 887 kWh or 59 percent from 2013 to 2019 and is expected to decrease by another 69 kWh or 11 percent from 2019 to 2021. The efficiency gains are the result of minimum lighting standards set by the 2007 Energy Information and Security Act. I note that while lighting efficiency gains continue to dampen electricity sales in 2020 and 2021, overall use per customer is increasing due to pandemic-related factors that I have previously discussed.

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Figure 7  
Residential 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 2019 (63.9 percent) and have decreased at an average annual rate of 0.1 percent over the time period 2010 to 2019. Commercial and Industrial sales are expected to decline significantly in 2020 (-5.2 percent) as a result of business and industry slowdown due to the pandemic, and then increase a modest 0.5 percent in the 2021 test year.

Sales to the Small Commercial and Industrial class account for about 73 percent of total Commercial and Industrial sales. Small Commercial and Industrial sales declined 0.6 percent per year on average over the 2010-2019 time period, with

1 declines reported in seven of the past 10 years and each of the past five years.  
2 Since 2016, Small Commercial and Industrial sales have declined 2.1 percent per  
3 year on average and are expected to decline another 4.4 percent and 0.2 percent  
4 in 2020 and the 2021 test year, respectively.

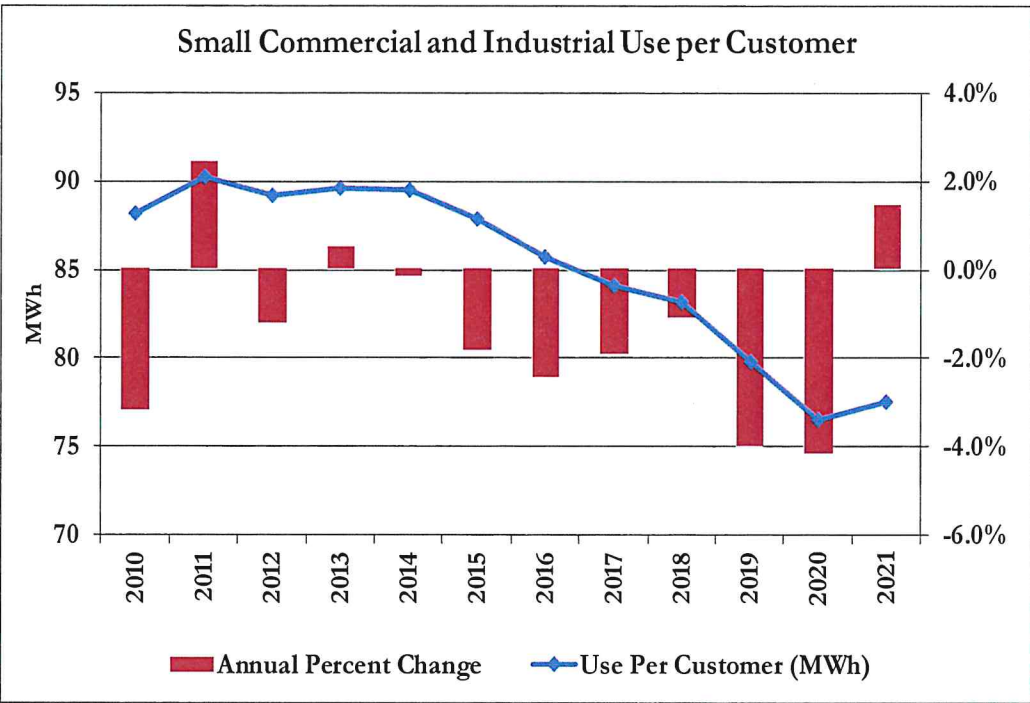
5  
6 Sales to the Large Commercial and Industrial class have seen annual percent  
7 changes ranging between -4.3 percent and +4.3 percent since 2011, which is the  
8 post-2008 recession and recovery time period. The average annual growth  
9 between 2010 and 2019 was 1.7 percent, but as noted above, this growth was not  
10 linear and cannot be relied upon. Sales are expected to decline 7.5 percent in  
11 2020 due to the impacts of the pandemic, and then recover somewhat in 2021,  
12 with growth of 2.6 percent.

13  
14 Q. WHY HAVE SMALL COMMERCIAL AND INDUSTRIAL SALES DECLINED OVER THE  
15 PAST FIVE YEARS?

16 A. Sales to the Small Commercial and Industrial class have declined due to declining  
17 use per customer, as shown in Figure 8 below. Although the number of  
18 customers continues to increase, as shown in Table 1 above the rate of growth  
19 has slowed, and the impact of use per customer declines is much greater than the  
20 gains from customer additions. The decreasing use per customer primarily is the  
21 result of efficiency improvements. We expect a significant decline in sales in  
22 2020 due to pandemic impacts, and a continued modest decline in 2021.

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Figure 8  
2010-2021 Small Commercial and Industrial Use Per Customer (W/N)



- Q. PLEASE DISCUSS RECENT TRENDS IN STREET LIGHTING SALES.
- A. Street Lighting sales accounted for 0.7 percent of total sales in 2019 and decreased each year from 2014 through 2017 as more efficient light bulbs were installed. Street Lighting sales showed modest growth in 2018 and 2019 and are expected to show a slight decline in 2020 and then return to modest growth in 2021.
- Q. PLEASE DISCUSS SALES TRENDS IN THE PUBLIC AUTHORITY CLASS.
- A. Public Authority sales accounted for 0.7 percent of total sales in 2019. Sales to Public Authority customers have been volatile, with annual changes ranging between -7.8 percent and +13.1 percent. We expect sales in this class to decline in 2020 and then to improve in the 2021 test year.

1 Q. HOW DID THE 2013 WEATHER NORMALIZED ACTUAL SALES COMPARE TO THE  
2 2013 TEST YEAR ELECTRIC SALES FORECAST FILED IN THE COMPANY'S PREVIOUS  
3 ELECTRIC RATE CASE (CASE NO. PU-12-813)?

4 A. A comparison of the weather normalized 2013 actual sales and the 2013 test year  
5 forecasted sales filed in Case No. PU-12-813 is provided in Table 3 below. The  
6 2013 total retail sales forecast was very close to the 2013 weather normalized  
7 actual sales. Weather normalized 2013 actual sales were slightly lower (5,906  
8 MWh or 0.3 percent) than predicted for the test year, validating the  
9 reasonableness of the 2013 test year forecast. As shown in Table 3, higher-than-  
10 expected sales in the Residential class were almost entirely offset by lower-than-  
11 expected sales in the Commercial and Industrial class.

12  
13 **Table 3**  
14 **2013 W/N Sales by Class (MWh)**

15 Customer Class	2013 TY Forecast	2013 Actual	Variance	Percentage Difference
16 Residential	785,093	800,440	15,347	2.0%
17 Commercial & Industrial	1,456,411	1,433,793	-22,618	-1.6%
18 Street Lighting	16,279	16,389	110	0.7%
19 Public Authority	12,938	14,193	1,255	9.7%
20 <b>Total Retail</b>	<b>2,270,721</b>	<b>2,264,815</b>	<b>-5,906</b>	<b>-0.3%</b>

21  
22 Q. HAS THE COMPANY CHANGED ITS FORECASTING METHODOLOGY FOR NORTH  
23 DAKOTA SINCE THE LAST RATE CASE?

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

1 **III. OVERVIEW OF SALES AND**  
2 **CUSTOMER FORECASTING METHODOLOGY**  
3

4 Q. IS THE TEST YEAR FORECAST THE SAME FORECAST USED BY XCEL ENERGY FOR  
5 THE 2021 FINANCIAL BUDGET?

6 A. Yes, it is.  
7

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

10 A. The sales forecast for the 2021 financial budget was prepared in July 2020 using a  
11 combination of econometric and statistical forecasting techniques and analyses.  
12 The forecast was based on actual customers and sales through May 2020. In  
13 order to provide the most up-to-date information at the time this testimony was  
14 written, we have replaced forecast values for June, July and August 2020 with  
15 actual values.  
16

17 Q. HOW WERE THE TEST YEAR SALES FORECASTS DEVELOPED FOR THE  
18 RESIDENTIAL AND SMALL COMMERCIAL AND INDUSTRIAL CUSTOMER CLASSES?

19 A. Regression models were developed as the foundation for the sales forecasts of  
20 the Residential without Space Heating, Residential with Space Heating, and Small  
21 Commercial and Industrial customer classes. Regression techniques are very  
22 well-known, proven methods of forecasting and are commonly accepted by  
23 forecasters throughout the utility industry. This method provides reliable,  
24 accurate projections, accommodates the use of predictor variables, such as  
25 economic or demographic indicators and weather, and allows clear interpretation  
26 of the model. Xcel Energy has been using these types of regression models since  
27 1991.

1 Monthly sales forecasts for these customer classes were developed based on  
2 regression models designed to define a statistical relationship between the  
3 historical sales and the independent predictor variables, including historical  
4 economic and demographic indicators, historical electricity prices, historical  
5 weather (expressed in heating-degree days (HDD) and temperature-humidity  
6 index (THI)), number of billing days, and historical number of customers. In all  
7 of the models, monthly historical data from January 2003 through May 2020 was  
8 used to determine these relationships. The modeled relationships were then  
9 simulated over the forecast period by assuming normal weather (expressed in  
10 terms of 20-year-averaged HDD and THI) and the projected levels of the  
11 independent predictor variables.

12

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

15 A. Sales in the Large Commercial and Industrial, Street Lighting, and Public  
16 Authority classes were developed by assessing historical trends in each of these  
17 classes. This assessment included an examination of both historical sales and  
18 customer count trends and then a determination whether these trends will  
19 continue.

20

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

22 A. The number of customers by customer class for the classes Residential without  
23 Space Heating, Residential with Space Heating, and Small Commercial and  
24 Industrial is forecasted using demographic data in regression models. The  
25 historical number of customers by class is derived from the Company's billing  
26 system. The customer forecasts for the Large Commercial and Industrial and  
27 Public Authority customer classes were developed by holding constant the

1 average number of customers at the May 2020 level. Counts in each of these  
2 classes have been stable, varying by only 1 or 2 each month, for at least the past  
3 18 months, except for the February 2020 Public Authority customer count  
4 adjustment that I discussed in Section II of my testimony. The Street Lighting  
5 customer forecast was developed by increasing customers by the annual average  
6 historical change in customers.

7  
8 **IV. STATISTICALLY MODELED FORECASTS**

9  
10 Q. PLEASE DESCRIBE THE REGRESSION MODELS AND ASSOCIATED ANALYSIS USED IN  
11 XCEL ENERGY'S STATISTICAL PROJECTIONS OF SALES AND CUSTOMERS.

12 A. The regression models and associated analysis used in Xcel Energy's statistical  
13 projections of sales are provided in Exhibit\_\_(JEM-1), Schedule 4, and the  
14 regression models and associated analysis used in Xcel Energy's statistical  
15 projections of customers are provided in Exhibit\_\_(JEM-1), Schedule 5. These  
16 schedules include, by customer class, the models with their summary statistics  
17 and output and descriptions for each variable included in the model.

18  
19 Q. WHAT TECHNIQUES DID XCEL ENERGY EMPLOY TO EVALUATE THE  
20 REASONABLENESS OF ITS QUANTITATIVE FORECASTING MODELS AND SALES  
21 PROJECTIONS?

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

24  
25 First, the coefficient of determination (R-squared) test statistic is a measure of  
26 the quality of the model's fit to the historical data. It represents the proportion  
27 of the variation of the historical sales around their mean value that can be

1 attributed to the functional relationship between the historical sales and the  
2 explanatory variables included in the model. If the R-squared statistic is high, the  
3 model is explaining a high degree of the historical sales variability. The  
4 regression models used to develop the sales forecast demonstrate very high  
5 R-squared statistics, ranging between 0.875 and 0.993.

6  
7 Next, the t-statistics of the variables indicate the degree of correlation between  
8 that variable's data series and the sales data series being modeled. The t-statistic  
9 is a measure of the statistical significance of each variable's individual  
10 contribution to the prediction model. Generally, the absolute value of each  
11 t-statistic should be greater than 1.98 to be considered statistically significant at  
12 the 95 percent confidence level and greater than 1.66 to be considered  
13 statistically significant at the 90 percent confidence level. This criterion was  
14 applied in the development of the regression models used to develop the sales  
15 forecast. The final regression models used to develop the Company's test year  
16 sales forecast tested satisfactorily under this standard. All variables were  
17 statistically significant at greater than the 91 percent confidence level, and most  
18 variables were statistically significant at the 95 percent confidence level or higher.

19  
20 In addition, each model was inspected for the presence of first-order  
21 autocorrelation, as measured by the Durbin-Watson (DW) test statistic.  
22 Autocorrelation refers to the correlation of the model's error terms for different  
23 time periods. For example, an overestimate in one period is likely to lead to an  
24 overestimate in the succeeding period, and vice versa, under the presence of  
25 first-order autocorrelation. Thus, when forecasting with a regression model,  
26 absence of autocorrelation between the error terms is very important. The DW  
27 test statistic ranges between 0 and 4 and provides a measure to test for

1 autocorrelation. In the absence of first-order autocorrelation, the DW test  
2 statistic equals 2.0. Autocorrelation was present in each of the Company's initial  
3 regression models. Therefore, the Company applied an autocorrelation  
4 correction process so that the final regression models used to develop the sales  
5 forecast tested satisfactorily for the absence of first-order autocorrelation, as  
6 measured by the DW test statistic.

7  
8 Next, the Company conducted a graphical inspection of each model's error  
9 terms (*i.e.* actual less predicted) to verify that the models were not misspecified,  
10 and that statistical assumptions pertaining to constant variance among the  
11 residual terms and their random distribution with respect to the predictor  
12 variables were not violated. Analysis of each model's residuals indicated that the  
13 residuals were homoscedastic (constant variance) and randomly distributed,  
14 indicating that the regression modeling technique was an appropriate selection  
15 for each customer class' sales that were statistically modeled.

16  
17 Finally, the statistically-modeled sales forecasts for each customer class have been  
18 reviewed for reasonableness as compared to the respective monthly sales history  
19 for that class. Graphical inspection reveals that the patterns of the test year sales  
20 forecast fit well with the respective historical patterns for each customer class.  
21 The annual total forecast sales have been compared to their respective historical  
22 trends for consistency. Similar qualitative tests for reasonableness and  
23 consistency have been performed for the customer level projections.

24  
25 The results of these quantitative and qualitative validity tests support the  
26 reasonableness of the quantitative forecasting models and test year customer  
27 count and sales projections.

1                   **V. WEATHER NORMALIZATION OF TEST YEAR SALES**

2  
3    Q.   HOW DID XCEL ENERGY ADJUST ITS TEST YEAR SALES FORECAST FOR THE  
4        INFLUENCE OF WEATHER ON SALES?

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

16  
17       For the Large Commercial and Industrial, Public Street and Highway Lighting,  
18       and Public Authority classes, forecast volumes have not been weather  
19       normalized. These customers' use of electricity is influenced by factors other  
20       than weather (for example, hours of daylight). As a result, the weather impact  
21       due to deviation from normal weather is indistinguishable from other variables.

22  
23    Q.   HOW WAS NORMAL WEATHER DETERMINED?

24    A.   Normal daily weather was calculated based on the average of historical HDD and  
25        THI for the 20-year time period 2000 to 2019. These normal HDD and THI  
26        were related to the forecasted billing month in the same manner as were the  
27        actual HDD and THI.

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

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

7

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

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

18

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

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

1 **VI. DATA PREPARATION**

2

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

5 A. Historical billing-month sales and number of customers were obtained from Xcel  
6 Energy's billing system reports. Monthly historical data from January 2003  
7 through May 2020 was obtained and used.

8

9 Q. WHAT IS THE SOURCE OF THE COMPANY'S PRE-FEBRUARY 2005 SALES  
10 INFORMATION?

11 A. All of the pre-February 2005 billing data is from Xcel Energy's legacy billing  
12 system (i.e., our Customer Service System, or CSS).

13

14 Q. WHAT IS THE SOURCE OF THE COMPANY'S POST-FEBRUARY 2005 SALES  
15 INFORMATION?

16 A. In February 2005, the Company converted from CSS to the Customer Resource  
17 System (CRS) billing system. Most 2005 data will be from CRS. The definition  
18 of a billing month is different under CRS from the definition of a billing month  
19 under CSS. Consequently, the data presented by the post-February 2005 CRS  
20 monthly billed sales will not be entirely consistent with the data presented by  
21 CSS prior to 2005. However, the definitional differences have been addressed by  
22 calculating both billing-month weather and billing days using the same billing  
23 information underlying the billing-month sales.

24

25 Q. PLEASE EXPLAIN OTHER AREAS OF DIFFERENCE?

26 A. Yes. With the conversion from CSS to CRS, the number of customers in 2005  
27 appears lower than it would have been under CSS. Analysis conducted prior to

1 system conversion indicated that CRS would report fewer customers than CSS  
2 just based on tests of the change in the definition of active services. These  
3 resulted from small definitional changes in what constitutes an active services  
4 account needed to bring uniformity between the former NCE system and the  
5 former Northern States Power Company (NSP) system. However, these  
6 customer-count definitional changes did not impact the amount of sales billed to  
7 customers.

8  
9 Q. DID XCEL ENERGY MAKE ANY ADJUSTMENT TO THE CUSTOMER COUNTS AS A  
10 RESULT OF THESE CHANGES?

11 A. No, the Company did not adjust the customer counts. However, we did use  
12 binary variables in the Residential and Commercial and Industrial customer  
13 regression models to account for these definitional changes. The use of the  
14 binary variable in the regression models provided a better statistical fit to the  
15 historical data.

16  
17 Q. WHAT IS THE SOURCE OF WEATHER DATA?

18 A. As I explained previously in my testimony, NOAA weather data measured at the  
19 Fargo weather station was my data source, and the measure of weather used was  
20 HDD and THI. Eight temperature readings per day were obtained, and the  
21 average daily temperature was determined by averaging the eight temperature  
22 readings. The Company used HDD as a measure of cold weather. HDD were  
23 calculated for each day by subtracting the average daily temperature from 65  
24 degrees Fahrenheit. For example, if the average daily temperature was 45  
25 degrees Fahrenheit, then 65 minus 45 or 20 HDD were calculated for that day.  
26 If the average daily temperature was greater than 65 degrees Fahrenheit, then  
27 that day recorded zero HDD. Normal daily HDD were calculated by averaging  
28 20 years of daily HDD using data from 1990 to 2009.

1 The Company used the THI as the measure of hot weather, because it combines  
2 temperature and humidity, both of which impact air conditioning load. The THI  
3 was calculated for each day using the formula:

$$4 \quad \text{THI} = 17.5 + (0.55 * \text{Dry Bulb}) + (0.2 * \text{Dew Point})$$

6  
7 The dew point data was based on the same eight readings of temperature  
8 discussed above.

9  
10 Q. WHAT WAS YOUR SOURCE OF ECONOMIC AND DEMOGRAPHIC DATA?

11 A. As I previously explained, historical and forecasted economic and demographic  
12 variables for the state and the Fargo metropolitan area were obtained from IHS  
13 Markit, a respected economic forecasting firm frequently relied on by forecasting  
14 professionals and by the Company since the 1990s. These variables include  
15 households, Gross State Product, and the average price of West Texas  
16 Intermediate Crude. This information is used to determine the historical  
17 relationship between customers and sales, and economic and demographic  
18 measures. The Company used the most current economic and demographic data  
19 available from IHS Markit at the time of modeling.

## 20 21 **VII. UNBILLED SALES**

22  
23 Q. PLEASE EXPLAIN THE TERM “UNBILLED SALES”.

24 A. Xcel Energy reads electric meters each working day according to a meter-reading  
25 schedule based on 21 billing cycles per billing month. Meters read early in the  
26 month mostly reflect consumption that occurred during the previous month.  
27 Meters read late in the month mostly reflect consumption that occurred during

1 the current month. The “billing month” sales for the current month reflect  
2 consumption that occurred in both the previous month and the current month.  
3 Thus, billing-month sales lag calendar-month sales. Unbilled sales reflect  
4 electricity consumed in the current month that is not billed to the customer until  
5 the succeeding month.

6  
7 Q. WHAT IS THE PURPOSE OF THE UNBILLED SALES ADJUSTMENT?

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

10  
11 Q. IS XCEL ENERGY REFLECTING UNBILLED REVENUE ON ITS BOOKS FOR  
12 ACCOUNTING AND FINANCIAL PURPOSES?

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

14  
15 Q. HOW WERE THE ESTIMATED MONTHLY NET UNBILLED SALES VOLUMES  
16 DETERMINED?

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

21  
22 **VIII. CALENDAR-MONTH SALES DERIVATION**

23  
24 Q. HOW WERE THE ESTIMATED MONTHLY CALENDAR-MONTH SALES DETERMINED?

25 A. For the Residential without Space Heating, Residential with Space Heating, and  
26 Small Commercial and Industrial classes, Xcel Energy calculated the test year  
27 calendar-month sales based on the projected billing-month sales. The test year

1 calendar-month sales were calculated in terms of the sales load component that is  
2 not associated with weather (base load), and the sales load component that is  
3 influenced by weather (total weather load). The weather was measured in terms  
4 of normal HDD and THI, as described above. The base-load sales and the total  
5 weather sales components were calculated for each class. The two components  
6 were then combined to provide the total calendar-month volumes.

7  
8 The calendar-month base-load component was calculated as follows:

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

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

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

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

23  
24 The calendar-month total weather load component was calculated the same way  
25 the billing-month total weather load was calculated (as described in Step 1  
26 above). However, the calculation was performed by substituting the calendar-  
27 month sales weather normalization regression coefficient (defined in terms of

1 calendar-month HDD, THI, and number of customers) and the calendar-month  
2 normal HDD and THI. The calendar-month total sales were calculated by  
3 combining the calendar-month base-load and calendar-month total weather load  
4 components.

5  
6 For the Large Commercial and Industrial and Public Authority classes, Xcel  
7 Energy calculated the test year calendar-month sales simply based on the  
8 projected billing-month sales in the same manner as detailed for Residential with  
9 Space Heating, Residential without Space Heating, and Small Commercial and  
10 Industrial classes. However, for the Large Commercial and Industrial and Public  
11 Authority classes, there are no total weather load sales. The test year calendar-  
12 month total sales for this class were calculated only in terms of their base load,  
13 where the billing-month base load equaled the projected billing-month sales.

14  
15 The Public Street and Highway Lighting classes are billed on a calendar-month  
16 basis. Therefore, for these classes, the calendar-month sales equal the billing-  
17 month sales.

## 18 19 **IX. JURISDICTIONAL DEMAND ALLOCATOR**

20  
21 Q. HOW DOES THE COMPANY USE THE JURISDICTIONAL DEMAND ALLOCATOR?

22 A. As discussed in the Direct Testimony of Company witness Mr. Benjamin C.  
23 Halama, in order to determine the level of investment associated with the  
24 provision of electric service to North Dakota retail customers, it is necessary to  
25 assign or allocate a portion of the total NSPM System production and  
26 transmission investment to each jurisdiction. Consistent with the methodology  
27 accepted in previous North Dakota electric rate cases, we use each jurisdiction's

1        respective contribution to the monthly NSPM System peak demands for  
2        electricity as the basis for this jurisdictional demand allocation.

3

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

6    A.    The Company uses a 12-month Coincident Peak (12 CP) jurisdictional demand  
7        allocation method that has been approved by the Commission in the last several  
8        electric rate cases going back to the early 1990s. The 12 CP demand is calculated  
9        from forecasted 2021 monthly coincident peak demands (i.e., North Dakota  
10       monthly demands at the time of the monthly NSPM System peaks) that are  
11       based on the sales forecast I presented above and assuming normal weather.  
12       The monthly demands for North Dakota, South Dakota and Minnesota are  
13       adjusted for transmission losses and then totaled for the year for both North  
14       Dakota and the NSPM System. The totals are then used to derive a single North  
15       Dakota demand ratio.

16

17   Q.    IS THE METHODOLOGY USED TO FORECAST THE 2021 MONTHLY CP DEMANDS  
18        THE SAME METHODOLOGY THE COMPANY HAS USED IN PAST RATE CASES?

19   A.    Yes. The Company used the same methodology to forecast the 2021 monthly  
20        CP demands that it has used in past rate cases, including Case No. PU-12-813.

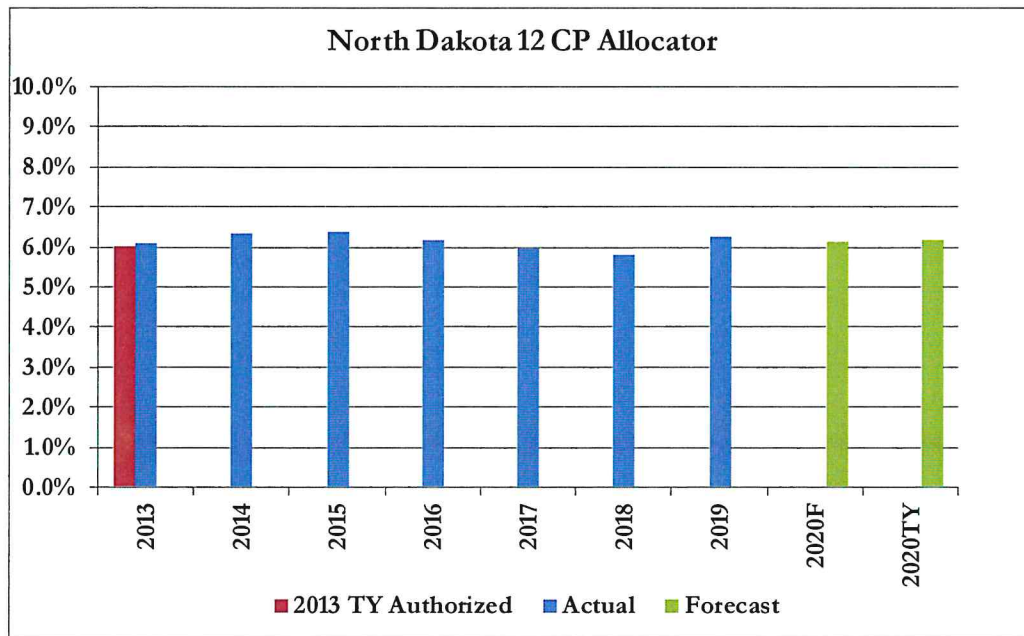
21

22   Q.    WHAT IS THE FORECASTED NORTH DAKOTA JURISDICTIONAL DEMAND  
23        ALLOCATOR FOR THE 2021 TEST YEAR?

24   A.    The 2021 test year North Dakota jurisdictional demand allocator is 6.173  
25        percent. Figure 9 below shows the North Dakota 12 CP demand allocator  
26        authorized for the 2013 test year in Case No. PU-12-813, the actual allocator for  
27        2013 through 2019, and the forecasted allocator for 2020 and the 2021 test year.

1 The actual 12 CP demand allocator has ranged between 5.788 percent and 6.391  
2 percent over the past five years, and the 2021 test year demand allocator is within  
3 this range.

4  
5 **Figure 9**  
6 **2013-2021 Demand Allocators**



20 Q. WHAT FACTORS CONTRIBUTED TO THE NORTH DAKOTA 12 CP ALLOCATOR  
21 BEING BELOW 6 PERCENT IN 2017 AND 2018?

22 A. The primary contributor to the lower North Dakota 12 CP allocators in 2017  
23 and 2018 is weather differences between North Dakota and Minnesota on the  
24 monthly system peak day during the two years. Weather is the most significant  
25 driver of the system peak demand, particularly Minnesota weather, as Minnesota  
26 accounts for approximately 87 percent of the system peak demand. During 2017  
27 and 2018, Minnesota and North Dakota experienced peaking-condition weather

1 on the same day only once, and in all other months, the North Dakota peak  
2 demand on the system peak day was lower than a peak demand day. This  
3 resulted in a lower North Dakota 12 CP and lower 12 CP allocator. In 2019,  
4 North Dakota and Minnesota experienced peak weather conditions  
5 simultaneously in five months, leading to a higher North Dakota 12 CP and 12  
6 CP allocator.

7  
8 Q. IS IT ONLY ACTIVITY IN NORTH DAKOTA THAT IMPACTS THE NORTH DAKOTA  
9 JURISDICTIONAL DEMAND ALLOCATOR?

10 A. No. North Dakota's 12 CP allocator is impacted by multiple factors occurring in  
11 *all* five NSP System jurisdictions, including demand-side management activity,  
12 the expiration of firm wholesale contracts, the loss of large customer loads, and,  
13 as I explained above, weather.

14  
15 Q. IS THE 2021 TEST YEAR 12 CP DEMAND ALLOCATOR REASONABLE TO USE TO  
16 ALLOCATE COSTS IN THIS PROCEEDING?

17 A. Yes. As I previously explained, the 2021 test year North Dakota 12 CP demand  
18 allocator was developed using the same methodology the Company has used and  
19 the Commission has accepted in past cases. The 2021 test year 12 CP demand  
20 allocator is based on the sales forecast I discussed earlier in my testimony,  
21 assumes normal weather, and is aligned with historical actual results.

22  
23 **X. CONCLUSION**

24  
25 Q. IN YOUR OPINION, DO THE XCEL ENERGY SALES AND CUSTOMER FORECASTS  
26 PROVIDE A REASONABLE BASIS FOR ESTABLISHING RATES IN THIS CASE?

27 A. Yes. The forecast data is reasonable based on the economic conditions that were

1           foreseeable when the budget was developed and supports the test year revenue  
2           projections.

3

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

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

10

11   Q.   DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

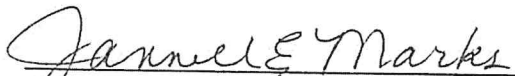
12   A.   Yes, it does.

1 STATE OF NORTH DAKOTA  
2 BEFORE THE  
3 PUBLIC SERVICE COMMISSION  
4  
5

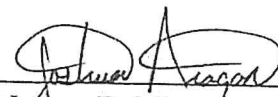
6 In the Matter of the Application of Northern )  
7 States Power Company, a Minnesota Corporation )  
8 For Authority to Increase Rates for Electric Service ) Case No. PU-20-\_\_\_\_  
9 in North Dakota )  
10  
11

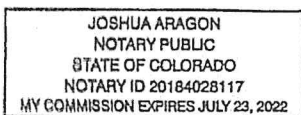
12  
13 AFFIDAVIT OF  
14 Jannell E. Marks  
15

16  
17 I, the undersigned, being duly sworn, depose and say that the foregoing is the  
18 Direct Testimony of the undersigned, and that such Direct Testimony and the  
19 exhibits or schedules sponsored by me to the best of my knowledge, information  
20 and belief, are true, correct, accurate and complete, and I hereby adopt said testimony  
21 as if given by me in formal hearing, under oath.  
22

23  
24   
25 Jannell E. Marks  
26  
27

28  
29  
30 Subscribed and sworn to before me, this 20<sup>th</sup> day of October, 2020.  
31

32   
33 \_\_\_\_\_  
34 Notary Public  
35 My Commission Expires:  
36



**Resume**

**Jannell E. Marks**  
**Director, Sales, Energy and Demand Forecasting**  
**1800 Larimer Street, Denver, Colorado 80202**

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February 2007 – Present

Director, Sales, Energy and Demand Forecasting

Responsible for the development of forecasted sales data and economic conditions for Xcel Energy's operating companies, and the presentation of this information to Xcel Energy's senior management, other Xcel Energy departments, and externally to various regulatory and reporting agencies. Also responsible for Xcel Energy's Load Research function, which designs, maintains, monitors, and analyzes electric load research samples in the Xcel Energy operating companies' service territories. Additionally, responsible for developing and implementing forecasting, planning, and load analysis studies for regulatory proceedings. Testified on forecasting issues before the Colorado Public Utilities Commission, the Minnesota Public Utilities Commission, the North Dakota Public Service Commission, the Public Utility Commission of Texas, the South Dakota Public Utilities Commission, the New Mexico Public Regulation Commission, and the Public Service Commission of Wisconsin.

August 2000 – February 2007

Manager, Energy Forecasting, Xcel Energy

Responsible for the development and presentation of forecasted data for Xcel Energy's operating companies. Also responsible for reporting historical and statistical information to various regulatory agencies and others. Testified on forecasting issues before the Public Utility Commission of Texas, the Colorado Public Utilities Commission, and the Minnesota Public Utilities Commission.

May 1997 – August 2000

Manager, Demand, Energy and Customer Forecasts, New Century Energies, Inc.

Responsible for developing demand, energy, and customer forecasts for New Century Energies, Inc.'s operating companies. Also directed the

preparation of statistical reporting for regulatory agencies and others regarding historical and forecasted reports. Testified on forecasting issues before the Public Utility Commission of Texas and the Colorado Public Utilities Commission.

1991 – 1997

Senior Research Analyst, Public Service Company of Colorado

Responsible for developing the customer and sales forecasts for Public Service Company of Colorado and the economic, customer, sales and demand forecasts for Cheyenne Light, Fuel and Power Company.

1982 – 1991

Research Analyst, Public Service Company of Colorado

### **Education**

Colorado State University – Bachelor of Science: Statistics

1982

### **Memberships**

Edison Electric Institute Load Forecasting Group

Itron Energy Forecasting Group

## 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

**CRS** – Customer Resource System, Xcel Energy’s billing system since February 2005.

**CSS** – Xcel Energy’s billing system prior to February 2005.

**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.

### **Definition of Terms (continued)**

**NOAA** – National Oceanic and Atmospheric Administration.

**Normal Weather** – the average of 2 years of historical weather.

**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, 2021-December 31, 2021.

**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.

Test Year Sales and Customers by Customer Class

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Year 2021	Year 2021
1 Xcel Energy - North Dakota State														
2														
3														
4 Weather Normalized Calendar Month Sales (MWh)														
5														
6														
7														
8 Residential without Space Heat	53,445	44,040	44,206	34,296	37,034	43,203	49,851	49,704	35,127	39,094	40,127	50,274	520,402	520,402
9 Residential with Space Heat	41,603	30,284	25,002	16,693	14,569	12,590	14,431	13,879	10,683	17,828	25,160	36,359	259,080	259,080
10 Small Commercial & Industrial	93,648	80,429	90,814	70,040	74,393	74,334	87,521	84,800	73,007	80,993	76,958	88,556	975,492	975,492
11 Large Commercial & Industrial	25,503	26,794	29,675	27,457	29,008	27,401	31,356	33,218	32,567	30,748	28,112	29,708	351,547	351,547
12 Public Street & Highway Lighting	1,704	1,514	1,195	1,196	876	887	759	1,161	1,170	1,387	1,596	1,741	15,185	15,185
13 Other Sales to Public Authority	1,324	941	1,259	1,233	1,144	1,481	1,350	1,496	1,093	1,069	1,097	1,291	14,777	14,777
14														
15 Total Retail Sales	217,227	184,002	192,151	150,915	157,023	159,896	185,269	184,257	153,647	171,120	173,050	207,928	2,136,485	2,136,485
16														
17														
18														
19														
20 Number of Customers														
21														
22														
23														
24 Residential without Space Heat	59,178	59,172	59,172	59,173	59,174	59,185	59,197	59,209	59,226	59,243	59,260	59,281	59,206	59,206
25 Residential with Space Heat	22,069	22,074	22,083	22,092	22,101	22,118	22,135	22,151	22,171	22,191	22,212	22,234	22,136	22,136
26 Small Commercial & Industrial	12,694	12,671	12,648	12,623	12,599	12,579	12,559	12,537	12,517	12,520	12,522	12,527	12,583	12,583
27 Large Commercial & Industrial	24	24	24	24	24	24	24	24	24	24	24	24	24	24
28 Public Street & Highway Lighting	239	239	239	239	243	243	243	243	247	247	247	247	243	243
29 Other Sales to Public Authority	157	157	157	157	157	157	157	157	157	157	157	157	157	157
30														
31 Total Retail Customers	94,361	94,337	94,323	94,308	94,298	94,306	94,315	94,321	94,342	94,382	94,422	94,470	94,349	94,349

Test Year 2021 MWh Electric Sales

Xcel Energy North Dakota Residential without Space Heat  
2021 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
ND_Res_RAP_MA12	-10706.922	4020.389	-2.663	0.84%	Residential Real Average Price, 12-month moving average (\$/MWh)
MA12_CGSP_ND	3590.749	1405.692	2.554	1.15%	ND Real Gross State Product, 12-month moving average (millions 2012\$)
BillDaysCellnet21	1137.174	75.306	15.101	0.00%	Billing Days
ma12_PriceWTIOil	21.288	7.809	2.726	0.70%	Average Price of West Texas Intermediate Crude, 12-month moving average (\$/Barrel)
H65_bill_RX_ND_Jan	0.000194760	0.000	27.895	0.00%	January HDD65 * January customers
H65_bill_RX_ND_Feb	0.000176070	0.000	22.107	0.00%	February HDD65 * February customers
H65_bill_RX_ND_Mar	0.000151719	0.000	18.681	0.00%	March HDD65 * March customers
H65_bill_RX_ND_Apr	0.000110317	0.000	9.715	0.00%	April HDD65 * April customers
H65_bill_RX_ND_Nov	0.000069492	0.000	4.197	0.00%	November HDD65 * November customers
H65_bill_RX_ND_Dec	0.000147066	0.000	16.184	0.00%	December HDD65 * December customers
T65_bill_RX_ND_Jun	0.001561699	0.000	7.143	0.00%	June THI65 * June customers
T65_bill_RX_ND_Jul	0.001766463	0.000	19.269	0.00%	July THI65 * July customers
T65_bill_RX_ND_Aug	0.002092274	0.000	23.860	0.00%	August THI65 * August customers
T65_bill_RX_ND_Sep	0.001613518	0.000	9.992	0.00%	September THI65 * September customers
T65_bill_RX_ND_Oct	0.003807292	0.001	5.665	0.00%	October THI65 * October customers
Post2018	-146.392	39.937	-3.666	0.03%	Trend variable June 2018-December 2019
COVID_19_Impacts_Apr2020	3661.960	1179.138	3.106	0.22%	Trend variable April 2020-December 2025
SAR(1)	0.405	0.068	5.953	0.00%	First order seasonal autoregressive term
MA(1)	0.252	0.072	3.482	0.06%	First order moving average term

Test Year 2021 MWh Electric Sales

## Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Model Statistics	
Iterations	22
Adjusted Observations	197
Deg. of Freedom for Error	178
R-Squared	0.967
Adjusted R-Squared	0.964
AIC	14.564
BIC	14.881
F-Statistic	NA
Prob (F-Statistic)	NA
Log-Likelihood	-1,695.12
Model Sum of Squares	10,024,972,141.78
Sum of Squared Errors	343,482,267.79
Mean Squared Error	1,929,675.66
Std. Error of Regression	1,389.13
Mean Abs. Dev. (MAD)	1,073.69
Mean Abs. % Err. (MAPE)	2.52%
Durbin-Watson Statistic	1.948
Durbin-H Statistic	NA
Ljung-Box Statistic	37.86
Prob (Ljung-Box)	0.036
Skewness	0.195
Kurtosis	2.899
Jarque-Bera	1.338
Prob (Jarque-Bera)	0.512

### Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	48,689.120				
2003	2	43,829.897				
2003	3	42,764.704				
2003	4	35,994.629				
2003	5	32,856.133				
2003	6	34,494.593				
2003	7	43,081.177				
2003	8	47,732.371				
2003	9	46,308.886				
2003	10	33,262.167				
2003	11	35,411.604				
2003	12	45,782.351				
2004	1	50,627.425	52,961.859	-2,334.434	-4.61%	-1.681
2004	2	46,067.241	47,671.795	-1,604.554	-3.48%	-1.155
2004	3	39,789.184	40,919.648	-1,130.464	-2.84%	-0.814
2004	4	36,534.466	37,687.409	-1,152.943	-3.16%	-0.830
2004	5	32,909.000	32,728.320	180.680	0.55%	0.130
2004	6	34,211.000	35,257.070	-1,046.070	-3.06%	-0.753
2004	7	38,876.000	40,423.636	-1,547.636	-3.98%	-1.114
2004	8	40,383.000	39,682.909	700.091	1.73%	0.504
2004	9	36,352.000	38,785.322	-2,433.322	-6.69%	-1.752
2004	10	34,746.000	35,362.428	-616.428	-1.77%	-0.444
2004	11	35,383.000	35,453.437	-70.437	-0.20%	-0.051
2004	12	44,790.000	46,019.905	-1,229.905	-2.75%	-0.885
2005	1	54,161.205	55,318.288	-1,157.083	-2.14%	-0.833
2005	2	42,065.877	42,851.352	-785.475	-1.87%	-0.565
2005	3	41,515.863	45,178.692	-3,662.829	-8.82%	-2.637
2005	4	38,625.350	36,835.910	1,789.440	4.63%	1.288
2005	5	33,290.698	33,546.195	-255.497	-0.77%	-0.184
2005	6	38,083.726	37,650.484	433.242	1.14%	0.312
2005	7	46,497.632	43,961.464	2,536.168	5.45%	1.826
2005	8	51,643.000	52,528.858	-885.858	-1.72%	-0.638
2005	9	39,018.387	37,641.593	1,376.794	3.53%	0.991
2005	10	34,120.576	35,000.366	-879.790	-2.58%	-0.633
2005	11	33,295.276	34,002.203	-706.927	-2.12%	-0.509
2005	12	45,629.000	44,087.456	1,541.544	3.38%	1.110
2006	1	49,264.760	50,899.341	-1,634.581	-3.32%	-1.177
2006	2	40,845.697	42,177.759	-1,332.062	-3.26%	-0.959
2006	3	45,796.967	45,883.501	-86.534	-0.19%	-0.062
2006	4	34,981.493	34,582.190	399.303	1.14%	0.287
2006	5	34,158.121	35,498.134	-1,340.013	-3.92%	-0.965
2006	6	40,662.503	40,006.709	655.794	1.61%	0.472
2006	7	45,082.334	44,107.941	974.393	2.16%	0.701
2006	8	56,302.661	55,263.054	1,039.608	1.85%	0.748

### Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	38,605.426	36,538.659	2,066.767	5.35%	1.488
2006	10	36,385.095	35,672.921	712.174	1.96%	0.513
2006	11	35,715.605	35,134.864	580.741	1.63%	0.418
2006	12	42,769.632	42,268.485	501.147	1.17%	0.361
2007	1	53,545.460	54,495.970	-950.511	-1.78%	-0.684
2007	2	46,928.329	46,704.727	223.602	0.48%	0.161
2007	3	45,451.306	45,533.269	-81.963	-0.18%	-0.059
2007	4	37,983.062	38,449.703	-466.641	-1.23%	-0.336
2007	5	35,562.979	34,924.956	638.023	1.79%	0.459
2007	6	38,439.593	39,284.727	-845.134	-2.20%	-0.608
2007	7	49,312.167	49,040.059	272.108	0.55%	0.196
2007	8	54,916.417	53,333.508	1,582.909	2.88%	1.139
2007	9	35,426.511	37,330.934	-1,904.423	-5.38%	-1.371
2007	10	38,164.641	39,763.569	-1,598.928	-4.19%	-1.151
2007	11	34,396.175	34,749.775	-353.600	-1.03%	-0.255
2007	12	44,718.373	44,378.104	340.269	0.76%	0.245
2008	1	56,624.684	58,466.884	-1,842.200	-3.25%	-1.326
2008	2	50,067.737	49,700.145	367.592	0.73%	0.265
2008	3	44,384.161	44,458.602	-74.441	-0.17%	-0.054
2008	4	41,520.763	42,346.359	-825.596	-1.99%	-0.594
2008	5	33,616.673	33,718.146	-101.473	-0.30%	-0.073
2008	6	33,698.321	35,372.291	-1,673.970	-4.97%	-1.205
2008	7	44,086.065	43,683.247	402.818	0.91%	0.290
2008	8	43,404.185	44,456.425	-1,052.240	-2.42%	-0.757
2008	9	43,111.868	41,910.114	1,201.754	2.79%	0.865
2008	10	37,546.016	37,992.436	-446.420	-1.19%	-0.321
2008	11	31,309.150	30,903.612	405.538	1.30%	0.292
2008	12	50,040.245	49,781.518	258.727	0.52%	0.186
2009	1	59,514.317	58,795.148	719.169	1.21%	0.518
2009	2	48,132.113	47,125.364	1,006.749	2.09%	0.725
2009	3	48,408.633	47,847.200	561.432	1.16%	0.404
2009	4	41,081.062	39,864.973	1,216.090	2.96%	0.875
2009	5	34,311.651	32,335.990	1,975.661	5.76%	1.422
2009	6	35,967.726	36,518.861	-551.135	-1.53%	-0.397
2009	7	42,626.956	40,709.764	1,917.193	4.50%	1.380
2009	8	39,271.676	38,916.563	355.113	0.90%	0.256
2009	9	41,096.457	38,570.500	2,525.957	6.15%	1.818
2009	10	39,870.332	37,833.594	2,036.738	5.11%	1.466
2009	11	34,255.585	33,340.704	914.881	2.67%	0.659
2009	12	48,751.528	48,166.278	585.250	1.20%	0.421
2010	1	55,861.794	55,334.456	527.338	0.94%	0.380
2010	2	46,832.767	47,360.403	-527.636	-1.13%	-0.380
2010	3	47,355.960	49,004.365	-1,648.405	-3.48%	-1.187
2010	4	37,931.472	39,156.217	-1,224.745	-3.23%	-0.882

### Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	32,494.000	32,837.323	-343.323	-1.06%	-0.247
2010	6	39,291.360	39,194.836	96.524	0.25%	0.069
2010	7	46,139.069	46,944.147	-805.078	-1.74%	-0.580
2010	8	52,515.279	52,011.777	503.502	0.96%	0.362
2010	9	41,717.573	42,265.021	-547.448	-1.31%	-0.394
2010	10	33,782.636	35,029.132	-1,246.496	-3.69%	-0.897
2010	11	35,044.136	35,630.777	-586.641	-1.67%	-0.422
2010	12	49,680.894	48,331.670	1,349.224	2.72%	0.971
2011	1	58,056.641	59,653.816	-1,597.175	-2.75%	-1.150
2011	2	48,092.200	47,913.720	178.480	0.37%	0.128
2011	3	51,881.954	50,431.591	1,450.363	2.80%	1.044
2011	4	38,153.006	38,573.800	-420.794	-1.10%	-0.303
2011	5	37,175.243	35,489.739	1,685.504	4.53%	1.213
2011	6	39,153.034	39,385.614	-232.580	-0.59%	-0.167
2011	7	43,865.722	47,325.952	-3,460.230	-7.89%	-2.491
2011	8	51,368.067	54,159.286	-2,791.219	-5.43%	-2.009
2011	9	42,526.114	39,779.862	2,746.252	6.46%	1.977
2011	10	34,305.024	36,199.874	-1,894.850	-5.52%	-1.364
2011	11	33,823.356	34,911.251	-1,087.895	-3.22%	-0.783
2011	12	44,229.382	45,250.628	-1,021.246	-2.31%	-0.735
2012	1	50,920.320	52,173.870	-1,253.550	-2.46%	-0.902
2012	2	45,564.999	46,483.737	-918.738	-2.02%	-0.661
2012	3	43,500.497	44,976.684	-1,476.187	-3.39%	-1.063
2012	4	33,891.589	36,264.627	-2,373.038	-7.00%	-1.708
2012	5	35,052.534	36,344.564	-1,292.030	-3.69%	-0.930
2012	6	37,850.270	39,048.268	-1,197.998	-3.17%	-0.862
2012	7	52,039.528	51,085.219	954.309	1.83%	0.687
2012	8	54,981.786	53,955.087	1,026.699	1.87%	0.739
2012	9	38,559.181	38,164.422	394.759	1.02%	0.284
2012	10	38,240.424	38,110.754	129.670	0.34%	0.093
2012	11	38,684.191	36,339.386	2,344.805	6.06%	1.688
2012	12	42,906.094	44,398.530	-1,492.436	-3.48%	-1.074
2013	1	60,612.754	59,434.812	1,177.942	1.94%	0.848
2013	2	49,077.618	48,229.488	848.130	1.73%	0.611
2013	3	45,376.223	44,676.648	699.575	1.54%	0.504
2013	4	48,279.062	45,321.659	2,957.403	6.13%	2.129
2013	5	38,834.404	36,845.737	1,988.667	5.12%	1.432
2013	6	35,717.509	36,055.115	-337.606	-0.95%	-0.243
2013	7	51,692.736	52,271.906	-579.170	-1.12%	-0.417
2013	8	47,981.089	45,192.578	2,788.511	5.81%	2.007
2013	9	44,028.904	46,076.526	-2,047.622	-4.65%	-1.474
2013	10	40,744.020	39,400.001	1,344.019	3.30%	0.968
2013	11	33,741.413	35,190.760	-1,449.347	-4.30%	-1.043
2013	12	51,400.310	48,126.063	3,274.247	6.37%	2.357

### Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	65,491.478	64,570.847	920.631	1.41%	0.663
2014	2	50,096.853	48,695.591	1,401.262	2.80%	1.009
2014	3	52,260.252	49,799.260	2,460.992	4.71%	1.772
2014	4	44,095.815	43,491.544	604.271	1.37%	0.435
2014	5	36,312.844	35,449.336	863.509	2.38%	0.622
2014	6	39,796.394	39,522.594	273.800	0.69%	0.197
2014	7	44,674.140	45,620.936	-946.796	-2.12%	-0.682
2014	8	45,860.978	46,543.999	-683.021	-1.49%	-0.492
2014	9	42,203.952	40,730.807	1,473.145	3.49%	1.060
2014	10	39,423.509	40,890.211	-1,466.702	-3.72%	-1.056
2014	11	31,292.045	31,629.535	-337.491	-1.08%	-0.243
2014	12	52,856.046	51,547.035	1,309.011	2.48%	0.942
2015	1	57,337.412	57,494.115	-156.703	-0.27%	-0.113
2015	2	45,531.703	45,718.884	-187.181	-0.41%	-0.135
2015	3	51,163.662	50,746.154	417.508	0.82%	0.301
2015	4	39,584.595	40,962.774	-1,378.179	-3.48%	-0.992
2015	5	32,043.824	32,849.565	-805.741	-2.51%	-0.580
2015	6	39,686.999	38,486.085	1,200.914	3.03%	0.865
2015	7	48,018.897	47,294.045	724.852	1.51%	0.522
2015	8	49,411.201	49,658.721	-247.520	-0.50%	-0.178
2015	9	44,573.280	44,512.079	61.201	0.14%	0.044
2015	10	38,110.810	39,225.468	-1,114.658	-2.92%	-0.802
2015	11	30,907.186	31,515.611	-608.425	-1.97%	-0.438
2015	12	46,039.165	46,836.840	-797.675	-1.73%	-0.574
2016	1	51,910.598	52,710.800	-800.202	-1.54%	-0.576
2016	2	46,737.503	45,606.247	1,131.256	2.42%	0.814
2016	3	45,999.826	47,524.975	-1,525.149	-3.32%	-1.098
2016	4	36,789.695	36,708.952	80.743	0.22%	0.058
2016	5	34,063.036	32,578.558	1,484.478	4.36%	1.069
2016	6	40,336.998	40,064.684	272.313	0.68%	0.196
2016	7	43,688.541	42,568.673	1,119.868	2.56%	0.806
2016	8	56,164.894	55,276.311	888.583	1.58%	0.640
2016	9	41,818.509	39,615.969	2,202.540	5.27%	1.586
2016	10	33,954.434	34,101.157	-146.722	-0.43%	-0.106
2016	11	31,573.316	33,285.742	-1,712.425	-5.42%	-1.233
2016	12	42,254.391	43,416.850	-1,162.459	-2.75%	-0.837
2017	1	60,137.231	56,200.656	3,936.575	6.55%	2.834
2017	2	43,128.479	43,690.247	-561.768	-1.30%	-0.404
2017	3	47,747.876	48,089.308	-341.432	-0.72%	-0.246
2017	4	34,404.206	35,469.524	-1,065.318	-3.10%	-0.767
2017	5	34,907.314	34,956.824	-49.510	-0.14%	-0.036
2017	6	39,300.013	40,058.755	-758.742	-1.93%	-0.546
2017	7	42,777.197	42,074.155	703.042	1.64%	0.506
2017	8	51,649.543	49,441.316	2,208.227	4.28%	1.590

### Xcel Energy North Dakota Residential without Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	36,829.343	37,550.310	-720.967	-1.96%	-0.519
2017	10	36,410.923	37,478.003	-1,067.080	-2.93%	-0.768
2017	11	34,513.384	34,153.858	359.526	1.04%	0.259
2017	12	41,976.703	44,032.892	-2,056.189	-4.90%	-1.480
2018	1	60,638.478	59,565.026	1,073.452	1.77%	0.773
2018	2	46,076.877	46,312.774	-235.897	-0.51%	-0.170
2018	3	48,571.967	48,541.575	30.392	0.06%	0.022
2018	4	40,334.119	39,968.421	365.698	0.91%	0.263
2018	5	36,976.496	35,172.283	1,804.213	4.88%	1.299
2018	6	42,791.380	42,680.515	110.865	0.26%	0.080
2018	7	50,571.381	50,737.102	-165.721	-0.33%	-0.119
2018	8	53,349.467	51,061.093	2,288.374	4.29%	1.647
2018	9	35,809.360	36,839.954	-1,030.594	-2.88%	-0.742
2018	10	39,068.949	38,134.003	934.946	2.39%	0.673
2018	11	34,416.173	35,724.024	-1,307.851	-3.80%	-0.941
2018	12	43,389.672	44,561.032	-1,171.360	-2.70%	-0.843
2019	1	54,810.799	55,756.287	-945.488	-1.73%	-0.681
2019	2	48,859.555	48,126.671	732.884	1.50%	0.528
2019	3	50,616.773	49,022.877	1,593.896	3.15%	1.147
2019	4	39,339.787	40,774.909	-1,435.122	-3.65%	-1.033
2019	5	34,745.879	34,456.665	289.214	0.83%	0.208
2019	6	34,551.846	34,675.341	-123.495	-0.36%	-0.089
2019	7	47,768.499	47,554.518	213.981	0.45%	0.154
2019	8	48,175.250	49,211.887	-1,036.637	-2.15%	-0.746
2019	9	34,744.540	34,009.790	734.750	2.11%	0.529
2019	10	42,536.672	40,101.276	2,435.396	5.73%	1.753
2019	11	33,122.038	31,882.429	1,239.609	3.74%	0.892
2019	12	44,845.909	46,997.545	-2,151.636	-4.80%	-1.549
2020	1	55,989.454	53,980.351	2,009.103	3.59%	1.446
2020	2	43,019.833	44,307.101	-1,287.268	-2.99%	-0.927
2020	3	45,601.433	47,178.298	-1,576.865	-3.46%	-1.135
2020	4	42,400.351	42,221.148	179.203	0.42%	0.129
2020	5	33,666.015	33,905.612	-239.597	-0.71%	-0.172
2020	6		40,609.930			
2020	7		50,013.344			
2020	8		49,119.596			
2020	9		41,528.676			
2020	10		39,036.596			
2020	11		34,142.293			
2020	12		47,914.832			
2021	1		54,997.320			
2021	2		45,707.856			
2021	3		50,579.780			
2021	4		40,227.514			

Xcel Energy North Dakota Residential without Space Heat  
2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		31,754.258			
2021	6		39,445.589			
2021	7		46,277.820			
2021	8		50,382.397			
2021	9		40,397.670			
2021	10		36,295.726			
2021	11		35,540.903			
2021	12		48,106.475			

Test Year 2021 MWh Electric Sales

Xcel Energy North Dakota Residential with Space Heat  
2021 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
Oil_WTI_12MA	15.012	4.481	3.350	0.10%	Average Price of West Texas Intermediate Crude, 12-month moving average (\$/Barrel)
Trend03	-7.066	2.294	-3.080	0.24%	Trend variable beginning January 2003
BillDaysCellnet21	307.978	16.161	19.057	0.00%	Billing Days
H65_bill_RH_ND_Jan	0.000828284	0.000	62.566	0.00%	January HDD65 * January customers
H65_bill_RH_ND_Feb	0.000842952	0.000	58.372	0.00%	February HDD65 * February customers
H65_bill_RH_ND_Mar	0.000742274	0.000	48.001	0.00%	March HDD65 * March customers
H65_bill_RH_ND_Apr	0.000679541	0.000	29.758	0.00%	April HDD65 * April customers
H65_bill_RH_ND_May	0.000583630	0.000	12.945	0.00%	May HDD65 * May customers
H65_bill_RH_ND_Jun	0.000415358	0.000	3.617	0.04%	June HDD65 * June customers
H65_bill_RH_ND_Oct	0.000435942	0.000	8.033	0.00%	October HDD65 * October customers
H65_bill_RH_ND_Nov	0.000634905	0.000	20.738	0.00%	November HDD65 * November customers
H65_bill_RH_ND_Dec	0.000755984	0.000	43.433	0.00%	December HDD65 * December customers
T65_bill_RH_ND_Jun	0.001758642	0.000	4.543	0.00%	June TH165 * June customers
T65_bill_RH_ND_Jul	0.001556154	0.000	9.022	0.00%	July TH165 * July customers
T65_bill_RH_ND_Aug	0.001473752	0.000	9.167	0.00%	August TH165 * August customers
T65_bill_RH_ND_Sep	0.001655132	0.000	5.670	0.00%	September TH165 * September customers
COVID_19_Impacts_Apr2020	1142.849	661.688	1.727	8.59%	Trend variable April 2020-December 2025
AR(1)	0.182	0.074	2.482	1.40%	First order autoregressive term
SAR(1)	0.439	0.070	6.293	0.00%	First order seasonal moving average term

## Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

### Model Statistics

Iterations	15
Adjusted Observations	196
Deg. of Freedom for Error	177
R-Squared	0.994
Adjusted R-Squared	0.993
AIC	13.540
BIC	13.858
F-Statistic	NA
Prob (F-Statistic)	NA
Log-Likelihood	-1,586.01
Model Sum of Squares	18,768,928,561.14
Sum of Squared Errors	122,549,643.98
Mean Squared Error	692,370.87
Std. Error of Regression	832.09
Mean Abs. Dev. (MAD)	612.11
Mean Abs. % Err. (MAPE)	3.15%
Durbin-Watson Statistic	2.023
Durbin-H Statistic	NA
Ljung-Box Statistic	29.23
Prob (Ljung-Box)	0.212
Skewness	-0.275
Kurtosis	3.135
Jarque-Bera	2.627
Prob (Jarque-Bera)	0.269

### Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	35,862.488				
2003	2	37,503.114				
2003	3	34,802.005				
2003	4	21,412.183				
2003	5	14,410.910				
2003	6	11,595.108				
2003	7	12,921.598				
2003	8	13,855.685				
2003	9	13,307.722				
2003	10	12,052.122				
2003	11	19,586.769				
2003	12	31,907.062				
2004	1	37,779.443				
2004	2	38,686.256	38,359.500	326.756	0.84%	0.393
2004	3	27,595.598	27,229.307	366.291	1.33%	0.440
2004	4	21,022.000	20,754.527	267.473	1.27%	0.321
2004	5	14,835.000	15,098.655	-263.655	-1.78%	-0.317
2004	6	12,238.000	11,985.917	252.083	2.06%	0.303
2004	7	12,023.000	11,919.522	103.478	0.86%	0.124
2004	8	11,613.000	11,523.085	89.915	0.77%	0.108
2004	9	11,143.000	11,052.004	90.996	0.82%	0.109
2004	10	12,120.000	11,899.906	220.094	1.82%	0.265
2004	11	17,347.000	17,567.383	-220.383	-1.27%	-0.265
2004	12	28,549.000	28,847.893	-298.893	-1.05%	-0.359
2005	1	41,380.813	39,985.321	1,395.492	3.37%	1.677
2005	2	32,239.592	31,168.097	1,071.495	3.32%	1.288
2005	3	28,615.014	29,972.076	-1,357.062	-4.74%	-1.631
2005	4	19,476.964	19,065.084	411.880	2.11%	0.495
2005	5	15,057.378	14,612.619	444.759	2.95%	0.535
2005	6	11,836.661	12,511.247	-674.586	-5.70%	-0.811
2005	7	13,402.365	12,956.908	445.457	3.32%	0.535
2005	8	14,008.000	14,343.666	-335.666	-2.40%	-0.403
2005	9	11,237.375	11,340.927	-103.552	-0.92%	-0.124
2005	10	11,889.611	12,170.397	-280.786	-2.36%	-0.337
2005	11	15,612.944	16,644.722	-1,031.778	-6.61%	-1.240
2005	12	29,777.000	28,031.166	1,745.834	5.86%	2.098
2006	1	30,307.750	32,439.684	-2,131.934	-7.03%	-2.562
2006	2	28,477.696	29,352.629	-874.933	-3.07%	-1.051
2006	3	29,964.242	30,122.602	-158.360	-0.53%	-0.190
2006	4	18,369.168	17,888.805	480.363	2.62%	0.577
2006	5	12,479.930	14,501.478	-2,021.548	-16.20%	-2.429
2006	6	12,327.042	12,396.444	-69.402	-0.56%	-0.083
2006	7	13,158.551	12,831.947	326.604	2.48%	0.393
2006	8	15,013.123	15,011.345	1.779	0.01%	0.002

### Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	11,519.801	10,673.957	845.844	7.34%	1.017
2006	10	13,408.234	13,727.692	-319.458	-2.38%	-0.384
2006	11	18,895.167	18,298.562	596.605	3.16%	0.717
2006	12	26,997.138	25,894.773	1,102.365	4.08%	1.325
2007	1	34,012.449	33,900.608	111.841	0.33%	0.134
2007	2	36,749.657	35,227.789	1,521.868	4.14%	1.829
2007	3	30,277.178	28,889.921	1,387.257	4.58%	1.667
2007	4	21,655.484	20,754.855	900.629	4.16%	1.082
2007	5	13,335.355	13,135.213	200.142	1.50%	0.241
2007	6	11,951.284	12,284.151	-332.867	-2.79%	-0.400
2007	7	13,669.357	14,255.567	-586.210	-4.29%	-0.705
2007	8	14,229.403	14,270.110	-40.707	-0.29%	-0.049
2007	9	10,955.661	11,047.381	-91.720	-0.84%	-0.110
2007	10	12,233.315	13,068.349	-835.034	-6.83%	-1.004
2007	11	16,164.982	17,224.281	-1,059.299	-6.55%	-1.273
2007	12	30,610.059	29,221.274	1,388.785	4.54%	1.669
2008	1	38,146.729	39,774.612	-1,627.883	-4.27%	-1.956
2008	2	38,474.776	37,662.692	812.084	2.11%	0.976
2008	3	31,137.120	30,442.108	695.012	2.23%	0.835
2008	4	22,684.732	24,237.311	-1,552.579	-6.84%	-1.866
2008	5	15,090.144	15,580.590	-490.446	-3.25%	-0.589
2008	6	11,341.464	11,785.891	-444.427	-3.92%	-0.534
2008	7	12,337.792	12,655.285	-317.493	-2.57%	-0.382
2008	8	12,539.236	12,216.742	322.494	2.57%	0.388
2008	9	12,575.508	12,990.539	-415.031	-3.30%	-0.499
2008	10	12,169.017	13,483.909	-1,314.893	-10.81%	-1.580
2008	11	15,434.528	15,288.646	145.882	0.95%	0.175
2008	12	32,242.573	32,938.344	-695.771	-2.16%	-0.836
2009	1	42,514.871	42,447.377	67.494	0.16%	0.081
2009	2	36,451.718	35,207.712	1,244.006	3.41%	1.495
2009	3	32,805.825	32,578.403	227.422	0.69%	0.273
2009	4	23,491.310	22,251.514	1,239.796	5.28%	1.490
2009	5	14,833.616	14,633.586	200.030	1.35%	0.240
2009	6	11,953.691	12,406.501	-452.810	-3.79%	-0.544
2009	7	12,439.614	11,414.031	1,025.583	8.24%	1.233
2009	8	11,278.539	11,030.962	247.577	2.20%	0.298
2009	9	11,670.553	11,107.072	563.481	4.83%	0.677
2009	10	14,214.303	12,906.190	1,308.113	9.20%	1.572
2009	11	17,214.314	16,717.258	497.056	2.89%	0.597
2009	12	29,728.285	29,550.253	178.032	0.60%	0.214
2010	1	39,658.605	38,421.049	1,237.556	3.12%	1.487
2010	2	33,670.290	34,657.687	-987.397	-2.93%	-1.187
2010	3	29,352.595	31,142.146	-1,789.551	-6.10%	-2.151
2010	4	17,883.137	18,397.144	-514.007	-2.87%	-0.618

### Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	12,716.553	12,997.717	-281.164	-2.21%	-0.338
2010	6	12,294.225	11,803.915	490.310	3.99%	0.589
2010	7	13,432.373	13,626.821	-194.448	-1.45%	-0.234
2010	8	13,980.087	14,201.408	-221.321	-1.58%	-0.266
2010	9	12,286.706	12,117.032	169.674	1.38%	0.204
2010	10	11,110.146	12,445.167	-1,335.021	-12.02%	-1.604
2010	11	16,402.553	17,378.672	-976.119	-5.95%	-1.173
2010	12	33,288.842	31,982.833	1,306.009	3.92%	1.570
2011	1	41,094.256	42,533.162	-1,438.906	-3.50%	-1.729
2011	2	35,260.969	35,519.522	-258.553	-0.73%	-0.311
2011	3	34,389.015	33,411.723	977.292	2.84%	1.175
2011	4	21,396.678	21,784.454	-387.776	-1.81%	-0.466
2011	5	16,099.510	15,774.734	324.776	2.02%	0.390
2011	6	12,617.787	12,753.545	-135.758	-1.08%	-0.163
2011	7	13,417.415	14,086.259	-668.844	-4.98%	-0.804
2011	8	14,157.919	15,019.488	-861.569	-6.09%	-1.035
2011	9	12,806.718	11,909.454	897.264	7.01%	1.078
2011	10	12,193.161	11,760.343	432.818	3.55%	0.520
2011	11	17,634.234	17,871.411	-237.177	-1.34%	-0.285
2011	12	29,083.866	28,808.220	275.646	0.95%	0.331
2012	1	33,885.723	34,030.271	-144.548	-0.43%	-0.174
2012	2	32,050.901	32,793.580	-742.679	-2.32%	-0.893
2012	3	27,304.708	27,082.837	221.871	0.81%	0.267
2012	4	16,146.807	16,489.322	-342.515	-2.12%	-0.412
2012	5	13,867.671	14,179.803	-312.133	-2.25%	-0.375
2012	6	12,364.057	12,392.153	-28.096	-0.23%	-0.034
2012	7	15,573.536	15,304.652	268.884	1.73%	0.323
2012	8	15,128.022	14,650.507	477.515	3.16%	0.574
2012	9	12,264.316	11,209.298	1,055.018	8.60%	1.268
2012	10	14,013.296	14,910.648	-897.352	-6.40%	-1.078
2012	11	20,551.116	19,210.860	1,340.256	6.52%	1.611
2012	12	28,073.444	27,946.225	127.219	0.45%	0.153
2013	1	41,909.629	41,995.269	-85.640	-0.20%	-0.103
2013	2	35,563.149	35,265.993	297.156	0.84%	0.357
2013	3	30,343.278	30,235.026	108.252	0.36%	0.130
2013	4	29,173.305	28,780.578	392.727	1.35%	0.472
2013	5	18,174.191	17,205.664	968.527	5.33%	1.164
2013	6	11,518.653	11,419.166	99.487	0.86%	0.120
2013	7	14,974.264	15,227.211	-252.947	-1.69%	-0.304
2013	8	13,081.786	12,363.105	718.681	5.49%	0.864
2013	9	13,399.629	14,200.026	-800.397	-5.97%	-0.962
2013	10	12,937.425	12,987.532	-50.107	-0.39%	-0.060
2013	11	18,800.675	18,994.508	-193.833	-1.03%	-0.233
2013	12	35,026.638	33,893.772	1,132.866	3.23%	1.361

### Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	48,035.268	47,990.648	44.620	0.09%	0.054
2014	2	37,199.501	37,779.110	-579.609	-1.56%	-0.697
2014	3	36,886.155	34,919.858	1,966.297	5.33%	2.363
2014	4	25,570.925	24,757.356	813.569	3.18%	0.978
2014	5	16,572.905	16,958.551	-385.646	-2.33%	-0.463
2014	6	12,964.969	12,705.079	259.891	2.00%	0.312
2014	7	13,186.680	13,161.466	25.214	0.19%	0.030
2014	8	12,896.313	12,842.942	53.371	0.41%	0.064
2014	9	12,370.489	11,950.896	419.593	3.39%	0.504
2014	10	12,789.475	13,579.448	-789.973	-6.18%	-0.949
2014	11	16,976.814	16,914.374	62.440	0.37%	0.075
2014	12	35,199.397	34,879.927	319.470	0.91%	0.384
2015	1	39,754.468	39,345.148	409.320	1.03%	0.492
2015	2	32,623.731	32,406.077	217.654	0.67%	0.262
2015	3	34,598.443	34,364.866	233.577	0.68%	0.281
2015	4	20,516.090	20,703.516	-187.426	-0.91%	-0.225
2015	5	13,396.678	13,196.331	200.347	1.50%	0.241
2015	6	13,021.365	12,423.298	598.067	4.59%	0.719
2015	7	13,781.537	13,498.494	283.043	2.05%	0.340
2015	8	13,892.549	13,373.894	518.655	3.73%	0.623
2015	9	12,874.101	13,193.986	-319.885	-2.48%	-0.384
2015	10	12,024.111	11,236.399	787.712	6.55%	0.947
2015	11	14,304.843	15,404.494	-1,099.651	-7.69%	-1.322
2015	12	27,188.399	28,423.990	-1,235.591	-4.54%	-1.485
2016	1	35,494.822	36,905.033	-1,410.211	-0.040	-1.695
2016	2	32,494.868	32,704.698	-209.830	-0.006	-0.252
2016	3	27,650.183	28,405.520	-755.337	-0.027	-0.908
2016	4	19,824.306	19,496.167	328.139	0.017	0.394
2016	5	13,789.033	13,420.352	368.681	0.027	0.443
2016	6	12,564.431	11,992.010	572.421	0.046	0.688
2016	7	12,616.381	12,019.119	597.262	0.047	0.718
2016	8	15,116.030	14,920.548	195.482	0.013	0.235
2016	9	12,328.542	10,938.870	1,389.672	0.113	1.670
2016	10	11,892.386	11,732.497	159.889	0.013	0.192
2016	11	14,555.460	15,293.263	-737.803	-0.051	-0.887
2016	12	25,676.349	26,916.367	-1,240.018	-0.048	-1.490
2017	1	42,185.047	40,365.668	1,819.379	4.31%	2.187
2017	2	29,517.348	29,768.361	-251.013	-0.85%	-0.302
2017	3	31,152.435	30,499.014	653.421	2.10%	0.785
2017	4	18,051.126	18,717.746	-666.620	-3.69%	-0.801
2017	5	14,793.516	14,987.521	-194.005	-1.31%	-0.233
2017	6	12,638.435	12,623.676	14.759	0.12%	0.018
2017	7	12,410.010	11,852.618	557.392	4.49%	0.670
2017	8	14,011.476	13,167.125	844.351	6.03%	1.015

### Xcel Energy North Dakota Residential with Space Heat 2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	11,216.269	10,563.212	653.057	5.82%	0.785
2017	10	12,170.222	12,493.003	-322.781	-2.65%	-0.388
2017	11	20,205.690	19,239.076	966.614	4.78%	1.162
2017	12	26,590.160	27,933.477	-1,343.317	-5.05%	-1.614
2018	1	45,055.718	44,112.278	943.440	2.09%	1.134
2018	2	35,204.946	35,263.376	-58.430	-0.17%	-0.070
2018	3	31,881.284	33,596.292	-1,715.008	-5.38%	-2.061
2018	4	24,672.959	24,785.503	-112.544	-0.46%	-0.135
2018	5	15,295.320	14,712.682	582.638	3.81%	0.700
2018	6	12,899.768	13,023.968	-124.200	-0.96%	-0.149
2018	7	14,390.302	14,562.655	-172.353	-1.20%	-0.207
2018	8	14,351.509	13,603.780	747.729	5.21%	0.899
2018	9	11,013.156	10,721.815	291.341	2.65%	0.350
2018	10	16,005.261	15,347.605	657.656	4.11%	0.790
2018	11	20,588.068	21,477.565	-889.497	-4.32%	-1.069
2018	12	29,175.258	30,272.313	-1,097.055	-3.76%	-1.318
2019	1	38,780.552	39,452.243	-671.691	-1.73%	-0.807
2019	2	40,210.326	40,283.968	-73.642	-0.18%	-0.089
2019	3	35,988.550	36,417.567	-429.017	-1.19%	-0.516
2019	4	22,237.934	23,459.610	-1,221.676	-5.49%	-1.468
2019	5	15,493.224	15,912.739	-419.515	-2.71%	-0.504
2019	6	11,682.653	11,121.422	561.231	4.80%	0.674
2019	7	13,903.023	13,629.673	273.350	1.97%	0.329
2019	8	13,505.753	13,328.232	177.521	1.31%	0.213
2019	9	10,246.617	10,011.338	235.279	2.30%	0.283
2019	10	15,687.117	14,108.377	1,578.740	10.06%	1.897
2019	11	20,187.991	19,517.626	670.365	3.32%	0.806
2019	12	30,372.552	32,347.061	-1,974.509	-6.50%	-2.373
2020	1	39,697.619	39,614.321	83.298	0.21%	0.100
2020	2	31,616.263	33,628.542	-2,012.279	-6.36%	-2.418
2020	3	30,353.738	31,456.806	-1,103.068	-3.63%	-1.326
2020	4	23,924.328	23,785.660	138.668	0.58%	0.167
2020	5	15,019.963	15,189.571	-169.608	-1.13%	-0.204
2020	6		13,016.661			
2020	7		14,326.137			
2020	8		13,399.070			
2020	9		12,054.796			
2020	10		14,013.934			
2020	11		18,037.867			
2020	12		31,220.084			
2021	1		39,095.576			
2021	2		34,326.272			
2021	3		34,022.703			
2021	4		22,009.652			

Xcel Energy North Dakota Residential with Space Heat  
2021 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		13,602.290			
2021	6		12,506.205			
2021	7		13,145.864			
2021	8		13,542.927			
2021	9		11,572.866			
2021	10		12,825.031			
2021	11		18,911.969			
2021	12		31,869.176			

Xcel Energy North Dakota Small Commercial and Industrial  
2021 Test-Year Sales Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
BillDaysCellnet21	2547.152	75.725	33.637	0.00%	Billing Days
H65_bill_SmCl_ND_Jan	0.001	0.000	9.612	0.00%	January HDD65 * January customers
H65_bill_SmCl_ND_Feb	0.000654070	0.000	7.202	0.00%	February HDD65 * February customers
H65_bill_SmCl_ND_MarAprMayJun	0.000642913	0.000	6.962	0.00%	March through June HDD65 * March through June customers
H65_bill_SmCl_ND_NovDec	0.000908001	0.000	3.702	0.03%	November, December HDD65 * November, December customers
T65_bill_SmCl_ND_Jul	0.004372457	0.001	3.791	0.02%	July TH165 * July customers
T65_bill_SmCl_ND_Aug	0.006964825	0.001	6.454	0.00%	August TH165 * August customers
T65_bill_SmCl_ND_Sep	0.009193001	0.002	4.534	0.00%	September TH165 * September customers
CRS	-8172.406	1597.822	-5.115	0.00%	Binary variable for CRS conversion
Feb2005	-21843.325	3365.368	-6.491	0.00%	Binary variable February 2005
Mar2005	-24232.985	3670.148	-6.603	0.00%	Binary variable March 2005
Jun2005	9267.585	3368.007	2.752	0.66%	Binary variable June 2005
Dec2005	-28231.143	3402.962	-8.296	0.00%	Binary variable December 2005
Apr2006	-34025.030	3556.523	-9.567	0.00%	Binary variable April 2006
May2005	18866.738	3360.861	5.620	0.00%	Binary variable May 2005
Mar2006	20953.899	3613.062	5.799	0.00%	Binary variable March 2006
Apr2005	-14256.352	3641.583	-3.915	0.01%	Binary variable April 2005
Apr2016	-6144.778	3307.378	-1.858	6.49%	Binary variable April 2016
Nov_Dec_Binary	-5936.508	3250.345	-1.826	6.95%	Binary variable November, December
CGSP_ND	0.225	0.084	2.680	0.81%	ND Real Gross State Product (millions 2012\$)
Post2018	-326.881	85.947	-3.803	0.02%	Trend variable June 2018-December 2019
Trend03	-38.205	18.497	-2.065	4.04%	Trend variable beginning January 2003
SAR(1)	0.421	0.073	5.786	0.00%	First order seasonal autoregressive term

## Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Sales Forecast

Model Statistics	
Iterations	14
Adjusted Observations	197
Deg. of Freedom for Error	174
R-Squared	0.889
Adjusted R-Squared	0.875
AIC	16.535
BIC	16.918
F-Statistic	NA
Prob (F-Statistic)	NA
Log-Likelihood	-1,885.18
Model Sum of Squares	18,881,370,982.28
Sum of Squared Errors	2,365,483,600.75
Mean Squared Error	13,594,733.34
Std. Error of Regression	3,687.10
Mean Abs. Dev. (MAD)	2,787.19
Mean Abs. % Err. (MAPE)	3.17%
Durbin-Watson Statistic	2.095
Durbin-H Statistic	NA
Ljung-Box Statistic	41.54
Prob (Ljung-Box)	0.015
Skewness	-0.023
Kurtosis	3.005
Jarque-Bera	0.017
Prob (Jarque-Bera)	0.992

### Xcel Energy North Dakota Small Commercial and Industrial 2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	91,302.406				
2003	2	85,805.796				
2003	3	83,707.604				
2003	4	76,079.455				
2003	5	73,072.413				
2003	6	75,921.475				
2003	7	83,132.850				
2003	8	84,638.627				
2003	9	84,929.816				
2003	10	75,612.653				
2003	11	77,636.056				
2003	12	88,672.720				
2004	1	93,475.633	94,570.892	-1,095.259	-1.17%	-0.297
2004	2	87,111.022	86,458.533	652.489	0.75%	0.177
2004	3	81,938.745	80,746.245	1,192.500	1.46%	0.323
2004	4	76,873.652	79,107.865	-2,234.213	-2.91%	-0.606
2004	5	73,045.684	74,918.768	-1,873.084	-2.56%	-0.508
2004	6	77,660.811	77,224.974	435.837	0.56%	0.118
2004	7	81,206.909	79,612.811	1,594.098	1.96%	0.432
2004	8	79,518.212	78,082.688	1,435.524	1.81%	0.389
2004	9	78,885.147	78,050.967	834.180	1.06%	0.226
2004	10	74,054.224	74,173.486	-119.262	-0.16%	-0.032
2004	11	76,852.921	74,788.838	2,064.083	2.69%	0.560
2004	12	88,292.285	87,247.708	1,044.577	1.18%	0.283
2005	1	95,699.418	97,030.329	-1,330.911	-1.39%	-0.361
2005	2	67,839.513	65,680.483	2,159.030	3.18%	0.586
2005	3	70,763.797	70,899.330	-135.533	-0.19%	-0.037
2005	4	72,498.854	72,505.963	-7.109	-0.01%	-0.002
2005	5	98,585.964	101,317.770	-2,731.806	-2.77%	-0.741
2005	6	97,485.788	97,531.323	-45.535	-0.05%	-0.012
2005	7	78,340.850	87,000.731	-8,659.881	-11.05%	-2.349
2005	8	102,162.000	99,499.742	2,662.258	2.61%	0.722
2005	9	93,334.620	87,858.195	5,476.425	5.87%	1.485
2005	10	84,217.486	81,267.338	2,950.148	3.50%	0.800
2005	11	77,804.852	79,927.326	-2,122.474	-2.73%	-0.576
2005	12	63,918.000	63,552.022	365.978	0.57%	0.099
2006	1	104,527.442	100,868.565	3,658.877	3.50%	0.992
2006	2	92,512.852	87,389.631	5,123.221	5.54%	1.389
2006	3	118,867.315	119,188.925	-321.610	-0.27%	-0.087
2006	4	45,254.551	45,271.419	-16.868	-0.04%	-0.005
2006	5	80,288.625	86,771.002	-6,482.377	-8.07%	-1.758
2006	6	87,473.390	87,581.441	-108.051	-0.12%	-0.029
2006	7	92,185.497	82,072.401	10,113.096	10.97%	2.743
2006	8	95,896.385	102,233.461	-6,337.076	-6.61%	-1.719

### Xcel Energy North Dakota Small Commercial and Industrial 2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	80,991.171	85,439.607	-4,448.436	-5.49%	-1.206
2006	10	77,258.408	85,627.047	-8,368.639	-10.83%	-2.270
2006	11	75,831.225	80,146.583	-4,315.358	-5.69%	-1.170
2006	12	86,132.265	85,263.827	868.438	1.01%	0.236
2007	1	110,621.670	108,062.581	2,559.089	2.31%	0.694
2007	2	83,728.258	91,776.221	-8,047.963	-9.61%	-2.183
2007	3	92,769.263	93,532.421	-763.158	-0.82%	-0.207
2007	4	85,239.670	85,279.697	-40.027	-0.05%	-0.011
2007	5	84,851.147	83,509.301	1,341.846	1.58%	0.364
2007	6	84,993.666	83,813.616	1,180.050	1.39%	0.320
2007	7	84,823.583	93,542.531	-8,718.948	-10.28%	-2.365
2007	8	97,199.849	96,743.344	456.505	0.47%	0.124
2007	9	83,411.150	80,509.390	2,901.760	3.48%	0.787
2007	10	93,102.096	84,752.531	8,349.565	8.97%	2.265
2007	11	79,493.324	77,415.775	2,077.549	2.61%	0.563
2007	12	92,057.682	88,448.079	3,609.603	3.92%	0.979
2008	1	111,317.823	111,364.304	-46.481	-0.04%	-0.013
2008	2	93,979.937	91,224.788	2,755.149	2.93%	0.747
2008	3	95,367.645	88,354.348	7,013.296	7.35%	1.902
2008	4	89,946.403	93,562.117	-3,615.714	-4.02%	-0.981
2008	5	81,686.080	83,731.011	-2,044.931	-2.50%	-0.555
2008	6	80,914.420	85,352.215	-4,437.795	-5.48%	-1.204
2008	7	91,252.626	88,028.870	3,223.756	3.53%	0.874
2008	8	91,946.032	83,946.857	7,999.175	8.70%	2.170
2008	9	96,053.411	94,474.928	1,578.483	1.64%	0.428
2008	10	91,750.315	89,269.804	2,480.511	2.70%	0.673
2008	11	72,821.969	70,011.634	2,810.335	3.86%	0.762
2008	12	97,519.969	100,224.463	-2,704.494	-2.77%	-0.734
2009	1	107,266.058	108,495.136	-1,229.078	-1.15%	-0.333
2009	2	92,966.381	88,841.092	4,125.289	4.44%	1.119
2009	3	101,631.115	98,027.900	3,603.214	3.55%	0.977
2009	4	83,007.292	87,966.566	-4,959.274	-5.97%	-1.345
2009	5	80,204.869	80,207.898	-3.029	-0.00%	-0.001
2009	6	84,626.999	86,720.441	-2,093.442	-2.47%	-0.568
2009	7	93,294.702	89,479.764	3,814.938	4.09%	1.035
2009	8	88,196.908	87,085.683	1,111.225	1.26%	0.301
2009	9	86,107.718	88,489.837	-2,382.119	-2.77%	-0.646
2009	10	86,988.349	85,903.293	1,085.056	1.25%	0.294
2009	11	76,950.668	75,563.707	1,386.961	1.80%	0.376
2009	12	96,442.731	95,622.133	820.598	0.85%	0.223
2010	1	97,352.031	101,314.525	-3,962.494	-4.07%	-1.075
2010	2	85,307.464	89,818.204	-4,510.740	-5.29%	-1.223
2010	3	104,359.706	100,532.535	3,827.171	3.67%	1.038
2010	4	81,558.814	85,406.966	-3,848.152	-4.72%	-1.044

### Xcel Energy North Dakota Small Commercial and Industrial 2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	72,245.902	78,547.838	-6,301.936	-8.72%	-1.709
2010	6	89,269.629	86,362.386	2,907.243	3.26%	0.788
2010	7	89,544.392	90,430.822	-886.430	-0.99%	-0.240
2010	8	94,376.120	97,329.291	-2,953.171	-3.13%	-0.801
2010	9	86,916.210	89,170.520	-2,254.310	-2.59%	-0.611
2010	10	81,375.874	81,880.187	-504.312	-0.62%	-0.137
2010	11	80,187.948	79,696.290	491.658	0.61%	0.133
2010	12	93,915.416	94,491.508	-576.092	-0.61%	-0.156
2011	1	107,997.998	105,242.761	2,755.237	2.55%	0.747
2011	2	86,683.503	87,801.945	-1,118.442	-1.29%	-0.303
2011	3	105,512.141	102,237.531	3,274.610	3.10%	0.888
2011	4	78,569.079	81,805.345	-3,236.266	-4.12%	-0.878
2011	5	85,098.881	84,290.037	808.844	0.95%	0.219
2011	6	84,248.679	89,002.036	-4,753.357	-5.64%	-1.289
2011	7	87,765.617	89,587.662	-1,822.045	-2.08%	-0.494
2011	8	100,922.613	98,336.471	2,586.142	2.56%	0.701
2011	9	91,868.818	88,430.176	3,438.642	3.74%	0.933
2011	10	84,520.567	81,904.469	2,616.098	3.10%	0.710
2011	11	79,708.857	80,690.139	-981.282	-1.23%	-0.266
2011	12	87,828.322	91,140.976	-3,312.654	-3.77%	-0.898
2012	1	100,666.860	103,971.869	-3,305.009	-3.28%	-0.896
2012	2	91,748.815	90,970.183	778.632	0.85%	0.211
2012	3	93,685.791	96,271.359	-2,585.568	-2.76%	-0.701
2012	4	79,543.715	82,644.713	-3,100.998	-3.90%	-0.841
2012	5	84,552.669	88,515.696	-3,963.027	-4.69%	-1.075
2012	6	83,271.107	84,363.116	-1,092.009	-1.31%	-0.296
2012	7	96,160.839	94,122.594	2,038.245	2.12%	0.553
2012	8	100,833.124	102,859.350	-2,026.226	-2.01%	-0.550
2012	9	85,468.355	84,253.047	1,215.308	1.42%	0.330
2012	10	89,875.160	91,203.982	-1,328.822	-1.48%	-0.360
2012	11	77,849.171	82,853.465	-5,004.294	-6.43%	-1.357
2012	12	93,924.927	86,755.816	7,169.111	7.63%	1.944
2013	1	107,326.358	110,855.751	-3,529.393	-3.29%	-0.957
2013	2	89,040.122	90,325.677	-1,285.555	-1.44%	-0.349
2013	3	94,294.919	88,941.535	5,353.384	5.68%	1.452
2013	4	90,914.355	97,004.077	-6,089.722	-6.70%	-1.652
2013	5	87,710.886	88,445.339	-734.453	-0.84%	-0.199
2013	6	78,255.901	81,146.079	-2,890.178	-3.69%	-0.784
2013	7	100,534.472	97,450.833	3,083.639	3.07%	0.836
2013	8	92,033.648	91,748.479	285.169	0.31%	0.077
2013	9	95,121.888	95,317.703	-195.815	-0.21%	-0.053
2013	10	92,558.183	89,288.007	3,270.176	3.53%	0.887
2013	11	79,607.982	75,136.350	4,471.632	5.62%	1.213
2013	12	97,441.517	99,776.398	-2,334.881	-2.40%	-0.633

### Xcel Energy North Dakota Small Commercial and Industrial 2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	115,422.884	113,314.015	2,108.869	1.83%	0.572
2014	2	90,792.110	88,931.521	1,860.589	2.05%	0.505
2014	3	106,604.291	99,545.883	7,058.408	6.62%	1.914
2014	4	86,412.097	90,079.002	-3,666.905	-4.24%	-0.995
2014	5	82,498.579	85,923.871	-3,425.292	-4.15%	-0.929
2014	6	87,548.135	84,839.606	2,708.528	3.09%	0.735
2014	7	94,865.760	95,341.038	-475.278	-0.50%	-0.129
2014	8	90,359.026	90,683.595	-324.569	-0.36%	-0.088
2014	9	90,374.885	92,855.946	-2,481.061	-2.75%	-0.673
2014	10	94,524.238	90,857.906	3,666.332	3.88%	0.994
2014	11	72,389.943	74,257.240	-1,867.297	-2.58%	-0.506
2014	12	107,510.036	101,763.784	5,746.252	5.34%	1.558
2015	1	104,121.503	107,006.385	-2,884.882	-2.77%	-0.782
2015	2	85,959.682	87,789.227	-1,829.545	-2.13%	-0.496
2015	3	109,195.169	103,615.394	5,579.775	5.11%	1.513
2015	4	85,722.831	87,973.591	-2,250.760	-2.63%	-0.610
2015	5	75,942.701	79,368.060	-3,425.359	-4.51%	-0.929
2015	6	90,882.031	90,068.957	813.074	0.89%	0.221
2015	7	96,599.539	94,556.684	2,042.855	2.11%	0.554
2015	8	96,491.661	92,937.887	3,553.774	3.68%	0.964
2015	9	92,185.513	95,054.189	-2,868.676	-3.11%	-0.778
2015	10	89,500.873	87,409.698	2,091.175	2.34%	0.567
2015	11	76,127.113	74,202.070	1,925.043	2.53%	0.522
2015	12	96,259.465	98,524.118	-2,264.653	-2.35%	-0.614
2016	1	96,460.848	99,975.457	-3,514.609	-3.64%	-0.953
2016	2	92,638.978	89,358.960	3,280.018	3.54%	0.890
2016	3	100,669.934	102,690.173	-2,020.239	-2.01%	-0.548
2016	4	75,851.673	77,851.871	-2,000.198	-2.64%	-0.542
2016	5	86,687.407	81,212.081	5,475.326	6.32%	1.485
2016	6	88,633.301	88,150.343	482.958	0.54%	0.131
2016	7	89,307.718	85,967.657	3,340.061	3.74%	0.906
2016	8	101,340.276	102,909.393	-1,569.117	-1.55%	-0.426
2016	9	91,056.349	87,884.770	3,171.579	3.48%	0.860
2016	10	85,977.296	82,413.811	3,563.485	4.14%	0.966
2016	11	75,797.121	78,395.073	-2,597.952	-3.43%	-0.705
2016	12	91,216.613	90,333.070	883.543	0.97%	0.240
2017	1	107,209.757	104,421.097	2,788.660	2.60%	0.756
2017	2	80,244.082	84,621.841	-4,377.759	-5.46%	-1.187
2017	3	104,085.834	100,634.538	3,451.296	3.32%	0.936
2017	4	75,356.118	80,102.442	-4,746.324	-6.30%	-1.287
2017	5	85,619.838	88,866.066	-3,246.228	-3.79%	-0.880
2017	6	84,970.065	88,117.959	-3,147.894	-3.70%	-0.854
2017	7	91,112.836	86,089.084	5,023.752	5.51%	1.363
2017	8	93,183.608	96,154.639	-2,971.031	-3.19%	-0.806

### Xcel Energy North Dakota Small Commercial and Industrial 2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	85,082.011	83,863.254	1,218.757	1.43%	0.331
2017	10	87,408.538	86,059.213	1,349.325	1.54%	0.366
2017	11	76,925.937	80,198.457	-3,272.520	-4.25%	-0.888
2017	12	88,131.683	90,899.753	-2,768.070	-3.14%	-0.751
2018	1	111,454.404	107,836.058	3,618.346	3.25%	0.981
2018	2	84,685.248	84,517.270	167.978	0.20%	0.046
2018	3	100,833.526	99,376.292	1,457.234	1.45%	0.395
2018	4	82,832.817	86,211.843	-3,379.026	-4.08%	-0.916
2018	5	84,775.953	86,415.216	-1,639.263	-1.93%	-0.445
2018	6	85,136.656	81,813.507	3,323.149	3.90%	0.901
2018	7	92,385.660	93,808.651	-1,422.991	-1.54%	-0.386
2018	8	98,203.895	94,537.906	3,665.989	3.73%	0.994
2018	9	81,246.812	80,883.777	363.035	0.45%	0.098
2018	10	87,218.948	87,286.012	-67.064	-0.08%	-0.018
2018	11	76,786.063	78,749.977	-1,963.914	-2.56%	-0.533
2018	12	91,595.729	89,420.345	2,175.384	2.37%	0.590
2019	1	99,374.500	103,680.301	-4,305.801	-4.33%	-1.168
2019	2	86,132.242	85,012.743	1,119.499	1.30%	0.304
2019	3	97,801.341	94,163.708	3,637.633	3.72%	0.987
2019	4	84,956.134	85,212.326	-256.192	-0.30%	-0.069
2019	5	77,852.146	82,951.164	-5,099.018	-6.55%	-1.383
2019	6	74,288.002	77,098.688	-2,810.686	-3.78%	-0.762
2019	7	93,325.166	89,163.954	4,161.212	4.46%	1.129
2019	8	89,472.687	89,573.129	-100.442	-0.11%	-0.027
2019	9	77,541.112	77,813.574	-272.462	-0.35%	-0.074
2019	10	89,224.242	81,801.589	7,422.653	8.32%	2.013
2019	11	69,368.880	68,751.198	617.682	0.89%	0.168
2019	12	90,559.731	93,002.224	-2,442.493	-2.70%	-0.662
2020	1	102,091.914	97,184.914	4,907.000	4.81%	1.331
2020	2	80,021.760	79,131.552	890.208	1.11%	0.241
2020	3	96,302.283	92,146.218	4,156.065	4.32%	1.127
2020	4	73,465.600	82,453.864	-8,988.264	-12.23%	-2.438
2020	5	64,156.195	70,009.841	-5,853.646	-9.12%	-1.588
2020	6		78,866.395			
2020	7		86,960.664			
2020	8		82,512.970			
2020	9		81,351.610			
2020	10		79,163.621			
2020	11		66,510.465			
2020	12		88,590.407			
2021	1		94,655.765			
2021	2		78,590.995			
2021	3		96,084.913			
2021	4		77,946.392			

Xcel Energy North Dakota Small Commercial and Industrial  
2019 Test-Year Sales Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		67,928.959			
2021	6		79,868.379			
2021	7		81,569.975			
2021	8		86,635.590			
2021	9		81,302.995			
2021	10		73,650.883			
2021	11		71,118.675			
2021	12		88,075.952			

Northern States Power Company

RX Coef

Case No. PU-20-  
Exhibit \_\_\_(JEM-1), Schedule 5  
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Test Year 2021 Customer Counts

Xcel Energy North Dakota Residential without Space Heating  
2021 Test-Year Customer Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	32457.659	2355.412	13.780	0.00%	Constant
HH_ND	82.504	7.952	10.375	0.00%	North Dakota Households (thousands)
CRS	591.848	83.141	7.119	0.00%	Binary variable for CRS conversion
Jul11	-3427.525	76.165	-45.001	0.00%	Binary variable July 2011
Aug2011	-1467.468	99.528	-14.744	0.00%	Binary variable August 2011
Sep2011	-580.756	75.392	-7.703	0.00%	Binary variable September 2011
AR(1)	1.514	0.061	24.964	0.00%	First order autoregressive term
AR(2)	-0.555	0.060	-9.190	0.00%	Second order autoregressive term

Test Year 2021 Customer Counts

Xcel Energy North Dakota Residential without Space Heating  
2021 Test-Year Customer Forecast

Model Statistics	
Iterations	19
Adjusted Observations	207
Deg. of Freedom for Error	199
R-Squared	0.997
Adjusted R-Squared	0.997
AIC	9.121
BIC	9.250
F-Statistic	9597.563
Prob (F-Statistic)	0.000
Log-Likelihood	-1,229.74
Model Sum of Squares	591,534,718.26
Sum of Squared Errors	1,752,162.18
Mean Squared Error	8,804.84
Std. Error of Regression	93.83
Mean Abs. Dev. (MAD)	61.95
Mean Abs. % Err. (MAPE)	0.11%
Durbin-Watson Statistic	2.134
Durbin-H Statistic	NA
Ljung-Box Statistic	28.500
Prob (Ljung-Box)	0.240
Skewness	-0.800
Kurtosis	7.791
Jarque-Bera	219.987
Prob (Jarque-Bera)	0.000

Xcel Energy North Dakota Residential without Space Heating  
2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	54,446.000				
2003	2	54,480.000				
2003	3	54,543.000	54,524.133	18.867	0.03%	0.201
2003	4	54,605.000	54,601.346	3.654	0.01%	0.039
2003	5	54,660.000	54,660.978	-0.978	-0.00%	-0.010
2003	6	54,584.000	54,710.610	-126.610	-0.23%	-1.349
2003	7	54,796.000	54,565.740	230.260	0.42%	2.454
2003	8	54,715.000	54,929.587	-214.587	-0.39%	-2.287
2003	9	54,940.000	54,690.098	249.902	0.45%	2.663
2003	10	54,993.000	55,076.379	-83.379	-0.15%	-0.889
2003	11	54,920.000	55,032.499	-112.499	-0.20%	-1.199
2003	12	54,880.000	54,893.350	-13.350	-0.02%	-0.142
2004	1	55,000.000	54,874.007	125.993	0.23%	1.343
2004	2	54,947.000	55,078.603	-131.603	-0.24%	-1.403
2004	3	55,049.000	54,932.556	116.444	0.21%	1.241
2004	4	55,038.000	55,117.092	-79.092	-0.14%	-0.843
2004	5	54,955.000	55,044.576	-89.576	-0.16%	-0.955
2004	6	54,991.000	54,925.802	65.198	0.12%	0.695
2004	7	55,049.000	55,027.068	21.932	0.04%	0.234
2004	8	55,219.000	55,095.635	123.365	0.22%	1.315
2004	9	55,356.000	55,321.596	34.404	0.06%	0.367
2004	10	55,356.000	55,435.386	-79.386	-0.14%	-0.846
2004	11	55,507.000	55,360.105	146.895	0.26%	1.565
2004	12	55,377.000	55,589.487	-212.487	-0.38%	-2.264
2005	1	55,445.000	55,309.607	135.393	0.24%	1.443
2005	2	54,854.000	54,893.578	-39.578	-0.07%	-0.422
2005	3	54,780.000	54,857.914	-77.914	-0.14%	-0.830
2005	4	54,532.000	54,746.130	-214.130	-0.39%	-2.282
2005	5	54,397.000	54,412.482	-15.482	-0.03%	-0.165
2005	6	53,987.000	54,341.919	-354.919	-0.66%	-3.782
2005	7	53,763.000	53,799.195	-36.195	-0.07%	-0.386
2005	8	53,729.000	53,688.133	40.867	0.08%	0.436
2005	9	53,595.000	53,761.531	-166.531	-0.31%	-1.775
2005	10	53,724.000	53,578.075	145.925	0.27%	1.555
2005	11	53,909.000	53,848.279	60.721	0.11%	0.647
2005	12	53,949.000	54,057.355	-108.355	-0.20%	-1.155
2006	1	54,019.000	54,015.802	3.198	0.01%	0.034
2006	2	54,069.000	54,100.138	-31.138	-0.06%	-0.332
2006	3	54,157.000	54,137.574	19.426	0.04%	0.207
2006	4	54,149.000	54,243.599	-94.599	-0.17%	-1.008
2006	5	54,190.000	54,183.217	6.783	0.01%	0.072
2006	6	54,043.000	54,232.739	-189.739	-0.35%	-2.022
2006	7	54,060.000	53,997.019	62.981	0.12%	0.671
2006	8	54,288.000	54,104.161	183.839	0.34%	1.959

### Xcel Energy North Dakota Residential without Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	54,422.000	54,439.741	-17.741	-0.03%	-0.189
2006	10	54,588.000	54,515.932	72.068	0.13%	0.768
2006	11	54,699.000	54,692.727	6.273	0.01%	0.067
2006	12	54,812.000	54,768.504	43.496	0.08%	0.464
2007	1	54,976.000	54,877.823	98.177	0.18%	1.046
2007	2	55,033.000	55,063.243	-30.243	-0.05%	-0.322
2007	3	55,158.000	55,058.378	99.622	0.18%	1.062
2007	4	55,228.000	55,215.827	12.173	0.02%	0.130
2007	5	55,274.000	55,252.281	21.719	0.04%	0.231
2007	6	55,202.000	55,307.944	-105.944	-0.19%	-1.129
2007	7	55,220.000	55,160.398	59.602	0.11%	0.635
2007	8	55,287.000	55,228.464	58.536	0.11%	0.624
2007	9	55,281.000	55,320.833	-39.833	-0.07%	-0.425
2007	10	55,427.000	55,275.407	151.593	0.27%	1.616
2007	11	55,467.000	55,500.634	-33.634	-0.06%	-0.358
2007	12	55,489.000	55,481.105	7.895	0.01%	0.084
2008	1	55,647.000	55,493.053	153.947	0.28%	1.641
2008	2	55,702.000	55,720.913	-18.913	-0.03%	-0.202
2008	3	55,741.000	55,717.437	23.563	0.04%	0.251
2008	4	55,783.000	55,746.800	36.200	0.06%	0.386
2008	5	55,791.000	55,789.617	1.383	0.00%	0.015
2008	6	55,719.000	55,787.666	-68.666	-0.12%	-0.732
2008	7	55,755.000	55,670.796	84.204	0.15%	0.897
2008	8	55,884.000	55,766.462	117.538	0.21%	1.253
2008	9	55,976.000	55,943.111	32.889	0.06%	0.351
2008	10	56,051.000	56,011.968	39.032	0.07%	0.416
2008	11	56,038.000	56,075.682	-37.682	-0.07%	-0.402
2008	12	56,073.000	56,015.723	57.277	0.10%	0.610
2009	1	56,087.000	56,077.083	9.917	0.02%	0.106
2009	2	56,099.000	56,080.081	18.919	0.03%	0.202
2009	3	56,094.000	56,091.821	2.179	0.00%	0.023
2009	4	56,019.000	56,078.757	-59.757	-0.11%	-0.637
2009	5	56,028.000	55,969.218	58.782	0.10%	0.626
2009	6	56,045.000	56,012.477	32.523	0.06%	0.347
2009	7	56,026.000	56,041.238	-15.238	-0.03%	-0.162
2009	8	56,065.000	56,003.729	61.271	0.11%	0.653
2009	9	56,105.000	56,072.062	32.938	0.06%	0.351
2009	10	56,132.000	56,112.663	19.337	0.03%	0.206
2009	11	56,158.000	56,131.952	26.048	0.05%	0.278
2009	12	56,242.000	56,154.961	87.039	0.15%	0.928
2010	1	56,235.000	56,269.329	-34.329	-0.06%	-0.366
2010	2	56,270.000	56,212.649	57.351	0.10%	0.611
2010	3	56,289.000	56,269.450	19.550	0.03%	0.208
2010	4	56,258.000	56,279.628	-21.628	-0.04%	-0.230

Xcel Energy North Dakota Residential without Space Heating  
2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	56,223.000	56,222.658	0.342	0.00%	0.004
2010	6	56,209.000	56,195.913	13.087	0.02%	0.139
2010	7	56,275.000	56,190.254	84.746	0.15%	0.903
2010	8	56,309.000	56,298.793	10.207	0.02%	0.109
2010	9	56,323.000	56,314.498	8.502	0.02%	0.091
2010	10	56,356.000	56,317.679	38.321	0.07%	0.408
2010	11	56,420.000	56,360.723	59.277	0.11%	0.632
2010	12	56,472.000	56,440.155	31.845	0.06%	0.339
2011	1	56,523.000	56,484.219	38.781	0.07%	0.413
2011	2	56,548.000	56,533.428	14.572	0.03%	0.155
2011	3	56,545.000	56,543.830	1.170	0.00%	0.012
2011	4	56,570.000	56,526.269	43.731	0.08%	0.466
2011	5	56,567.000	56,566.634	0.366	0.00%	0.004
2011	6	56,489.000	56,579.848	-90.848	-0.16%	-0.968
2011	7	52,599.000	53,020.941	-421.941	-0.80%	-4.497
2011	8	53,952.000	54,326.245	-374.245	-0.69%	-3.988
2011	9	54,292.000	54,552.656	-260.656	-0.48%	-2.778
2011	10	54,608.000	54,644.694	-36.694	-0.07%	-0.391
2011	11	54,919.000	54,549.346	369.654	0.67%	3.939
2011	12	55,144.000	55,169.192	-25.192	-0.05%	-0.268
2012	1	55,341.000	55,339.369	1.631	0.00%	0.017
2012	2	55,499.000	55,514.876	-15.876	-0.03%	-0.169
2012	3	55,608.000	55,646.877	-38.877	-0.07%	-0.414
2012	4	55,661.000	55,726.337	-65.337	-0.12%	-0.696
2012	5	55,808.000	55,748.206	59.794	0.11%	0.637
2012	6	55,808.000	55,942.741	-134.741	-0.24%	-1.436
2012	7	55,895.000	55,863.656	31.344	0.06%	0.334
2012	8	56,066.000	55,997.450	68.550	0.12%	0.731
2012	9	56,261.000	56,210.139	50.861	0.09%	0.542
2012	10	56,425.000	56,412.552	12.448	0.02%	0.133
2012	11	56,499.000	56,554.717	-55.717	-0.10%	-0.594
2012	12	56,565.000	56,577.831	-12.831	-0.02%	-0.137
2013	1	56,550.000	56,638.772	-88.772	-0.16%	-0.946
2013	2	56,601.000	56,581.526	19.474	0.03%	0.208
2013	3	56,681.000	56,669.143	11.857	0.02%	0.126
2013	4	56,761.000	56,764.041	-3.041	-0.01%	-0.032
2013	5	56,830.000	56,842.848	-12.848	-0.02%	-0.137
2013	6	56,828.000	56,887.230	-59.230	-0.10%	-0.631
2013	7	56,809.000	56,857.134	-48.134	-0.08%	-0.513
2013	8	56,924.000	56,830.835	93.165	0.16%	0.993
2013	9	56,986.000	57,019.016	-33.016	-0.06%	-0.352
2013	10	57,048.000	57,049.303	-1.303	-0.00%	-0.014
2013	11	57,196.000	57,110.208	85.792	0.15%	0.914
2013	12	57,284.000	57,303.522	-19.522	-0.03%	-0.208

Xcel Energy North Dakota Residential without Space Heating  
2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	57,270.000	57,354.934	-84.934	-0.15%	-0.905
2014	2	57,314.000	57,286.446	27.554	0.05%	0.294
2014	3	57,348.000	57,364.602	-16.602	-0.03%	-0.177
2014	4	57,320.000	57,392.046	-72.046	-0.13%	-0.768
2014	5	57,485.000	57,332.418	152.582	0.27%	1.626
2014	6	57,464.000	57,614.944	-150.944	-0.26%	-1.609
2014	7	57,533.000	57,485.226	47.774	0.08%	0.509
2014	8	57,550.000	57,603.603	-53.603	-0.09%	-0.571
2014	9	57,541.000	57,593.320	-52.320	-0.09%	-0.558
2014	10	57,663.000	57,572.527	90.473	0.16%	0.964
2014	11	57,632.000	57,764.483	-132.483	-0.23%	-1.412
2014	12	57,674.000	57,652.122	21.878	0.04%	0.233
2015	1	57,705.000	57,735.174	-30.174	-0.05%	-0.322
2015	2	57,696.000	57,761.066	-65.066	-0.11%	-0.693
2015	3	57,823.000	57,732.506	90.494	0.16%	0.964
2015	4	57,893.000	57,932.031	-39.031	-0.07%	-0.416
2015	5	57,954.000	57,969.801	-15.801	-0.03%	-0.168
2015	6	57,993.000	57,981.675	11.325	0.02%	0.121
2015	7	57,992.000	58,031.696	-39.696	-0.07%	-0.423
2015	8	58,124.000	58,009.009	114.991	0.20%	1.225
2015	9	58,218.000	58,209.867	8.133	0.01%	0.087
2015	10	58,224.000	58,279.399	-55.399	-0.10%	-0.590
2015	11	58,283.000	58,236.791	46.209	0.08%	0.492
2015	12	58,464.000	58,323.250	140.750	0.24%	1.500
2016	1	58,526.000	58,564.997	-38.997	-0.07%	-0.416
2016	2	58,487.000	58,558.895	-71.895	-0.12%	-0.766
2016	3	58,482.000	58,465.917	16.083	0.03%	0.171
2016	4	58,481.000	58,480.455	0.545	0.00%	0.006
2016	5	58,539.000	58,482.183	56.817	0.10%	0.606
2016	6	58,464.000	58,567.663	-103.663	-0.18%	-1.105
2016	7	58,416.000	58,424.126	-8.126	-0.01%	-0.087
2016	8	58,462.000	58,393.403	68.597	0.12%	0.731
2016	9	58,450.000	58,490.007	-40.007	-0.07%	-0.426
2016	10	58,467.000	58,446.646	20.354	0.03%	0.217
2016	11	58,527.000	58,479.371	47.629	0.08%	0.508
2016	12	58,582.000	58,561.103	20.897	0.04%	0.223
2017	1	58,607.000	58,611.406	-4.406	-0.01%	-0.047
2017	2	58,658.000	58,619.066	38.934	0.07%	0.415
2017	3	58,653.000	58,682.733	-29.733	-0.05%	-0.317
2017	4	58,697.000	58,647.195	49.805	0.08%	0.531
2017	5	58,688.000	58,716.912	-28.912	-0.05%	-0.308
2017	6	58,694.000	58,692.107	1.893	0.00%	0.020
2017	7	58,751.000	58,699.883	51.117	0.09%	0.545
2017	8	58,775.000	58,783.705	-8.705	-0.01%	-0.093

### Xcel Energy North Dakota Residential without Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	58,729.000	58,789.270	-60.270	-0.10%	-0.642
2017	10	58,839.000	58,707.172	131.828	0.22%	1.405
2017	11	58,872.000	58,900.085	-28.085	-0.05%	-0.299
2017	12	58,922.000	58,889.866	32.134	0.05%	0.342
2018	1	58,963.000	58,948.110	14.890	0.03%	0.159
2018	2	59,023.000	58,983.295	39.705	0.07%	0.423
2018	3	59,054.000	59,052.238	1.762	0.00%	0.019
2018	4	59,022.000	59,066.736	-44.736	-0.08%	-0.477
2018	5	59,018.000	59,001.948	16.052	0.03%	0.171
2018	6	58,927.000	59,011.420	-84.420	-0.14%	-0.900
2018	7	58,900.000	58,878.319	21.681	0.04%	0.231
2018	8	58,931.000	58,888.669	42.331	0.07%	0.451
2018	9	58,938.000	58,950.842	-12.842	-0.02%	-0.137
2018	10	58,972.000	58,945.213	26.787	0.05%	0.285
2018	11	58,996.000	58,993.515	2.485	0.00%	0.026
2018	12	59,024.000	59,011.220	12.780	0.02%	0.136
2019	1	59,117.000	59,041.250	75.750	0.13%	0.807
2019	2	59,109.000	59,167.201	-58.201	-0.10%	-0.620
2019	3	59,195.000	59,103.701	91.299	0.15%	0.973
2019	4	59,214.000	59,239.276	-25.276	-0.04%	-0.269
2019	5	59,254.000	59,220.995	33.005	0.06%	0.352
2019	6	59,155.000	59,272.527	-117.527	-0.20%	-1.253
2019	7	59,175.000	59,100.695	74.305	0.13%	0.792
2019	8	59,193.000	59,186.614	6.386	0.01%	0.068
2019	9	59,225.000	59,202.823	22.177	0.04%	0.236
2019	10	59,209.000	59,242.324	-33.324	-0.06%	-0.355
2019	11	59,249.000	59,201.027	47.973	0.08%	0.511
2019	12	59,284.000	59,271.195	12.805	0.02%	0.136
2020	1	59,316.000	59,302.642	13.358	0.02%	0.142
2020	2	59,316.000	59,332.350	-16.350	-0.03%	-0.174
2020	3	59,320.000	59,305.839	14.161	0.02%	0.151
2020	4	59,322.000	59,317.429	4.571	0.01%	0.049
2020	5	59,285.000	59,318.535	-33.535	-0.06%	-0.357
2020	6		59,253.399			
2020	7		59,230.656			
2020	8		59,213.715			
2020	9		59,204.106			
2020	10		59,197.137			
2020	11		59,192.017			
2020	12		59,184.306			
2021	1		59,177.588			
2021	2		59,171.635			
2021	3		59,171.947			
2021	4		59,172.751			

### Xcel Energy North Dakota Residential without Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		59,173.966			
2021	6		59,185.229			
2021	7		59,196.791			
2021	8		59,208.612			
2021	9		59,225.714			
2021	10		59,243.016			
2021	11		59,260.493			
2021	12		59,281.396			

Test Year 2021 Customer Counts

Xcel Energy North Dakota Residential with Space Heating  
2021 Test-Year Customer Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
HH_ND	68.753	0.665	103.317	0.00%	North Dakota Households (thousands)
CRS	395.523	45.559	8.682	0.00%	Binary variable for CRS conversion
Jul11	-377.818	36.160	-10.448	0.00%	Binary variable July 2011
Aug2011	-229.911	36.450	-6.307	0.00%	Binary variable August 2011
Oct2011	58.095	27.638	2.102	3.68%	Binary variable October 2011
Nov2014	115.849	27.319	4.241	0.00%	Binary variable November 2014
AR(1)	1.481	0.062	23.735	0.00%	First order autoregressive term
AR(2)	-0.499	0.062	-7.987	0.00%	Second order autoregressive term

## Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Model Statistics	
Iterations	16
Adjusted Observations	207
Deg. of Freedom for Error	199
R-Squared	0.999
Adjusted R-Squared	0.999
AIC	7.884
BIC	8.013
F-Statistic	NA
Prob (F-Statistic)	NA
Log-Likelihood	-1,101.77
Model Sum of Squares	456,240,360.82
Sum of Squared Errors	508,856.49
Mean Squared Error	2,557.07
Std. Error of Regression	50.57
Mean Abs. Dev. (MAD)	35.45
Mean Abs. % Err. (MAPE)	0.18%
Durbin-Watson Statistic	2.066
Durbin-H Statistic	NA
Ljung-Box Statistic	22.05
Prob (Ljung-Box)	0.577
Skewness	0.533
Kurtosis	5.000
Jarque-Bera	44.307
Prob (Jarque-Bera)	0.000

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	18,564.000				
2003	2	18,588.000				
2003	3	18,586.000	18,607.732	-21.732	-0.12%	-0.430
2003	4	18,563.000	18,593.035	-30.035	-0.16%	-0.594
2003	5	18,618.000	18,560.220	57.780	0.31%	1.143
2003	6	18,589.000	18,653.469	-64.469	-0.35%	-1.275
2003	7	18,681.000	18,583.307	97.693	0.52%	1.932
2003	8	18,673.000	18,734.328	-61.328	-0.33%	-1.213
2003	9	18,622.000	18,676.866	-54.866	-0.29%	-1.085
2003	10	18,669.000	18,605.549	63.451	0.34%	1.255
2003	11	18,636.000	18,700.884	-64.884	-0.35%	-1.283
2003	12	18,641.000	18,628.843	12.157	0.07%	0.240
2004	1	18,627.000	18,652.959	-25.959	-0.14%	-0.513
2004	2	18,624.000	18,629.986	-5.986	-0.03%	-0.118
2004	3	18,697.000	18,632.825	64.175	0.34%	1.269
2004	4	18,699.000	18,742.709	-43.709	-0.23%	-0.864
2004	5	18,676.000	18,709.509	-33.509	-0.18%	-0.663
2004	6	18,673.000	18,674.736	-1.736	-0.01%	-0.034
2004	7	18,648.000	18,682.013	-34.013	-0.18%	-0.673
2004	8	18,740.000	18,646.737	93.263	0.50%	1.844
2004	9	18,782.000	18,795.801	-13.801	-0.07%	-0.273
2004	10	18,746.000	18,812.360	-66.360	-0.35%	-1.312
2004	11	18,706.000	18,738.335	-32.335	-0.17%	-0.639
2004	12	18,681.000	18,697.342	-16.342	-0.09%	-0.323
2005	1	18,715.000	18,680.511	34.489	0.18%	0.682
2005	2	18,322.000	18,348.094	-26.094	-0.14%	-0.516
2005	3	18,289.000	18,335.168	-46.168	-0.25%	-0.913
2005	4	18,202.000	18,285.268	-83.268	-0.46%	-1.647
2005	5	18,155.000	18,173.116	-18.116	-0.10%	-0.358
2005	6	17,985.000	18,143.386	-158.386	-0.88%	-3.132
2005	7	17,771.000	17,917.081	-146.081	-0.82%	-2.889
2005	8	17,782.000	17,685.082	96.918	0.55%	1.917
2005	9	17,719.000	17,808.377	-89.377	-0.50%	-1.767
2005	10	17,806.000	17,709.747	96.253	0.54%	1.903
2005	11	17,846.000	17,870.265	-24.265	-0.14%	-0.480
2005	12	17,845.000	17,886.330	-41.330	-0.23%	-0.817
2006	1	17,870.000	17,865.078	4.922	0.03%	0.097
2006	2	17,922.000	17,902.812	19.188	0.11%	0.379
2006	3	17,989.000	17,967.590	21.410	0.12%	0.423
2006	4	17,980.000	18,041.087	-61.087	-0.34%	-1.208
2006	5	18,006.000	17,994.523	11.477	0.06%	0.227
2006	6	17,886.000	18,023.109	-137.109	-0.77%	-2.711
2006	7	17,928.000	17,839.603	88.397	0.49%	1.748
2006	8	18,101.000	17,961.642	139.358	0.77%	2.756

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	18,174.000	18,196.915	-22.915	-0.13%	-0.453
2006	10	18,223.000	18,218.677	4.323	0.02%	0.085
2006	11	18,285.000	18,254.784	30.216	0.17%	0.598
2006	12	18,339.000	18,322.127	16.873	0.09%	0.334
2007	1	18,423.000	18,371.129	51.871	0.28%	1.026
2007	2	18,470.000	18,468.566	1.434	0.01%	0.028
2007	3	18,504.000	18,496.222	7.778	0.04%	0.154
2007	4	18,534.000	18,523.081	10.919	0.06%	0.216
2007	5	18,590.000	18,550.501	39.499	0.21%	0.781
2007	6	18,564.000	18,639.287	-75.287	-0.41%	-1.489
2007	7	18,577.000	18,562.731	14.269	0.08%	0.282
2007	8	18,593.000	18,595.272	-2.272	-0.01%	-0.045
2007	9	18,595.000	18,612.847	-17.847	-0.10%	-0.353
2007	10	18,583.000	18,608.111	-25.111	-0.14%	-0.497
2007	11	18,587.000	18,589.646	-2.646	-0.01%	-0.052
2007	12	18,605.000	18,601.918	3.082	0.02%	0.061
2008	1	18,664.000	18,626.874	37.126	0.20%	0.734
2008	2	18,681.000	18,705.606	-24.606	-0.13%	-0.487
2008	3	18,704.000	18,701.711	2.289	0.01%	0.045
2008	4	18,750.000	18,727.588	22.412	0.12%	0.443
2008	5	18,770.000	18,784.568	-14.568	-0.08%	-0.288
2008	6	18,722.000	18,798.530	-76.530	-0.41%	-1.513
2008	7	18,708.000	18,714.396	-6.396	-0.03%	-0.126
2008	8	18,776.000	18,718.041	57.959	0.31%	1.146
2008	9	18,811.000	18,826.293	-15.293	-0.08%	-0.302
2008	10	18,845.000	18,844.600	0.400	0.00%	0.008
2008	11	18,885.000	18,877.940	7.060	0.04%	0.140
2008	12	18,963.000	18,920.765	42.235	0.22%	0.835
2009	1	18,968.000	19,016.745	-48.745	-0.26%	-0.964
2009	2	19,016.000	18,985.669	30.331	0.16%	0.600
2009	3	19,023.000	19,054.817	-31.817	-0.17%	-0.629
2009	4	19,106.000	19,041.627	64.373	0.34%	1.273
2009	5	19,214.000	19,161.530	52.470	0.27%	1.038
2009	6	19,231.000	19,269.539	-38.539	-0.20%	-0.762
2009	7	19,249.000	19,246.572	2.428	0.01%	0.048
2009	8	19,256.000	19,265.001	-9.001	-0.05%	-0.178
2009	9	19,248.000	19,265.018	-17.018	-0.09%	-0.337
2009	10	19,269.000	19,250.698	18.302	0.09%	0.362
2009	11	19,324.000	19,286.017	37.983	0.20%	0.751
2009	12	19,368.000	19,355.584	12.416	0.06%	0.246
2010	1	19,507.000	19,394.334	112.666	0.58%	2.228
2010	2	19,599.000	19,578.485	20.515	0.10%	0.406
2010	3	19,687.000	19,645.108	41.892	0.21%	0.828
2010	4	19,700.000	19,729.995	-29.995	-0.15%	-0.593

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	19,687.000	19,705.523	-18.523	-0.09%	-0.366
2010	6	19,693.000	19,687.073	5.927	0.03%	0.117
2010	7	19,686.000	19,699.203	-13.203	-0.07%	-0.261
2010	8	19,708.000	19,686.143	21.857	0.11%	0.432
2010	9	19,704.000	19,722.533	-18.533	-0.09%	-0.366
2010	10	19,730.000	19,705.934	24.066	0.12%	0.476
2010	11	19,835.000	19,746.751	88.249	0.44%	1.745
2010	12	19,849.000	19,889.631	-40.631	-0.20%	-0.803
2011	1	19,875.000	19,858.283	16.717	0.08%	0.331
2011	2	19,894.000	19,890.119	3.881	0.02%	0.077
2011	3	19,934.000	19,905.597	28.403	0.14%	0.562
2011	4	19,926.000	19,955.678	-29.678	-0.15%	-0.587
2011	5	19,957.000	19,924.172	32.828	0.16%	0.649
2011	6	19,954.000	20,000.038	-46.038	-0.23%	-0.910
2011	7	19,740.000	19,590.266	149.734	0.76%	2.961
2011	8	20,124.000	19,983.107	140.893	0.70%	2.786
2011	9	20,600.000	20,481.784	118.216	0.57%	2.338
2011	10	20,856.000	20,787.390	68.610	0.33%	1.357
2011	11	20,938.000	20,900.438	37.562	0.18%	0.743
2011	12	20,984.000	21,009.982	-25.982	-0.12%	-0.514
2012	1	20,988.000	21,008.978	-20.978	-0.10%	-0.415
2012	2	20,992.000	20,992.706	-0.706	-0.00%	-0.014
2012	3	20,922.000	20,997.390	-75.390	-0.36%	-1.491
2012	4	20,874.000	20,892.450	-18.450	-0.09%	-0.365
2012	5	20,837.000	20,857.025	-20.025	-0.10%	-0.396
2012	6	20,757.000	20,826.323	-69.323	-0.33%	-1.371
2012	7	20,686.000	20,727.313	-41.313	-0.20%	-0.817
2012	8	20,647.000	20,662.795	-15.795	-0.08%	-0.312
2012	9	20,601.000	20,641.191	-40.191	-0.20%	-0.795
2012	10	20,590.000	20,593.251	-3.251	-0.02%	-0.064
2012	11	20,650.000	20,600.652	49.348	0.24%	0.976
2012	12	20,668.000	20,695.771	-27.771	-0.13%	-0.549
2013	1	20,685.000	20,693.242	-8.242	-0.04%	-0.163
2013	2	20,673.000	20,710.189	-37.189	-0.18%	-0.735
2013	3	20,667.000	20,684.674	-17.674	-0.09%	-0.350
2013	4	20,707.000	20,682.517	24.483	0.12%	0.484
2013	5	20,688.000	20,745.512	-57.512	-0.28%	-1.137
2013	6	20,674.000	20,683.341	-9.341	-0.05%	-0.185
2013	7	20,714.000	20,679.956	34.044	0.16%	0.673
2013	8	20,780.000	20,746.683	33.317	0.16%	0.659
2013	9	20,812.000	20,826.800	-14.800	-0.07%	-0.293
2013	10	20,845.000	20,840.882	4.118	0.02%	0.081
2013	11	20,857.000	20,874.318	-17.318	-0.08%	-0.342
2013	12	20,872.000	20,877.988	-5.988	-0.03%	-0.118

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	20,917.000	20,893.851	23.149	0.11%	0.458
2014	2	20,936.000	20,953.579	-17.579	-0.08%	-0.348
2014	3	20,956.000	20,961.686	-5.686	-0.03%	-0.112
2014	4	21,037.000	20,981.484	55.516	0.26%	1.098
2014	5	21,056.000	21,092.081	-36.081	-0.17%	-0.714
2014	6	21,059.000	21,093.364	-34.364	-0.16%	-0.680
2014	7	21,095.000	21,082.665	12.335	0.06%	0.244
2014	8	21,086.000	21,135.308	-49.308	-0.23%	-0.975
2014	9	21,111.000	21,104.822	6.178	0.03%	0.122
2014	10	21,128.000	21,147.157	-19.157	-0.09%	-0.379
2014	11	21,447.000	21,276.525	170.475	0.79%	3.371
2014	12	21,532.000	21,453.953	78.047	0.36%	1.543
2015	1	21,541.000	21,650.936	-109.936	-0.51%	-2.174
2015	2	21,563.000	21,564.860	-1.860	-0.01%	-0.037
2015	3	21,585.000	21,593.770	-8.770	-0.04%	-0.173
2015	4	21,580.000	21,616.193	-36.193	-0.17%	-0.716
2015	5	21,572.000	21,598.617	-26.617	-0.12%	-0.526
2015	6	21,539.000	21,553.488	-14.488	-0.07%	-0.286
2015	7	21,674.000	21,527.013	146.987	0.68%	2.907
2015	8	21,708.000	21,743.638	-35.638	-0.16%	-0.705
2015	9	21,705.000	21,726.811	-21.811	-0.10%	-0.431
2015	10	21,729.000	21,705.569	23.431	0.11%	0.463
2015	11	21,742.000	21,742.786	-0.786	-0.00%	-0.016
2015	12	21,781.000	21,750.236	30.764	0.14%	0.608
2016	1	21,788.000	21,801.692	-13.692	-0.06%	-0.271
2016	2	21,851.000	21,792.768	58.232	0.27%	1.152
2016	3	21,855.000	21,882.772	-27.772	-0.13%	-0.549
2016	4	21,890.000	21,857.429	32.571	0.15%	0.644
2016	5	21,918.000	21,907.450	10.550	0.05%	0.209
2016	6	21,891.000	21,928.842	-37.842	-0.17%	-0.748
2016	7	21,843.000	21,876.382	-33.382	-0.15%	-0.660
2016	8	21,971.000	21,818.865	152.135	0.69%	3.009
2016	9	21,991.000	22,032.555	-41.555	-0.19%	-0.822
2016	10	21,982.000	21,998.432	-16.432	-0.07%	-0.325
2016	11	22,015.000	21,975.238	39.762	0.18%	0.786
2016	12	22,041.000	22,028.733	12.267	0.06%	0.243
2017	1	22,049.000	22,050.902	-1.902	-0.01%	-0.038
2017	2	22,070.000	22,049.898	20.102	0.09%	0.398
2017	3	22,101.000	22,077.133	23.867	0.11%	0.472
2017	4	22,101.000	22,112.697	-11.697	-0.05%	-0.231
2017	5	22,115.000	22,097.346	17.654	0.08%	0.349
2017	6	22,042.000	22,128.958	-86.958	-0.39%	-1.720
2017	7	22,023.000	22,008.770	14.230	0.06%	0.281
2017	8	22,038.000	22,017.355	20.645	0.09%	0.408

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	22,036.000	22,049.363	-13.363	-0.06%	-0.264
2017	10	22,022.000	22,039.223	-17.223	-0.08%	-0.341
2017	11	22,039.000	22,019.787	19.213	0.09%	0.380
2017	12	22,063.000	22,052.264	10.736	0.05%	0.212
2018	1	22,070.000	22,079.642	-9.642	-0.04%	-0.191
2018	2	22,081.000	22,078.343	2.657	0.01%	0.053
2018	3	22,110.000	22,091.453	18.547	0.08%	0.367
2018	4	22,104.000	22,129.232	-25.232	-0.11%	-0.499
2018	5	22,060.000	22,106.180	-46.180	-0.21%	-0.913
2018	6	21,976.000	22,041.725	-65.725	-0.30%	-1.300
2018	7	21,944.000	21,940.786	3.214	0.01%	0.064
2018	8	21,948.000	21,935.557	12.443	0.06%	0.246
2018	9	21,941.000	21,957.317	-16.317	-0.07%	-0.323
2018	10	21,981.000	21,945.403	35.597	0.16%	0.704
2018	11	21,993.000	22,008.407	-15.407	-0.07%	-0.305
2018	12	21,999.000	22,006.083	-7.083	-0.03%	-0.140
2019	1	22,013.000	22,009.429	3.571	0.02%	0.071
2019	2	22,017.000	22,027.423	-10.423	-0.05%	-0.206
2019	3	22,069.000	22,026.212	42.788	0.19%	0.846
2019	4	22,075.000	22,101.689	-26.689	-0.12%	-0.528
2019	5	22,069.000	22,084.872	-15.872	-0.07%	-0.314
2019	6	21,997.000	22,073.934	-76.934	-0.35%	-1.521
2019	7	22,000.000	21,970.168	29.832	0.14%	0.590
2019	8	22,003.000	22,010.791	-7.791	-0.04%	-0.154
2019	9	21,999.000	22,013.448	-14.448	-0.07%	-0.286
2019	10	21,997.000	22,006.540	-9.540	-0.04%	-0.189
2019	11	22,017.000	22,005.817	11.183	0.05%	0.221
2019	12	22,037.000	22,036.729	0.271	0.00%	0.005
2020	1	22,047.000	22,056.601	-9.601	-0.04%	-0.190
2020	2	22,063.000	22,061.680	1.320	0.01%	0.026
2020	3	22,061.000	22,072.772	-11.772	-0.05%	-0.233
2020	4	22,060.000	22,065.856	-5.856	-0.03%	-0.116
2020	5	22,044.000	22,065.479	-21.479	-0.10%	-0.425
2020	6		22,035.457			
2020	7		22,034.225			
2020	8		22,036.647			
2020	9		22,043.718			
2020	10		22,051.581			
2020	11		22,059.735			
2020	12		22,064.657			
2021	1		22,069.489			
2021	2		22,074.169			
2021	3		22,083.384			
2021	4		22,092.408			

### Xcel Energy North Dakota Residential with Space Heating 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		22,101.239			
2021	6		22,117.964			
2021	7		22,134.502			
2021	8		22,150.859			
2021	9		22,171.254			
2021	10		22,191.480			
2021	11		22,211.543			
2021	12		22,234.174			

Test Year 2021 Customer Counts

Xcel Energy North Dakota Small Commercial and Industrial  
 2021 Test-Year Customer Forecast

Variable	Coefficient	StdErr	T-Stat	P-Value	Definition
CONST	3728.097	343.148	10.864	0.00%	Constant
NDTotResCust	0.111	0.004	25.950	0.00%	ND Total Residential Customers
CRS	139.180	21.505	6.472	0.00%	Binary variable for CRS conversion
AR(1)	0.963	0.017	58.119	0.00%	First order autoregressive term
SAR(1)	0.255	0.061	4.186	0.00%	First order seasonal autoregressive term

## Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

### Model Statistics

Iterations	16
Adjusted Observations	196
Deg. of Freedom for Error	191
R-Squared	0.998
Adjusted R-Squared	0.998
AIC	6.185
BIC	6.269
F-Statistic	20447.81056
Prob (F-Statistic)	0.0000
Log-Likelihood	-879.26
Model Sum of Squares	38,720,705.76
Sum of Squared Errors	90,421.11
Mean Squared Error	473.41
Std. Error of Regression	21.76
Mean Abs. Dev. (MAD)	15.09
Mean Abs. % Err. (MAPE)	0.13%
Durbin-Watson Statistic	2.065
Durbin-H Statistic	NA
Ljung-Box Statistic	22.28
Prob (Ljung-Box)	0.5623
Skewness	0.122
Kurtosis	6.049
Jarque-Bera	76.422
Prob (Jarque-Bera)	0.000

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2003	1	11,543.000				
2003	2	11,496.000				
2003	3	11,576.000				
2003	4	11,531.000				
2003	5	11,544.000				
2003	6	11,560.000				
2003	7	11,605.000				
2003	8	11,599.000				
2003	9	11,524.000				
2003	10	11,524.000				
2003	11	11,582.000				
2003	12	11,611.000				
2004	1	11,656.000				
2004	2	11,615.000	11,645.779	-30.779	-0.26%	-1.415
2004	3	11,676.000	11,663.439	12.561	0.11%	0.577
2004	4	11,615.000	11,671.962	-56.962	-0.49%	-2.618
2004	5	11,682.000	11,614.782	67.218	0.58%	3.089
2004	6	11,670.000	11,701.070	-31.070	-0.27%	-1.428
2004	7	11,695.000	11,685.768	9.232	0.08%	0.424
2004	8	11,694.000	11,733.513	-39.513	-0.34%	-1.816
2004	9	11,685.000	11,699.463	-14.463	-0.12%	-0.665
2004	10	11,680.000	11,688.059	-8.059	-0.07%	-0.370
2004	11	11,811.000	11,719.867	91.133	0.77%	4.188
2004	12	11,768.000	11,808.259	-40.259	-0.34%	-1.850
2005	1	11,729.000	11,795.082	-66.082	-0.56%	-3.037
2005	2	11,471.000	11,481.536	-10.536	-0.09%	-0.484
2005	3	11,500.000	11,479.315	20.685	0.18%	0.951
2005	4	11,501.000	11,456.033	44.967	0.39%	2.067
2005	5	11,499.000	11,507.354	-8.354	-0.07%	-0.384
2005	6	11,471.000	11,437.305	33.695	0.29%	1.549
2005	7	11,484.000	11,432.958	51.042	0.44%	2.346
2005	8	11,471.000	11,476.706	-5.706	-0.05%	-0.262
2005	9	11,505.000	11,444.854	60.146	0.52%	2.764
2005	10	11,504.000	11,529.297	-25.297	-0.22%	-1.163
2005	11	11,517.000	11,560.746	-43.746	-0.38%	-2.011
2005	12	11,511.000	11,517.869	-6.869	-0.06%	-0.316
2006	1	11,513.000	11,511.973	1.027	0.01%	0.047
2006	2	11,500.000	11,524.884	-24.884	-0.22%	-1.144
2006	3	11,506.000	11,531.505	-25.505	-0.22%	-1.172
2006	4	11,544.000	11,518.568	25.432	0.22%	1.169
2006	5	11,558.000	11,559.656	-1.656	-0.01%	-0.076
2006	6	11,563.000	11,541.218	21.782	0.19%	1.001
2006	7	11,601.000	11,587.803	13.197	0.11%	0.607
2006	8	11,649.000	11,644.723	4.277	0.04%	0.197

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2006	9	11,661.000	11,687.913	-26.913	-0.23%	-1.237
2006	10	11,667.000	11,681.154	-14.154	-0.12%	-0.651
2006	11	11,685.000	11,686.249	-1.249	-0.01%	-0.057
2006	12	11,656.000	11,703.919	-47.919	-0.41%	-2.202
2007	1	11,687.000	11,686.018	0.982	0.01%	0.045
2007	2	11,692.000	11,696.843	-4.843	-0.04%	-0.223
2007	3	11,687.000	11,711.292	-24.292	-0.21%	-1.116
2007	4	11,710.000	11,713.514	-3.514	-0.03%	-0.162
2007	5	11,754.000	11,728.179	25.821	0.22%	1.187
2007	6	11,761.000	11,756.016	4.984	0.04%	0.229
2007	7	11,782.000	11,776.171	5.829	0.05%	0.268
2007	8	11,809.000	11,795.467	13.533	0.11%	0.622
2007	9	11,798.000	11,808.502	-10.502	-0.09%	-0.483
2007	10	11,853.000	11,811.311	41.689	0.35%	1.916
2007	11	11,866.000	11,858.926	7.074	0.06%	0.325
2007	12	11,821.000	11,859.353	-38.353	-0.32%	-1.763
2008	1	11,825.000	11,848.351	-23.351	-0.20%	-1.073
2008	2	11,819.000	11,834.517	-15.517	-0.13%	-0.713
2008	3	11,811.000	11,823.767	-12.767	-0.11%	-0.587
2008	4	11,824.000	11,827.791	-3.791	-0.03%	-0.174
2008	5	11,869.000	11,839.440	29.560	0.25%	1.359
2008	6	11,865.000	11,863.016	1.984	0.02%	0.091
2008	7	11,886.000	11,874.486	11.514	0.10%	0.529
2008	8	11,895.000	11,914.392	-19.392	-0.16%	-0.891
2008	9	11,892.000	11,909.057	-17.057	-0.14%	-0.784
2008	10	11,911.000	11,917.536	-6.536	-0.05%	-0.300
2008	11	11,925.000	11,919.413	5.587	0.05%	0.257
2008	12	11,895.000	11,927.921	-32.921	-0.28%	-1.513
2009	1	11,906.000	11,896.132	9.868	0.08%	0.454
2009	2	11,909.000	11,912.690	-3.690	-0.03%	-0.170
2009	3	11,906.000	11,909.046	-3.046	-0.03%	-0.140
2009	4	11,907.000	11,911.310	-4.310	-0.04%	-0.198
2009	5	11,959.000	11,934.255	24.745	0.21%	1.137
2009	6	11,951.000	11,967.692	-16.692	-0.14%	-0.767
2009	7	11,937.000	11,958.712	-21.712	-0.18%	-0.998
2009	8	11,950.000	11,942.610	7.390	0.06%	0.340
2009	9	11,965.000	11,952.559	12.441	0.10%	0.572
2009	10	11,975.000	11,974.858	0.142	0.00%	0.007
2009	11	11,995.000	11,989.441	5.559	0.05%	0.255
2009	12	11,991.000	12,000.688	-9.688	-0.08%	-0.445
2010	1	11,996.000	12,010.513	-14.513	-0.12%	-0.667
2010	2	12,001.000	12,012.206	-11.206	-0.09%	-0.515
2010	3	12,006.000	12,015.403	-9.403	-0.08%	-0.432
2010	4	12,000.000	12,007.643	-7.643	-0.06%	-0.351

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2010	5	12,017.000	12,008.402	8.598	0.07%	0.395
2010	6	12,039.000	12,016.410	22.590	0.19%	1.038
2010	7	12,050.000	12,044.318	5.682	0.05%	0.261
2010	8	12,047.000	12,060.245	-13.245	-0.11%	-0.609
2010	9	12,045.000	12,053.478	-8.478	-0.07%	-0.390
2010	10	12,052.000	12,055.399	-3.399	-0.03%	-0.156
2010	11	12,068.000	12,076.220	-8.220	-0.07%	-0.378
2010	12	12,078.000	12,073.579	4.421	0.04%	0.203
2011	1	12,084.000	12,086.705	-2.705	-0.02%	-0.124
2011	2	12,090.000	12,089.197	0.803	0.01%	0.037
2011	3	12,111.000	12,094.858	16.142	0.13%	0.742
2011	4	12,122.000	12,113.671	8.329	0.07%	0.383
2011	5	12,135.000	12,132.222	2.778	0.02%	0.128
2011	6	12,135.000	12,133.147	1.853	0.02%	0.085
2011	7	11,632.000	11,683.055	-51.055	-0.44%	-2.347
2011	8	11,740.000	11,824.932	-84.932	-0.72%	-3.904
2011	9	11,879.000	11,835.604	43.396	0.37%	1.994
2011	10	11,932.000	11,946.663	-14.663	-0.12%	-0.674
2011	11	11,993.000	11,979.430	13.570	0.11%	0.624
2011	12	12,033.000	12,027.625	5.375	0.04%	0.247
2012	1	12,033.000	12,058.199	-25.199	-0.21%	-1.158
2012	2	12,025.000	12,055.620	-30.620	-0.25%	-1.407
2012	3	12,037.000	12,039.007	-2.007	-0.02%	-0.092
2012	4	12,040.000	12,045.133	-5.133	-0.04%	-0.236
2012	5	12,038.000	12,059.949	-21.949	-0.18%	-1.009
2012	6	12,037.000	12,037.304	-0.304	-0.00%	-0.014
2012	7	12,058.000	12,032.002	25.998	0.22%	1.195
2012	8	12,087.000	12,055.607	31.393	0.26%	1.443
2012	9	12,096.000	12,119.050	-23.050	-0.19%	-1.059
2012	10	12,130.000	12,114.192	15.808	0.13%	0.727
2012	11	12,159.000	12,152.446	6.554	0.05%	0.301
2012	12	12,182.000	12,173.638	8.362	0.07%	0.384
2013	1	12,208.000	12,178.921	29.079	0.24%	1.336
2013	2	12,202.000	12,206.903	-4.903	-0.04%	-0.225
2013	3	12,203.000	12,213.488	-10.488	-0.09%	-0.482
2013	4	12,206.000	12,218.585	-12.585	-0.10%	-0.578
2013	5	12,231.000	12,210.006	20.994	0.17%	0.965
2013	6	12,239.000	12,232.457	6.543	0.05%	0.301
2013	7	12,267.000	12,247.163	19.837	0.16%	0.912
2013	8	12,290.000	12,290.863	-0.863	-0.01%	-0.040
2013	9	12,285.000	12,298.679	-13.679	-0.11%	-0.629
2013	10	12,322.000	12,300.556	21.444	0.17%	0.986
2013	11	12,328.000	12,343.186	-15.186	-0.12%	-0.698
2013	12	12,317.000	12,343.330	-26.330	-0.21%	-1.210

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2014	1	12,339.000	12,328.407	10.593	0.09%	0.487
2014	2	12,348.000	12,344.296	3.704	0.03%	0.170
2014	3	12,368.000	12,352.923	15.077	0.12%	0.693
2014	4	12,355.000	12,371.432	-16.432	-0.13%	-0.755
2014	5	12,365.000	12,381.124	-16.124	-0.13%	-0.741
2014	6	12,378.000	12,366.866	11.134	0.09%	0.512
2014	7	12,399.000	12,397.070	1.930	0.02%	0.089
2014	8	12,403.000	12,401.436	1.564	0.01%	0.072
2014	9	12,420.000	12,401.549	18.451	0.15%	0.848
2014	10	12,453.000	12,442.130	10.870	0.09%	0.500
2014	11	12,458.000	12,481.477	-23.477	-0.19%	-1.079
2014	12	12,475.000	12,466.822	8.178	0.07%	0.376
2015	1	12,498.000	12,484.317	13.683	0.11%	0.629
2015	2	12,520.000	12,499.594	20.406	0.16%	0.938
2015	3	12,530.000	12,538.958	-8.958	-0.07%	-0.412
2015	4	12,525.000	12,531.649	-6.649	-0.05%	-0.306
2015	5	12,549.000	12,527.764	21.236	0.17%	0.976
2015	6	12,547.000	12,552.253	-5.253	-0.04%	-0.241
2015	7	12,574.000	12,563.231	10.769	0.09%	0.495
2015	8	12,595.000	12,591.811	3.189	0.03%	0.147
2015	9	12,605.000	12,607.531	-2.531	-0.02%	-0.116
2015	10	12,623.000	12,611.535	11.465	0.09%	0.527
2015	11	12,675.000	12,622.457	52.543	0.41%	2.415
2015	12	12,705.000	12,696.544	8.456	0.07%	0.389
2016	1	12,700.000	12,713.633	-13.633	-0.11%	-0.627
2016	2	12,705.000	12,704.808	0.192	0.00%	0.009
2016	3	12,698.000	12,700.251	-2.251	-0.02%	-0.103
2016	4	12,690.000	12,695.866	-5.866	-0.05%	-0.270
2016	5	12,703.000	12,701.678	1.322	0.01%	0.061
2016	6	12,711.000	12,688.609	22.391	0.18%	1.029
2016	7	12,695.000	12,700.310	-5.310	-0.04%	-0.244
2016	8	12,714.000	12,712.077	1.923	0.02%	0.088
2016	9	12,723.000	12,712.051	10.949	0.09%	0.503
2016	10	12,729.000	12,724.509	4.491	0.04%	0.206
2016	11	12,748.000	12,747.351	0.649	0.01%	0.030
2016	12	12,746.000	12,755.329	-9.329	-0.07%	-0.429
2017	1	12,752.000	12,743.816	8.184	0.06%	0.376
2017	2	12,761.000	12,757.745	3.255	0.03%	0.150
2017	3	12,767.000	12,759.283	7.717	0.06%	0.355
2017	4	12,751.000	12,765.850	-14.850	-0.12%	-0.683
2017	5	12,760.000	12,750.088	9.912	0.08%	0.456
2017	6	12,757.000	12,754.868	2.132	0.02%	0.098
2017	7	12,755.000	12,757.219	-2.219	-0.02%	-0.102
2017	8	12,748.000	12,756.814	-8.814	-0.07%	-0.405

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2017	9	12,746.000	12,742.740	3.260	0.03%	0.150
2017	10	12,746.000	12,755.867	-9.867	-0.08%	-0.453
2017	11	12,747.000	12,752.137	-5.137	-0.04%	-0.236
2017	12	12,753.000	12,751.029	1.971	0.02%	0.091
2018	1	12,759.000	12,757.524	1.476	0.01%	0.068
2018	2	12,769.000	12,765.730	3.270	0.03%	0.150
2018	3	12,777.000	12,774.976	2.024	0.02%	0.093
2018	4	12,770.000	12,765.990	4.010	0.03%	0.184
2018	5	12,795.000	12,765.265	29.735	0.23%	1.367
2018	6	12,794.000	12,774.129	19.871	0.16%	0.913
2018	7	12,801.000	12,782.616	18.384	0.14%	0.845
2018	8	12,791.000	12,798.153	-7.153	-0.06%	-0.329
2018	9	12,785.000	12,788.420	-3.420	-0.03%	-0.157
2018	10	12,797.000	12,787.311	9.689	0.08%	0.445
2018	11	12,828.000	12,796.415	31.585	0.25%	1.452
2018	12	12,826.000	12,826.740	-0.740	-0.01%	-0.034
2019	1	12,859.000	12,833.748	25.252	0.20%	1.161
2019	2	12,846.000	12,854.050	-8.050	-0.06%	-0.370
2019	3	12,838.000	12,857.056	-19.056	-0.15%	-0.876
2019	4	12,834.000	12,836.372	-2.372	-0.02%	-0.109
2019	5	12,821.000	12,842.037	-21.037	-0.16%	-0.967
2019	6	12,812.000	12,804.215	7.785	0.06%	0.358
2019	7	12,818.000	12,815.258	2.742	0.02%	0.126
2019	8	12,809.000	12,814.048	-5.048	-0.04%	-0.232
2019	9	12,805.000	12,808.121	-3.121	-0.02%	-0.143
2019	10	12,794.000	12,801.739	-7.739	-0.06%	-0.356
2019	11	12,800.000	12,805.663	-5.663	-0.04%	-0.260
2019	12	12,823.000	12,803.032	19.968	0.16%	0.918
2020	1	12,823.000	12,830.772	-7.772	-0.06%	-0.357
2020	2	12,833.000	12,819.671	13.329	0.10%	0.613
2020	3	12,828.000	12,824.962	3.038	0.02%	0.140
2020	4	12,819.000	12,824.034	-5.034	-0.04%	-0.231
2020	5	12,805.000	12,806.784	-1.784	-0.01%	-0.082
2020	6		12,801.157			
2020	7		12,797.525			
2020	8		12,791.241			
2020	9		12,787.426			
2020	10		12,783.570			
2020	11		12,782.145			
2020	12		12,784.612			
2021	1		12,781.739			
2021	2		12,782.272			
2021	3		12,780.623			
2021	4		12,778.068			

### Xcel Energy North Dakota Small Commercial and Industrial 2021 Test-Year Customer Forecast

Year	Month	Actual	Pred	Resid	%Resid	StdResid
2021	5		12,775.835			
2021	6		12,777.862			
2021	7		12,779.545			
2021	8		12,780.337			
2021	9		12,782.495			
2021	10		12,784.589			
2021	11		12,787.284			
2021	12		12,791.836			