Integrated Resource Plan 2024

Submitted to the
Montana Public Service Commission
September 30, 2024

Volume II: Attachment A

Montana-Dakota Utilities Co.

2024 Integrated Resource Plan

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Attachment A

MONTANA-DAKOTA UTILITIES CO.
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In the Community to Serve®

MONTANA-DAKOTA UTILITIES CO.
ELECTRIC LOAD FORECAST
2024–2043

Prepared by
Montana-Dakota Utilities Co.
Electric System Operations & Planning Department

December 31, 2023

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Executive Summary

This report presents the 2024-2043 forecasts of Montana-Dakota Utilities Co.'s (Montana-Dakota) electric energy requirements and peak demands for the Integrated System of Montana, North Dakota, and South Dakota and for the Wyoming System. The forecasts are prepared by the Electric System Operations & Planning Department. An econometric methodology of forecasting is generally used as the starting point for Montana-Dakota's load forecasts.

INTEGRATED SYSTEM

Total annual energy for the Integrated System is projected to grow at an average rate of 0.42% per year for the next five years and at an average rate of 0.55% per year through 2043. Integrated System summer peak demand is projected to grow at an average rate of 0.64% per year for the next five years and an average rate of 0.69% per year through 2043 prior to any reductions due to demand response programs. Integrated System winter peak demand is projected to grow at an average rate of 0.43% per year for the next five years and an average rate of 0.56% per year through 2043.

As described in Montana-Dakota's 2021 Integrated Resource Plans (IRPs) filed with the North Dakota and Montana Public Service Commissions, Montana-Dakota has established a Demand-Side Management (DSM) goal of achieving an overall reduction of 0.34 percent of annual energy sales over the 20-year planning horizon of the IRPs using new and existing energy efficiency programs. Additionally, Montana-Dakota will pursue a demand response portfolio that includes the Commercial Demand Response program, which was launched in June 2012, as well as the continued promotion of the Company's current Interruptible Demand Response program. The effects of the demand-side management (DSM) programs that will be implemented in the Integrated System to achieve these goals are reflected in the sales and demand forecasts.

Econometric Overview

Montana-Dakota uses econometric modeling as the starting point for its forecasts. The econometric models are developed using the statistical software package SAS®. In order to capture the unusual activity experienced as a result of the Bakken oil field, other forecasting methods and analyses also enter into the forecasting process for the Integrated System resulting in a combined analysis approach to the forecast.

An econometric model is a set of equations that expresses electricity use as a function of underlying factors such as income, price of electricity and alternate fuels, and weather.

The strengths of econometric forecasting models include:

- Econometric models explicitly measure the effects of underlying causes of trends and patterns.
- Econometric models provide statistical evaluation of forecast uncertainty.
- Econometric models utilize economic and demographic information that is easily understood.
- Econometric models can be readily re-estimated.

The econometric method combines economics theory and statistical techniques to produce a system of simultaneous equations. The method starts with estimating causal relationships between electric energy consumption (the dependent variable) and factors influencing electricity use (the independent variables). The relationship is estimated by applying regression analysis or other more sophisticated methods to time-series data. Once the relationships are established, inserting forecasts of the independent variables into the equation yields projections of the dependent variable.

A number of demographic and econometric variables were tested for fit in the process of developing both the Integrated System and Wyoming System forecasts. Various combinations of variables were tested for statistical significance when evaluating the data to be used in each equation. The following is a list of variables that were available for both the historical time period being analyzed and the forecasted time period:

Residential price of electricity
Small Commercial & Industrial price of electricity
Large Commercial & Industrial price of electricity
Residential price of alternate fuel (natural gas)
Commercial price of alternate fuel (natural gas)
Total Personal Income
Heating Degree Days (HDD) for Bismarck, ND; Aberdeen, SD; and Sheridan, WY
Cooling Degree Days (CDD) for Bismarck, ND; Aberdeen, SD; and Sheridan, WY
Number of Households
Employment by Sector
Total Retail Sales
Temperature at the time of peak for Bismarck, ND; Williston, ND; and Miles City, MT; for the Integrated System forecast and for Sheridan, WY for the Wyoming System forecast

The variables used in each resulting equation are noted in the narrative that follows for each sales sector forecast. The forecast process begins by estimating the full models and then removing variables for which the estimated coefficient

either has the wrong sign or is not statistically significantly different from zero (using a p-value of 0.10).

Prior to the forecast developed in 2012, forecasts for the Integrated System had always been developed on a total Integrated System basis followed by allocations to the states of Montana, North Dakota, and South Dakota. The forecast published in this report is now the eleventh consecutive year in which the forecasts were developed for each sales sector on a state-by-state basis rather than an Integrated System basis.

Data Sources

At the time this analysis was begun for the Integrated System (June 2023) and the Wyoming System (September 2023), the most recent year for which a complete set of weather and actual monthly sales by sector was available was 2022.

The data used in the development of the forecast that are available in-house include Montana-Dakota's rate projections, historical sales, energy, demand, losses, natural gas and electricity prices, and number of customers or bills.

In addition to the data available in-house, most of the economic and demographic data are obtained from Woods & Poole Economics, Inc. (W&P) of Washington, D.C. by county. The W&P data are apportioned and adjusted to represent the data for the Montana-Dakota service territory. Other data sources include the National Oceanic and Atmospheric Administration (NOAA), U.S. Census Bureau, and others.

The forecasts for the Integrated System and the Wyoming System are developed annually. Likewise, the W&P data by county are available annually from the regional model developed by W&P. W&P revises the regional model from one year to the next to reflect new computational techniques and new sources of regional economic and demographic information. Each year, W&P produces new projections based on an updated historical database and revised assumptions. Therefore, the data provided by W&P captures the economic conditions in place at the time that the W&P forecasts are produced.

While national economic conditions can change quite quickly, data from W&P is provided once per year and therefore may not reflect the most current economic climate. For Montana-Dakota's service territory, this is not always a concern since this area is somewhat isolated from factors affecting the rest of the country; economic trends felt nationally usually take a year or two or more before their impact reaches this area. For example, while the 2008 economic downturn was felt by the majority of the country, Montana-Dakota's service territory was enjoying a robust agricultural sector, intense oil field drilling activity, and

increased energy usage resulting from high oil prices. However, the impacts that occurred in 2020, related to COVID-19, were felt nationwide.

Here is an excerpt from the U.S. Bureau of Labor Statists (BLS) in their March 1, 2024, press release titled Regional and State Unemployment, 2023 Annual Average Summary: "In 2023, annual average unemployment rates decreased in 6 states, increased in 2 states, and were little changed in 42 states and the District of Columbia, the U.S. Bureau of Labor Statistics reported today. Employment-population ratios increased in 10 states and were little changed in 40 states and the District. The U.S. jobless rate was unchanged over the year at 3.6 percent, while the national employment-population ratio rose by 0.3 percentage point to 60.3 percent." According to BLS, Montana's unemployment rate was at 2.9%, North Dakota's unemployment was at 1.9%, South Dakota's unemployment rate was at 2.0% and Wyoming's unemployment rate was at 2.9%; all below the national rate of 3.6%.

The forecasts for the Integrated System and the Wyoming System in this publication reflect growth seen up through 2022.

Degree days are used to estimate how hot or cold the climate is and how much energy may be needed to keep buildings cool or warm. Heating degree days, HDDs, are calculated by subtracting the mean daily temperature from 65°F and summing only positive values over a given period of time, while cooling degree days, CDDs, are calculated by subtracting 65°F from the mean daily temperature and summing only positive values over a given period of time.

The HDD and CDD numbers used are annual values and the change in magnitude from one year to another is more relevant for representing warmer or cooler than normal weather in the analysis than the actual values. Since the forecasts are developed for each sales sector on a state-by-state basis rather than an Integrated System basis, HDDs and CDDs for sites in North Dakota, South Dakota, and Montana were considered for representation of degree days in Montana-Dakota's electric service territory in each state.

Bismarck and Mandan, ND account for approximately one-third of Montana-Dakota's Integrated System electric sales annually. Therefore, Bismarck HDDs and CDDs were used to represent Montana-Dakota's service territory in North Dakota. There are no NOAA National Climatic Data Center (NCDC) stations with local climatological data available in Montana that are in Montana-Dakota's electric service territory. It was decided that Bismarck HDDs and CDDs values would best represent the Montana-Dakota service territory in Montana as well.

There are also no NOAA NCDC stations in South Dakota that are in Montana-Dakota's electric service territory. After reviewing available data, it was decided that Aberdeen, SD HDDs and CDDs would be used to represent Montana-Dakota's service territory in South Dakota.

For the Wyoming System, HDDs and CDDs are from NOAA for Sheridan, WY.

Historical personal income per household is calculated to be total personal income divided by the number of households for those counties in which Montana-Dakota provides electric utility service. Historical personal income is available from the W&P data which come from the U.S. Department of Commerce. Historical households are also from the U.S. Department of Commerce. Forecasted personal income and number of households are projections provided by W&P.

Historical company data used in the development of the forecasts are included in Appendix A for the Integrated System and Appendix H for the Wyoming System. Appendices A-1 through A-4 list annual sales by customer class for Montana, North Dakota, South Dakota, and the Integrated System for the years 1966-2023, respectively. Appendix A-5 lists the seasonal peaks and load factors of the Integrated System for the years 1975-2023. Appendix A-6 lists demand by state at the time of the system peak for the summer and winter seasons for the years 1975-2023. Similar information can be found in Appendix H for the Wyoming System.

Appendix B contains historical and forecasted values for the exogenous variables for the Integrated System and Appendix I contains the corresponding data for the Wyoming System.

Integrated System

Overview

From 2006-2011, econometric equations were used to develop long-range (20-year) electric load forecasts for Montana-Dakota's Integrated System, which is comprised of Montana-Dakota's service territories in Montana, North Dakota, and South Dakota. The total Integrated System sales by sector were then allocated to the individual states.

Beginning in 2012, the forecast was developed for each state individually – Montana, North Dakota, and South Dakota – and the forecasts by state were combined to arrive at the Integrated System forecast in total. The previously used methodology of allocating Integrated System sales to the states was becoming more difficult to accomplish while capturing the shifting percentage of sales in each state. This was a result of the higher growth recently experienced in North Dakota due to the Bakken oil field activity which is also beginning to impact Montana-Dakota's electric sales in Montana.

At the time this analysis was begun (June 2023), the most recent year for which a complete set of weather, prices, monthly sales by sector, and other historical information was available was for year-ending 2022. The equations developed used historical data available through 2022 and were designed to forecast the time period 2024-2043.

Montana-Dakota's Integrated System consists of the counties listed in the table below. These counties are located in eastern Montana, north-central South Dakota, and western and central North Dakota.

Counties by State in Montana-Dakota's Integrated System

Montana	South Dakota	North Dakota	
Custer	Campbell	Adams	Logan
Daniels	Corson	Bowman	McIntosh
Dawson	Edmunds	Burke	McKenzie
Fallon	Faulk	Burleigh	Mercer
Prairie	Harding	Dickey	Morton
Richland	McPherson	Divide	Mountrail
Roosevelt	Perkins	Dunn	Oliver
Rosebud	Potter	Emmons	Renville
Sheridan	Walworth	Golden Valley	Slope
Wibaux		Grant	Stark
		Hettinger	Williams
		Kidder	

Montana-Dakota also provides electric service to a small part of Brown County of South Dakota. However, Brown County is excluded from the database because it includes the town of Aberdeen which is not served by Montana-Dakota, but which comprises the majority of the population for the county. Including Brown County would reflect too much of the economic activity that occurs in Aberdeen.

The same is true for Ward County in North Dakota. Montana-Dakota provides electric service to a small part of Ward County. However, Ward County is excluded from the database because it includes the town of Minot which does not receive electric service from Montana-Dakota, but which comprises the majority of the population for the county. Including Ward County would reflect too much of the economic activity that occurs in Minot.

1. Forecast Methodology – Sales

The Montana, North Dakota, and South Dakota sales forecasts are disaggregated into five sales sectors:

- Residential sector.
- Small Commercial & Industrial (SC&I) sector. This sector consists of those commercial and industrial customers whose monthly peak demand averages less than 50 kilowatts over a year's time.
- Large Commercial & Industrial (LC&I) sector. This sector consists of those commercial and industrial customers whose monthly peak demand averages more than 50 kilowatts over a year's time.
- Street Lighting. This sector consists of energy for public street and highway lighting.
- Miscellaneous. This sector includes energy for sales to other public authorities, interdepartmental sales, and company use.

The LC&I sector was further broken down into four end-use categories which were forecasted individually. The remainder of the LC&I sales fall into a fifth category: General LC&I sales. The end-uses forecasted individually were as follows:

- North Dakota
    - Marathon (Tesoro) Corporation's Refinery sales
    - North American Coal Corporation's Coyote Creek Mine sales
    - Sabin Metal Corporation's sales
- Montana
    - Montana Oil Field sales

Econometric equations were tried initially in the development of the forecasted sales for the three primary customer categories by state – residential, SC&I, and General LC&I – while sales forecasts for the street lighting and miscellaneous sectors were developed primarily using current sales levels or simple linear regression. The final models used for each of the primary customer categories were a combination of econometrics and judgment. The sales forecasts for the five LC&I end-uses were developed using a combination of regressions and information available from Montana-Dakota's field personnel regarding these large customers.

The development of the sales forecasts for each of the five sales sectors is explained below.

1.1 Residential

The residential sales forecast is derived by developing a forecast of residential use per customer and a forecast of number of residential customers. The product of these becomes the baseline residential sales forecast. Adjustments were added to the annual forecasts in anticipation of load due to Electric Vehicle charging starting in 2024.

RESIDENTIAL USE PER CUSTOMER

Higher electricity prices and lower income may result in less electricity use, while higher alternate fuel prices as well as colder than normal winters (more heating degree days) and hotter than normal summers (more cooling degree days) may result in more electricity consumption. Historical and forecasted values for these variables are available and were tested for statistical significance when developing the residential econometric equations for each state in previous years. The historical values for these variables are given in Appendix B.

The econometric process used in previous years allowed residential use per customer to depend on variables such as the residential price of electricity, alternate fuel prices for residential customers (natural gas), personal income per household, heating degree days, cooling degree days, number of households, and year. This year the final residential use per customer models for Montana, North Dakota and South Dakota will hold use per customer flat for the entire forecast period making average customer counts the primary driver for residential sales growth.

NUMBER OF RESIDENTIAL CUSTOMERS

The model initially developed for the number of customers (bills) for each state is as follows:

$$ln(res\_bills_t) = a + b^{hhld} \times ln(hholds_t) + e_t$$

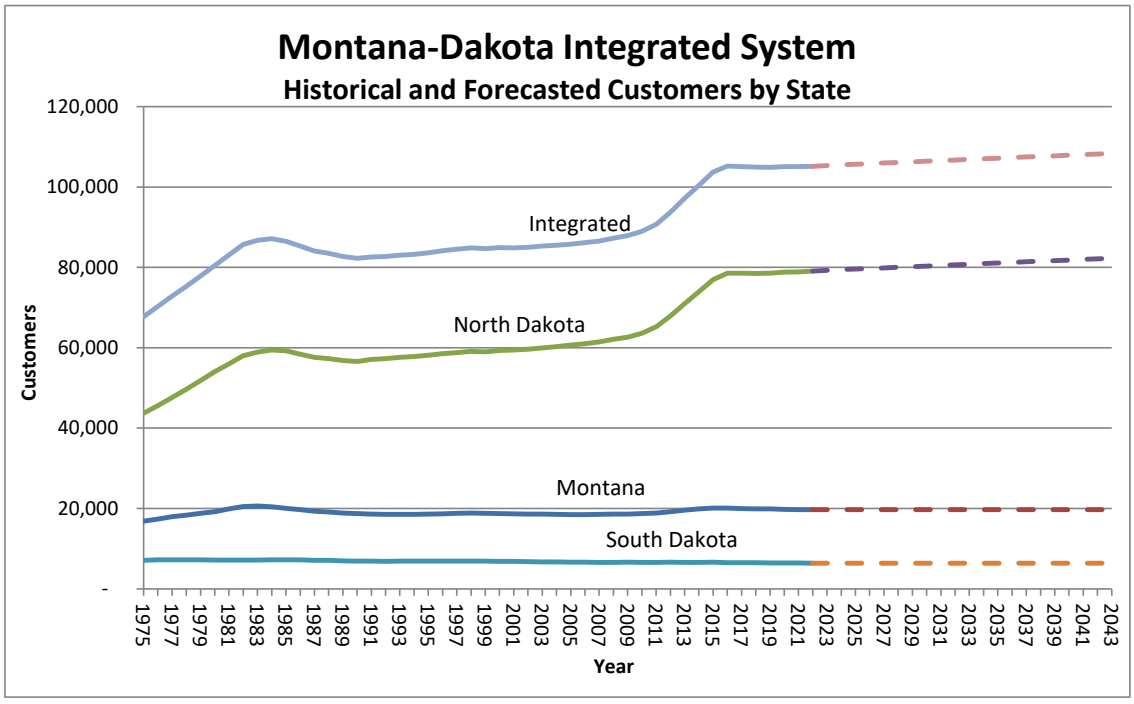
In this equation, *a* and *b* are estimated parameters; e_t is the error term, the dependent variable is the natural log of the number of bills and the explanatory variable is the natural log of the number of households.

The forecast for number of customers by state was initially developed as described above. However, adjustments were made to the residential customer forecasts for all states.

In North Dakota, growth in residential customers for 2024 through 2025 was set based on experienced residential customer growth trends. In the following years, residential customer growth was allowed to continue at the rate set in 2025.

For Montana and South Dakota, customer growth for 2024 and beyond was set to the approximate residential customer growth currently experienced.

Historical and forecasted customers (bills) by state and in total are plotted on the following chart while the values are given in Appendix B-6.



1.2 Small Commercial & Industrial

Small commercial & industrial (SC&I) sales could potentially depend on variables such as the SC&I price of electricity, alternate fuel prices for SC&I customers (natural gas), employment, heating degree days, cooling degree days, and year. Higher electricity prices may result in less electricity use, while higher alternate fuel prices and higher employment as well as colder than normal winters (more heating degree days) and hotter than normal summers (more cooling degree days) may result in more electricity consumption. Historical and forecasted values for these variables are available and were tested for statistical significance in developing the SC&I econometric equations by state. The historical and forecasted values for these variables are given in Appendix B.

In contrast to the residential sales forecast which uses two models for each state to project residential sales (a use per residential customer model and a residential customer number model), a single model for each state is used to forecast small commercial & industrial (SC&I) sales. The final models by state are as follows:

North Dakota:

$$\ln(sci\_kwh_t) = a + b^{Emp} \times \ln(emp\_no\_farm\_mining_t) + e_t$$

where:

ln	= natural logarithm;
sci_kwh_t	= small comm & industrial sales; and
$emp\_no\_farm\_mining_t$	= total employment, excluding farm and mining.

In this equation, *a* and *b* are estimated parameters; e_t is the error term.

Montana:

$$\ln(sci\_kwh_t) = a + b^{Emp} \times \ln(emp\_no\_farm\_mining_t) + b^{Yr} \times year_t + e_t$$

where:

ln	= natural logarithm;
sci_kwh_t	= small commercial & industrial sales;
$emp\_no\_farm\_mining_t$	= total employment, excluding farm and mining; and
$year_t$	= year (1998-2022), which serves as a time trend variable.

In this equation, *a* and *b* are estimated parameters; e_t is the error term.

South Dakota:

$$\ln(sci\_kwh_t) = a + b^{HDD} \times HDD_t + b^{Yr} \times year_t + e_t$$

where:

ln	= natural logarithm;
sci_kwh_t	= small commercial & industrial sales;
HDD_t	= heating degree days; and
$year_t$	= year (1998-2022), which serves as a time trend variable.

In this equation, *a* and *b* are estimated parameters; e_t is the error term.

The Personal Consumption Expenditure Deflator, whose values are given on Appendix B-5, was used to place small commercial and industrial electricity prices and firm natural gas prices into real dollar terms.

Employment numbers are available from W&P for the historical time period from the U.S. Department of Commerce, Bureau of Economic Analysis. Employment projections for the counties served by Montana-Dakota are made by W&P. However, due to the activity anticipated by our districts in North Dakota and Montana, adjustments were made to what was projected by W&P.

Since residential customer number forecasts had been developed for North Dakota and Montana, it was decided that a relationship between residential customer numbers and employment should be established in order that the SC&I sales forecast would correspond to the residential customer number forecast and the growth in employment and residential customers would then be directly correlated. Regressions were run on 25-year ratios of historical employment (total employment less farming and mining) to residential customers. The forecasted ratio produced from this regression was applied to the adjusted residential customer forecasts for both North Dakota and Montana to arrive at the adjusted employment forecasts for each state. Historical employment as well as employment as forecasted by W&P and as adjusted is given on Appendix B-7.

1.3 Large Commercial & Industrial

The sales forecasts for four LC&I end-uses (Marathon (Tesoro) Refineries, North American Coal, Sabin Metals, and Montana Oil Fields) were developed using information available from Montana-Dakota's field personnel regarding these large customers.

1.3.1 General LC&I

General LC&I sales (sales to all other LC&I customers that are not one of the above end-uses) could depend on variables such as the LC&I price of electricity, alternate fuel prices for LC&I customers (natural gas), heating degree days, cooling degree days, employment, and year. Higher electricity prices can result in less electricity use, while higher alternate fuel prices and higher employment as well as colder than normal winters (more heating degree days) and hotter than normal summers (more cooling degree days) could result in more electricity consumption. Historical and forecasted values for these variables are available and were tested for statistical significance in developing the General LC&I econometric equations by state.

As with SC&I sales, General LC&I sales are forecasted using a single model. The forecast process began in each state by estimating the full models and then removing variables for which the estimated coefficient either has the wrong sign or is not statistically significant. The Personal Consumption Expenditure Deflator, whose values are given on Appendix B-5, was used to place large commercial and industrial electricity prices and firm natural gas prices into real dollar terms.

The final models for Montana, North Dakota, and South Dakota were identical with the only statistically significant variable being the time-trend variable.

The final model for all three states is as follows:

$$ln(\,lci\_kwh_t) = a + b^{yr} \times year_t + e_t$$

where:

ln	= natural logarithm;
lci_kwh_t	= large commercial & industrial sales;
$year_t$	= year (1998-2022), which serves as a time trend variable.

In this equation, *a* and *b* are estimated parameters; e_t is the error term.

After the General LC&I sales are projected by state using the equation developed as outlined above, adjustments are made to the projected sales in the appropriate state to reflect load growth that is due to any changes expected for existing customers or additional new General LC&I customers that may have been added in 2023 and beyond. Information regarding the specific LC&I customers that come online is provided by Montana-Dakota's field personnel who have contact with and closely monitor these customers. There were no adjustments in 2023, for South Dakota. However, there were adjustments made to both North Dakota and Montana's General LC&I modeled forecasts due to expected and announced customer reductions beginning in 2024.

An adjustment was added to all three state's annual forecasts in anticipation of load due to Electric Vehicle charging, starting in 2024.

1.4 Street Lighting

The sales forecast for the street lighting sector (public street and highway lighting) for all states, Montana, North Dakota, and South Dakota, started with their actual 2022 levels and then are held constant for the remainder of the forecast.

1.5 Miscellaneous

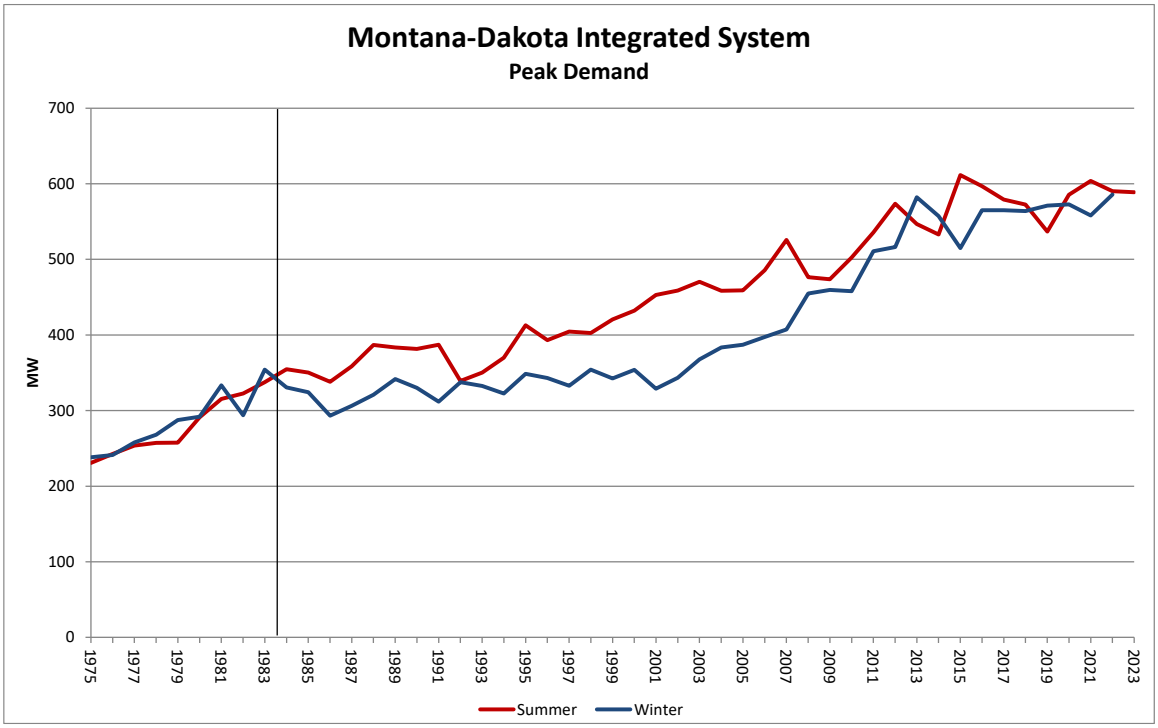
The miscellaneous sales sector is made up of sales for the following three end-uses:

1. Interdepartmental Sales – gas utility use of electricity
2. Other Public Sales – sales to government authorities which includes municipal pumping and some city sales (these sales are served under special contracts that are applicable only to public authorities)
3. Company Use - Montana-Dakota offices

The sales forecast for the miscellaneous sector for all states, Montana, North Dakota, and South Dakota, started with their actual 2022 levels and then are held constant for the remainder of the forecast.

2. Forecast Methodology – Peak Demand

Integrated System historical peak demand is shown on the chart below.



Montana-Dakota was a winter peaking utility prior to 1984. From about 1973 to 1983, the spread between the winter and summer peaks began to narrow and in 1984 Montana-Dakota became a summer peaking utility. From Montana-Dakota's Residential Energy Use Surveys and other available information, it is known that air conditioning has become more prevalent over time and air conditioning load has driven much of the increase in summer peak demand. Recently, the winter peak has been growing at a faster rate again due to the addition of more space heating load and unseasonably cooler summers. The gap between winter and summer seasonal peaks has narrowed once more with an occasional winter peak being higher than summer for years 2013, 2014 and 2019.

The Integrated System peak demand forecast is developed on a total system basis; it is not disaggregated by state or by sector. The summer peak demand forecast was developed using an econometric model. Peak day/hour temperature, annual cooling degree days, total system sales for the year including losses (annual requirements), and a time-trend variable (year) were tested as the independent variables in the econometric model.

For peak day temperature, Montana-Dakota has available the historical hourly temperatures for three major load centers: Bismarck, ND; Williston, ND; and Miles City, MT. Weighted average temperatures for Bismarck (70%), Miles City (15%) and Williston (15%) at the time of the system peak were used as the peak day temperature. This weighting method has been tested and used in the past in the company's short-term demand forecast as well as in other informal in-house analyses. The inclusion of cooling degree days in the model is based on the fact that Montana-Dakota is a summer peaking utility and that hotter summers create more hot days on which high peaks may be set and may also serve as a proxy for heat buildup leading up to the peak.

Because of the nature of the econometric models, the historical summer peak demand data were adjusted to reflect customer load interruptions due to Interruptible Rate 38/39 and/or forced distribution outages that occurred at the time of the summer peak. The historical summer peak value thus represents the peak as it would have occurred had there not been any interruptions. Interruptions to the load for customers served on Large Power Demand Response Rate 38 and/or Interruptible Large Power Service Rate 39 typically occur at the time of the system peak. Also, a forced distribution outage occurred at the time of the summer peak in 2002 and voltage reductions were implemented at the time of the summer peaks in 2006 and 2007.

The summer peak demand model is as follows:

$$peak\_load_t = a + b^{PTemp} \times peak\_temp_t + b^{Sales} \times system\_kwh_t + b^{yr} \times year_t + e_t$$

where:

$peak\_load_t$	= summer peak demand;
$peak\_temp_t$	= weighted average temp at time of summer peak;
$system\_kwh_t$	= annual energy requirements; and
$year_t$	= year (1988-2022), which serves as a time trend variable.

In this equation, *a* and the *b*'s are estimated parameters; e_t is the error term.

The winter peak demand forecast is developed in a manner similar to the summer peak demand forecast except that HDDs were tested for statistical significance in the model rather than CDDs. It was found that HDDs are not statistically significant. The historical period of 30 years was used in developing the winter peak demand model: 1993-2022.

For the winter peak demand forecast, additional variables were tested to see if they play a statistically significant role in the determination of the winter peak. The variables tested were the number of minutes of daylight on the day of the winter peak and the number of days between the winter peak and the winter solstice.

The winter peak demand model is as follows:

$$peak\_load_t = a + b^{PTemp} \times peak\_temp_t + b^{Sales} \times system\_kwh_t + e_t$$

where:

$peak\_load_t$	= winter peak demand;
$peak\_temp_t$	= weighted average temp at time of winter peak; and
$system\_kwh_t$	= annual energy requirements.

In this equation, *a* and the *b*'s are estimated parameters; e_t is the error term.

3. Forecast Results – Sales and Demand

The forecast methodology for both sales and demand as described in Sections 1 and 2 above results in the initial sales forecasts by sales class for each state and the initial demand forecast. Reductions to the sales forecasts by class and by state and to the demand forecast are made to reflect Demand-Side Management programs that are being implemented. Once these reductions are reflected in the sales forecasts, the total of the sales forecasts by class are adjusted by the loss factor to arrive at the final forecast of energy requirements.

3.1 Demand-Side Management (DSM) Reductions

As reflected in the 2021 Integrated Resource Plans (IRP) filed with the North Dakota and Montana Public Service Commissions, Montana-Dakota has included reductions for both energy efficiency and demand response levels over the 20-year planning period of the IRPs. The specific programs used to attain the goals may change over the planning period but will include both energy efficiency and demand response programs that are deemed cost effective.

Energy efficiency programs focus on energy reductions (kWh) and will have some reduction in peak demand (kW). Demand response programs focus on peak demand reductions and may be called upon during peaking conditions and system emergencies. The forecasted reductions based on the expected energy efficiency and demand response programs for energy and peak demand are reflected in the forecast and those amounts are summarized below:

- DSM Energy savings
    - 0.37 percent of annual sales for 2024 through 2042, achieved by growing from 0.18% of total sales in 2023, to 0.43% of total sales by 2030 through 2042, for an overall savings of 0.37% for the 20-year forecast horizon.

- Peak Demand savings
    - Demand Response programs of 59.0 MW for 2024, to 60.0 MW by 2025 through 2042 for the commercial sales sector.
    - Energy Efficiency programs of 0.59 MW in 2024 and 0.68 MW by 2042.

The forecasted reduction in energy and peak demand resulting from the above programs is reflected in the forecast.

3.2 Losses

The sales forecasts reflect the energy delivered to Montana-Dakota's customers' meters. The total amount of electricity generated at the power plants to meet Montana-Dakota's customers' energy needs is greater than what is delivered to the meters and is called the 'Total Energy Requirements.' The difference between the sales and energy requirements reflects the losses that occur within the transmission and distribution system.

The annual energy losses percentage, defined as a fraction of the total annual energy requirements, has varied from year to year. Therefore, these loss percentages are averaged over a ten-year time period. The average value for the past ten years is 8.147%. Using this value for all future years for each state, the total energy requirements are calculated for each year during the study period.

3.3 Final Energy Requirements Forecast

The forecasted sales and system peak demand are first adjusted to reflect the effects of the DSM programs that are being implemented as explained in Section 3.1 and then adjusted for losses as outlined in Section 3.2 to calculate the total energy requirements and peak demand forecast. This is the amount of energy and capacity that needs to be generated or purchased to meet Montana-Dakota's customers' energy needs.

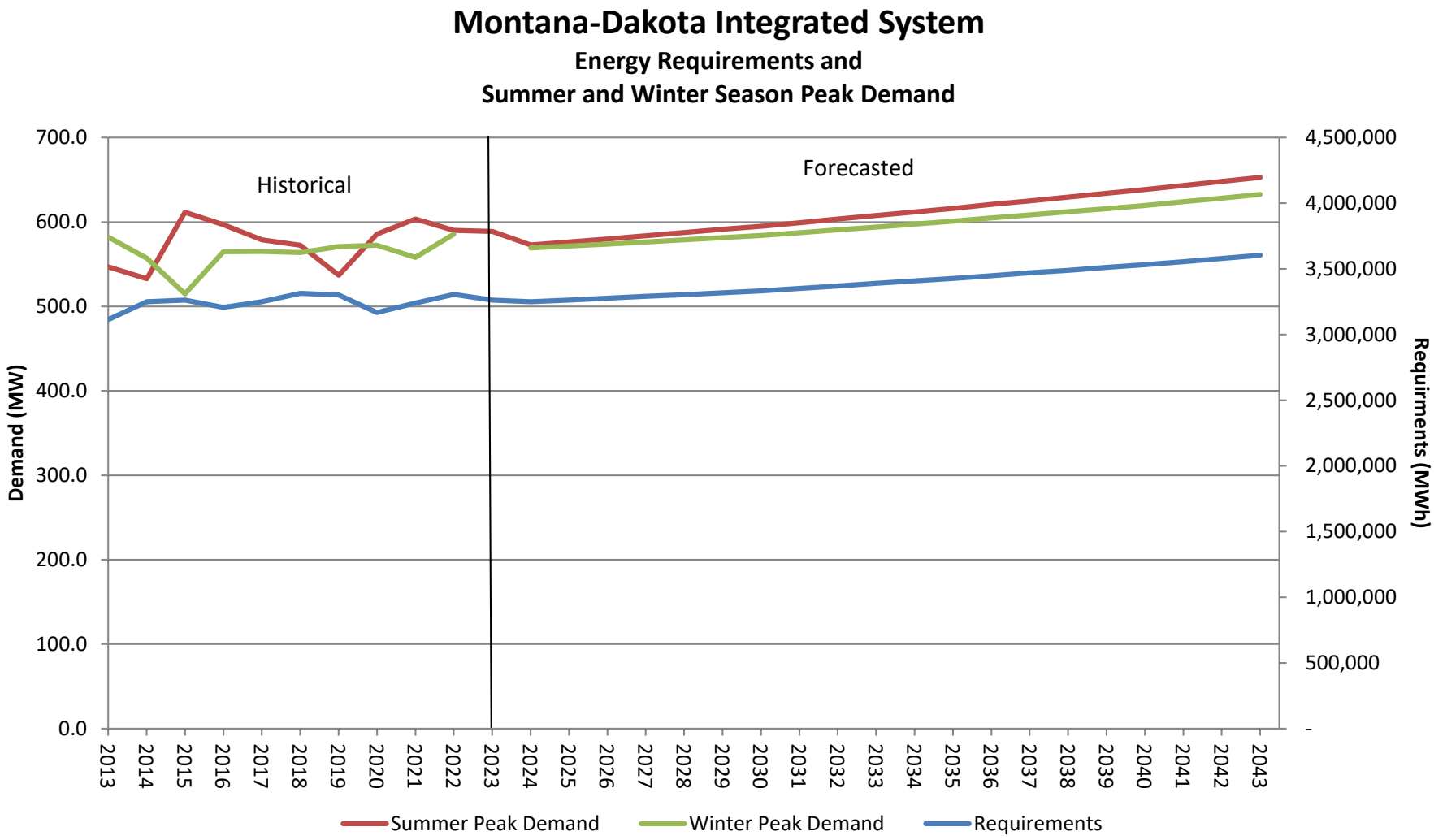
The final forecast results are presented on the following several pages. A table summarizing the Integrated System energy requirements and seasonal peak demand is given first, followed by a graph with historical and forecasted seasonal peak demand and energy requirements. A table summarizing historical and forecasted sales by sales sector for Montana, North Dakota, South Dakota, and the Integrated System in total is given next, followed by a graph of the Integrated System data. A table detailing the historical and forecasted residential sales, customers, and use per customer by state is given next. The last page of this section is a similar table for the Integrated System in total.

Refer to Appendices C-1 through C-4 for graphs of the historical and forecasted sales by sector.

Montana-Dakota Utilities Co.
Historical and Forecasted Energy and Demand
Integrated System
Reflecting Demand-Side Management Programs from 2021 IRP
Calendar Month Basis

	Total Energy Requirements (net of DSM and EE)		Summer Peak - MW				Winter Peak 2/				Demand Response	
Year	MWh	% Change	Total Demand Before any DSM or EE	Energy Efficiency (EE)	Demand Net of EE 1/	% Change	Total Demand Before any DSM or EE	Energy Efficiency (EE)	Demand Net of EE 1/	% Change	Rate 38/39 Interrupt Loads	Commercial Demand Response
2013	3,115,064				546.9				582.1			
2014	3,250,683	4.35%			533.0	-2.54%			557.2	-4.28%		
2015	3,263,271	0.39%			611.5	14.73%			514.9	-7.59%		
2016	3,206,737	-1.73%			596.8	-2.40%			564.9	9.71%		
2017	3,251,539	1.40%			579.1	-2.97%			565.1	0.03%		
2018	3,313,387	1.90%			572.4	-1.16%			563.8	-0.22%		
2019	3,301,537	-0.36%			536.9	-6.20%			571.1	1.29%		
2020	3,169,086	-4.01%			585.6	9.07%			572.7	0.28%		
2021	3,240,600	2.26%			603.7	3.09%			558.0	-2.57%		
2022	3,305,682	2.01%			590.2	-2.24%			585.7	4.96%		
2023	3,263,461	-1.28%			588.8	-0.24%	Not yet available					
2024	3,251,040	-0.38%	573.4	0.6	572.8	-2.72%	569.8	0.6	569.2		20.0	39.0
2025	3,262,875	0.36%	576.9	0.6	576.3	0.61%	572.0	0.6	571.4	0.39%	20.0	40.0
2026	3,276,381	0.41%	580.6	0.6	580.0	0.64%	574.4	0.6	573.8	0.42%	20.0	40.0
2027	3,291,338	0.46%	584.5	0.6	583.9	0.67%	577.1	0.6	576.5	0.47%	20.0	40.0
2028	3,304,290	0.39%	588.1	0.6	587.5	0.62%	579.4	0.6	578.8	0.40%	20.0	40.0
2029	3,319,364	0.46%	591.9	0.6	591.3	0.65%	582.1	0.6	581.5	0.47%	20.0	40.0
2030	3,333,013	0.41%	595.6	0.6	595.0	0.62%	584.5	0.6	583.9	0.41%	20.0	40.0
2031	3,351,640	0.56%	599.9	0.6	599.3	0.72%	587.9	0.6	587.3	0.58%	20.0	40.0
2032	3,370,689	0.57%	604.1	0.6	603.5	0.70%	591.3	0.6	590.7	0.58%	20.0	40.0
2033	3,389,765	0.57%	608.4	0.6	607.8	0.71%	594.7	0.6	594.1	0.57%	20.0	40.0
2034	3,408,922	0.57%	612.7	0.6	612.1	0.71%	598.2	0.6	597.6	0.59%	20.0	40.0
2035	3,428,151	0.56%	616.9	0.7	616.2	0.68%	601.6	0.6	601.0	0.57%	20.0	40.0
2036	3,448,941	0.61%	621.4	0.7	620.7	0.73%	605.4	0.6	604.8	0.63%	20.0	40.0
2037	3,469,787	0.60%	625.8	0.7	625.1	0.71%	609.1	0.6	608.5	0.61%	20.0	40.0
2038	3,490,230	0.59%	630.3	0.7	629.6	0.72%	612.8	0.6	612.2	0.61%	20.0	40.0
2039	3,511,186	0.60%	634.7	0.7	634.0	0.70%	616.5	0.6	615.9	0.60%	20.0	40.0
2040	3,532,235	0.60%	639.2	0.7	638.5	0.71%	620.3	0.6	619.7	0.62%	20.0	40.0
2041	3,556,134	0.68%	644.0	0.7	643.3	0.75%	624.6	0.6	624.0	0.69%	20.0	40.0
2042	3,580,110	0.67%	648.7	0.7	648.0	0.73%	628.9	0.6	628.3	0.69%	20.0	40.0
2043	3,604,271	0.67%	653.5	0.7	652.8	0.74%	633.3	0.6	632.7	0.70%	20.0	40.0

1/ Historical demand reported is system actual demand.
2/ Winter Peak is for Nov-Dec of current year and Jan-Apr of following year.


Montana-Dakota Integrated System
Energy Requirements and
Summer and Winter Season Peak Demand
Historical
Forecasted
Demand (MW)
Requirments (MWh)
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
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2041
2042
2043
Summer Peak Demand
Winter Peak Demand
Requirements

Montana-Dakota Utilities Co.
Historical and Forecasted Annual Sales by Sector
Montana
Billing Month Basis
Reflecting Demand-Side Programs

	Residential /*		Small C&I		Large C&I /*		Street Lighting		Miscellaneous		Total Sales	
YEAR	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change
2013	194,907		128,003		438,918		7,028		7,742		776,598	
2014	200,088	2.66%	137,799	7.65%	451,686	2.91%	7,108	1.13%	7,901	2.05%	804,582	3.60%
2015	191,420	-4.33%	135,202	-1.88%	473,740	4.88%	7,103	-0.07%	7,991	1.14%	815,456	1.35%
2016	184,296	-3.72%	131,690	-2.60%	474,495	0.16%	7,102	-0.01%	7,517	-5.93%	805,101	-1.27%
2017	188,743	2.41%	133,595	1.45%	469,138	-1.13%	7,035	-0.94%	7,409	-1.44%	805,919	0.10%
2018	192,080	1.77%	138,485	3.66%	469,653	0.11%	4,451	-36.73%	6,303	-14.93%	810,972	0.63%
2019	185,319	-3.52%	133,950	-3.27%	455,960	-2.92%	3,049	-31.51%	6,171	-2.09%	784,449	-3.27%
2020	184,785	-0.29%	125,023	-6.66%	421,234	-7.62%	3,077	0.93%	6,424	4.10%	740,543	-5.60%
2021	184,910	0.07%	129,676	3.72%	421,853	0.15%	2,942	-4.39%	7,253	12.90%	746,634	0.82%
2022	191,158	3.38%	131,236	1.20%	424,604	0.65%	2,913	-0.99%	7,304	0.70%	757,215	1.42%
2023	186,681	-2.34%	127,409	-2.92%	403,535	-4.96%	2,623	-9.96%	6,962	-4.68%	727,210	-3.96%
2024	187,067	0.21%	132,310	3.85%	410,786	1.80%	2,913	11.06%	7,304	4.91%	740,380	1.81%
2025	187,747	0.36%	132,981	0.51%	411,697	0.22%	2,913	0.00%	7,304	0.00%	742,642	0.31%
2026	188,001	0.14%	133,655	0.51%	413,049	0.33%	2,913	0.00%	7,304	0.00%	744,922	0.31%
2027	188,255	0.14%	134,333	0.51%	414,416	0.33%	2,913	0.00%	7,304	0.00%	747,221	0.31%
2028	188,509	0.13%	134,872	0.40%	415,399	0.24%	2,913	0.00%	7,304	0.00%	748,998	0.24%
2029	188,763	0.13%	135,554	0.51%	416,765	0.33%	2,913	0.00%	7,304	0.00%	751,300	0.31%
2030	189,021	0.14%	136,240	0.51%	418,151	0.33%	2,913	0.00%	7,304	0.00%	753,629	0.31%
2031	189,532	0.27%	136,929	0.51%	419,412	0.30%	2,913	0.00%	7,304	0.00%	756,089	0.33%
2032	190,042	0.27%	137,621	0.51%	420,824	0.34%	2,913	0.00%	7,304	0.00%	758,704	0.35%
2033	190,552	0.27%	138,316	0.51%	422,237	0.34%	2,913	0.00%	7,304	0.00%	761,322	0.35%
2034	191,062	0.27%	139,015	0.51%	423,665	0.34%	2,913	0.00%	7,304	0.00%	763,959	0.35%
2035	191,567	0.26%	139,718	0.51%	425,108	0.34%	2,913	0.00%	7,304	0.00%	766,609	0.35%
2036	192,136	0.30%	140,423	0.51%	426,582	0.35%	2,913	0.00%	7,304	0.00%	769,358	0.36%
2037	192,704	0.30%	141,133	0.51%	428,061	0.35%	2,913	0.00%	7,304	0.00%	772,114	0.36%
2038	193,272	0.29%	141,845	0.50%	429,374	0.31%	2,913	0.00%	7,304	0.00%	774,709	0.34%
2039	193,841	0.29%	142,561	0.50%	430,867	0.35%	2,913	0.00%	7,304	0.00%	777,486	0.36%
2040	194,409	0.29%	143,281	0.50%	432,384	0.35%	2,913	0.00%	7,304	0.00%	780,291	0.36%
2041	194,996	0.30%	144,004	0.50%	433,910	0.35%	2,913	0.00%	7,304	0.00%	783,127	0.36%
2042	195,583	0.30%	144,731	0.50%	435,453	0.36%	2,913	0.00%	7,304	0.00%	785,984	0.36%
2043	196,170	0.30%	145,470	0.51%	437,018	0.36%	2,913	0.00%	7,304	0.00%	788,874	0.37%
2013-2023 Average Yearly Growth (10 Years History)		-0.47%		-0.40%		-1.16%		-11.67%		-1.47%		-0.93%
2018-2023 Average Yearly Growth (5 Years History)		-0.14%		-1.25%		-2.74%		-7.76%		3.27%		-1.82%
2024-2029 Average Yearly Growth (5 Years)		0.17%		0.48%		0.29%		0.00%		0.00%		0.29%
2024-2034 Average Yearly Growth (10 Years)		0.19%		0.49%		0.31%		0.00%		0.00%		0.31%
2024-2043 Average Yearly Growth (19 Years)		0.25%		0.50%		0.33%		0.00%		0.00%		0.34%

/* Electric Vehicle charging for both Residential and Large C&I Sales has been included to begin in 2024.

Montana-Dakota Utilities Co.
Historical and Forecasted Annual Sales by Sector
North Dakota
Billing Month Basis
Reflecting Demand-Side Programs

	Residential /*		Small C&I		Large C&I /*		Street Lighting		Miscellaneous		Total Sales	
YEAR	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change
2013	774,916		559,839		516,813		19,895		47,406		1,918,869	
2014	812,654	4.87%	609,044	8.79%	579,346	12.10%	20,015	0.60%	50,790	7.14%	2,071,849	7.97%
2015	784,977	-3.41%	614,126	0.83%	603,879	4.23%	20,313	1.49%	50,730	-0.12%	2,074,025	0.10%
2016	746,374	-4.92%	599,694	-2.35%	617,934	2.33%	20,387	0.36%	49,560	-2.31%	2,033,949	-1.93%
2017	754,400	1.08%	585,174	-2.42%	638,719	3.36%	20,042	-1.69%	59,021	19.09%	2,057,356	1.15%
2018	799,661	6.00%	565,692	-3.33%	690,345	8.08%	19,569	-2.36%	58,278	-1.26%	2,133,545	3.70%
2019	784,808	-1.86%	573,956	1.46%	675,579	-2.14%	16,733	-14.49%	56,260	-3.46%	2,107,336	-1.23%
2020	779,619	-0.66%	552,682	-3.71%	652,236	-3.46%	13,957	-16.59%	55,728	-0.95%	2,054,222	-2.52%
2021	759,330	-2.60%	530,068	-4.09%	716,278	9.82%	13,753	-1.46%	55,962	0.42%	2,075,392	1.03%
2022	800,682	5.45%	539,523	1.78%	721,796	0.77%	13,651	-0.74%	56,012	0.09%	2,131,664	2.71%
2023	791,662	-1.13%	575,891	6.74%	732,336	1.46%	13,401	-1.83%	55,502	-0.91%	2,168,792	1.74%
2024	794,164	0.32%	543,850	-5.56%	716,088	-2.22%	13,651	1.87%	56,012	0.92%	2,123,765	-2.08%
2025	796,040	0.24%	546,565	0.50%	719,503	0.48%	13,651	0.00%	56,012	0.00%	2,131,772	0.38%
2026	800,407	0.55%	548,723	0.39%	722,225	0.38%	13,651	0.00%	56,012	0.00%	2,141,019	0.43%
2027	804,775	0.55%	551,457	0.50%	725,698	0.48%	13,651	0.00%	56,012	0.00%	2,151,593	0.49%
2028	809,141	0.54%	553,616	0.39%	728,482	0.38%	13,651	0.00%	56,012	0.00%	2,160,902	0.43%
2029	813,508	0.54%	556,367	0.50%	732,020	0.49%	13,651	0.00%	56,012	0.00%	2,171,558	0.49%
2030	817,876	0.54%	558,525	0.39%	734,802	0.38%	13,651	0.00%	56,012	0.00%	2,180,866	0.43%
2031	825,232	0.90%	561,294	0.50%	738,186	0.46%	13,651	0.00%	56,012	0.00%	2,194,375	0.62%
2032	832,590	0.89%	564,077	0.50%	741,753	0.48%	13,651	0.00%	56,012	0.00%	2,208,082	0.62%
2033	839,946	0.88%	566,873	0.50%	745,337	0.48%	13,651	0.00%	56,012	0.00%	2,221,820	0.62%
2034	847,304	0.88%	569,683	0.50%	748,955	0.49%	13,651	0.00%	56,012	0.00%	2,235,605	0.62%
2035	854,660	0.87%	572,508	0.50%	752,603	0.49%	13,651	0.00%	56,012	0.00%	2,249,433	0.62%
2036	863,190	1.00%	575,346	0.50%	756,286	0.49%	13,651	0.00%	56,012	0.00%	2,264,485	0.67%
2037	871,719	0.99%	578,198	0.50%	759,997	0.49%	13,651	0.00%	56,012	0.00%	2,279,577	0.67%
2038	880,249	0.98%	581,064	0.50%	763,503	0.46%	13,651	0.00%	56,012	0.00%	2,294,479	0.65%
2039	888,778	0.97%	583,945	0.50%	767,250	0.49%	13,651	0.00%	56,012	0.00%	2,309,636	0.66%
2040	897,307	0.96%	586,840	0.50%	771,032	0.49%	13,651	0.00%	56,012	0.00%	2,324,842	0.66%
2041	908,182	1.21%	589,749	0.50%	774,835	0.49%	13,651	0.00%	56,012	0.00%	2,342,429	0.76%
2042	919,056	1.20%	592,671	0.50%	778,666	0.49%	13,651	0.00%	56,012	0.00%	2,360,057	0.75%
2043	929,931	1.18%	595,664	0.51%	782,549	0.50%	13,651	0.00%	56,012	0.00%	2,377,808	0.75%
2013-2023 Average Yearly Growth (10 Years History)		0.07%		-0.88%		3.04%		-4.98%		1.52%		0.70%
2018-2023 Average Yearly Growth (5 Years History)		-0.05%		-0.39%		1.69%		-6.94%		-0.72%		0.36%
2024-2029 Average Yearly Growth (5 Years)		0.50%		0.45%		0.44%		0.00%		0.00%		0.45%
2024-2034 Average Yearly Growth (10 Years)		0.65%		0.46%		0.44%		0.00%		0.00%		0.51%
2024-2043 Average Yearly Growth (19 Years)		0.85%		0.48%		0.47%		0.00%		0.00%		0.60%

/* Electric Vehicle charging for both Residential and Large C&I Sales has been included to begin in 2024.

Montana-Dakota Utilities Co.
Historical and Forecasted Annual Sales by Sector
South Dakota
Billing Month Basis
Reflecting Demand-Side Programs

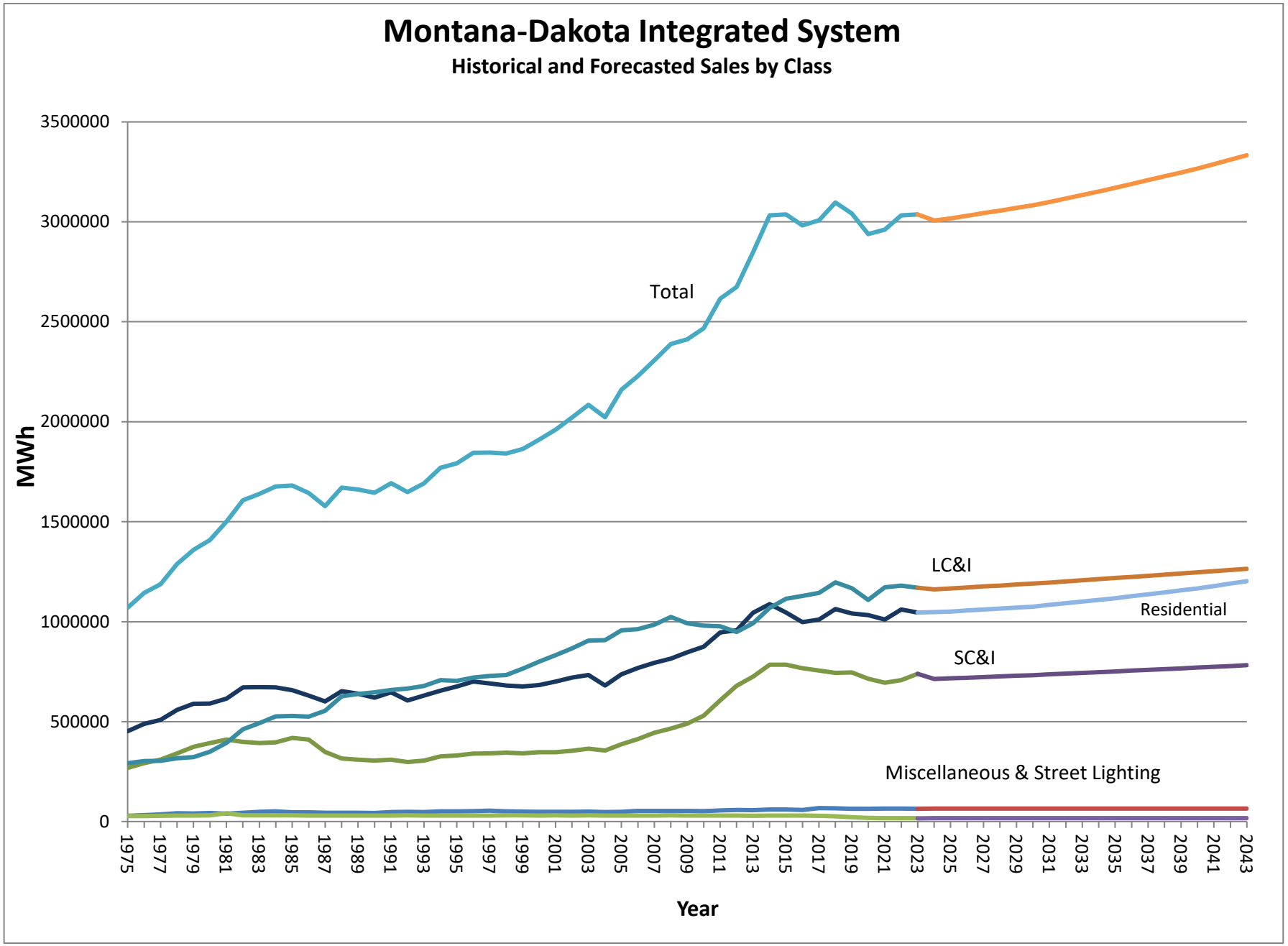
	Residential /*		Small C&I		Large C&I /*		Street Lighting		Miscellaneous		Total Sales	
YEAR	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change	Sales (MWh)	% Change
2013	74,265		37,118		36,338		2,661		1,866		152,248	
2014	75,462	1.61%	38,045	2.50%	37,507	3.22%	2,651	-0.38%	1,753	-6.06%	155,418	2.08%
2015	69,743	-7.58%	35,995	-5.39%	37,084	-1.13%	2,568	-3.13%	1,730	-1.31%	147,120	-5.34%
2016	67,301	-3.50%	35,799	-0.54%	35,875	-3.26%	2,517	-1.99%	1,703	-1.56%	143,195	-2.67%
2017	67,065	-0.35%	37,186	3.87%	35,546	-0.92%	2,487	-1.18%	1,752	2.88%	144,037	0.59%
2018	72,030	7.40%	39,185	5.38%	36,289	2.09%	2,461	-1.05%	1,732	-1.14%	151,697	5.32%
2019	70,773	-1.75%	38,738	-1.14%	35,995	-0.81%	2,397	-2.59%	1,851	6.88%	149,754	-1.28%
2020	68,270	-3.54%	36,426	-5.97%	35,841	-0.43%	1,556	-35.10%	1,682	-9.14%	143,774	-3.99%
2021	66,631	-2.40%	35,305	-3.08%	34,051	-4.99%	1,185	-23.84%	1,799	6.96%	138,971	-3.34%
2022	69,482	4.28%	36,811	4.26%	34,054	0.01%	1,208	1.95%	2,005	11.45%	143,560	3.30%
2023	67,904	-2.27%	36,335	-1.29%	34,074	0.06%	1,199	-0.75%	1,832	-8.63%	141,344	-1.54%
2024	67,080	-1.21%	36,731	1.09%	34,961	2.60%	1,208	0.75%	2,005	9.44%	141,984	0.45%
2025	67,114	0.05%	36,934	0.55%	35,399	1.25%	1,208	0.00%	2,005	0.00%	142,660	0.48%
2026	67,375	0.39%	37,138	0.55%	35,896	1.40%	1,208	0.00%	2,005	0.00%	143,622	0.67%
2027	67,637	0.39%	37,343	0.55%	36,386	1.37%	1,208	0.00%	2,005	0.00%	144,579	0.67%
2028	67,898	0.39%	37,511	0.45%	36,848	1.27%	1,208	0.00%	2,005	0.00%	145,469	0.62%
2029	68,159	0.38%	37,718	0.55%	37,360	1.39%	1,208	0.00%	2,005	0.00%	146,450	0.67%
2030	68,420	0.38%	37,926	0.55%	37,874	1.38%	1,208	0.00%	2,005	0.00%	147,433	0.67%
2031	68,953	0.78%	38,136	0.55%	38,386	1.35%	1,208	0.00%	2,005	0.00%	148,688	0.85%
2032	69,486	0.77%	38,346	0.55%	38,934	1.43%	1,208	0.00%	2,005	0.00%	149,980	0.87%
2033	70,019	0.77%	38,558	0.55%	39,473	1.38%	1,208	0.00%	2,005	0.00%	151,263	0.86%
2034	70,552	0.76%	38,771	0.55%	40,019	1.38%	1,208	0.00%	2,005	0.00%	152,556	0.85%
2035	71,085	0.76%	38,985	0.55%	40,573	1.38%	1,208	0.00%	2,005	0.00%	153,857	0.85%
2036	71,725	0.90%	39,201	0.55%	41,142	1.40%	1,208	0.00%	2,005	0.00%	155,281	0.93%
2037	72,365	0.89%	39,417	0.55%	41,713	1.39%	1,208	0.00%	2,005	0.00%	156,708	0.92%
2038	73,004	0.88%	39,635	0.55%	42,262	1.32%	1,208	0.00%	2,005	0.00%	158,114	0.90%
2039	73,644	0.88%	39,854	0.55%	42,847	1.38%	1,208	0.00%	2,005	0.00%	159,557	0.91%
2040	74,284	0.87%	40,074	0.55%	43,439	1.38%	1,208	0.00%	2,005	0.00%	161,010	0.91%
2041	75,136	1.15%	40,295	0.55%	44,041	1.38%	1,208	0.00%	2,005	0.00%	162,685	1.04%
2042	75,989	1.14%	40,517	0.55%	44,651	1.39%	1,208	0.00%	2,005	0.00%	164,370	1.04%
2043	76,842	1.12%	40,742	0.55%	45,272	1.39%	1,208	0.00%	2,005	0.00%	166,069	1.03%
2013-2023 Average Yearly Growth (10 Years History)		-0.75%		-0.20%		-0.86%		-9.06%		0.54%		-0.74%
2018-2023 Average Yearly Growth (5 Years History)		-1.06%		-1.59%		-1.51%		-15.57%		1.69%		-1.46%
2024-2029 Average Yearly Growth (5 Years)		0.34%		0.53%		1.34%		0.00%		0.00%		0.63%
2024-2034 Average Yearly Growth (10 Years)		0.51%		0.54%		1.36%		0.00%		0.00%		0.72%
2024-2043 Average Yearly Growth (19 Years)		0.73%		0.55%		1.37%		0.00%		0.00%		0.84%

/* Electric Vehicle charging for both Residential and Large C&I Sales has been included to begin in 2024.

Montana-Dakota Utilities Co.
Historical and Forecasted Annual Sales by Sector
Integrated System
Billing Month Basis
Reflecting Demand-Side Programs

YEAR	Residential /* Sales (MWh)	% Change	Small C&I Sales (MWh)	% Change	Large C&I /* Sales (MWh)	% Change	Street Lighting Sales (MWh)	% Change	Miscellaneous Sales (MWh)	% Change	Total Sales Sales (MWh)	% Change	Total Energy Requirements MWh	% Change
2013	1,044,088		724,960		992,069		29,584		57,014		2,847,715		3,115,064	
2014	1,088,204	4.23%	784,888	8.27%	1,068,540	7.71%	29,774	0.64%	60,444	6.02%	3,031,849	6.47%	3,250,683	4.35%
2015	1,046,140	-3.87%	785,323	0.06%	1,114,703	4.32%	29,984	0.71%	60,451	0.01%	3,036,601	0.16%	3,263,271	0.39%
2016	997,971	-4.60%	767,183	-2.31%	1,128,304	1.22%	30,006	0.07%	58,780	-2.76%	2,982,244	-1.79%	3,206,737	-1.73%
2017	1,010,208	1.23%	755,955	-1.46%	1,143,403	1.34%	29,564	-1.47%	68,182	15.99%	3,007,312	0.84%	3,251,539	1.40%
2018	1,063,771	5.30%	743,362	-1.67%	1,196,287	4.63%	26,481	-10.43%	66,313	-2.74%	3,096,214	2.96%	3,313,387	1.90%
2019	1,040,900	-2.15%	746,645	0.44%	1,167,534	-2.40%	22,179	-16.25%	64,282	-3.06%	3,041,539	-1.77%	3,301,537	-0.36%
2020	1,032,674	-0.79%	714,131	-4.35%	1,109,311	-4.99%	18,590	-16.18%	63,834	-0.70%	2,938,540	-3.39%	3,169,086	-4.01%
2021	1,010,871	-2.11%	695,050	-2.67%	1,172,183	5.67%	17,880	-3.82%	65,014	1.85%	2,960,997	0.76%	3,240,600	2.26%
2022	1,061,322	4.99%	707,570	1.80%	1,180,454	0.71%	17,772	-0.60%	65,321	0.47%	3,032,439	2.41%	3,305,682	2.01%
2023	1,046,247	-1.42%	739,635	4.53%	1,169,945	-0.89%	17,223	-3.09%	64,296	-1.57%	3,037,346	0.16%	3,263,461	-1.28%
2024	1,048,311	0.20%	712,890	-3.62%	1,161,835	-0.69%	17,772	3.19%	65,321	1.59%	3,006,130	-1.03%	3,251,039	-0.38%
2025	1,050,902	0.25%	716,480	0.50%	1,166,599	0.41%	17,772	0.00%	65,321	0.00%	3,017,074	0.36%	3,262,875	0.36%
2026	1,055,784	0.46%	719,516	0.42%	1,171,170	0.39%	17,772	0.00%	65,321	0.00%	3,029,563	0.41%	3,276,381	0.41%
2027	1,060,666	0.46%	723,133	0.50%	1,176,501	0.46%	17,772	0.00%	65,321	0.00%	3,043,393	0.46%	3,291,338	0.46%
2028	1,065,548	0.46%	725,999	0.40%	1,180,729	0.36%	17,772	0.00%	65,321	0.00%	3,055,369	0.39%	3,304,290	0.39%
2029	1,070,430	0.46%	729,640	0.50%	1,186,145	0.46%	17,772	0.00%	65,321	0.00%	3,069,307	0.46%	3,319,364	0.46%
2030	1,075,317	0.46%	732,691	0.42%	1,190,827	0.39%	17,772	0.00%	65,321	0.00%	3,081,928	0.41%	3,333,013	0.41%
2031	1,083,717	0.78%	736,358	0.50%	1,195,984	0.43%	17,772	0.00%	65,321	0.00%	3,099,152	0.56%	3,351,640	0.56%
2032	1,092,117	0.78%	740,044	0.50%	1,201,512	0.46%	17,772	0.00%	65,321	0.00%	3,116,766	0.57%	3,370,689	0.57%
2033	1,100,517	0.77%	743,748	0.50%	1,207,047	0.46%	17,772	0.00%	65,321	0.00%	3,134,405	0.57%	3,389,765	0.57%
2034	1,108,918	0.76%	747,470	0.50%	1,212,638	0.46%	17,772	0.00%	65,321	0.00%	3,152,119	0.57%	3,408,922	0.57%
2035	1,117,313	0.76%	751,210	0.50%	1,218,283	0.47%	17,772	0.00%	65,321	0.00%	3,169,900	0.56%	3,428,151	0.56%
2036	1,127,051	0.87%	754,970	0.50%	1,224,010	0.47%	17,772	0.00%	65,321	0.00%	3,189,123	0.61%	3,448,941	0.61%
2037	1,136,788	0.86%	758,748	0.50%	1,229,770	0.47%	17,772	0.00%	65,321	0.00%	3,208,399	0.60%	3,469,787	0.60%
2038	1,146,526	0.86%	762,544	0.50%	1,235,139	0.44%	17,772	0.00%	65,321	0.00%	3,227,302	0.59%	3,490,230	0.59%
2039	1,156,263	0.85%	766,360	0.50%	1,240,963	0.47%	17,772	0.00%	65,321	0.00%	3,246,679	0.60%	3,511,186	0.60%
2040	1,166,000	0.84%	770,194	0.50%	1,246,855	0.47%	17,772	0.00%	65,321	0.00%	3,266,142	0.60%	3,532,235	0.60%
2041	1,178,315	1.06%	774,048	0.50%	1,252,785	0.48%	17,772	0.00%	65,321	0.00%	3,288,241	0.68%	3,556,134	0.68%
2042	1,190,629	1.05%	777,920	0.50%	1,258,770	0.48%	17,772	0.00%	65,321	0.00%	3,310,411	0.67%	3,580,110	0.67%
2043	1,202,943	1.03%	781,876	0.51%	1,264,839	0.48%	17,772	0.00%	65,321	0.00%	3,332,751	0.67%	3,604,271	0.67%
2013-2023 Average Yearly Growth (10 Years History)		-0.09%		-0.76%		1.24%		-6.65%		1.13%		0.21%		0.25%
2018-2023 Average Yearly Growth (5 Years History)		-0.13%		-0.61%		-0.07%		-7.83%		-0.25%		-0.28%		-0.14%
2024-2029 Average Yearly Growth (5 Years)		0.43%		0.46%		0.41%		0.00%		0.00%		0.42%		0.42%
2024-2034 Average Yearly Growth (10 Years)		0.56%		0.47%		0.43%		0.00%		0.00%		0.47%		0.47%
2024-2043 Average Yearly Growth (19 Years)		0.74%		0.49%		0.45%		0.00%		0.00%		0.55%		0.55%

/* Electric Vehicle charging for both Residential and Large C&I Sales has been included to begin in 2024.


Montana-Dakota Integrated System
Historical and Forecasted Sales by Class
MWh
Year
Total
LC&I
Residential
SC&I
Miscellaneous & Street Lighting
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
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2039
2041
2043

Montana-Dakota Utiliities Co.
Historical and Forecasted
Residential Sales, Customers, and Use per Customer
Reflecting EE and DR Reductions

North Dakota

Year	Sales /* (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2012	700,451		67,888		10,318	
2013	774,916	10.63%	70,949	3,061	10,922	5.86%
2014	812,654	4.87%	73,909	2,960	10,995	0.67%
2015	784,977	-3.41%	76,894	2,985	10,209	-7.16%
2016	746,374	-4.92%	78,553	1,659	9,502	-6.93%
2017	754,400	1.08%	78,564	11	9,602	1.06%
2018	799,661	6.00%	78,510	(54)	10,185	6.07%
2019	784,808	-1.86%	78,567	57	9,989	-1.93%
2020	779,619	-0.66%	78,812	245	9,892	-0.97%
2021	759,330	-2.60%	78,896	84	9,624	-2.71%
2022	800,682	5.45%	79,076	180	10,125	5.21%
2023	789,578	-1.39%	79,251	175	9,963	-1.60%
2024	791,321	0.22%	79,426	175	9,963	0.00%
2025	792,816	0.19%	79,576	150	9,963	0.00%
2026	794,310	0.19%	79,726	150	9,963	0.00%
2027	795,805	0.19%	79,876	150	9,963	0.00%
2028	797,299	0.19%	80,026	150	9,963	0.00%
2029	798,793	0.19%	80,176	150	9,963	0.00%
2030	800,288	0.19%	80,326	150	9,963	0.00%
2031	801,782	0.19%	80,476	150	9,963	0.00%
2032	803,277	0.19%	80,626	150	9,963	0.00%
2033	804,771	0.19%	80,776	150	9,963	0.00%
2034	806,266	0.19%	80,926	150	9,963	0.00%
2035	807,760	0.19%	81,076	150	9,963	0.00%
2036	809,255	0.19%	81,226	150	9,963	0.00%
2037	810,749	0.18%	81,376	150	9,963	0.00%
2038	812,244	0.18%	81,526	150	9,963	0.00%
2039	813,738	0.18%	81,676	150	9,963	0.00%
2040	815,232	0.18%	81,826	150	9,963	0.00%
2041	816,727	0.18%	81,976	150	9,963	0.00%
2042	818,221	0.18%	82,126	150	9,963	0.00%
2043	819,716	0.18%	82,276	250	9,963	0.00%

	Sales	Custs	Use/Cust
2012-2022 Average Yearly Growth (10 Years History)	0.48%	1.30%	-0.81%
2017-2022 Average Yearly Growth (5 Years History) U	0.39%	0.14%	0.24%
2023-2028 Average Yearly Growth (5 Years)	0.19%	0.19%	0.00%
2023-2033 Average Yearly Growth (10 Years)	0.19%	0.19%	0.00%
2023-2043 Average Yearly Growth (20 Years)	0.19%	0.19%	0.00%

South Dakota

Year	Sales /* (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2012	69,097		6,616		10,444	
2013	74,265	7.48%	6,590	(26)	11,269	7.90%
2014	75,462	1.61%	6,580	(10)	11,468	1.77%
2015	69,743	-7.58%	6,662	82	10,469	-8.72%
2016	67,301	-3.50%	6,546	(116)	10,281	-1.79%
2017	67,065	-0.35%	6,533	(13)	10,266	-0.15%
2018	72,030	7.40%	6,496	(37)	11,088	8.02%
2019	70,773	-1.75%	6,442	(54)	10,986	-0.92%
2020	68,270	-3.54%	6,441	(1)	10,599	-3.52%
2021	66,631	-2.40%	6,423	(18)	10,374	-2.13%
2022	69,482	4.28%	6,398	(25)	10,860	4.69%
2023	66,821	-3.83%	6,398	-	10,444	-3.83%
2024	66,821	0.00%	6,398	-	10,444	0.00%
2025	66,821	0.00%	6,398	-	10,444	0.00%
2026	66,821	0.00%	6,398	-	10,444	0.00%
2027	66,821	0.00%	6,398	-	10,444	0.00%
2028	66,821	0.00%	6,398	-	10,444	0.00%
2029	66,821	0.00%	6,398	-	10,444	0.00%
2030	66,821	0.00%	6,398	-	10,444	0.00%
2031	66,821	0.00%	6,398	-	10,444	0.00%
2032	66,821	0.00%	6,398	-	10,444	0.00%
2033	66,821	0.00%	6,398	-	10,444	0.00%
2034	66,821	0.00%	6,398	-	10,444	0.00%
2035	66,821	0.00%	6,398	-	10,444	0.00%
2036	66,821	0.00%	6,398	-	10,444	0.00%
2037	66,821	0.00%	6,398	-	10,444	0.00%
2038	66,821	0.00%	6,398	-	10,444	0.00%
2039	66,821	0.00%	6,398	-	10,444	0.00%
2040	66,821	0.00%	6,398	-	10,444	0.00%
2041	66,821	0.00%	6,398	-	10,444	0.00%
2042	66,821	0.00%	6,398	-	10,444	0.00%
2043	66,821	0.00%	6,398	-	10,444	0.00%

	Sales	Custs	Use/Cust
2012-2022 Average Yearly Growth (10 Years History)	-0.55%	-0.37%	-0.18%
2017-2022 Average Yearly Growth (5 Years History) U	-0.26%	-0.39%	0.13%
2023-2028 Average Yearly Growth (5 Years)	0.000%	0.00%	0.00%
2023-2033 Average Yearly Growth (10 Years)	0.000%	0.00%	0.00%
2023-2043 Average Yearly Growth (20 Years)	0.00%	0.00%	0.00%

Montana

Year	Sales /* (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2012	187,635		19,191		9,777	
2013	194,907	3.88%	19,616	425	9,936	1.63%
2014	200,088	2.66%	19,918	302	10,046	1.10%
2015	191,420	-4.33%	20,135	217	9,507	-5.36%
2016	184,296	-3.72%	20,128	(7)	9,156	-3.69%
2017	188,743	2.41%	19,981	(147)	9,446	3.17%
2018	192,080	1.77%	19,911	(70)	9,647	2.13%
2019	185,319	-3.52%	19,896	(15)	9,314	-3.45%
2020	184,785	-0.29%	19,798	(98)	9,334	0.21%
2021	184,910	0.07%	19,746	(53)	9,365	0.33%
2022	191,158	3.38%	19,695	(51)	9,706	3.64%
2023	186,571	-2.40%	19,695	-	9,473	-2.40%
2024	186,571	0.00%	19,695	-	9,473	0.00%
2025	186,571	0.00%	19,695	-	9,473	0.00%
2026	186,571	0.00%	19,695	-	9,473	0.00%
2027	186,571	0.00%	19,695	-	9,473	0.00%
2028	186,571	0.00%	19,695	-	9,473	0.00%
2029	186,571	0.00%	19,695	-	9,473	0.00%
2030	186,571	0.00%	19,695	-	9,473	0.00%
2031	186,571	0.00%	19,695	-	9,473	0.00%
2032	186,571	0.00%	19,695	-	9,473	0.00%
2033	186,571	0.00%	19,695	-	9,473	0.00%
2034	186,571	0.00%	19,695	-	9,473	0.00%
2035	186,571	0.00%	19,695	-	9,473	0.00%
2036	186,571	0.00%	19,695	-	9,473	0.00%
2037	186,571	0.00%	19,695	-	9,473	0.00%
2038	186,571	0.00%	19,695	-	9,473	0.00%
2039	186,571	0.00%	19,695	-	9,473	0.00%
2040	186,571	0.00%	19,695	-	9,473	0.00%
2041	186,571	0.00%	19,695	-	9,473	0.00%
2042	186,571	0.00%	19,695	-	9,473	0.00%
2043	186,571	0.00%	19,695	-	9,473	0.00%

	Sales	Custs	Use/Cust
2012-2022 Average Yearly Growth (10 Years History)	-0.34%	0.09%	-0.44%
2017-2022 Average Yearly Growth (5 Years History) U	-0.15%	-0.29%	0.14%
2023-2028 Average Yearly Growth (5 Years)	0.00%	0.00%	0.00%
2023-2033 Average Yearly Growth (10 Years)	0.00%	0.00%	0.00%
2023-2043 Average Yearly Growth (20 Years)	0.00%	0.00%	0.00%

/* **Forecasted Sales** = (Ave Custs x Avg Use Per Cust); AC Cycling program has been cancelled.
/* Electric Vehicle charging is not included in this Residential base forecast.

Montana-Dakota Utilities Co.
Historical and Forecasted
Residential Sales, Customers, and Use per Customer
Integrated System with DSM Reductions

Year	Sales /* (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2012	957,183		93,695		10,216	
2013	1,044,088	9.08%	97,155	3,460	10,747	5.19%
2014	1,088,204	4.23%	100,407	3,252	10,838	0.85%
2015	1,046,140	-3.87%	103,691	3,284	10,089	-6.91%
2016	997,971	-4.60%	105,227	1,536	9,484	-6.00%
2017	1,010,208	1.23%	105,078	(149)	9,614	1.37%
2018	1,063,771	5.30%	104,917	(161)	10,139	5.46%
2019	1,040,900	-2.15%	104,905	(12)	9,922	-2.14%
2020	1,032,674	-0.79%	105,051	146	9,830	-0.93%
2021	1,010,871	-2.11%	105,065	14	9,621	-2.12%
2022	1,061,322	4.99%	105,169	105	10,092	4.89%
2023	1,042,970	-1.73%	105,344	175	9,901	-1.89%
2024	1,044,713	0.17%	105,519	175	9,901	0.00%
2025	1,046,208	0.14%	105,669	150	9,901	0.00%
2026	1,047,702	0.14%	105,819	150	9,901	0.00%
2027	1,049,197	0.14%	105,969	150	9,901	0.00%
2028	1,050,691	0.14%	106,119	150	9,901	0.00%
2029	1,052,185	0.14%	106,269	150	9,901	0.00%
2030	1,053,680	0.14%	106,419	150	9,901	0.00%
2031	1,055,174	0.14%	106,569	150	9,901	0.00%
2032	1,056,669	0.14%	106,719	150	9,901	0.00%
2033	1,058,163	0.14%	106,869	150	9,901	0.00%
2034	1,059,658	0.14%	107,019	150	9,902	0.00%
2035	1,061,152	0.14%	107,169	150	9,902	0.00%
2036	1,062,647	0.14%	107,319	150	9,902	0.00%
2037	1,064,141	0.14%	107,469	150	9,902	0.00%
2038	1,065,636	0.14%	107,619	150	9,902	0.00%
2039	1,067,130	0.14%	107,769	150	9,902	0.00%
2040	1,068,624	0.14%	107,919	150	9,902	0.00%
2041	1,070,119	0.14%	108,069	150	9,902	0.00%
2042	1,071,613	0.14%	108,219	150	9,902	0.00%
2043	1,073,108	0.14%	108,369	150	9,902	0.00%

	Sales	**Custs**	**Use/Cust**
2012-2022 Average Yearly Growth (10 Years History)	0.26%	0.96%	-0.69%
2017-2022 Average Yearly Growth (5 Years History)	0.25%	0.03%	0.22%
2023-2028 Average Yearly Growth (5 Years)	0.15%	0.15%	0.00%
2023-2033 Average Yearly Growth (10 Years)	0.14%	0.14%	0.00%
2023-2043 Average Yearly Growth (20 Years)	0.14%	0.14%	0.00%

/* Electric Vehicle charging is not included in this Reidential base forecast.

4. Forecast Uncertainty

Forecasting is a process permeated with uncertainty. The demand and energy projections produced by the econometric process described in the first three sections results in a forecast based solely on the information used as inputs to the equations. For purposes of integrated resource planning, a single forecast does not allow the analysis of risk and uncertainty associated with the input assumptions. Robust resource decisions cannot be made unless uncertainty is considered. That uncertainty can be expressed through peak demand forecasts that reflect temperatures which correspond to higher confidence levels as well as by evaluating high-growth and low-growth scenarios in energy forecasts.

4.1 Effect of Temperature on Peak Demand

The final forecast results given in Section 3 were developed assuming average temperatures at the time of the system peak. However, there are some shortcomings associated with this methodology. First, with an average temperature forecast, actual peak demand would have a 50% probability of being lower than the forecast values and a 50% probability of exceeding forecast values (50/50 forecast). Second, there can be an appearance that peak demand is under forecasted when the actual temperature at the time of system peak exceeds average temperatures.

A study is conducted periodically by Montana-Dakota's System Operations & Planning staff to establish the relationship between summer peak demand and temperature at the time of system peak. As part of the study, the company's historical June, July and August demands and corresponding temperatures at times when the temperatures equaled or exceeded 85°F on Mondays through Thursdays are analyzed. The 2023 study results indicated that each one degree increase in temperature at the time of summer peak would result in an increase of approximately 6.9 MW in summer peak demand.

Since Montana-Dakota does not have actual hourly load available by state or by customer class, this study is conducted on an Integrated System basis, and it is not possible to produce these results by jurisdiction or by customer sector.

Further statistical analysis of temperatures at the time of system peak for the years 1993 through 2022 (prior to 1984 the company was a winter peaking utility) provided the results shown in the following table:

Temperature Probability at Peak and Effect on Peak Demand

Probability	Weighted Average Temperature	Approximate Increase in Summer Peak Demand (MW)
50%	96.4	0.0
75%	100.5	28.3
80%	101.5	35.2
85%	102.7	43.5
90%	104.2	53.9
95%	106.4	69.1
97%	107.8	78.8

*/ Using 6.9 MW/Degree F

As the table shows, there is a 90% probability that actual temperatures at the time of the system peak will not exceed 104.2°F. At this temperature, 53.9 MW of capacity, in addition to that which was forecasted, is needed to meet the system peak demand that may occur. This is called the 90/10 forecast and provides a peak demand forecast for extreme weather conditions. It represents a 90% probability that the actual peak demand would not exceed the forecast value and a 10% probability that the actual peak demand would be higher than the forecast value.

The following table summarizes the results of the 50/50 probability and 90/10 probability demand forecasts. The 2024 90/10 forecasted demand is calculated to be the 2024 50/50 forecasted demand plus 53.9 MW as shown in the table above. From that point, the growth rate for the 90/10 forecast scenario is assumed to be the same as that of the 50/50 forecast scenario.

Alternate Summer Peak Demand Forecast Comparison

Year	Base Forecast (96.4 degrees F) 50/50 Forecast (MW)	Growth Rate	Alternate Forecast (104.2 degrees F) 90/10 Forecast (MW) */
2024	572.8		626.7
2025	576.3	0.61%	630.5
2026	580.0	0.64%	634.5
2027	583.9	0.67%	638.8
2028	587.5	0.62%	642.7
2029	591.3	0.65%	646.9
2030	595.0	0.62%	650.9
2031	599.3	0.72%	655.6
2032	603.5	0.70%	660.2
2033	607.8	0.71%	664.9
2034	612.1	0.71%	669.6
2035	616.3	0.69%	674.2
2036	620.7	0.73%	679.1
2037	625.1	0.71%	683.9
2038	629.6	0.72%	688.8
2039	634.0	0.70%	693.6
2040	638.5	0.71%	698.5
2041	643.3	0.75%	703.7
2042	648.0	0.73%	708.8
2043	652.8	0.74%	714.1

*/ The growth rate for the 90/10 Forecast scenario is assumed to be the same as that of the 50/50 Forecast scenario.

4.2 High-Growth and Low-Growth Scenario Forecasts

Another approach to express uncertainty in this forecast was to simulate high-growth and low-growth scenarios which represent the corresponding economic conditions that may occur. These high-growth and low-growth scenario forecasts were developed as follows.

Historical total energy was analyzed in order to find a period of time during which unusually high growth was experienced and a period of time during which unusually low growth was experienced. Based on the historical sales data given on Appendix A-9 and graphed on Appendix A-10, the average growth rate that occurred from 1977 to 1985 (4.4%) was used as the basis for the high growth rate and the average growth rate that occurred from 2013 to 2021 (0.23%) was used as the low growth rate. Both periods consist of eight years of history.

As a result, for the high-growth scenario, an average growth rate of 4.4% per year was assumed to occur during the 20-year forecast horizon. For the low-growth scenario, an average growth rate of 0.23% per year was assumed to occur during the 20-year forecast horizon.

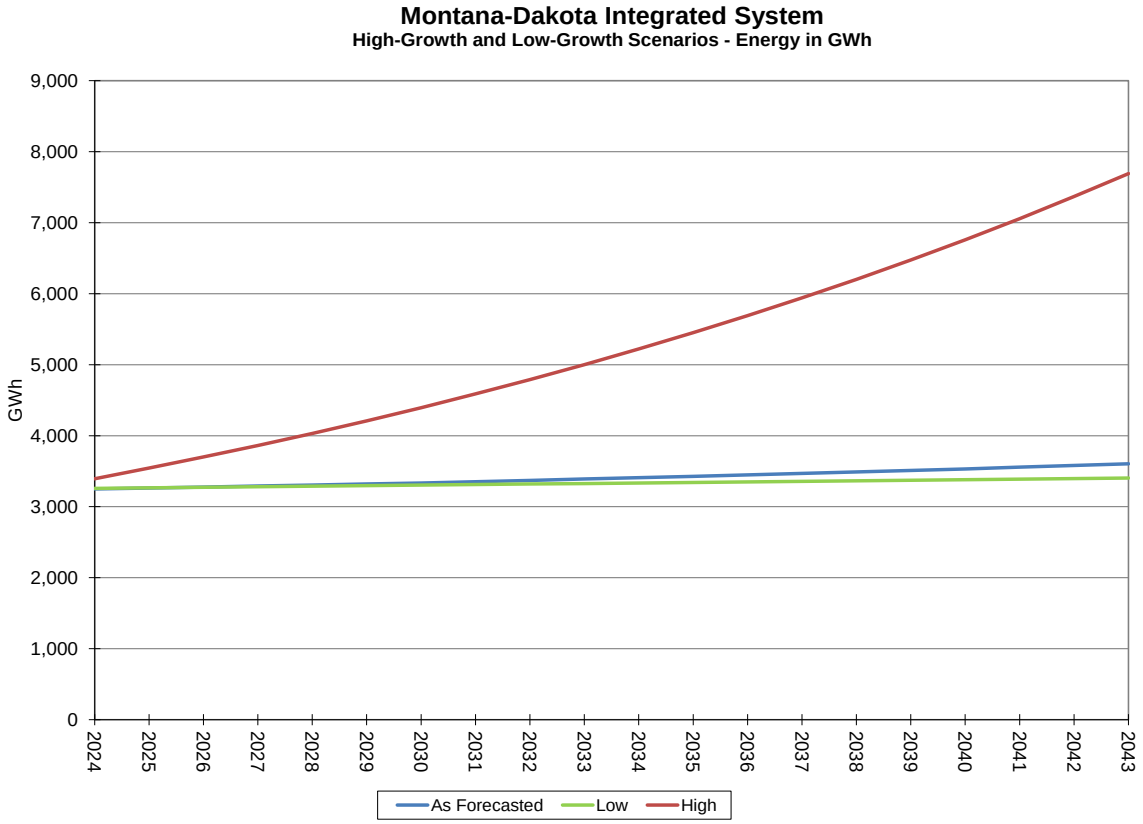
Demand for each scenario was derived by applying the load factors calculated from the base forecast to the high-growth and low-growth scenario forecasted energy.

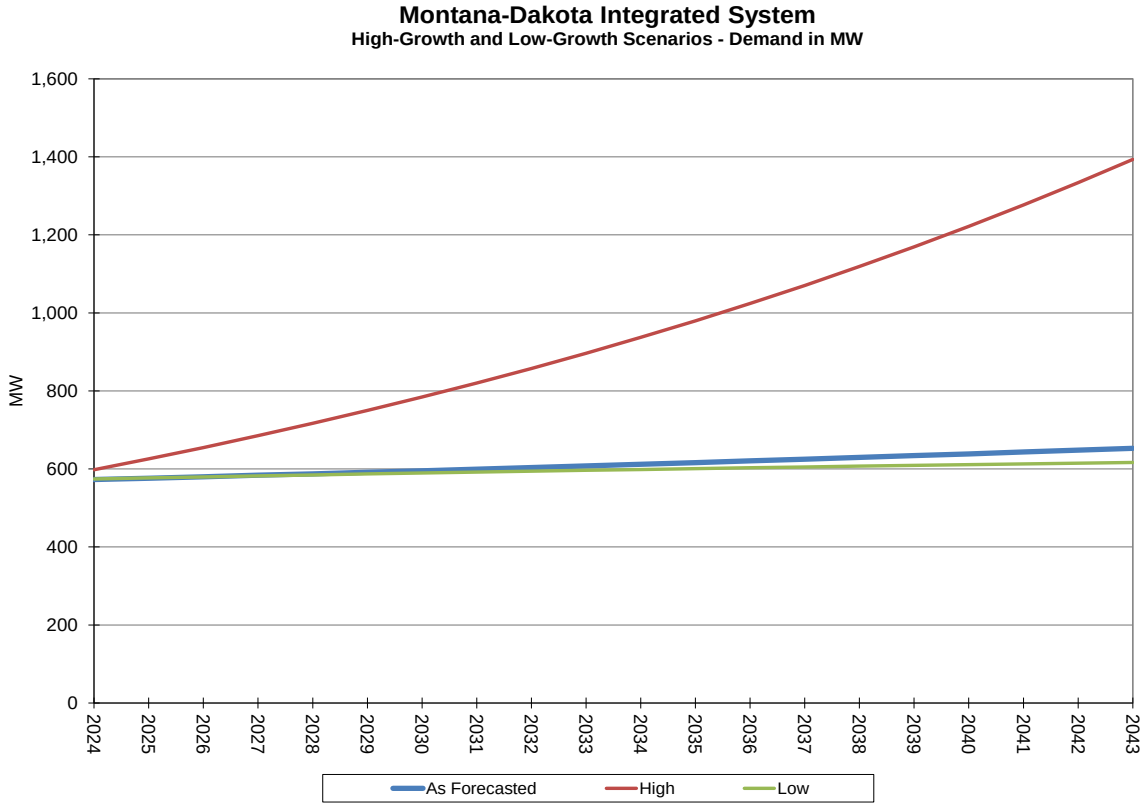
The results of the high-growth and low-growth scenarios for energy and demand are given below. The following two pages present the graphs of the numeric results.

High-Growth and Low-Growth Scenarios
Total Annual Energy (GWh) and
Summer Peak Demand (MW)

	ENERGY			DEMAND		
	Forecast	HIGH 1/	LOW 2/	Forecast	HIGH	LOW
2024	3,251.0	3,394.0	3,258.5	572.8	598.0	574.1
2025	3,262.9	3,543.3	3,266.0	576.3	625.8	576.9
2026	3,276.4	3,699.2	3,273.5	580.0	654.8	579.5
2027	3,291.3	3,862.0	3,281.0	583.9	685.1	582.1
2028	3,304.3	4,031.9	3,288.5	587.5	716.9	584.7
2029	3,319.4	4,209.3	3,296.1	591.3	749.8	587.1
2030	3,333.0	4,394.5	3,303.7	595.0	784.5	589.7
2031	3,351.6	4,587.9	3,311.3	599.3	820.3	592.1
2032	3,370.7	4,789.8	3,318.9	603.5	857.5	594.2
2033	3,389.8	5,000.6	3,326.5	607.8	896.6	596.4
2034	3,408.9	5,220.6	3,334.2	612.1	937.3	598.6
2035	3,428.2	5,450.3	3,341.9	616.3	979.8	600.8
2036	3,448.9	5,690.1	3,349.6	620.7	1024.1	602.9
2037	3,469.8	5,940.5	3,357.3	625.1	1070.3	604.9
2038	3,490.2	6,201.9	3,365.0	629.6	1118.8	607.0
2039	3,511.2	6,474.8	3,372.7	634.0	1169.2	609.0
2040	3,532.2	6,759.7	3,380.5	638.5	1222.0	611.1
2041	3,556.1	7,057.1	3,388.3	643.3	1276.7	613.0
2042	3,580.1	7,367.6	3,396.1	648.0	1333.6	614.7
2043	3,604.3	7,691.8	3,403.9	652.8	1393.2	616.5

1/ High forecast assumes 4.4% growth per year (actual 1977-85 growth).
2/ Low forecast assumes 0.23% growth per year (actual 2013-21 growth).


Montana-Dakota Integrated System
High-Growth and Low-Growth Scenarios - Energy in GWh
GWh
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
As Forecasted
Low
High


Montana-Dakota Integrated System
High-Growth and Low-Growth Scenarios - Demand in MW
MW
1,600
1,400
1,200
1,000
800
600
400
200
0
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
As Forecasted
High
Low

5. Allocations

Montana-Dakota's Integrated System consists of the service territories in Montana, North Dakota, and South Dakota. The sales forecasts were developed by sector for each state while the demand forecast was developed for the Integrated System in total. Montana-Dakota's Financial Forecasting Department requires forecasts of monthly peak demands by state, and monthly sales and energy requirements by sector for each state. Therefore, disaggregating the Integrated System forecast into peaks by state and month as well as disaggregating annual sales into monthly sales is necessary.

5.1 Sales and Customer Allocations by Month

The Financial Forecasting Department requires a calendar month forecast for each state. This is accomplished through a two-step process. First, monthly estimates of energy and customers by sector are determined by calculating the ratio of the monthly bill cycle value to the annual amount for the 5-year periods of time for 2018-2022 for both sales and customers. Results were averaged for each month for each sector for each state. These ratios were then applied to the forecasts by sector and by state (annual amounts) to arrive at monthly billing-cycle sales and customers. The allocation factors for billing-cycle sales and customers for each state, month and sector are shown in Appendix A-7. Billing-month to calendar-month apportionment factors are then used to convert from billing-month to calendar-month sales. These apportionment factors are shown in Appendix A-8.

5.2 Peak Demand Allocations by State

The forecasted summer and winter peak demand for the Integrated System were allocated to the states based on the percentage of each state's forecasted annual requirements to the total Integrated System forecasted requirements, for each year. This methodology permitted the seasonal demand forecasts by state to grow at the same rate as annual energy requirements for each state.

5.3 Peak Demand Allocations by Month

Allocating peak demand on a monthly basis by state consists of several steps:

1. Ratios of each monthly peak to the seasonal peak were calculated for each state for the 15-year periods of time from May 2008 through April 2023. (The summer season is May through October, and the winter season is November through April of the next year.)

2. The ratios determined by state in Step 1 from each month were averaged to determine which month of the season was to be the peak month, second highest month, etc. Final results of this step indicate that July and January are the peak months for the summer and winter seasons, respectively. (See the table below which gives the monthly ranks by state for each month and season.)

Monthly Average of the Ratios of Monthly Peak To Seasonal Peak for the Integrated System (Number in Parenthesis is Rank)

Summer Season

	ND		SD		MT	
MAY	(6)	0.7099	(6)	0.6185	(6)	0.6830
JUNE	(3)	0.8904	(3)	0.8794	(3)	0.8749
JULY	(1)	0.9696	(1)	0.9518	(1)	0.9797
AUGUST	(2)	0.9792	(2)	0.9357	(2)	0.9524
SEPTEMBER	(4)	0.8541	(4)	0.8028	(4)	0.8215
OCTOBER	(5)	0.7461	(5)	0.7348	(5)	0.6916

Winter Season

	ND		SD		MT	
NOV	(5)	0.8387	(5)	0.8442	(4)	0.8551
DEC	(2)	0.9391	(2)	0.9425	(2)	0.9538
JAN	(1)	0.9842	(1)	0.9501	(1)	0.9334
FEB	(3)	0.9274	(3)	0.9277	(3)	0.9231
MARCH	(4)	0.8678	(4)	0.8555	(5)	0.8381
APRIL	(6)	0.7582	(6)	0.7425	(6)	0.7463

3. For each season, the monthly ratios determined in Step 1 for the 5-year periods of time from May 2018 through April 2023, were sorted into rank sequence for each year of historical data and averaged across the years for each ranking. Applying the ranked average ratios from this step to the proper month according to the rank determined in Step 2 results in the monthly assignments given in the following table.

ND 5-Year Average Monthly Ratios of Seasonal Peaks

January	1.0000	July	1.0000 */
February	0.9312	August	0.9678
March	0.8704	September	0.8440
April	0.7646	October	0.7848
May	0.6954	November	0.8164
June	0.9211	December	0.9376

SD 5-Year Average Monthly Ratios of Seasonal Peaks

January	1.0000	July	1.0000
February	0.8921	August	0.9688
March	0.8398	September	0.8442
April	0.6982	October	0.7178
May	0.6162	November	0.8100
June	0.9195	December	0.9482

MT 5-Year Average Monthly Ratios of Seasonal Peaks

January	1.0000	**/	July	1.0000
February	0.8824		August	0.9385
March	0.7934		September	0.7883
April	0.7380		October	0.7030
May	0.6466		November	0.8334
June	0.8482		December	0.9200

*/ The July and August ratios for the state of North Dakota as determined in Step 2 above were very close. Since July is typically the peak month, the ratios used here were flipped between July and August, allowing the peak month to continue to be July.

**/ The December and January ratios for the state of Montana as determined in Step 2 above were very close. Since January is typically the peak month, the ratios used here were flipped between December and January, allowing the peak month to continue to be January.

5.4 Annual Energy and Seasonal Peak Demand by State

The forecasts of summer and winter peak demands and annual energy through the year 2043 for the Integrated System, Montana, North Dakota, and South Dakota are shown in Appendices C-5 through C-6 and graphically depicted in Appendix C-7.

5.5 Sales Forecasts by Sector

The monthly forecasts for the ten-year period 2024-2033, which result from the allocation method described above, are shown in Appendices D, E, F, and G for Montana, North Dakota, South Dakota, and the Integrated System, respectively.

APPENDIX A

Integrated System
Historical Data

Montana-Dakota Utilities Co.
Annual Sales by Class for the State of Montana
(Kilowatt Hours)

Year	Residential	Small C&I	Large C&I	Street Lighting	Other Public Sales	Interdepart-mental	Company Use	Unbilled	Total
1966	68,502,477	49,977,929	72,419,095	3,866,284	3,808,210	1,015,211	377,210	-	199,966,416
1967	68,579,218	50,233,896	98,914,908	4,015,663	3,715,582	1,091,354	810,948	-	227,361,569
1968	71,874,276	52,477,560	118,039,208	4,249,304	3,535,121	1,375,297	723,627	-	252,274,393
1969	78,325,684	53,242,727	138,245,825	5,604,625	3,863,692	1,249,804	709,401	-	281,241,758
1970	82,496,690	55,175,717	153,459,061	6,083,320	3,897,568	1,160,863	737,641	-	303,010,860
1971	85,705,748	55,865,479	163,248,877	6,492,393	4,104,508	958,540	960,127	-	317,335,672
1972	90,077,273	58,161,951	172,396,207	6,600,222	3,795,853	992,915	890,585	-	332,915,006
1973	92,338,476	61,367,352	190,984,413	6,706,073	4,211,624	1,158,025	902,676	-	357,668,639
1974	96,505,351	66,904,551	186,287,388	6,840,674	4,153,930	1,315,961	945,082	-	362,952,937
1975	105,048,515	69,452,309	178,400,297	7,087,080	3,913,278	1,506,121	984,351	-	366,391,951
1976	115,110,425	77,612,604	175,313,131	7,268,240	4,495,249	1,583,748	1,004,267	-	382,387,664
1977	120,454,365	81,073,772	172,531,607	7,359,231	4,657,927	1,548,399	1,036,205	-	388,661,506
1978	129,852,166	87,526,266	175,599,086	7,353,808	4,677,788	4,820,487	1,049,471	-	410,879,072
1979	136,672,460	96,589,760	178,879,168	7,359,189	5,467,739	2,283,782	1,029,716	-	428,281,814
1980	136,149,204	101,715,349	198,015,998	7,459,268	6,123,304	1,797,126	972,817	-	452,233,066
1981	144,334,391	111,228,786	206,717,766	7,487,108	6,381,820	1,715,542	752,755	-	478,618,168
1982	153,313,720	125,817,634	213,636,154	7,407,897	5,634,466	2,943,589	1,651,780	-	510,405,240
1983	150,623,962	108,187,279	249,492,431	7,481,435	7,159,425	1,709,185	917,496	-	525,571,213
1984	149,973,668	101,423,250	272,228,601	7,379,668	6,998,461	3,442,266	900,229	-	542,346,143
1985	142,726,940	106,608,809	281,467,351	7,188,874	6,516,453	1,001,594	639,636	-	546,149,657
1986	133,656,316	101,534,376	277,264,926	7,266,290	5,968,032	189,694	590,579	-	526,470,213
1987	126,119,227	95,806,617	248,018,234	7,290,415	6,493,543	195,663	580,473	-	484,504,172
1988	139,327,515	87,777,108	259,622,149	7,217,742	7,711,112	211,260	616,658	-	502,483,544
1989	133,923,369	85,321,774	255,852,368	7,076,958	7,254,814	226,885	599,867	-	490,256,035
1990	130,093,020	84,487,870	253,081,235	7,009,344	7,148,412	226,321	714,125	-	482,760,327
1991	135,844,961	85,054,308	253,947,072	7,232,332	6,944,172	225,952	606,717	-	489,855,514
1992	126,265,220	82,097,610	246,018,931	7,228,554	6,937,275	215,649	560,531	-	469,323,770
1993	131,148,008	85,150,142	239,566,466	7,228,736	6,709,227	223,166	621,957	-	470,647,702
1994	137,293,020	91,734,345	237,573,170	7,257,426	7,110,947	232,838	679,830	-	481,881,576
1995	139,222,942	92,004,117	231,710,303	7,224,945	6,846,494	228,038	621,915	-	477,858,754
1996	147,421,480	96,007,848	231,515,420	7,237,827	7,135,267	233,336	574,831	-	490,126,009
1997	144,515,075	94,430,882	238,928,697	7,237,555	7,244,423	201,302	556,239	-	493,114,173
1998	144,374,643	96,561,060	237,770,443	7,271,601	7,162,112	213,369	549,751	-	493,902,979
1999	139,939,058	93,535,156	251,450,993	7,241,875	7,037,487	201,768	551,485	-	499,957,822
2000	143,298,426	94,947,102	276,845,617	7,212,210	6,819,914	218,795	456,819	-	529,798,883
2001	144,170,040	94,133,492	282,466,554	7,242,218	6,677,075	218,859	453,240	-	535,361,478
2002	147,916,359	96,252,274	306,159,986	7,240,913	6,893,847	195,977	448,893	-	565,108,249
2003	153,518,427	100,463,048	340,070,071	7,208,314	6,991,783	190,115	501,557	-	608,943,315
2004	141,249,319	98,150,615	348,097,119	7,249,849	6,709,211	178,934	469,139	-	602,104,186
2005	150,705,819	102,045,511	364,489,268	7,232,015	6,481,903	194,114	454,825	-	631,603,455
2006	157,205,695	104,213,569	368,666,049	7,202,765	6,996,525	189,666	435,247	-	644,909,516
2007	162,186,142	109,101,052	385,230,122	7,187,164	6,827,828	197,773	430,092	-	671,160,173
2008	162,181,766	108,595,072	408,686,454	7,243,765	7,034,312	190,513	411,809	-	694,343,691
2009	167,420,839	110,379,920	407,647,345	7,244,288	7,149,420	187,117	364,946	-	700,393,875
2010	171,661,490	109,187,916	415,946,482	7,203,307	6,973,614	185,423	351,780	-	711,510,012
2011	185,153,498	119,643,444	427,886,806	7,088,889	7,232,041	192,681	364,683	-	747,562,042
2012	187,634,686	132,714,357	420,458,666	7,106,072	7,603,435	171,842	358,713	-	756,047,771
2013	194,906,971	128,002,892	438,917,563	7,028,478	7,201,469	173,489	366,794	-	776,597,656
2014	200,088,171	137,799,079	451,686,572	7,107,653	7,341,210	175,228	384,145	-	804,582,058
2015	191,419,674	135,201,525	473,740,249	7,103,015	7,483,730	172,627	334,528	-	815,455,348
2016	184,295,936	131,689,711	474,495,852	7,102,363	7,019,988	170,203	326,917	-	805,100,970
2017	188,742,767	133,595,374	469,137,508	7,035,259	6,889,892	177,157	341,467	-	805,919,424
2018	192,079,714	138,485,324	469,653,438	4,451,247	5,752,819	176,856	372,851	-	810,972,249
2019	185,319,037	133,950,418	455,960,225	3,048,711	5,603,887	167,964	398,753	-	784,448,995
2020	184,784,621	125,022,927	421,234,462	3,077,171	5,904,576	147,189	372,449	-	740,543,395
2021	184,910,322	129,676,168	421,852,914	2,941,573	6,613,210	126,709	513,299	-	746,634,195
2022	191,158,226	131,236,062	424,603,574	2,912,718	6,427,606	127,437	749,447	-	757,215,070
2023	186,681,003	127,408,834	403,535,702	2,623,391	6,265,814	119,085	577,293	-	727,211,122

Montana-Dakota Utilities Co.
Annual Sales by Class for the State of North Dakota
(Kilowatt Hours)

Year	Residential	Small C&I	Large C&I	Street Lighting	Other Public Sales	Interdepart-mental	Company Use	Unbilled	Total
1966	177,839,445	101,454,865	62,248,779	12,065,801	9,778,523	242,324	627,634	35,481	364,292,852
1967	178,648,631	101,511,079	66,238,823	12,404,851	10,627,735	235,590	1,496,352	68,626	371,231,687
1968	189,586,695	108,098,127	68,327,053	13,528,733	11,306,057	1,075,808	1,514,551	68,231	393,505,255
1969	203,352,077	117,146,235	69,429,138	14,548,153	11,781,023	3,257,680	1,710,576	66,543	421,291,425
1970	215,129,232	128,966,438	74,006,755	15,405,493	12,432,105	2,976,220	1,632,669	66,670	450,615,582
1971	224,660,134	137,368,067	78,485,841	15,852,055	12,356,099	1,532,592	3,570,747	68,888	473,894,423
1972	241,177,868	141,541,263	85,849,701	16,145,159	12,610,906	230,775	5,480,921	72,184	503,108,777
1973	245,827,613	146,917,105	92,262,004	16,519,767	14,113,173	198,917	5,488,128	71,349	521,398,056
1974	259,763,946	151,905,722	95,263,639	16,812,962	14,147,896	207,547	5,388,873	64,700	543,555,285
1975	284,712,928	174,078,088	107,153,806	17,229,492	14,613,377	194,573	5,283,319	54,272	603,319,855
1976	307,231,757	188,990,076	119,225,930	17,788,799	17,287,746	233,931	5,201,276	58,861	656,018,376
1977	322,066,615	202,204,724	123,518,797	18,705,610	20,388,865	775,960	5,329,555	61,312	693,051,438
1978	360,829,206	226,814,052	131,861,024	19,233,630	22,666,150	448,114	5,583,243	55,953	767,491,372
1979	385,274,877	251,074,945	134,220,720	19,899,710	23,913,957	263,925	5,383,105	56,305	820,087,544
1980	390,283,221	265,468,707	140,987,413	20,492,222	26,160,460	382,762	5,040,756	44,390	848,859,931
1981	408,735,140	273,869,995	175,505,109	21,076,949	24,329,774	244,375	4,212,597	46,134	908,020,073
1982	452,363,924	245,889,852	236,334,289	21,499,821	26,288,435	261,436	4,964,613	47,986	987,650,356
1983	456,184,125	258,134,530	230,553,333	21,370,120	28,270,730	382,443	8,659,379	41,916	1,003,596,576
1984	455,285,616	267,515,911	240,737,178	20,966,383	28,884,506	2,020,361	6,602,362	42,325	1,022,054,642
1985	450,793,794	284,254,986	233,446,499	20,793,870	28,421,516	194,570	6,810,757	39,484	1,024,755,476
1986	434,367,094	282,091,350	232,968,286	20,399,709	29,251,485	283,486	8,387,924	37,451	1,007,786,785
1987	414,769,777	226,151,695	289,829,031	20,488,538	27,652,568	306,718	6,531,047	46,880	985,776,254
1988	449,769,976	199,876,624	348,910,521	20,488,320	27,128,548	233,035	6,339,307	34,969	1,052,781,300
1989	443,827,623	195,738,987	362,960,433	20,407,635	26,027,847	236,202	6,825,024	38,865	1,056,062,616
1990	430,825,093	192,983,257	373,076,254	20,510,585	25,648,820	243,363	6,283,396	37,303	1,049,608,071
1991	450,333,411	196,030,842	383,766,958	20,458,655	30,828,407	266,645	6,137,808	33,378	1,087,856,104
1992	423,260,909	188,693,144	398,197,743	20,663,341	31,720,268	282,076	6,211,805	48,627	1,069,077,913
1993	439,344,573	191,672,169	416,752,959	20,565,116	31,146,204	322,281	5,956,790	46,519	1,105,806,611
1994	456,342,312	203,783,580	445,849,305	20,574,807	32,828,420	316,899	6,987,912	41,960	1,166,725,195
1995	473,310,757	207,631,769	447,406,363	20,664,316	32,139,766	311,888	7,116,061	43,365	1,188,624,285
1996	489,581,963	212,394,753	463,633,627	20,598,257	33,617,666	293,678	7,112,634	42,287	1,227,274,865
1997	485,185,916	215,341,328	464,356,987	20,448,097	35,525,187	276,970	7,039,295	37,836	1,228,211,616
1998	476,555,259	216,137,378	470,352,073	20,780,506	33,387,706	268,955	6,460,961	35,675	1,223,978,513
1999	476,150,870	215,933,149	487,339,322	20,930,538	32,535,686	269,387	6,214,785	24,378	1,239,398,115
2000	480,611,397	220,082,001	496,752,971	20,765,723	32,298,343	276,507	5,758,461	-	1,256,545,403
2001	495,264,092	219,718,551	524,934,913	20,801,786	32,839,971	283,411	5,380,094	-	1,299,222,818
2002	510,649,026	223,725,158	534,095,959	20,845,828	33,601,388	245,882	4,924,187	-	1,328,087,428
2003	518,362,506	230,831,463	538,714,606	20,964,805	33,818,825	243,012	5,146,364	-	1,348,081,581
2004	482,828,358	224,924,291	532,079,391	20,632,572	32,251,096	238,077	5,030,082	-	1,297,983,867
2005	525,132,818	250,022,338	563,792,863	20,484,092	33,806,432	248,541	5,291,349	-	1,398,778,433
2006	550,070,624	274,727,542	564,963,429	20,772,430	35,894,619	238,213	7,203,891	-	1,453,870,748
2007	568,709,867	299,602,230	570,170,485	20,947,764	36,072,776	235,341	7,511,339	-	1,503,249,802
2008	585,608,722	320,093,226	583,501,829	21,200,739	35,709,163	242,421	7,356,084	-	1,553,712,184
2009	609,178,728	340,495,770	551,113,741	20,582,112	36,202,033	237,223	7,494,346	-	1,565,303,953
2010	632,068,296	382,985,447	530,340,771	20,372,584	35,746,426	237,329	7,232,018	-	1,608,982,871
2011	687,464,765	450,098,381	514,238,222	20,059,394	38,643,539	230,042	7,390,957	-	1,718,125,300
2012	700,451,260	512,566,297	492,981,290	20,075,686	40,771,733	202,097	7,544,693	-	1,774,593,056
2013	774,915,846	559,838,729	516,813,483	19,894,701	41,656,843	207,997	5,541,282	-	1,918,868,881
2014	812,653,819	609,043,689	579,346,413	20,014,582	44,712,842	189,611	5,887,244	-	2,071,848,200
2015	784,976,717	614,126,114	603,878,747	20,313,025	45,323,656	172,838	5,233,849	-	2,074,024,946
2016	746,374,241	599,694,059	617,933,575	20,386,694	44,431,734	170,182	4,958,056	-	2,033,948,541
2017	754,399,763	585,174,349	638,719,056	20,041,593	53,958,297	170,423	4,892,346	-	2,057,355,827
2018	799,660,935	565,691,780	690,344,780	19,569,074	53,201,967	179,514	4,896,729	-	2,133,544,779
2019	784,808,269	573,956,119	675,578,678	16,733,425	51,275,800	165,045	4,819,419	-	2,107,336,755
2020	779,618,599	552,682,437	652,235,577	13,956,705	50,838,854	153,386	4,736,174	-	2,054,221,732
2021	759,330,204	530,068,190	716,278,492	13,753,205	51,171,048	145,864	4,644,860	-	2,075,391,863
2022	800,681,799	539,522,883	721,796,333	13,651,297	50,766,604	153,914	5,091,103	-	2,131,663,933
2023	791,661,606	575,891,106	732,336,414	13,401,222	50,478,935	150,129	4,872,606	-	2,168,792,018

Montana-Dakota Utilities Co.
Annual Sales by Class for the State of South Dakota
(Kilowatt Hours)

Year	Residential	Small C&I	Large C&I	Street Lighting	Other Public Sales	Interdepart-mental	Company Use	Unbilled	Total
1966	42,230,739	22,427,449	6,732,280	2,095,903	1,697,150	1,424	126,325	-	75,311,270
1967	41,997,237	25,800,957	4,063,750	1,979,052	1,847,881	1,153	260,654	-	75,950,684
1968	43,952,926	23,284,225	3,940,603	2,575,843	1,707,100	1,608	268,857	-	75,731,162
1969	46,482,606	24,758,227	929,501	2,598,403	1,841,636	2,207	287,654	-	76,900,234
1970	47,361,709	22,775,007	3,464,385	2,547,642	1,759,567	2,154	269,189	-	78,179,653
1971	49,310,679	22,255,017	4,727,415	2,716,302	1,834,084	2,362	315,769	215	81,161,843
1972	52,980,235	22,785,758	5,347,104	2,813,232	1,918,580	2,270	365,122	-	86,212,301
1973	53,570,804	23,259,175	5,400,790	2,859,812	1,987,540	2,559	432,365	-	87,513,045
1974	56,666,860	23,203,748	5,840,707	2,994,179	2,138,696	2,487	428,561	-	91,275,238
1975	62,824,496	24,817,191	6,748,459	3,128,822	2,030,891	2,433	480,797	-	100,033,089
1976	66,343,302	25,800,602	7,756,873	3,103,016	2,053,227	2,370	467,531	-	105,526,921
1977	65,963,975	26,111,838	8,474,190	3,124,296	1,840,714	3,151	478,536	-	105,996,700
1978	68,589,710	27,328,956	9,693,110	3,113,948	1,774,321	2,966	607,731	-	111,110,742
1979	67,938,559	26,971,950	10,123,460	3,121,871	1,904,825	2,983	620,674	-	110,684,322
1980	64,325,468	26,196,596	10,851,108	3,140,131	2,170,017	3,737	507,507	-	107,194,564
1981	61,878,613	25,902,182	11,243,318	3,083,603	1,830,577	2,970	356,399	-	104,297,662
1982	65,558,005	27,156,570	11,426,316	3,030,031	1,871,552	2,943	607,247	-	109,652,664
1983	65,118,829	26,884,079	12,353,692	3,006,759	1,716,506	2,486	557,667	-	109,640,018
1984	65,920,772	27,933,476	12,698,954	2,964,197	1,816,219	1,782	545,965	-	111,881,365
1985	64,222,969	27,289,287	13,297,147	2,968,984	1,826,822	7,425	829,238	-	110,441,872
1986	62,444,941	27,005,631	14,820,308	2,987,404	1,637,375	22,258	571,879	-	109,489,796
1987	59,644,668	26,773,933	16,227,633	2,986,179	1,857,719	28,687	363,754	-	107,882,573
1988	63,622,038	28,168,260	18,064,220	2,953,900	1,925,245	14,449	419,470	-	115,167,582
1989	61,747,940	28,578,702	19,249,467	2,937,751	2,019,854	13,359	456,236	-	115,003,309
1990	59,041,129	27,674,002	20,540,349	2,938,991	1,879,111	9,908	369,286	-	112,452,776
1991	60,709,134	28,371,913	20,800,179	2,944,664	2,119,069	10,945	398,192	-	115,354,096
1992	56,416,333	27,113,531	21,125,368	2,920,263	2,354,085	10,701	343,584	-	110,283,865
1993	59,615,263	27,986,509	22,314,105	2,921,246	2,116,180	11,786	397,837	-	115,362,926
1994	61,124,471	30,267,538	23,784,346	2,922,998	2,427,771	11,901	422,267	-	120,961,292
1995	62,959,707	31,134,415	24,670,253	2,854,516	3,097,276	11,484	404,093	-	125,131,744
1996	63,638,266	32,141,951	25,352,355	2,872,136	3,137,175	12,172	352,311	-	127,506,366
1997	61,623,748	31,753,237	25,522,619	2,805,901	3,058,443	11,319	342,786	-	125,118,053
1998	59,360,287	32,313,292	25,113,488	2,796,107	3,003,078	9,777	286,457	-	122,882,486
1999	59,567,949	32,498,800	25,977,705	2,807,423	2,954,190	9,857	297,480	-	124,113,404
2000	59,525,312	32,320,913	25,956,274	2,740,106	2,810,931	9,227	308,855	-	123,671,618
2001	61,117,630	33,018,447	25,846,819	2,748,375	2,742,790	9,414	325,833	-	125,809,308
2002	61,780,443	33,800,702	26,645,097	2,691,584	2,737,670	9,884	329,617	-	127,994,997
2003	61,149,061	33,964,499	27,075,451	2,683,876	2,791,070	10,319	319,687	-	127,993,963
2004	56,535,958	32,909,312	27,090,632	2,672,475	2,885,412	9,788	290,260	-	122,393,837
2005	61,267,370	34,678,560	28,886,389	2,660,320	2,535,633	10,026	305,636	-	130,343,934
2006	61,675,574	34,206,361	28,556,470	2,626,482	2,204,422	9,086	299,875	-	129,578,270
2007	63,017,590	35,210,997	29,271,378	2,637,764	2,364,117	9,526	304,850	-	132,816,222
2008	67,104,019	36,965,622	30,890,745	2,635,828	2,432,011	9,826	318,928	-	140,356,979
2009	69,689,062	39,395,377	32,856,198	2,606,502	1,701,927	9,019	335,872	-	146,593,957
2010	70,867,723	37,312,865	34,338,981	2,638,638	1,210,011	8,876	316,402	-	146,693,496
2011	73,976,689	36,711,846	34,944,961	2,627,500	1,383,960	7,798	337,074	-	149,989,828
2012	69,097,067	34,638,566	35,388,342	2,620,423	1,518,467	2,742	289,333	-	143,554,940
2013	74,264,716	37,118,359	36,338,433	2,660,824	1,508,134	4,023	353,347	-	152,247,836
2014	75,462,217	38,045,222	37,507,489	2,650,807	1,431,970	4,128	316,511	-	155,418,344
2015	69,742,814	35,994,853	37,083,842	2,567,823	1,492,996	2,990	234,056	-	147,119,374
2016	67,300,830	35,799,151	35,874,593	2,517,019	1,485,537	2,291	215,472	-	143,194,893
2017	67,065,372	37,185,771	35,546,200	2,487,177	1,482,823	1,162	268,202	-	144,036,707
2018	72,030,090	39,185,098	36,289,248	2,461,232	1,434,645	1,919	295,533	-	151,697,765
2019	70,772,512	38,738,341	35,995,139	2,397,250	1,507,854	1,871	341,410	-	149,754,377
2020	68,270,425	36,425,549	35,840,638	1,555,865	1,413,561	1,699	267,237	-	143,774,974
2021	66,630,726	35,305,416	34,051,344	1,184,901	1,540,872	1,732	256,208	-	138,971,199
2022	69,481,874	36,811,331	34,053,609	1,208,285	1,694,394	1,948	308,194	-	143,559,635
2023	67,903,687	36,334,989	34,074,380	1,198,930	1,543,668	1,768	286,943	-	141,344,365

Montana-Dakota Utilities Co.
Annual Sales by Class for the Integrated System
(Kilowatt Hours)

Year	Residential	Small C&I	Large C&I	Street Lighting	Other Public Sales	Interdepart-mental	Company Use	Unbilled	Total
1966	288,572,661	173,860,243	141,400,154	18,027,988	15,283,883	1,258,959	1,131,169	35,481	639,570,538
1967	289,225,086	177,545,932	169,217,481	18,399,566	16,191,198	1,328,097	2,567,954	68,626	674,543,940
1968	305,413,897	183,859,912	190,306,864	20,353,880	16,548,278	2,452,713	2,507,035	68,231	721,510,810
1969	328,160,367	195,147,189	208,604,464	22,751,181	17,486,351	4,509,691	2,707,631	66,543	779,433,417
1970	344,987,631	206,917,162	230,930,201	24,036,455	18,089,240	4,139,237	2,639,499	66,670	831,806,095
1971	359,676,561	215,488,563	246,462,133	25,060,750	18,294,691	2,493,494	4,846,643	69,103	872,391,938
1972	384,235,376	222,488,972	263,593,012	25,558,613	18,325,339	1,225,960	6,736,628	72,184	922,236,084
1973	391,736,893	231,543,632	288,647,207	26,085,652	20,312,337	1,359,501	6,823,169	71,349	966,579,740
1974	412,936,157	242,014,021	287,391,734	26,647,815	20,440,522	1,525,995	6,762,516	64,700	997,783,460
1975	452,585,939	268,347,588	292,302,562	27,445,394	20,557,546	1,703,127	6,748,467	54,272	1,069,744,895
1976	488,685,484	292,403,282	302,295,934	28,160,055	23,836,222	1,820,049	6,673,074	58,861	1,143,932,961
1977	508,484,955	309,390,334	304,524,594	29,189,137	26,887,506	2,327,510	6,844,296	61,312	1,187,709,644
1978	559,271,082	341,669,274	317,153,220	29,701,386	29,118,259	5,271,567	7,240,445	55,953	1,289,481,186
1979	589,885,896	374,636,655	323,223,348	30,380,770	31,286,521	2,550,690	7,033,495	56,305	1,359,053,680
1980	590,757,893	393,380,652	349,854,519	31,091,621	34,453,781	2,183,625	6,521,080	44,390	1,408,287,561
1981	614,948,144	411,000,963	393,466,193	31,647,660	32,542,171	1,962,887	5,321,751	46,134	1,490,935,903
1982	671,235,649	398,864,056	461,396,759	31,937,749	33,794,453	3,207,968	7,223,640	47,986	1,607,708,260
1983	671,926,916	393,205,888	492,399,456	31,858,314	37,146,661	2,094,114	10,134,542	41,916	1,638,807,807
1984	671,180,056	396,872,637	525,664,733	31,310,248	37,699,186	5,464,409	8,048,556	42,325	1,676,282,150
1985	657,743,703	418,153,082	528,210,997	30,951,728	36,764,791	1,203,589	8,279,631	39,484	1,681,347,005
1986	630,468,351	410,631,357	525,053,520	30,653,403	36,856,892	495,438	9,550,382	37,451	1,643,746,794
1987	600,533,672	348,732,245	554,074,898	30,765,132	36,003,830	531,068	7,475,274	46,880	1,578,162,999
1988	652,719,529	315,821,992	626,596,890	30,659,962	36,764,905	458,744	7,375,435	34,969	1,670,432,426
1989	639,498,932	309,639,463	638,062,268	30,422,344	35,302,515	476,446	7,881,127	38,865	1,661,321,960
1990	619,959,242	305,145,129	646,697,838	30,458,920	34,676,343	479,592	7,366,807	37,303	1,644,821,174
1991	646,887,506	309,457,063	658,514,209	30,635,651	39,891,648	503,542	7,142,717	33,378	1,693,065,714
1992	605,942,462	297,904,285	665,342,042	30,812,158	41,011,628	508,426	7,115,920	48,627	1,648,685,548
1993	630,107,844	304,808,820	678,633,530	30,715,098	39,971,611	557,233	6,976,584	46,519	1,691,817,239
1994	654,759,803	325,785,463	707,206,821	30,755,231	42,367,138	561,638	8,090,009	41,960	1,769,568,063
1995	675,493,406	330,770,301	703,786,919	30,743,777	42,083,536	551,410	8,142,069	43,365	1,791,614,783
1996	700,641,709	340,544,552	720,501,402	30,708,220	43,890,108	539,186	8,039,776	42,287	1,844,907,240
1997	691,324,739	341,525,447	728,808,303	30,491,553	45,828,053	489,591	7,938,320	37,836	1,846,443,842
1998	680,290,189	345,011,730	733,236,004	30,848,214	43,552,896	492,101	7,297,169	35,675	1,840,763,978
1999	675,657,877	341,967,105	764,768,020	30,979,836	42,527,363	481,012	7,063,750	24,378	1,863,469,341
2000	683,435,135	347,350,016	799,554,862	30,718,039	41,929,188	504,529	6,524,135	-	1,910,015,904
2001	700,551,762	346,870,490	833,248,286	30,792,379	42,259,836	511,684	6,159,167	-	1,960,393,604
2002	720,345,828	353,778,134	866,901,042	30,778,325	43,232,905	451,743	5,702,697	-	2,021,190,674
2003	733,029,994	365,259,010	905,860,128	30,856,995	43,601,678	443,446	5,967,608	-	2,085,018,859
2004	680,613,635	355,984,218	907,267,142	30,554,896	41,845,719	426,799	5,789,481	-	2,022,481,890
2005	737,106,007	386,746,409	957,168,520	30,376,427	42,823,968	452,681	6,051,810	-	2,160,725,822
2006	768,951,893	413,147,472	962,185,948	30,601,677	45,095,566	436,965	7,939,013	-	2,228,358,534
2007	793,913,599	443,914,279	984,671,985	30,772,692	45,264,721	442,640	8,246,281	-	2,307,226,197
2008	814,894,507	465,653,920	1,023,079,028	31,080,332	45,175,486	442,760	8,086,821	-	2,388,412,854
2009	846,288,629	490,271,067	991,617,284	30,432,902	45,053,380	433,359	8,195,164	-	2,412,291,785
2010	874,597,509	529,486,228	980,626,234	30,214,529	43,930,051	431,628	7,900,200	-	2,467,186,379
2011	946,594,952	606,453,671	977,069,989	29,775,783	47,259,540	430,521	8,092,714	-	2,615,677,170
2012	957,183,013	679,919,220	948,828,298	29,802,181	49,893,635	376,681	8,192,739	-	2,674,195,767
2013	1,044,087,533	724,959,980	992,069,479	29,584,003	50,366,446	385,509	6,261,423	-	2,847,714,373
2014	1,088,204,207	784,887,990	1,068,540,474	29,773,042	53,486,022	368,967	6,587,900	-	3,031,848,602
2015	1,046,139,205	785,322,492	1,114,702,838	29,983,863	54,300,382	348,455	5,802,433	-	3,036,599,668
2016	997,971,007	767,182,921	1,128,304,020	30,006,076	52,937,259	342,676	5,500,445	-	2,982,244,404
2017	1,010,207,902	755,955,494	1,143,402,764	29,564,029	62,331,012	348,742	5,502,015	-	3,007,311,958
2018	1,063,770,739	743,362,202	1,196,287,466	26,481,553	60,389,431	358,289	5,565,113	-	3,096,214,793
2019	1,040,899,818	746,644,878	1,167,534,042	22,179,386	58,387,541	334,880	5,559,582	-	3,041,540,127
2020	1,032,673,645	714,130,913	1,109,310,677	18,589,741	58,156,991	302,274	5,375,860	-	2,938,540,101
2021	1,010,871,252	695,049,774	1,172,182,750	17,879,679	59,325,130	274,305	5,414,367	-	2,960,997,257
2022	1,061,321,899	707,570,276	1,180,453,516	17,772,300	58,888,604	283,299	6,148,744	-	3,032,438,638
2023	1,046,246,296	739,634,929	1,169,946,496	17,223,543	58,288,417	270,982	5,736,842	-	3,037,347,505

Montana-Dakota Utilities Co.

Integrated System Seasonal Peaks and Peak Month Load Factors 1/

	SUMMER			WINTER			Annual
			Load		2/	Load	load
Year	MW	Month	Factor	MW	Month	Factor	Factor
1960	76.7	AUG	70.7	109.3	DEC	58.8	50.9
1961	82.8	AUG	73.7	113.7	JAN	62.0	52.5
1962	83.8	AUG	76 4	123.2	JAN	65.4	53.7
1963	95.9	JUL	68.9	127.6	DEC	63.3	52.5
1964	101.8	AUG	68.2	138.2	DEC	64.2	51.8
1965	108.4	AUG	68.7	138.0	JAN	68.5	56.5
1966	114.0	JUL	70.5	149.6	JAN	65.4	58.2
1967	129.0	JUL	71.3	161.8	JAN	68.1	60.0
1968	133.3	JUL	69.9	173.5	DEC	65.1	55.0
1969	153.4	AUG	70.0	178.2	JAN	70.3	62.0
1970	160.5	JUL	70.2	186.2	DEC	67.6	59.5
1971	170.9	AUG	72.2	195.7	JAN	70.5	58.2
1972	174.5	AUG	72.6	209.1	DEC	69.4	58.5
1973	199.6	AUG	69.9	200.1	DEC	67.3	63.2
1974	210.0	JUL	71.9	222.0	JAN	66.6	62.7
1975	230.8	JUL	68.3	238.2	JAN	67.8	59.5
1976	242.6	AUG	64.8	241.3	JAN	78.1	59.7
1977	253.7	JUL	61.2	257.8	DEC	71.3	57.9
1978	257.2	SEP	59.9	268.1	JAN	79.0	62.9
1979	257.6	JUL	65.0	287.5	JAN	73.7	63.1
1980	291.2	JUL	64.4	292.0	DEC	73.4	61.7
1981	315.4	JUL	61.6	333.4	JAN	75.2	59.0
1982	322.7	AUG	60.8	293.7	DEC	74.9	59.6
1983	337.5	AUG	68.5	354.1	DEC	72.7	57.5
1984	354.6	AUG	64.3	330.6	JAN	74 3	58.3
1985	350.4	JUL	62.7	324.2	DEC	74.2	59.8
1986	338.0	JUN	57.9	293.2	DEC	73.4	59.2
1987	358.6	JUL	58.7	306.2	FEB	76.2	54.6
1988	386.7	JUN	61.6	320.9	FEB	74.1	54.2
1989	383.6	AUG	57.1	341.6	DEC	69.8	54.4
1990	381.6	JUL	55.4	330.2	DEC	70.8	53.5
1991	387.1	JUL	58.0	311.8	DEC	74.3	54.2
1992	339.1	AUG	60.9	337.5	DEC	73.1	61.4
1993	350.3	AUG	62.3	332.7	JAN	77.5	61.0
1994	369.8	AUG	61.8	322.6	DEC	74.5	59.7
1995	412.7	AUG	59.8	348.7	FEB	68.6	54.0
1996	393.3	AUG	62.6	343.1	JAN	78.4	58.3
1997	404.6	JUL	61.6	332.8	JAN	74.4	56.6
1998	402.5	AUG	63.6	354.2	DEC	70.1	56.9
1999	420.6	JUL	61.3	342.4	DEC	70.7	54.2
2000	432.3	AUG	61.3	353.9	DEC	77.4	54.9
2001	452.9	AUG	62.3	328.9	DEC	78.2	53.0
2002	458.8	JUL	64.9	343.5	JAN	78.4	53.7
2003	470.5	AUG	64.3	367.7	JAN	77.2	54.0
2004	458.4	JUL	60.4	383.4	JAN	76.7	54.9
2005	459.1	JUL	65.9	387.2	DEC	76.8	57.9
2006	485.5	JUL	68.3	397.2	NOV	69.3	56.4
2007	525.6	JUL	66.3	407.3	JAN	80.5	54.5
2008	476.6	AUG	66.9	455.0	DEC	78.1	62.2
2009	473.8	AUG	61.2	459.6	DEC	78.4	62.5
2010	502.5	AUG	64.8	457.8	JAN	79.8	61.7
2011	535.8	JUL	63.2	510.8	JAN	71.6	59.2
2012	573.6	JUL	66.8	516.2	JAN	78.3	58.0
2013	546.9	AUG	65.2	582.1	JAN	74.2	63.5
2014	533.0	AUG	66.6	557.2	JAN	77.1	63.8
2015	611.5	AUG	63.2	514.9	JAN	83.4	60.9
2016	596.8	JUL	63.6	564.9	DEC	79.3	61.2
2017	579.1	JUL	70.6	565.1	JAN	78.3	64.1
2018	572.4	JUL	67.6	563.8	FEB	83.6	66.1
2019	536.9	AUG	67.8	571.1	JAN	76.3	66.8
2020	585.6	AUG	65.1	572.7	FEB	78.2	61.6
2021	603.7	JUL	69.3	558.0	JAN	77.5	63.9
2022	590.2	AUG	67.0	585.7	DEC	76.7	63.3
2023	588.8	JUL	63.1				

1/ MDU only net peak on combined system as calculated by MDU (excludes REC adjusted peak).

2/ January and February is of the following year.

Montana-Dakota Utilities Co.
Demand by State at Time of System Seasonal Peak
(Megawatts)

	SUMMER				WINTER				
Year	ND	SD	MT	Int Sys	ND	SD	MT	Int Sys	
1975	139.4	22.1	69.3	230.8	145.1	22.8	70.3	238.2	*
1976	147.4	24.2	71.0	242.6	147.3	24.1	69.9	241.3	*
1977	155.9	23.5	74.6	254.0	155.1	24.3	78.4	257.8	
1978	165.5	20.4	70.3	256.2	165.5	23.9	78.7	268.1	*
1979	166.4	16.4	74.8	257.6	177.2	24.1	86.2	287.5	*
1980	181.5	21.5	88.2	291.2	180.8	21.8	89.4	292.0	
1981	202.3	21.0	92.1	315.4	201.5	24.9	106.9	333.3	*
1982	208.0	20.8	93.9	322.7	185.0	21.1	87.6	293.7	
1983	221.2	20.9	95.4	337.5	225.7	27.5	100.9	354.1	
1984	234.8	23.9	96.0	354.7	209.4	23.0	98.2	330.6	*
1985	233.3	24.4	92.7	350.4	206.9	22.4	94.9	324.2	
1986	224.2	22.5	91.4	338.1	196.4	21.2	75.7	293.3	
1987	242.1	28.5	88.1	358.7	204.6	22.8	78.8	306.2	*
1988	265.6	28.4	92.7	386.7	212.1	23.7	85.0	320.8	*
1989	265.1	27.6	90.9	383.6	225.6	26.9	89.1	341.6	
1990	261.2	26.2	94.2	381.6	218.2	24.1	87.9	330.2	
1991	271.9	30.0	85.2	387.1	217.5	19.9	74.4	311.8	
1992	234.4	20.9	83.7	339.0	233.4	23.9	80.1	337.4	
1993	251.1	23.3	75.9	350.3	225.6	25.5	81.6	332.7	*
1994	253.7	27.9	88.2	369.8	220.9	24.5	77.2	322.6	
1995	290.6	27.1	95.0	412.7	236.1	22.5	90.1	348.7	*
1996	272.0	27.1	94.1	393.2	233.6	21.3	88.2	343.1	*
1997	288.0	22.4	94.3	404.7	225.0	20.0	87.8	332.8	*
1998	285.1	25.7	91.7	402.5	248.2	21.6	84.4	354.2	
1999	295.0	28.7	96.9	420.6	237.3	21.6	83.6	342.5	
2000	302.9	30.1	99.3	432.3	234.7	22.8	96.4	353.9	
2001	317.8	29.8	105.4	453.0	235.0	14.3	79.6	328.9	
2002	326.0	26.4	106.4	458.8	242.9	14.4	86.2	343.5	*
2003	328.4	28.4	113.7	470.5	251.4	19.4	96.9	367.7	*
2004	320.2	28.4	109.8	458.4	258.8	21.9	102.7	383.4	*
2005	311.6	27.7	119.8	459.1	265.0	21.8	100.4	387.2	
2006	346.3	29.0	110.1	485.4	272.0	23.8	101.4	397.2	
2007	365.8	31.6	128.3	525.7	293.0	25.3	89.0	407.3	*
2008	330.1	27.6	118.9	476.6	309.1	30.3	115.6	455.0	
2009	337.0	27.7	109.0	473.7	313.3	28.8	117.5	459.6	
2010	357.7	28.4	116.4	502.5	330.1	25.7	102.0	457.8	*
2011	385.3	32.6	117.9	535.8	366.4	29.9	114.5	510.8	*
2012	406.8	24.9	141.9	573.6	380.0	29.4	106.8	516.2	*
2013	396.4	27.6	122.9	546.9	437.7	29.9	114.5	582.1	*
2014	376.3	24.8	131.9	533.0	409.0	29.6	118.6	557.2	*
2015	438.2	30.2	143.1	611.5	382.0	25.5	107.4	514.9	*
2016	416.2	37.6	143.0	596.8	403.8	28.5	132.6	564.9	
2017	412.3	31.8	135.0	579.1	409.9	29.4	125.7	565.1	*
2018	410.5	29.2	132.6	572.4	397.1	28.8	137.9	563.8	*
2019	383.7	25.7	127.5	536.9	408.7	31.6	130.8	571.1	*
2020	414.1	30.4	141.1	585.6	408.9	30.2	133.6	572.7	*
2021	424.6	31.7	147.4	603.7	384.7	24.4	148.9	558.0	*
2022	395.5	27.7	166.9	590.2	430.8	30.4	124.6	585.7	
2023	420.4	27.0	141.5	588.8					

* Winter peak is in the following year.

Montana-Dakota Utilities Co.
Billing Cycle Allocation Factors by State

North Dakota

Sales	January	February	March	April	May	June	July	August	September	October	November	December
Residential	0.113074	0.101305	0.102569	0.079963	0.064923	0.067223	0.081429	0.091117	0.074080	0.062299	0.068017	0.094001
Small C&I	0.101971	0.090405	0.099725	0.081372	0.070806	0.073133	0.078908	0.085191	0.077742	0.075116	0.073326	0.092303
Large C&I	0.092162	0.079806	0.090276	0.080135	0.073173	0.079551	0.084900	0.090782	0.083809	0.082556	0.075029	0.087821
Street Lighting	0.109031	0.090148	0.091386	0.085492	0.073210	0.071988	0.068973	0.071386	0.074298	0.081476	0.081882	0.100730
Other Public Sales	0.086175	0.073084	0.086454	0.077554	0.074698	0.089258	0.093922	0.099881	0.090087	0.080010	0.068515	0.080362
Interdepartmental	0.109299	0.098296	0.102487	0.090709	0.080356	0.073908	0.067112	0.068638	0.065694	0.071194	0.077289	0.095018
Company Use	0.091156	0.080246	0.093535	0.084451	0.075866	0.079746	0.086651	0.093247	0.081782	0.077799	0.069543	0.085978
Dickinson Refinery	0.098389	0.088217	0.091136	0.088958	0.057136	0.078260	0.078239	0.082292	0.073671	0.086043	0.084352	0.093308
Tesoro Refinery	0.086260	0.076394	0.086604	0.083628	0.073120	0.081360	0.083119	0.089022	0.088574	0.090927	0.077099	0.083892
Westmoreland NAAC	0.086643	0.087093	0.097018	0.083942	0.068381	0.073032	0.070840	0.088535	0.072062	0.083290	0.086766	0.102398
Customers												
Residential	0.999720	0.999971	0.999768	0.999676	0.999252	0.999390	0.999760	1.000034	0.999968	1.000286	1.001009	1.001164
Small C&I	0.994466	0.994282	0.995436	0.997829	1.001460	1.003050	1.003033	1.004438	1.003418	1.001025	1.000339	1.001226
Large C&I	1.001129	1.000138	1.000964	1.002948	1.003278	1.003113	1.001625	0.999972	0.998320	0.996667	0.996501	0.995344
Street Lighting	0.992287	0.991562	0.991562	0.991925	0.992287	0.995191	0.997006	1.000272	1.003539	1.010435	1.014790	1.019145
Other Public Sales	1.000028	0.999689	1.000368	1.005805	1.006484	1.005805	1.004106	1.003087	1.001048	0.995611	0.991533	0.986436
Peak Demand	1.0000	0.9312	0.8704	0.7646	0.6954	0.9211	1.0000	0.9678	0.8440	0.7848	0.8164	0.9376

South Dakota

Sales	January	February	March	April	May	June	July	August	September	October	November	December
Residential	0.112438	0.100474	0.103195	0.081794	0.067198	0.067867	0.080644	0.090808	0.072584	0.060903	0.068150	0.093944
Small C&I	0.110870	0.099824	0.108129	0.083975	0.070292	0.067904	0.075124	0.083042	0.072366	0.063987	0.069644	0.094844
Large C&I	0.095234	0.078780	0.084539	0.076206	0.073548	0.078307	0.082022	0.088480	0.086974	0.082147	0.079763	0.094000
Street Lighting	0.106876	0.089106	0.092223	0.088122	0.074207	0.076836	0.073535	0.078091	0.075820	0.081531	0.076449	0.087204
Other Public Sales	0.097129	0.089041	0.097264	0.089104	0.078302	0.083902	0.082992	0.083291	0.075620	0.072328	0.065541	0.085486
Interdepartmental	0.168503	0.156287	0.100011	0.067619	0.038063	0.047552	0.059112	0.065438	0.050605	0.052132	0.080052	0.114625
Company Use	0.156279	0.166727	0.156123	0.109042	0.059119	0.030726	0.028436	0.030589	0.028178	0.031383	0.072839	0.130559
Customers												
Residential	1.000083	1.000083	0.999834	1.000983	1.001356	1.001387	1.001356	1.000797	1.000518	0.998468	0.998375	0.996760
Small C&I	0.991428	0.990683	0.991002	0.996747	1.005789	1.008767	1.009405	1.007172	1.007065	1.000363	0.996428	0.995151
Large C&I	0.997044	0.995177	0.997044	0.997044	0.998911	1.000778	0.998911	1.004512	1.002645	1.004512	1.002645	1.000778
Street Lighting	0.977199	0.986971	0.986971	0.986971	0.986971	0.986971	0.986971	0.986971	0.986971	1.035831	1.045603	1.045603
Other Public Sales	0.984173	0.984173	0.984173	0.992806	1.010072	1.010072	1.010072	1.010072	1.014388	1.005755	0.997122	0.997122
Peak Demand	1.0000	0.8921	0.8398	0.6982	0.6162	0.9195	1.0000	0.9688	0.8442	0.7178	0.8100	0.9482

Montana

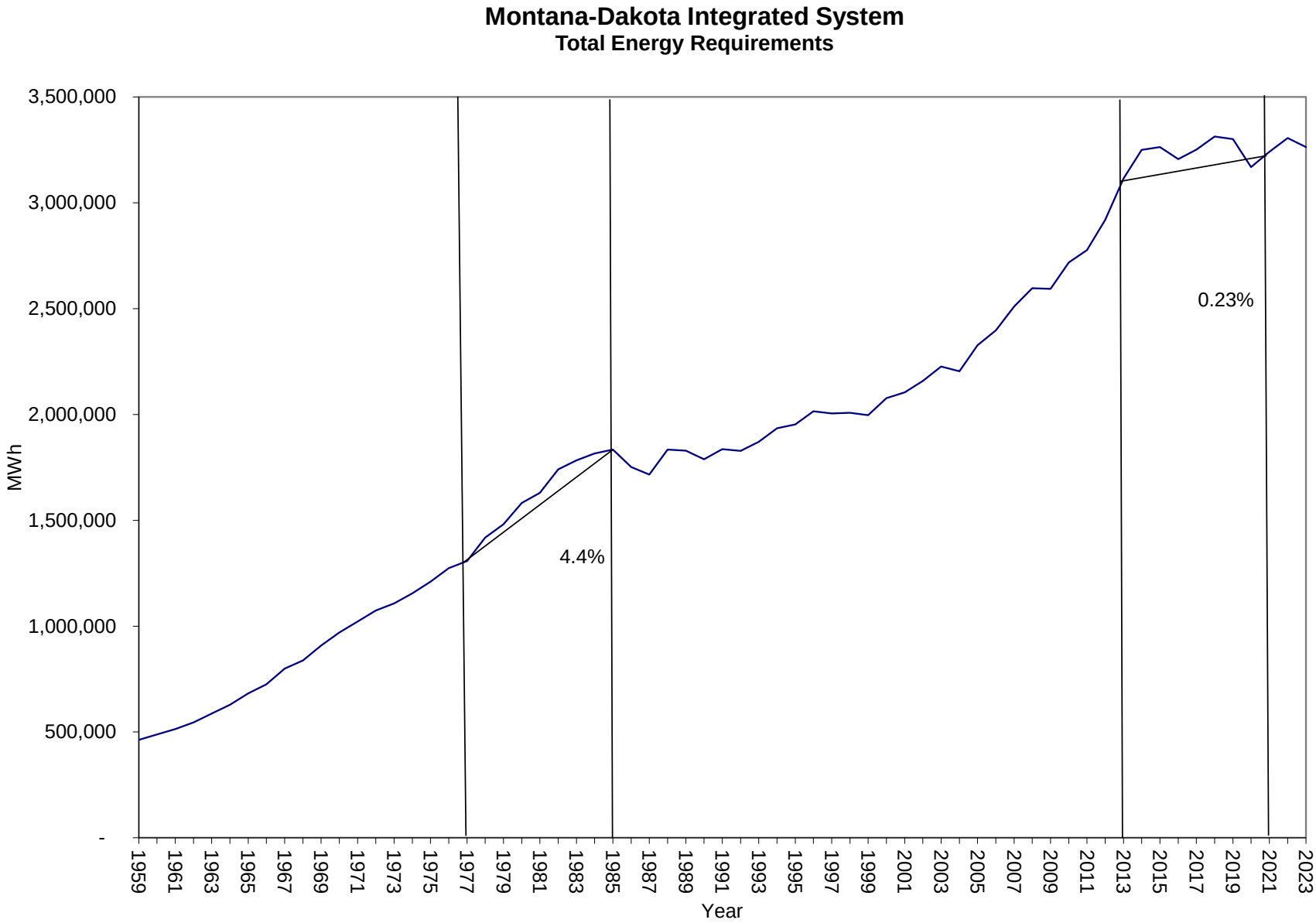
Sales	January	February	March	April	May	June	July	August	September	October	November	December
Residential	0.107412	0.094644	0.101005	0.077607	0.064023	0.065698	0.082926	0.104068	0.082522	0.063202	0.066061	0.090831
Small C&I	0.097258	0.086919	0.096507	0.079131	0.067701	0.071074	0.084074	0.101484	0.087274	0.075114	0.068143	0.085322
Large C&I	0.097892	0.084160	0.091427	0.082392	0.074186	0.078000	0.078306	0.082791	0.078754	0.082805	0.079604	0.089684
Street Lighting	0.112666	0.090150	0.097655	0.090583	0.080458	0.075360	0.073480	0.074622	0.072033	0.075140	0.070040	0.087814
Other Public Sales	0.078235	0.068161	0.083306	0.071350	0.066087	0.087701	0.101073	0.120957	0.105049	0.081401	0.060526	0.076154
Interdepartmental	0.112067	0.099210	0.105398	0.087227	0.073361	0.071071	0.069424	0.074314	0.069411	0.071848	0.074030	0.092639
Company Use	0.141540	0.107876	0.093311	0.083500	0.063404	0.060524	0.072168	0.077608	0.068199	0.065641	0.066116	0.100114
Denbury Onshore	0.092705	0.079442	0.085469	0.085067	0.079412	0.082909	0.081538	0.085500	0.080834	0.084060	0.077360	0.085703
Customers												
Residential	1.002168	1.001936	1.001623	1.001360	0.999806	0.999371	0.999281	0.999008	0.998756	0.998897	0.998776	0.999018
Small C&I	0.988943	0.987782	0.986996	0.996992	1.006577	1.010358	1.011444	1.010770	1.009085	1.001635	0.995981	0.993436
Large C&I	0.996980	0.992354	0.993125	0.993896	1.002377	1.004691	1.006233	1.011630	1.009317	1.000835	0.994667	0.993896
Street Lighting	1.012322	1.012322	1.012322	1.006635	1.000948	1.006635	1.006635	0.983886	0.983886	0.978199	0.995261	1.000948
Other Public Sales	0.995851	0.995851	0.995851	0.999834	1.003817	1.003817	1.003817	1.003817	1.003817	0.999834	0.995851	0.997842
Peak Demand	1.0000	0.8824	0.7934	0.7380	0.6466	0.8482	1.0000	0.9385	0.7883	0.7030	0.8334	0.9200

Montana-Dakota Utilities Co.
Billing-Month to Calendar-Month Allocation Factors

Residential	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
North Dakota	61.0%	63.4%	62.2%	63.6%	64.2%	62.9%	58.8%	61.2%	63.3%	60.1%	63.4%	64.3%
South Dakota	62.5%	65.1%	65.5%	66.2%	63.6%	63.5%	59.2%	63.0%	62.5%	59.1%	61.5%	64.1%
Montana	65.3%	69.6%	66.9%	68.4%	69.7%	61.6%	65.3%	67.9%	69.4%	66.6%	68.8%	69.0%
Small Commercial & Industrial												
North Dakota	59.7%	62.1%	59.2%	61.1%	61.0%	61.2%	57.5%	58.6%	60.1%	58.4%	63.0%	62.9%
South Dakota	66.3%	68.8%	69.1%	69.3%	61.9%	65.1%	61.5%	65.0%	63.4%	61.8%	64.8%	67.4%
Montana	58.8%	62.3%	59.4%	60.5%	61.6%	58.1%	59.0%	61.4%	62.3%	60.1%	62.3%	62.6%
Large Commercial & Industrial												
North Dakota	61.7%	64.5%	60.6%	62.6%	63.4%	65.1%	62.2%	63.1%	64.5%	62.8%	66.6%	65.3%
South Dakota	69.7%	71.3%	70.5%	72.2%	63.6%	70.7%	68.3%	70.4%	67.2%	66.0%	68.2%	70.9%
Montana	39.0%	39.9%	36.6%	37.8%	37.2%	44.9%	37.7%	39.2%	37.5%	37.2%	39.6%	41.0%
Street Lighting												
North Dakota	58.1%	60.8%	57.0%	59.1%	58.9%	60.1%	56.0%	56.2%	56.6%	55.8%	60.6%	60.0%
South Dakota	67.0%	69.4%	66.8%	69.2%	59.9%	69.8%	66.9%	66.9%	65.3%	64.3%	67.2%	68.5%
Montana	63.6%	68.2%	65.1%	65.8%	67.2%	60.6%	64.0%	64.3%	64.7%	65.2%	68.5%	62.5%
Other Public Sales												
North Dakota	58.3%	61.5%	57.5%	58.2%	57.9%	59.4%	56.1%	56.5%	57.2%	55.2%	60.9%	61.6%
South Dakota	72.1%	76.0%	73.6%	76.3%	56.9%	76.6%	73.8%	73.8%	69.7%	62.4%	65.9%	69.9%
Montana	61.3%	65.6%	60.7%	62.7%	63.7%	56.3%	59.4%	61.7%	62.3%	61.7%	64.9%	64.2%
Interdepartmental												
North Dakota	67.3%	70.0%	69.7%	70.2%	72.1%	72.0%	68.7%	70.0%	70.6%	68.4%	71.4%	71.1%
South Dakota	26.1%	23.9%	22.0%	24.9%	70.9%	28.6%	24.2%	24.5%	82.1%	24.1%	25.7%	27.5%
Montana	68.1%	71.9%	68.4%	71.6%	73.2%	63.6%	70.0%	76.0%	70.3%	70.6%	72.3%	71.5%
Company Use												
North Dakota	55.1%	57.0%	52.7%	55.5%	54.7%	55.9%	51.4%	52.9%	52.7%	51.0%	56.5%	57.3%
South Dakota	52.3%	56.5%	62.5%	64.7%	54.8%	66.7%	54.3%	59.5%	39.3%	38.4%	40.1%	45.1%
Montana	53.7%	58.7%	63.9%	66.7%	68.1%	58.2%	57.7%	60.0%	61.3%	59.9%	65.7%	60.6%

Montana-Dakota Utilties Co.
Historical Energy Requirements Integrated System
(Megawatt Hours)

Year	Total Requirements	%Inc/Dec
1959	463,307	
1960	488,316	5.40%
1961	514,086	5.28%
1962	545,306	6.07%
1963	586,589	7.57%
1964	628,616	7.16%
1965	682,214	8.53%
1966	725,389	6.33%
1967	798,855	10.13%
1968	837,504	4.84%
1969	908,231	8.44%
1970	970,490	6.85%
1971	1,021,876	5.29%
1972	1,073,560	5.06%
1973	1,107,691	3.18%
1974	1,155,351	4.30%
1975	1,210,168	4.74%
1976	1,274,391	5.31%
1977	1,307,542	2.60%
1978	1,418,366	8.48%
1979	1,481,019	4.42%
1980	1,581,612	6.79%
1981	1,629,323	3.02%
1982	1,740,859	6.85%
1983	1,783,753	2.46%
1984	1,815,453	1.78%
1985	1,834,294	1.04%
1986	1,751,503	-4.51%
1987	1,716,377	-2.01%
1988	1,834,232	6.87%
1989	1,828,665	-0.30%
1990	1,788,854	-2.18%
1991	1,836,243	2.65%
1992	1,827,866	-0.46%
1993	1,870,268	2.32%
1994	1,934,561	3.44%
1995	1,952,872	0.95%
1996	2,014,830	3.17%
1997	2,005,195	-0.48%
1998	2,007,534	0.12%
1999	1,996,647	-0.54%
2000	2,077,579	4.05%
2001	2,104,119	1.28%
2002	2,158,431	2.58%
2003	2,226,531	3.16%
2004	2,204,012	-1.01%
2005	2,327,117	5.59%
2006	2,397,793	3.04%
2007	2,510,540	4.70%
2008	2,596,990	3.44%
2009	2,593,368	-0.14%
2010	2,718,192	4.81%
2011	2,776,082	2.13%
2012	2,919,752	5.18%
2013	3,115,064	6.69%
2014	3,250,683	4.35%
2015	3,263,271	0.39%
2016	3,206,737	-1.73%
2017	3,251,539	1.40%
2018	3,313,387	1.90%
2019	3,301,537	-0.36%
2020	3,169,086	-4.01%
2021	3,240,600	2.26%
2022	3,305,682	2.01%
2023	3,263,461	-1.28%


Montana-Dakota Integrated System
Total Energy Requirements
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
MWh
4.4%
0.23%
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Year

APPENDIX B

Integrated System
Historical and Forecasted Exogenous Variables

Montana-Dakota Utilities Co.
Integrated System
Historical Electricity Prices 1/
cents/kWh

	Residential Prices			Small C&I Prices			Large C&I Prices		
Year	MT	ND	SD	MT	ND	SD	MT	ND	SD
1997	7.408	6.845	8.875	6.191	7.666	8.384	4.977	5.510	6.177
1998	7.413	6.878	8.962	6.193	7.697	8.375	5.012	5.549	6.146
1999	7.433	6.833	8.923	6.200	7.622	8.339	4.888	5.447	6.134
2000	7.445	6.731	8.783	6.177	7.512	8.243	4.850	5.339	5.989
2001	7.356	6.839	8.862	6.142	7.651	8.338	4.840	5.431	6.182
2002	7.335	6.753	8.807	6.109	7.552	8.294	4.821	5.509	6.162
2003	7.331	6.812	8.884	6.087	7.606	8.379	4.517	5.510	6.273
2004	7.375	7.172	9.098	6.133	7.861	8.565	4.524	5.720	6.440
2005	7.352	7.010	8.918	6.142	7.681	8.437	4.512	5.635	6.356
2006	7.337	7.342	9.165	6.106	8.027	8.689	4.500	6.009	6.596
2007	7.338	7.823	9.616	6.116	8.544	9.142	4.477	6.573	7.134
2008	8.370	7.844	9.606	7.288	8.683	9.125	5.183	6.673	7.167
2009	7.844	7.236	9.176	6.993	8.121	8.646	5.257	6.228	6.865
2010	7.973	7.664	9.243	7.171	8.596	8.779	4.946	6.709	7.217
2011	8.301	8.020	9.082	7.478	8.935	8.667	5.432	7.040	7.156
2012	8.453	8.406	9.349	7.592	9.216	8.962	5.624	7.388	7.334
2013	8.585	8.230	9.304	7.715	9.037	8.850	5.634	7.467	7.365
2014	8.705	8.614	9.360	7.809	9.397	8.877	5.851	7.719	7.470
2015	8.705	9.095	9.404	7.790	10.203	8.916	5.991	7.913	7.418
2016	8.718	9.907	10.934	7.934	11.044	10.400	5.743	8.481	8.570
2017	9.314	10.730	10.907	8.690	12.156	10.856	6.508	9.130	8.525
2018	9.423	10.729	10.862	8.948	12.390	10.905	6.687	9.005	8.576
2019	10.716	10.568	11.245	10.258	12.275	11.310	7.436	8.924	9.140
2020	10.826	10.295	11.028	10.250	12.117	10.984	7.654	8.575	8.625
2021	10.950	10.799	11.197	10.325	12.572	11.126	7.743	8.872	8.746
2022	11.125	11.330	12.060	10.536	13.289	12.133	7.743	9.517	9.765

SOURCE:
1997-2022: Historical prices calculated from Montana-Dakota Utilities Co., *Electric Operating Revenues Reports*

1/ Price of electricity reflects the "all-inclusive" price for each kWh sold (basic service charge, demand charge, energy charge, and fuel and purchased power.)

Montana-Dakota Utilities Co.
Integrated System
Historical Natural Gas Prices
$/Dk

Year	Residential Price	Firm Price
1997	4.54	4.09
1998	4.85	4.30
1999	5.08	4.54
2000	5.92	5.39
2001	7.42	6.87
2002	4.57	4.03
2003	6.83	6.29
2004	8.56	7.97
2005	10.49	9.84
2006	9.87	9.15
2007	7.78	7.09
2008	9.42	8.77
2009	7.82	7.19
2010	7.05	6.37
2011	7.03	6.37
2012	6.52	5.65
2013	6.56	5.85
2014	7.80	6.91
2015	7.56	6.55
2016	6.40	5.10
2017	6.89	5.68
2018	6.52	5.44
2019	6.44	5.41
2020	6.35	5.22
2021	8.22	6.73
2022	9.82	8.57

SOURCE:
1997-2022: CSBE Rate Reporting Class Report
Gas Year-to-Date Report for Year-end

Bismarck, ND and Aberdeen, SD
Heating Degree Days (HDD)
and
Cooling Degree Days (CDD)
(Annual)

	HDD		CDD	
	MT & ND	SD	MT & ND	SD
1997	8,450	8,854	609	540
1998	7,765	7,502	633	645
1999	7,710	7,401	457	507
2000	8,412	8,436	549	554
2001	8,039	8,348	668	727
2002	8,532	8,369	745	788
2003	8,493	8,319	737	601
2004	8,183	8,035	379	341
2005	7,792	7,871	555	659
2006	7,525	7,437	793	704
2007	8,345	8,465	666	698
2008	8,946	9,022	524	499
2009	9,108	8,847	331	327
2010	8,643	8,255	507	661
2011	8,750	8,668	425	729
2012	7,612	7,342	599	764
2013	9,133	9,445	555	580
2014	8,887	9,087	457	342
2015	7,655	7,364	622	677
2016	7,235	7,015	548	722
2017	7,894	7,845	615	552
2018	8,825	8,728	701	849
2019	9,327	9,261	530	601
2020	7,774	7,789	793	871
2021	7,360	7,134	1,045	986
2022	8,826	8,509	755	837
NORMAL	8,472	8,221	538	631

Montana-Dakota Utilities Co.
Service Territory Counties
Personal Income (2009 $s)

Year	Montana	North Dakota	South Dakota
1997	1,577,087	5,578,045	781,954
1998	1,644,943	6,068,216	857,977
1999	1,657,881	6,087,875	885,744
2000	1,652,750	6,508,866	949,202
2001	1,721,939	6,751,838	956,215
2002	1,668,578	6,597,177	802,916
2003	1,801,663	7,174,562	963,925
2004	1,843,781	7,237,624	972,390
2005	1,893,847	7,626,810	982,634
2006	1,879,825	7,844,624	781,076
2007	2,060,069	8,479,774	999,552
2008	2,191,916	9,444,114	1,133,465
2009	2,166,134	9,669,883	1,036,380
2010	2,372,397	10,914,325	1,092,444
2011	2,482,097	12,722,814	1,319,614
2012	2,839,006	15,307,035	1,339,194
2013	2,917,296	15,753,811	1,440,265
2014	2,992,500	17,382,996	1,353,057
2015	2,864,944	16,008,696	1,204,711
2016	2,597,460	14,346,208	1,060,555
2017	2,640,055	14,227,358	1,073,304
2018	2,616,118	14,823,483	1,097,321
2019	2,638,968	15,397,264	1,096,148
2020	2,786,096	15,638,900	1,297,022
2021	2,735,419	15,615,464	1,427,106
2022	2,742,949	16,289,384	1,394,721

SOURCES:
1997-2021: U.S. Dept. of Commerce
2022: Woods & Poole Economics, Inc.

Integrated System
Personal Consumption Expediture Deflator

Year	Personal Consumption Expenditure Deflator (2012 = 100)	Inflation Rate
1997	74.48	
1998	75.07	0.8%
1999	76.16	1.5%
2000	78.09	2.5%
2001	79.66	2.0%
2002	80.70	1.3%
2003	82.40	2.1%
2004	84.44	2.5%
2005	86.88	2.9%
2006	89.32	2.8%
2007	91.61	2.6%
2008	94.33	3.0%
2009	94.06	-0.3%
2010	95.75	1.8%
2011	98.17	2.5%
2012	100.00	1.9%
2013	101.35	1.4%
2014	102.89	1.5%
2015	103.12	0.2%
2016	104.15	1.0%
2017	106.05	1.8%
2018	108.32	2.1%
2019	109.93	1.5%
2020	111.15	1.1%
2021	115.62	4.0%
2022	122.86	6.3%
2023	127.84	4.1%
2024	132.25	3.4%
2025	136.22	3.0%
2026	140.30	3.0%
2027	144.53	3.0%
2028	148.96	3.1%
2029	153.60	3.1%
2030	158.44	3.2%
2031	163.48	3.2%
2032	168.69	3.2%
2033	174.09	3.2%
2034	179.67	3.2%
2035	185.45	3.2%
2036	191.42	3.2%
2037	197.59	3.2%
2038	203.97	3.2%
2039	210.56	3.2%
2040	217.37	3.2%
2041	224.40	3.2%
2042	231.67	3.2%
2043	239.17	3.2%

SOURCES:
1997-2022 U.S. Department of Commerce
2023-2043 Woods & Poole Economics, Inc.

Montana-Dakota Utilities Co.
Integrated System
Residential Sector
Households and Customers for Service Territory Counties

	Montana		North Dakota		South Dakota	
Year	Number of Households	Average Customers	Number of Households	Average Customers	Number of Households	Average Customers
1997	24,100	18,803	80,321	58,787	11,538	6,919
1998	24,019	18,839	80,967	59,081	11,384	6,913
1999	23,884	18,799	81,058	58,988	11,505	6,883
2000	23,829	18,716	81,566	59,332	11,459	6,866
2001	24,092	18,645	83,396	59,405	11,545	6,816
2002	23,799	18,635	83,797	59,608	11,407	6,768
2003	23,959	18,602	85,009	59,953	11,391	6,724
2004	23,931	18,539	85,375	60,279	11,204	6,681
2005	23,976	18,502	86,433	60,641	11,133	6,648
2006	23,945	18,505	87,358	61,026	10,989	6,620
2007	24,224	18,531	89,030	61,451	10,962	6,593
2008	24,285	18,582	89,973	62,068	10,897	6,612
2009	24,574	18,636	91,208	62,631	10,767	6,619
2010	24,545	18,716	91,736	63,619	10,761	6,609
2011	25,277	18,883	95,728	65,196	10,948	6,602
2012	25,418	19,191	97,192	67,888	10,935	6,616
2013	25,609	19,616	98,772	70,949	10,943	6,590
2014	25,739	19,918	100,521	73,909	10,965	6,580
2015	25,982	20,135	102,743	76,894	11,017	6,662
2016	26,222	20,128	104,735	78,553	11,058	6,546
2017	26,307	19,981	106,207	78,564	11,035	6,533
2018	26,663	19,911	108,107	78,510	11,085	6,496
2019	26,866	19,896	109,772	78,567	11,110	6,442
2020	26,813	19,798	110,491	78,812	11,021	6,441
2021	26,644	19,746	109,284	78,896	11,032	6,423
2022	26,669	19,695	109,626	79,076	11,066	6,398
2023	26,805	19,695	111,109	79,251	11,086	6,398
2024	26,909	19,695	112,511	79,426	11,096	6,398
2025	26,996	19,695	113,839	79,576	11,097	6,398
2026	27,064	19,695	115,100	79,726	11,089	6,398
2027	27,117	19,695	116,315	79,876	11,078	6,398
2028	27,158	19,695	117,482	80,026	11,061	6,398
2029	27,181	19,695	118,586	80,176	11,037	6,398
2030	27,193	19,695	119,644	80,326	11,011	6,398
2031	27,194	19,695	120,672	80,476	10,975	6,398
2032	27,188	19,695	121,653	80,626	10,939	6,398
2033	27,173	19,695	122,613	80,776	10,899	6,398
2034	27,150	19,695	123,552	80,926	10,857	6,398
2035	27,122	19,695	124,464	81,076	10,813	6,398
2036	27,096	19,695	125,367	81,226	10,770	6,398
2037	27,063	19,695	126,260	81,376	10,725	6,398
2038	27,026	19,695	127,143	81,526	10,676	6,398
2039	26,987	19,695	128,005	81,676	10,629	6,398
2040	26,947	19,695	128,873	81,826	10,582	6,398
2041	26,910	19,695	129,760	81,976	10,537	6,398
2042	26,881	19,695	130,689	82,126	10,492	6,398
2043	26,854	19,695	131,643	82,276	10,454	6,398

*/ Actual customer numbers for 1999 are unavailable due to the installation of a new CIS.
This number is an estimate.

SOURCES:
Households
2000, 2010: U.S. Department of Commerce
All other years: Estimated and projected by Woods & Poole Economics, Inc.
Customers
1997-2022: Actuals from Montana-Dakota Utilities Co. Customer Information System Active Customers Report
2023-2043: Montana-Dakota forecast

Integrated System
Employment Data
Total Employment less Farming and Mining Employment

	Montana				North Dakota				South Dakota	
Year	Number of Employees	Growth Rate	Adjusted Employment	Growth Rate	Number of Employees	Growth Rate	Adjusted Employment	Growth Rate	Number of Employees	Growth Rate
1997	30,476				113,370				12,140	
1998	30,900	1.39%			115,802	2.15%			12,242	0.84%
1999	30,706	-0.63%			116,960	1.00%			12,218	-0.20%
2000	30,740	0.11%			119,268	1.97%			12,397	1.47%
2001	30,225	-1.68%			119,232	-0.03%			12,158	-1.93%
2002	30,161	-0.21%			120,587	1.14%			12,157	-0.01%
2003	30,333	0.57%			121,984	1.16%			11,849	-2.53%
2004	30,481	0.49%			124,639	2.18%			11,967	1.00%
2005	30,629	0.49%			127,430	2.24%			12,007	0.33%
2006	30,877	0.81%			131,633	3.30%			12,143	1.13%
2007	31,592	2.32%			134,564	2.23%			12,192	0.40%
2008	32,020	1.35%			137,569	2.23%			12,248	0.46%
2009	32,289	0.84%			139,792	1.62%			12,358	0.90%
2010	32,673	1.19%			144,236	3.18%			12,364	0.05%
2011	33,939	3.87%			155,904	8.09%			12,393	0.23%
2012	34,854	2.70%			172,058	10.36%			12,430	0.30%
2013	35,748	2.56%			182,903	6.30%			12,734	2.45%
2014	35,841	0.26%			193,399	5.74%			12,851	0.92%
2015	35,026	-2.27%			190,728	-1.38%			12,774	-0.60%
2016	33,587	-4.11%			179,257	-6.01%			12,744	-0.23%
2017	33,217	-1.10%			176,559	-1.51%			12,596	-1.16%
2018	32,502	-2.15%			178,080	0.86%			12,496	-0.79%
2019	32,034	-1.44%			181,570	1.96%			12,174	-2.58%
2020	31,402	-1.97%			173,225	-4.60%			12,172	-0.02%
2021	31,481	0.25%			173,451	0.13%			12,293	0.99%
2022	32,261	2.48%			184,900	6.60%			12,411	0.96%
2023	32,652	1.21%	32,308	0.14%	190,631	3.10%	185,978	0.58%	12,467	0.45%
2024	33,038	1.18%	32,401	0.29%	196,368	3.01%	187,730	0.94%	12,521	0.43%
2025	33,279	0.73%	32,494	0.29%	199,601	1.65%	189,429	0.90%	12,604	0.66%
2026	33,483	0.61%	32,587	0.29%	202,698	1.55%	191,132	0.90%	12,686	0.65%
2027	33,689	0.62%	32,680	0.29%	205,776	1.52%	192,841	0.89%	12,755	0.54%
2028	33,881	0.57%	32,773	0.28%	208,825	1.48%	194,554	0.89%	12,820	0.51%
2029	34,070	0.56%	32,866	0.28%	211,884	1.46%	196,273	0.88%	12,876	0.44%
2030	34,256	0.55%	32,959	0.28%	214,952	1.45%	197,997	0.88%	12,945	0.54%
2031	34,431	0.51%	33,052	0.28%	218,008	1.42%	199,726	0.87%	13,004	0.46%
2032	34,606	0.51%	33,146	0.28%	221,071	1.40%	201,459	0.87%	13,065	0.47%
2033	34,777	0.49%	33,239	0.28%	224,148	1.39%	203,198	0.86%	13,125	0.46%
2034	34,945	0.48%	33,332	0.28%	227,220	1.37%	204,942	0.86%	13,180	0.42%
2035	35,109	0.47%	33,425	0.28%	230,328	1.37%	206,691	0.85%	13,238	0.44%
2036	35,273	0.47%	33,518	0.28%	233,437	1.35%	208,446	0.85%	13,294	0.42%
2037	35,428	0.44%	33,611	0.28%	236,559	1.34%	210,205	0.84%	13,346	0.39%
2038	35,580	0.43%	33,704	0.28%	239,691	1.32%	211,969	0.84%	13,401	0.41%
2039	35,734	0.43%	33,797	0.28%	242,826	1.31%	213,738	0.83%	13,451	0.37%
2040	35,880	0.41%	33,890	0.28%	245,985	1.30%	215,513	0.83%	13,505	0.40%
2041	36,022	0.40%	33,983	0.27%	249,141	1.28%	217,292	0.83%	13,548	0.32%
2042	36,166	0.40%	34,077	0.27%	252,311	1.27%	219,077	0.82%	13,599	0.38%
2043	36,304	0.38%	34,170	0.27%	255,493	1.26%	220,866	0.82%	13,648	0.36%

SOURCES:

Number of Employees:

1997-2021: U.S. Department of Commerce

2022-2042: Estimated and projected by Woods & Poole Economics, Inc.

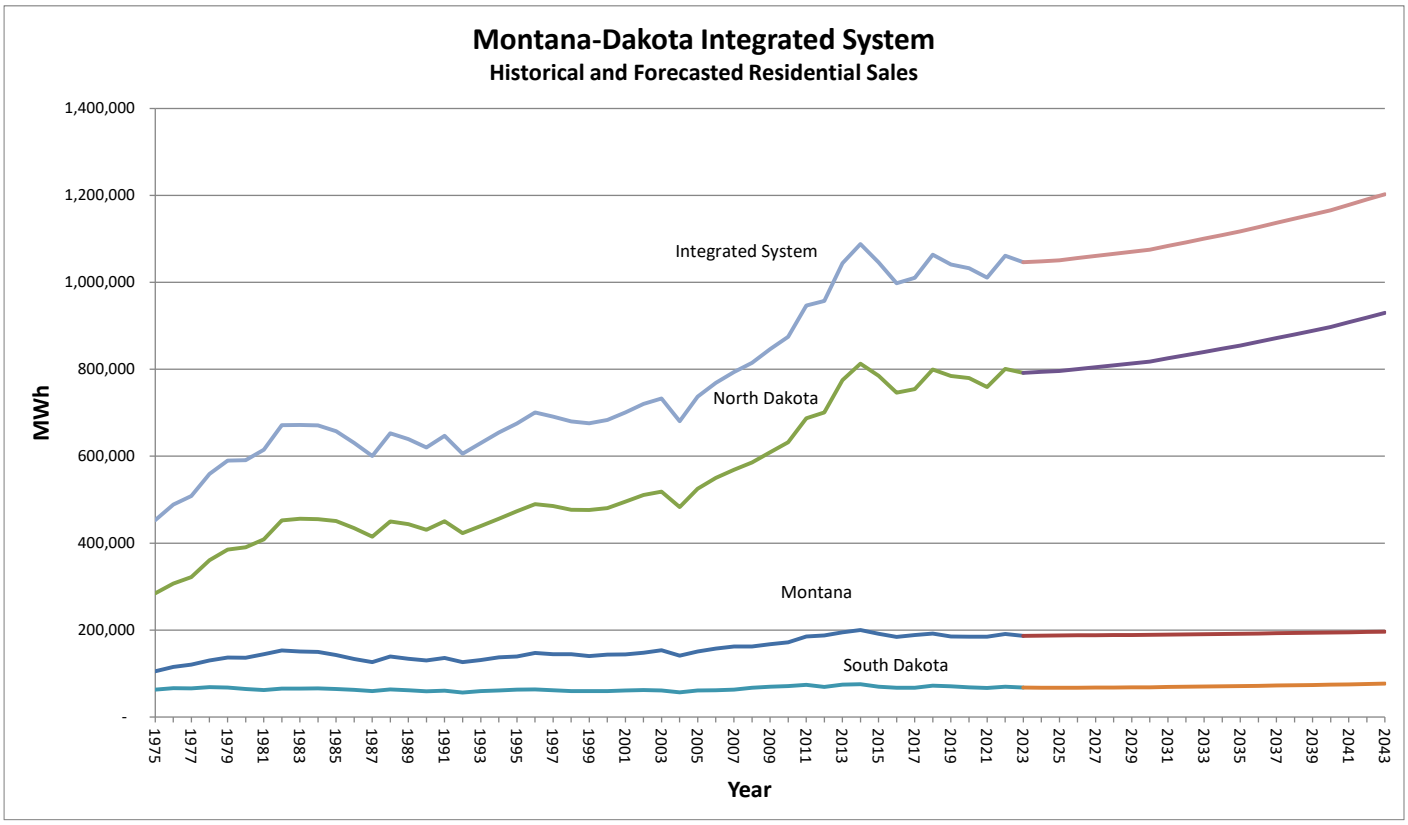
Adjusted Employment:

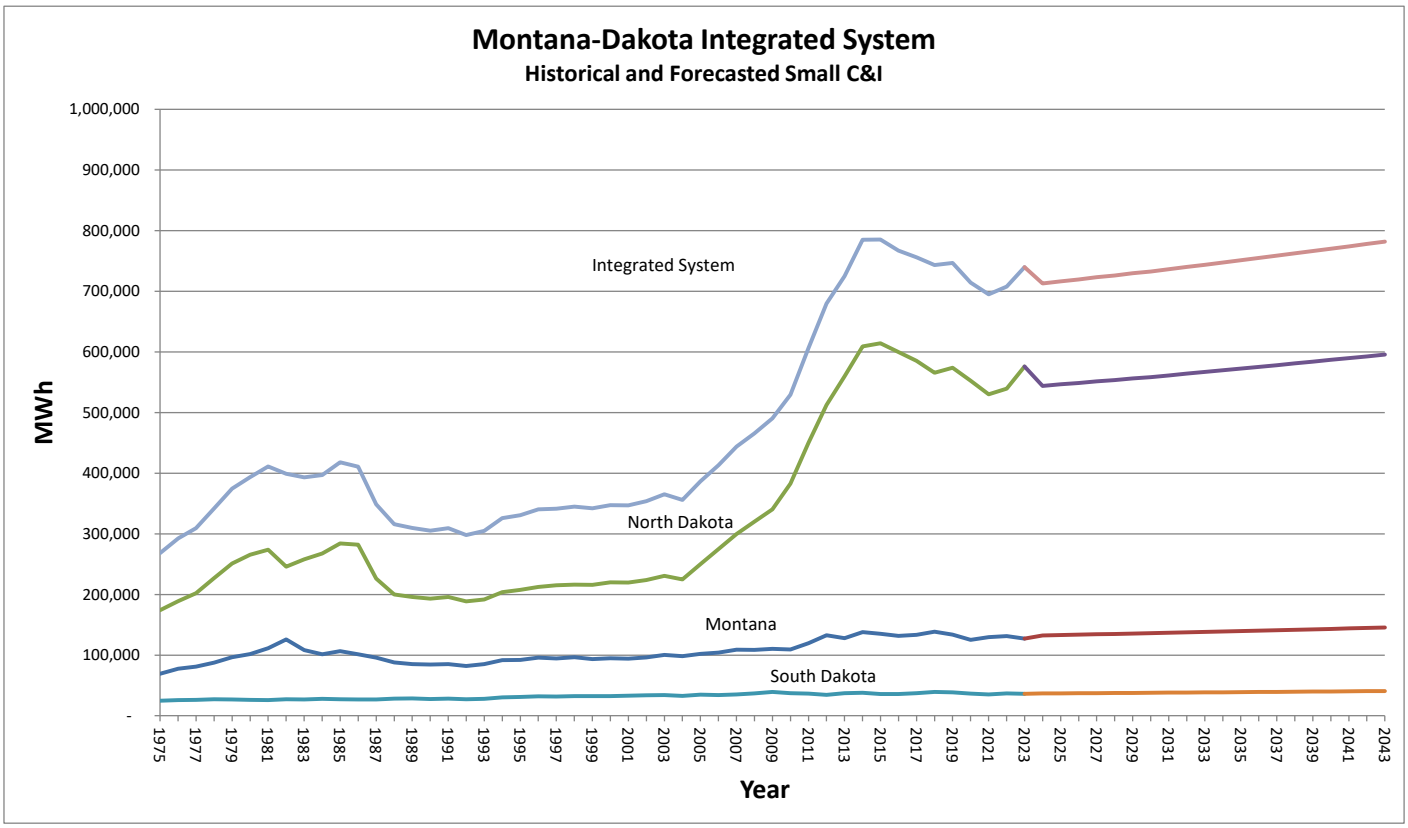
2023-2043: For Montana and North Dakota, employment was tied to the growth in residential customers by running a regression on the historical (1997-2022) ratio of actual residential customer numbers to employees. Those regression results were then applied on a forecasted basis to the adjusted forecast of residential customer numbers to arrive at an adjusted forecast of number of employees. No adjustment was made to South Dakota employment.

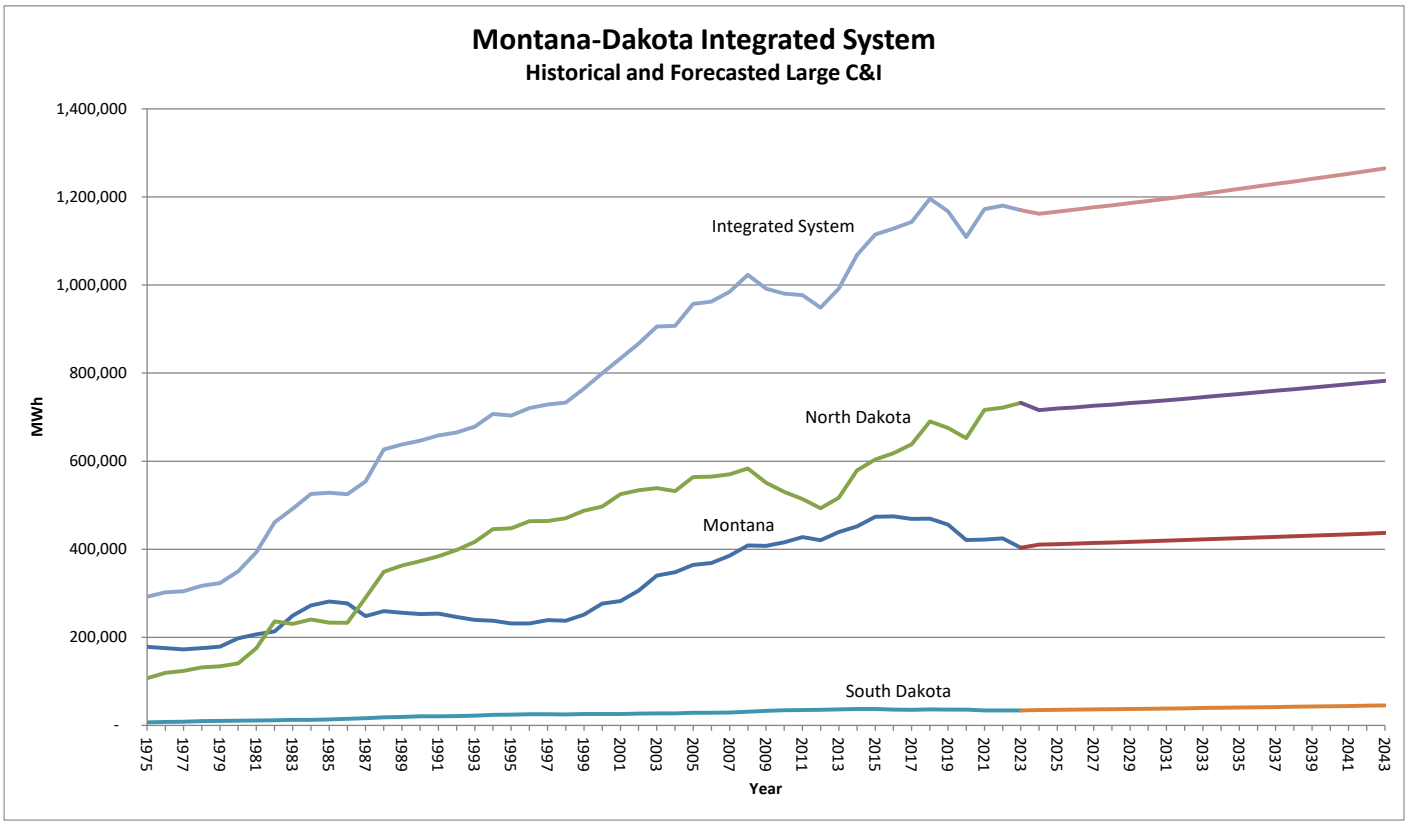
NOTE: The number of employees used for the forecast is total employment less farming and mining employment (most farms are not served by Montana-Dakota and the mining sector (oil fields and coal mining) is forecasted separately).

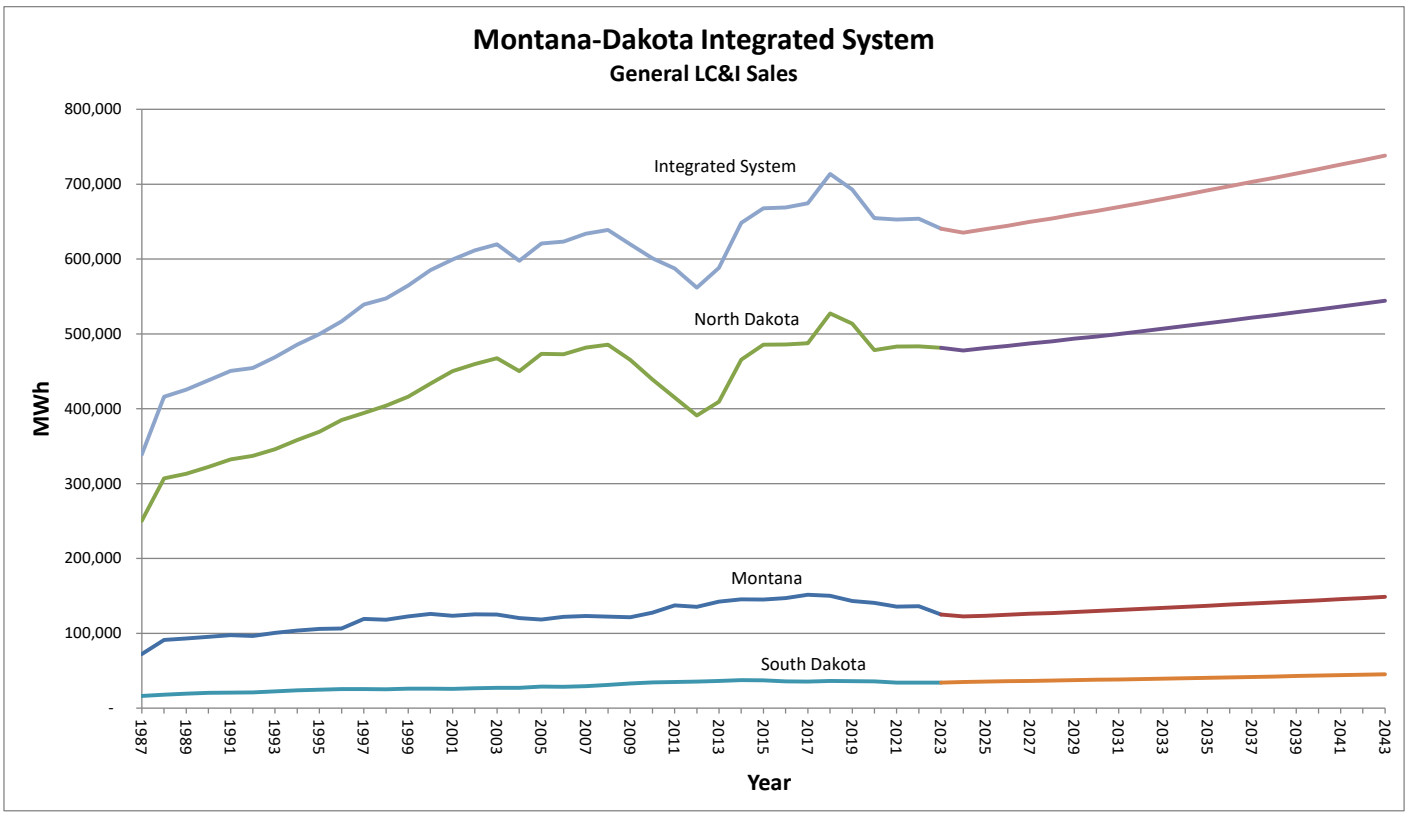
APPENDIX C

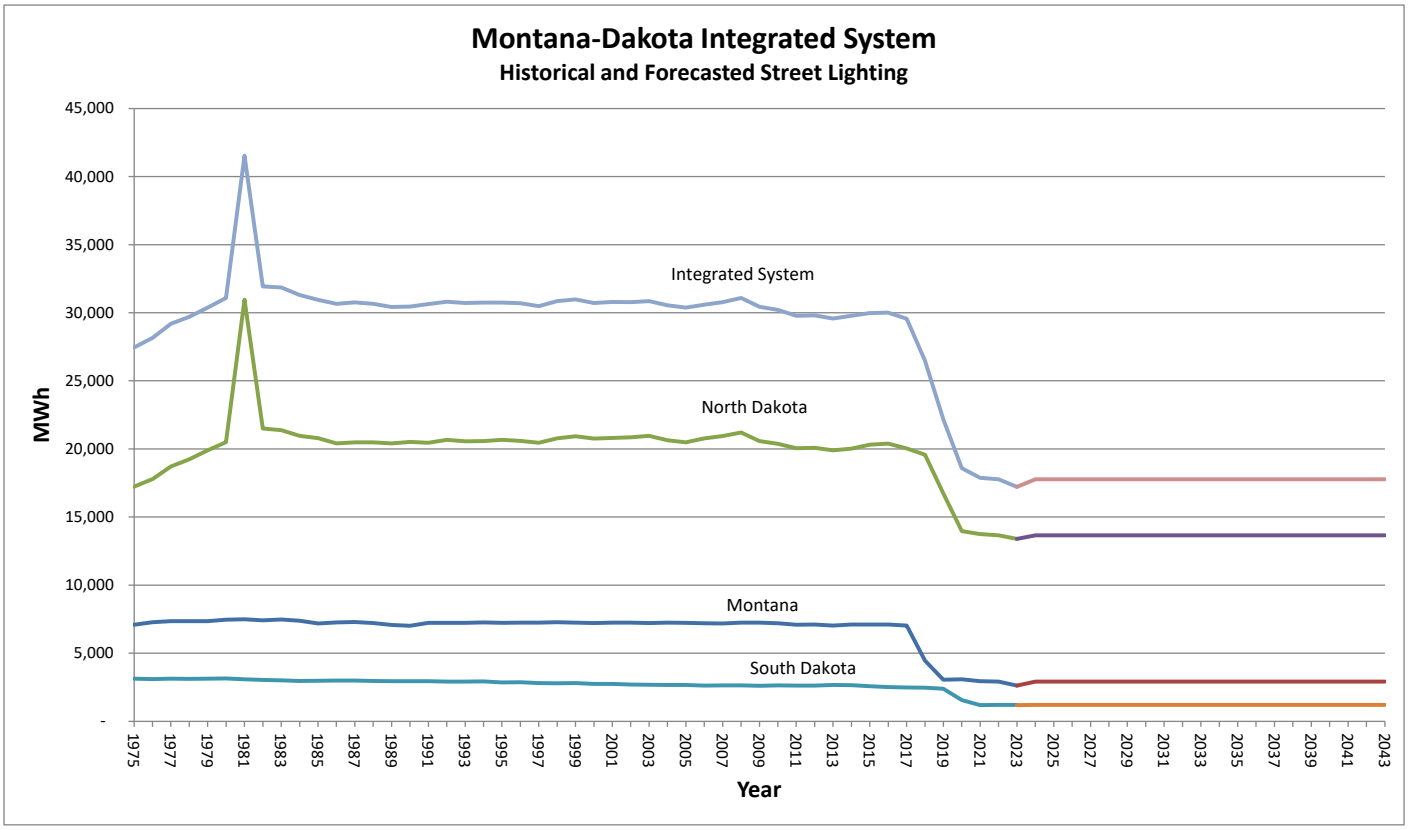
Integrated System Forecast Results

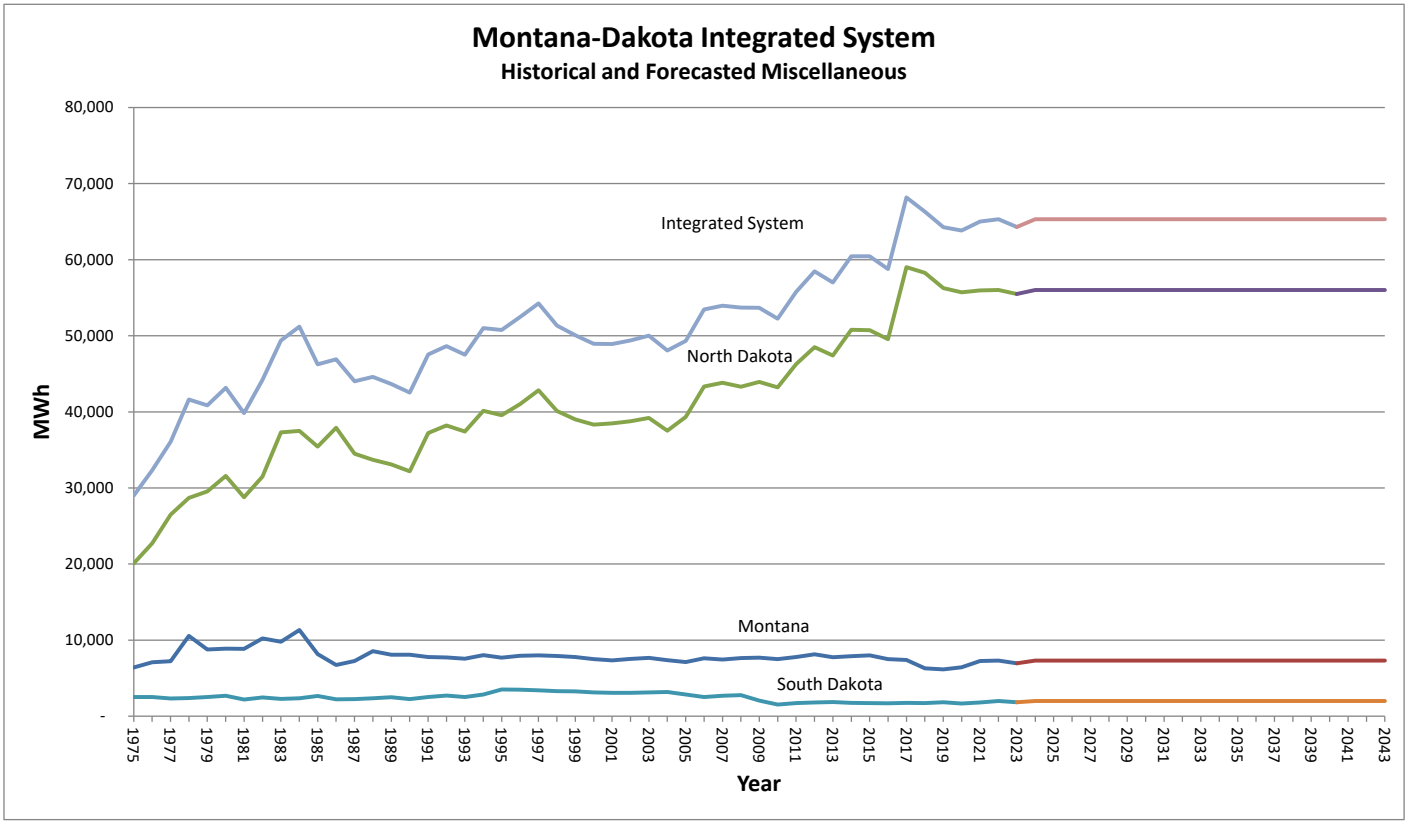

Montana-Dakota Integrated System
Historical and Forecasted Residential Sales
MWh
Year
Integrated System
North Dakota
Montana
South Dakota
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043

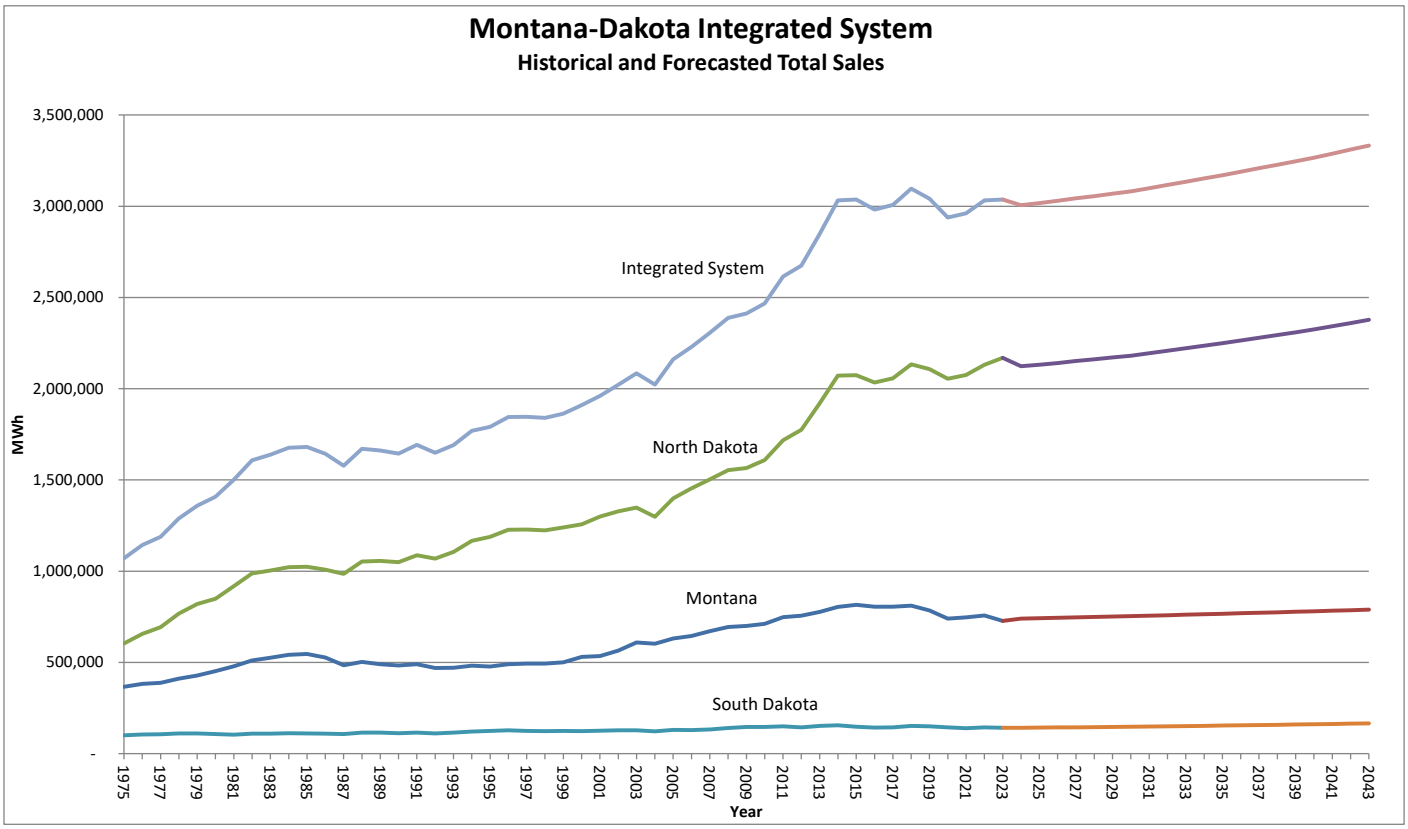

Montana-Dakota Integrated System
Historical and Forecasted Small C&I
MWh
Year
Integrated System
North Dakota
Montana
South Dakota
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043


Montana-Dakota Integrated System
Historical and Forecasted Large C&I
MWh
Year
Integrated System
North Dakota
Montana
South Dakota
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043


Montana-Dakota Integrated System
General LC&I Sales
MWh
Year
Integrated System
North Dakota
Montana
South Dakota
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043


Montana-Dakota Integrated System
Historical and Forecasted Street Lighting
MWh
Year
Integrated System
North Dakota
Montana
South Dakota


Montana-Dakota Integrated System
Historical and Forecasted Miscellaneous
MWh
Year
Integrated System
North Dakota
Montana
South Dakota


Montana-Dakota Integrated System
Historical and Forecasted Total Sales
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
MWh
Integrated System
North Dakota
Montana
South Dakota
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
Year

Montana-Dakota Utilities Co.
Forecasted Energy (MWh) and
Seasonal Demands (MW) Prior to Demand Response
Integrated System

Year	Summer Peak net of Energy Efficiency Programs (MW)	% Chg	Winter Peak net of Energy Efficiency Programs (MW)	% Chg	Annual Energy Requirments (GWh)	% Chg	Load Factor (%)
2024	572.8		569.3		3,251.7		64.63%
2025	576.3	0.61%	571.4	0.37%	3,263.7	0.37%	64.65%
2026	580.0	0.64%	573.8	0.42%	3,277.3	0.42%	64.50%
2027	583.8	0.66%	576.5	0.48%	3,292.1	0.45%	64.37%
2028	587.5	0.63%	578.9	0.40%	3,305.2	0.40%	64.05%
2029	591.2	0.63%	581.5	0.45%	3,320.2	0.45%	64.11%
2030	595.0	0.64%	583.9	0.41%	3,334.2	0.42%	63.97%
2031	599.3	0.72%	587.3	0.60%	3,352.8	0.56%	63.86%
2032	603.5	0.70%	590.7	0.57%	3,371.9	0.57%	63.61%
2033	607.8	0.71%	594.1	0.59%	3,391.0	0.57%	63.69%
2034	612.0	0.69%	597.6	0.58%	3,410.1	0.56%	63.61%
2035	616.3	0.70%	600.9	0.56%	3,429.4	0.57%	63.52%
2036	620.7	0.71%	604.9	0.66%	3,450.2	0.61%	63.28%
2037	625.2	0.72%	608.5	0.60%	3,471.1	0.60%	63.38%
2038	629.7	0.72%	612.2	0.61%	3,491.5	0.59%	63.30%
2039	634.1	0.70%	615.8	0.59%	3,512.5	0.60%	63.23%
2040	638.5	0.69%	619.7	0.62%	3,533.7	0.60%	63.01%
2041	643.3	0.75%	624.0	0.69%	3,557.6	0.68%	63.13%
2042	648.0	0.73%	628.4	0.70%	3,581.6	0.67%	63.10%
2043	652.8	0.74%	632.6	0.68%	3,605.8	0.68%	63.05%

Montana-Dakota Utilities Co.
Forecasted Energy (MWh) and
Seasonal Demands (MW) Prior to Demand Response
Montana

Year	Summer Peak net of Energy Efficiency Programs (MW)	% Chg	Winter Peak net of Energy Efficiency Programs (MW)	% Chg	Annual Energy Requirments (GWh)	% Chg	Load Factor (%)
2024	141.1		140.2		800.8		64.61%
2025	141.8	0.50%	140.6	0.30%	803.3	0.30%	64.67%
2026	142.6	0.56%	141.1	0.34%	805.7	0.31%	64.50%
2027	143.3	0.49%	141.5	0.31%	808.2	0.31%	64.38%
2028	144.0	0.49%	141.9	0.23%	810.1	0.24%	64.05%
2029	144.7	0.49%	142.4	0.34%	812.6	0.31%	64.11%
2030	145.5	0.55%	142.8	0.29%	815.2	0.31%	63.96%
2031	146.2	0.48%	143.2	0.33%	817.8	0.33%	63.86%
2032	146.9	0.48%	143.8	0.37%	820.7	0.35%	63.60%
2033	147.6	0.48%	144.2	0.33%	823.5	0.35%	63.69%
2034	148.3	0.47%	144.8	0.38%	826.3	0.35%	63.61%
2035	149.0	0.47%	145.3	0.36%	829.2	0.35%	63.53%
2036	149.7	0.47%	145.9	0.38%	832.2	0.36%	63.29%
2037	150.4	0.47%	146.4	0.36%	835.2	0.36%	63.39%
2038	151.1	0.47%	146.9	0.36%	838.0	0.34%	63.31%
2039	151.8	0.46%	147.4	0.35%	841.0	0.36%	63.24%
2040	152.5	0.46%	148.0	0.36%	844.0	0.36%	63.01%
2041	153.2	0.46%	148.6	0.40%	847.1	0.36%	63.12%
2042	153.8	0.39%	149.2	0.39%	850.2	0.37%	63.10%
2043	154.5	0.46%	149.7	0.37%	853.3	0.37%	63.05%

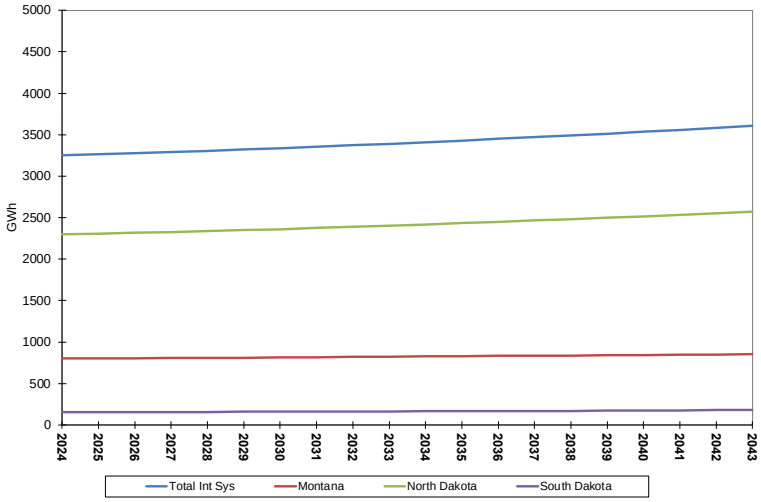
Montana-Dakota Utilities Co.
Forecasted Energy (MWh) and
Seasonal Demands (MW) Prior to Demand Response
North Dakota

Year	Summer Peak net of Energy Efficiency Programs (MW)	% Chg	Winter Peak net of Energy Efficiency Programs (MW)	% Chg	Annual Energy Requirments (GWh)	% Chg	Load Factor (%)
2024	404.7		402.2		2,297.3		64.62%
2025	407.2	0.62%	403.8	0.40%	2,306.1	0.38%	64.65%
2026	409.9	0.66%	405.5	0.42%	2,316.2	0.44%	64.50%
2027	412.8	0.71%	407.6	0.52%	2,327.5	0.49%	64.37%
2028	415.5	0.65%	409.4	0.44%	2,337.7	0.44%	64.05%
2029	418.3	0.67%	411.4	0.49%	2,349.1	0.49%	64.11%
2030	421.1	0.67%	413.2	0.44%	2,359.5	0.44%	63.96%
2031	424.3	0.76%	415.9	0.65%	2,374.1	0.62%	63.87%
2032	427.6	0.78%	418.5	0.63%	2,388.9	0.62%	63.60%
2033	430.8	0.75%	421.2	0.65%	2,403.8	0.62%	63.70%
2034	434.1	0.77%	423.9	0.64%	2,418.7	0.62%	63.60%
2035	437.4	0.76%	426.5	0.61%	2,433.7	0.62%	63.52%
2036	440.8	0.78%	429.5	0.70%	2,450.0	0.67%	63.28%
2037	444.2	0.77%	432.3	0.65%	2,466.3	0.67%	63.38%
2038	447.7	0.79%	435.3	0.69%	2,482.5	0.65%	63.30%
2039	451.1	0.76%	438.1	0.64%	2,498.9	0.66%	63.24%
2040	454.5	0.75%	441.1	0.68%	2,515.5	0.67%	63.01%
2041	458.3	0.84%	444.5	0.77%	2,534.5	0.76%	63.13%
2042	462.0	0.81%	448.0	0.79%	2,553.6	0.75%	63.10%
2043	465.8	0.82%	451.4	0.76%	2,572.8	0.75%	63.05%

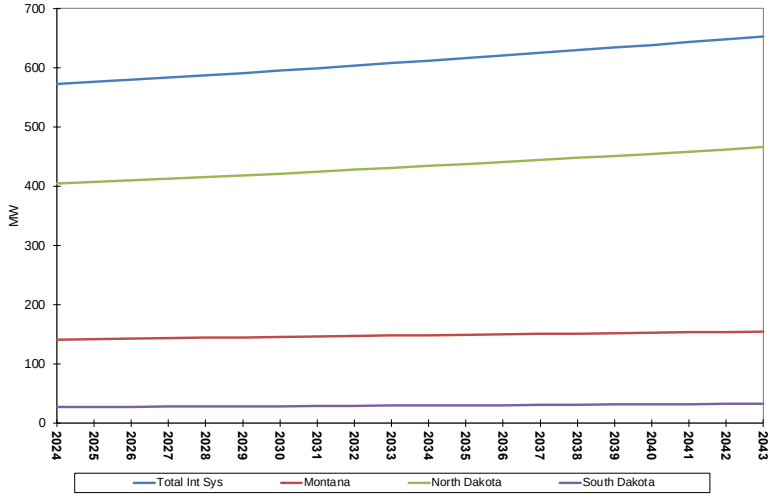
Montana-Dakota Utilities Co.
Forecasted Energy (MWh) and
Seasonal Demands (MW) Prior to Demand Response
South Dakota

Year	Summer Peak net of Energy Efficiency Programs (MW)	% Chg	Winter Peak net of Energy Efficiency Programs (MW)	% Chg	Annual Energy Requirments (GWh)	% Chg	Load Factor (%)
2024	27.0		26.9		153.6		64.76%
2025	27.3	1.11%	27.0	0.37%	154.4	0.49%	64.54%
2026	27.5	0.73%	27.2	0.74%	155.4	0.67%	64.50%
2027	27.7	0.73%	27.4	0.74%	156.4	0.66%	64.46%
2028	28.0	1.08%	27.6	0.73%	157.4	0.62%	63.99%
2029	28.2	0.71%	27.7	0.36%	158.4	0.67%	64.14%
2030	28.4	0.71%	27.9	0.72%	159.5	0.69%	64.13%
2031	28.8	1.41%	28.2	1.08%	160.9	0.85%	63.78%
2032	29.0	0.69%	28.4	0.71%	162.3	0.87%	63.71%
2033	29.4	1.38%	28.7	1.06%	163.7	0.85%	63.55%
2034	29.6	0.68%	28.9	0.70%	165.1	0.85%	63.66%
2035	29.9	1.01%	29.1	0.69%	166.5	0.86%	63.56%
2036	30.2	1.00%	29.5	1.37%	168.0	0.93%	63.34%
2037	30.6	1.32%	29.8	1.02%	169.6	0.92%	63.26%
2038	30.9	0.98%	30.0	0.67%	171.1	0.90%	63.21%
2039	31.2	0.97%	30.3	1.00%	172.7	0.91%	63.17%
2040	31.5	0.96%	30.6	0.99%	174.2	0.92%	62.97%
2041	31.8	0.95%	30.9	0.98%	176.1	1.04%	63.20%
2042	32.2	1.26%	31.2	0.97%	177.9	1.04%	63.06%
2043	32.5	0.93%	31.5	0.96%	179.7	1.03%	63.13%

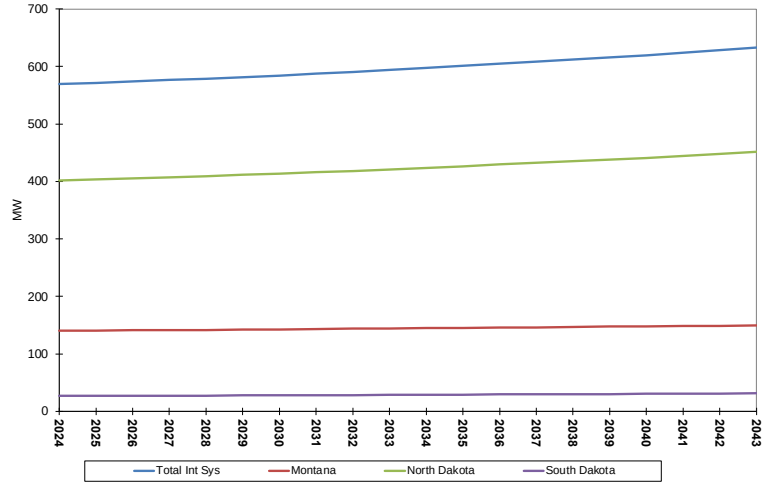
Montana-Dakota Integrated System
Forecast of Annual Energy by State



Montana-Dakota Integrated System
Forecast of Summer Peak Demand (Prior to Demand Response)
by State



Montana-Dakota Integrated System
Forecast of Winter Peak Demand by State



APPENDIX D

Monthly Forecasts – Montana
(2024-2033)

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2024**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	977.6	913.3	820.4	655.9	568.8	754.4	945.2	862.2	640.5	632.9	792.0	937.0	9,500.7
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,295	18,023	16,185	12,936	11,200	14,849	18,602	16,963	12,598	12,451	15,579	18,436	187,117
Use per Small Comm & Ind Customer - kWh	2,334.5	2,234.7	2,161.2	1,793.1	1,638.0	1,925.0	2,344.4	2,267.7	1,895.0	1,771.5	1,946.1	2,204.5	24,508.7
# of Small Comm & Ind Customers	5,340	5,334	5,330	5,384	5,436	5,456	5,462	5,458	5,449	5,409	5,378	5,365	5,400
Total Small Comm & Ind Sales - MWh	12,466	11,920	11,519	9,654	8,904	10,503	12,805	12,377	10,326	9,582	10,466	11,827	132,349
Large Comm & Ind Sales	37,360	33,566	36,075	33,078	34,572	30,530	33,959	33,273	33,211	34,291	34,286	36,619	410,820
Total Sales (Residential, SC&I and LC&I)	69,121	63,509	63,779	55,668	54,676	55,882	65,366	62,613	56,135	56,324	60,331	66,882	730,286
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	69,916	64,266	64,562	56,368	55,366	56,749	66,337	63,552	56,938	57,002	61,017	67,684	739,757
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	70,013	64,344	64,629	56,421	55,407	56,799	66,395	63,606	56,987	57,054	61,080	67,770	740,505
Total Requirements (Energy + Losses)	75,717	69,586	69,894	61,018	59,921	61,426	71,804	68,788	61,630	61,702	66,056	73,291	800,833
# of Large Comm & Ind Customers	254	253	253	253	256	256	257	258	257	255	254	253	255
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	141.2	124.6	112.0	104.2	91.2	119.7	141.1	132.4	111.2	99.2	116.8	129.0	141.2

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2025**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	981.1	916.6	823.4	658.2	570.8	757.2	948.6	865.3	642.8	635.2	794.9	938.9	9,533.6
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,365	18,088	16,243	12,982	11,240	14,903	18,669	17,024	12,644	12,497	15,636	18,473	187,764
Use per Small Comm & Ind Customer - kWh	2,339.4	2,239.4	2,165.5	1,796.7	1,641.2	1,929.1	2,349.4	2,272.6	1,899.2	1,775.3	1,950.1	2,209.5	24,560.6
# of Small Comm & Ind Customers	5,356	5,350	5,346	5,400	5,452	5,472	5,478	5,474	5,465	5,425	5,394	5,380	5,416
Total Small Comm & Ind Sales - MWh	12,530	11,981	11,577	9,702	8,948	10,556	12,870	12,440	10,379	9,631	10,519	11,887	133,020
Large Comm & Ind Sales	37,445	33,643	36,157	33,149	34,646	30,596	34,034	33,346	33,284	34,368	34,363	36,719	411,750
Total Sales (Residential, SC&I and LC&I)	69,340	63,712	63,977	55,833	54,834	56,055	65,573	62,810	56,307	56,496	60,518	67,079	732,534
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	70,135	64,469	64,760	56,533	55,524	56,922	66,544	63,749	57,110	57,174	61,204	67,881	742,005
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	70,232	64,547	64,827	56,586	55,565	56,972	66,602	63,803	57,159	57,226	61,267	67,967	742,753
Total Requirements (Energy + Losses)	75,954	69,806	70,108	61,196	60,092	61,614	72,028	69,001	61,816	61,888	66,258	73,504	803,265
# of Large Comm & Ind Customers	254	253	253	253	256	256	257	258	257	255	254	253	255
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	140.2	123.7	111.2	103.5	91.7	120.3	141.8	133.1	111.8	99.7	117.2	129.4	141.8

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2026**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	982.4	917.9	824.5	659.2	571.6	758.2	949.9	866.4	643.7	636.1	795.9	940.1	9,546.5
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,391	18,113	16,265	13,000	11,255	14,923	18,694	17,047	12,661	12,514	15,657	18,498	188,018
Use per Small Comm & Ind Customer - kWh	2,344.6	2,244.5	2,170.7	1,800.9	1,645.1	1,933.7	2,354.8	2,277.8	1,903.5	1,779.4	1,954.7	2,214.5	24,617.4
# of Small Comm & Ind Customers	5,371	5,365	5,360	5,415	5,467	5,487	5,493	5,489	5,480	5,440	5,409	5,395	5,431
Total Small Comm & Ind Sales - MWh	12,593	12,042	11,635	9,752	8,994	10,610	12,935	12,503	10,431	9,680	10,573	11,947	133,695
Large Comm & Ind Sales	37,571	33,756	36,277	33,256	34,757	30,694	34,143	33,453	33,392	34,480	34,478	36,842	413,099
Total Sales (Residential, SC&I and LC&I)	69,555	63,911	64,177	56,008	55,006	56,227	65,772	63,003	56,484	56,674	60,708	67,287	734,812
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	70,350	64,668	64,960	56,708	55,696	57,094	66,743	63,942	57,287	57,352	61,394	68,089	744,283
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	70,447	64,746	65,027	56,761	55,737	57,144	66,801	63,996	57,336	57,404	61,457	68,175	745,031
Total Requirements (Energy + Losses)	76,186	70,021	70,325	61,385	60,278	61,800	72,243	69,210	62,007	62,081	66,464	73,729	805,729
# of Large Comm & Ind Customers	255	254	254	254	257	257	258	259	258	256	255	254	256
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	140.6	124.1	111.6	103.8	92.2	120.9	142.6	133.8	112.4	100.3	117.6	129.8	142.6

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2027**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	983.7	919.1	825.6	660.1	572.4	759.2	951.1	867.6	644.5	636.9	797.0	941.4	9,559.3
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,417	18,137	16,287	13,018	11,271	14,943	18,719	17,070	12,678	12,530	15,678	18,523	188,271
Use per Small Comm & Ind Customer - kWh	2,349.5	2,249.4	2,175.4	1,804.6	1,648.6	1,937.9	2,360.0	2,282.2	1,907.6	1,783.2	1,958.7	2,217.7	24,667.9
# of Small Comm & Ind Customers	5,387	5,380	5,376	5,431	5,483	5,503	5,509	5,506	5,496	5,456	5,425	5,411	5,447
Total Small Comm & Ind Sales - MWh	12,657	12,102	11,695	9,801	9,039	10,664	13,001	12,566	10,484	9,729	10,626	12,000	134,364
Large Comm & Ind Sales	37,698	33,871	36,399	33,364	34,868	30,794	34,255	33,563	33,501	34,595	34,594	36,952	414,454
Total Sales (Residential, SC&I and LC&I)	69,772	64,110	64,381	56,183	55,178	56,401	65,975	63,199	56,663	56,854	60,898	67,475	737,089
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	70,567	64,867	65,164	56,883	55,868	57,268	66,946	64,138	57,466	57,532	61,584	68,277	746,560
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	70,664	64,945	65,231	56,936	55,909	57,318	67,004	64,192	57,515	57,584	61,647	68,363	747,308
Total Requirements (Energy + Losses)	76,421	70,236	70,545	61,575	60,464	61,988	72,463	69,422	62,201	62,275	66,669	73,933	808,192
# of Large Comm & Ind Customers	256	255	255	255	258	258	259	260	259	257	256	255	257
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	141.1	124.5	112.0	104.1	92.7	121.5	143.3	134.5	113.0	100.7	118.0	130.2	143.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA YEAR **2028**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	985.1	920.3	826.7	660.9	573.2	760.2	952.4	868.8	645.4	637.8	798.1	942.6	9,572.2
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,443	18,161	16,309	13,035	11,286	14,964	18,745	17,093	12,695	12,547	15,700	18,547	188,525
Use per Small Comm & Ind Customer - kWh	2,352.5	2,252.3	2,178.1	1,807.0	1,650.8	1,940.0	2,362.5	2,285.3	1,909.7	1,785.4	1,961.2	2,221.9	24,699.7
# of Small Comm & Ind Customers	5,402	5,395	5,391	5,446	5,498	5,519	5,525	5,521	5,512	5,471	5,440	5,426	5,462
Total Small Comm & Ind Sales - MWh	12,708	12,151	11,742	9,841	9,076	10,707	13,053	12,617	10,526	9,768	10,669	12,056	134,914
Large Comm & Ind Sales	37,791	33,954	36,486	33,441	34,949	30,865	34,335	33,641	33,580	34,677	34,678	37,057	415,454
Total Sales (Residential, SC&I and LC&I)	69,942	64,266	64,537	56,317	55,311	56,536	66,133	63,351	56,801	56,992	61,047	67,660	738,893
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	70,737	65,023	65,320	57,017	56,001	57,403	67,104	64,290	57,604	57,670	61,733	68,462	748,364
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	70,834	65,101	65,387	57,070	56,042	57,453	67,162	64,344	57,653	57,722	61,796	68,548	749,112
Total Requirements (Energy + Losses)	76,605	70,405	70,714	61,719	60,608	62,134	72,634	69,586	62,350	62,425	66,831	74,133	810,144
# of Large Comm & Ind Customers	256	255	255	255	258	258	259	260	259	257	256	255	257
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	141.5	124.9	112.3	104.5	93.1	122.1	144.0	135.1	113.5	101.2	118.2	130.5	144.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2029**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	986.4	921.6	827.9	661.8	573.9	761.2	953.7	869.9	646.3	638.6	799.2	943.9	9,585.1
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,469	18,186	16,331	13,052	11,301	14,983	18,770	17,116	12,712	12,564	15,721	18,573	188,778
Use per Small Comm & Ind Customer - kWh	2,357.8	2,257.1	2,182.5	1,810.7	1,654.2	1,944.2	2,367.8	2,290.0	1,913.7	1,789.1	1,965.4	2,226.6	24,752.1
# of Small Comm & Ind Customers	5,417	5,411	5,407	5,462	5,514	5,535	5,541	5,537	5,528	5,487	5,456	5,442	5,478
Total Small Comm & Ind Sales - MWh	12,772	12,213	11,801	9,890	9,121	10,761	13,120	12,680	10,579	9,817	10,723	12,117	135,594
Large Comm & Ind Sales	37,917	34,068	36,608	33,548	35,060	30,964	34,446	33,751	33,689	34,791	34,793	37,182	416,817
Total Sales (Residential, SC&I and LC&I)	70,158	64,467	64,740	56,490	55,482	56,708	66,336	63,547	56,980	57,172	61,237	67,872	741,189
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	70,953	65,224	65,523	57,190	56,172	57,575	67,307	64,486	57,783	57,850	61,923	68,674	750,660
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	71,050	65,302	65,590	57,243	56,213	57,625	67,365	64,540	57,832	57,902	61,986	68,760	751,408
Total Requirements (Energy + Losses)	76,838	70,622	70,934	61,907	60,793	62,320	72,853	69,798	62,544	62,619	67,036	74,362	812,626
# of Large Comm & Ind Customers	257	256	256	256	259	259	260	261	260	258	257	256	258
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	141.9	125.2	112.6	104.7	93.6	122.7	144.7	135.8	114.1	101.7	118.6	131.0	144.7

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2030**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	987.8	922.9	829.0	662.7	574.7	762.3	955.0	871.1	647.2	639.5	800.3	946.1	9,599.2
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,497	18,211	16,353	13,070	11,316	15,004	18,796	17,139	12,730	12,581	15,743	18,616	189,056
Use per Small Comm & Ind Customer - kWh	2,363.2	2,262.1	2,187.6	1,815.2	1,658.2	1,948.6	2,373.1	2,295.4	1,918.3	1,793.3	1,969.8	2,231.6	24,809.6
# of Small Comm & Ind Customers	5,432	5,426	5,422	5,476	5,529	5,550	5,556	5,552	5,543	5,502	5,471	5,457	5,493
Total Small Comm & Ind Sales - MWh	12,837	12,274	11,861	9,940	9,168	10,815	13,185	12,744	10,633	9,867	10,777	12,178	136,279
Large Comm & Ind Sales	38,047	34,185	36,732	33,658	35,173	31,064	34,558	33,861	33,800	34,907	34,911	37,303	418,199
Total Sales (Residential, SC&I and LC&I)	70,381	64,670	64,946	56,668	55,657	56,883	66,539	63,744	57,163	57,355	61,431	68,097	743,534
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	71,176	65,427	65,729	57,368	56,347	57,750	67,510	64,683	57,966	58,033	62,117	68,899	753,005
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	71,273	65,505	65,796	57,421	56,388	57,800	67,568	64,737	58,015	58,085	62,180	68,985	753,753
Total Requirements (Energy + Losses)	77,080	70,842	71,156	62,099	60,982	62,509	73,073	70,011	62,741	62,817	67,246	74,605	815,161
# of Large Comm & Ind Customers	258	257	257	257	260	260	261	262	261	259	258	257	259
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	142.4	125.6	112.9	105.1	94.1	123.4	145.5	136.6	114.7	102.3	119.0	131.3	145.5

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2031**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	990.4	925.4	831.2	664.5	576.3	764.4	957.6	873.5	648.9	641.2	802.5	948.7	9,625.1
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,549	18,260	16,398	13,105	11,347	15,045	18,846	17,186	12,764	12,615	15,785	18,666	189,566
Use per Small Comm & Ind Customer - kWh	2,368.2	2,267.0	2,192.4	1,819.0	1,661.7	1,952.9	2,378.3	2,300.5	1,922.3	1,797.2	1,973.9	2,236.4	24,863.0
# of Small Comm & Ind Customers	5,448	5,442	5,437	5,492	5,545	5,566	5,572	5,568	5,559	5,518	5,487	5,473	5,509
Total Small Comm & Ind Sales - MWh	12,902	12,337	11,920	9,990	9,214	10,870	13,252	12,809	10,686	9,917	10,831	12,240	136,968
Large Comm & Ind Sales	38,164	34,291	36,844	33,757	35,276	31,156	34,660	33,962	33,902	35,012	35,018	37,424	419,466
Total Sales (Residential, SC&I and LC&I)	70,615	64,888	65,162	56,852	55,837	57,071	66,758	63,957	57,352	57,544	61,634	68,330	746,000
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	71,410	65,645	65,945	57,552	56,527	57,938	67,729	64,896	58,155	58,222	62,320	69,132	755,471
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	71,507	65,723	66,012	57,605	56,568	57,988	67,787	64,950	58,204	58,274	62,383	69,218	756,219
Total Requirements (Energy + Losses)	77,333	71,077	71,390	62,298	61,177	62,712	73,310	70,241	62,946	63,022	67,465	74,857	817,828
# of Large Comm & Ind Customers	259	258	258	258	261	261	262	263	262	260	259	258	260
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	142.8	126.0	113.3	105.4	94.5	124.0	146.2	137.2	115.3	102.8	119.4	131.8	146.2

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2032**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	993.1	927.8	833.5	666.3	577.8	766.4	960.2	875.8	650.6	643.0	804.6	951.3	9,651.0
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,602	18,309	16,442	13,141	11,377	15,085	18,897	17,232	12,798	12,649	15,828	18,717	190,077
Use per Small Comm & Ind Customer - kWh	2,373.6	2,272.1	2,197.5	1,823.3	1,665.5	1,957.5	2,383.9	2,305.9	1,927.0	1,801.4	1,978.6	2,241.4	24,920.9
# of Small Comm & Ind Customers	5,463	5,457	5,452	5,507	5,560	5,581	5,587	5,583	5,574	5,533	5,502	5,488	5,524
Total Small Comm & Ind Sales - MWh	12,967	12,399	11,981	10,041	9,260	10,925	13,319	12,874	10,741	9,967	10,886	12,301	137,661
Large Comm & Ind Sales	38,297	34,409	36,970	33,869	35,391	31,258	34,775	34,075	34,014	35,130	35,137	37,552	420,877
Total Sales (Residential, SC&I and LC&I)	70,866	65,117	65,393	57,051	56,028	57,268	66,991	64,181	57,553	57,746	61,851	68,570	748,615
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	71,661	65,874	66,176	57,751	56,718	58,135	67,962	65,120	58,356	58,424	62,537	69,372	758,086
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	71,758	65,952	66,243	57,804	56,759	58,185	68,020	65,174	58,405	58,476	62,600	69,458	758,834
Total Requirements (Energy + Losses)	77,604	71,325	71,640	62,513	61,383	62,925	73,562	70,484	63,163	63,240	67,700	75,117	820,656
# of Large Comm & Ind Customers	259	258	258	258	261	261	262	263	262	260	259	258	260
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	143.2	126.4	113.6	105.7	95.0	124.6	146.9	137.9	115.8	103.3	119.8	132.3	146.9

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

MONTANA **YEAR 2033**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	995.8	930.4	835.7	668.1	579.4	768.5	962.8	878.2	652.4	644.7	806.8	953.8	9,677.0
# of Residential Customers	19,738	19,733	19,727	19,722	19,691	19,683	19,681	19,675	19,670	19,673	19,671	19,676	19,695
Total Residential Sales - MWh	19,655	18,359	16,486	13,176	11,408	15,126	18,948	17,279	12,832	12,683	15,870	18,766	190,588
Use per Small Comm & Ind Customer - kWh	2,378.5	2,277.2	2,202.1	1,827.1	1,669.3	1,961.8	2,389.3	2,310.5	1,931.1	1,805.2	1,982.8	2,246.2	24,974.2
# of Small Comm & Ind Customers	5,479	5,472	5,468	5,523	5,576	5,597	5,603	5,600	5,590	5,549	5,518	5,504	5,540
Total Small Comm & Ind Sales - MWh	13,032	12,461	12,041	10,091	9,308	10,980	13,387	12,939	10,795	10,017	10,941	12,363	138,355
Large Comm & Ind Sales	38,428	34,528	37,096	33,980	35,506	31,360	34,890	34,188	34,127	35,248	35,258	37,682	422,291
Total Sales (Residential, SC&I and LC&I)	71,115	65,348	65,623	57,247	56,222	57,466	67,225	64,406	57,754	57,948	62,069	68,811	751,234
Other Public Sales	482	475	498	442	472	633	744	718	577	453	451	484	6,429
Street & Highway Lighting Sales	299	269	273	248	210	224	217	213	217	216	224	305	2,915
Interdepartmental Sales	14	13	12	10	8	10	10	8	9	9	11	13	127
Total Billed Sales - MWh	71,910	66,105	66,406	57,947	56,912	58,333	68,196	65,345	58,557	58,626	62,755	69,613	760,705
Company Use	97	78	67	53	41	50	58	54	49	52	63	86	748
Total Energy	72,007	66,183	66,473	58,000	56,953	58,383	68,254	65,399	58,606	58,678	62,818	69,699	761,453
Total Requirements (Energy + Losses)	77,873	71,575	71,889	62,725	61,593	63,139	73,815	70,727	63,381	63,458	67,936	75,377	823,488
# of Large Comm & Ind Customers	260	259	259	259	262	262	263	264	263	261	260	259	261
# of Other Public Customers	98	98	98	98	98	98	98	98	98	98	98	98	98
# of Street & Highway Lighting Customers	34	34	34	34	34	34	34	34	34	34	34	34	34
Peak Demand Net of Energy Efficiency Progs	143.8	126.9	114.1	106.1	95.4	125.2	147.6	138.5	116.4	103.8	120.2	132.7	147.6

APPENDIX E

Monthly Forecasts - North Dakota
(2024-2033)

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2024**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,083.4	1,008.7	896.4	708.0	655.7	728.6	893.2	822.3	646.2	679.5	852.4	1,025.6	10,000.4
# of Residential Customers	79,404	79,424	79,408	79,400	79,367	79,378	79,407	79,429	79,423	79,449	79,506	79,518	79,426
Total Residential Sales - MWh	86,029	80,112	71,179	56,217	52,038	57,831	70,929	65,317	51,326	53,988	67,771	81,557	794,294
Use per Small Comm & Ind Customer - kWh	4,333.2	4,158.4	4,024.8	3,324.2	3,202.5	3,258.3	3,687.4	3,617.6	3,307.4	3,428.4	3,774.0	4,223.7	44,329.8
# of Small Comm & Ind Customers	12,204	12,202	12,216	12,245	12,290	12,309	12,309	12,326	12,314	12,285	12,276	12,287	12,272
Total Small Comm & Ind Sales - MWh	52,882	50,741	49,167	40,705	39,359	40,107	45,388	44,591	40,727	42,118	46,330	51,897	544,012
Large Comm & Ind Sales	62,307	59,460	62,141	54,550	55,722	56,768	62,799	62,025	59,121	59,127	59,641	62,622	716,283
Total Sales (Residential, SC&I and LC&I)	201,218	190,313	182,487	151,472	147,119	154,706	179,116	171,933	151,174	155,233	173,742	196,076	2,054,589
Other Public Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Street & Highway Lighting Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Interdepartmental Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Total Billed Sales - MWh	206,696	195,459	187,870	156,379	152,408	160,140	185,036	177,756	156,434	160,340	178,880	201,608	2,119,006
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	207,137	195,886	188,334	156,781	152,810	160,546	185,502	178,199	156,833	160,734	179,285	202,051	2,124,098
Total Requirements (Energy + Losses)	224,030	211,862	203,694	169,568	165,271	173,636	200,627	192,728	169,621	173,842	193,906	218,529	2,297,314
# of Large Comm & Ind Customers	1,195	1,194	1,195	1,198	1,198	1,198	1,196	1,194	1,192	1,190	1,190	1,188	1,194
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	402.4	374.7	350.3	307.7	281.4	372.8	404.7	391.7	341.6	317.6	328.3	377.1	404.7

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2025**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,083.9	1,009.1	896.8	708.3	656.0	728.9	893.6	822.7	646.6	679.8	852.8	1,028.3	10,007.3
# of Residential Customers	79,554	79,574	79,558	79,550	79,516	79,527	79,557	79,579	79,573	79,599	79,656	79,669	79,576
Total Residential Sales - MWh	86,232	80,301	71,347	56,349	52,161	57,968	71,096	65,471	51,448	54,115	67,932	81,922	796,342
Use per Small Comm & Ind Customer - kWh	4,315.9	4,141.9	4,008.8	3,310.8	3,189.7	3,245.1	3,672.4	3,603.0	3,294.2	3,414.6	3,758.9	4,204.0	44,149.3
# of Small Comm & Ind Customers	12,314	12,312	12,326	12,356	12,401	12,421	12,421	12,438	12,425	12,396	12,387	12,398	12,383
Total Small Comm & Ind Sales - MWh	53,146	50,995	49,413	40,908	39,556	40,308	45,615	44,814	40,931	42,328	46,562	52,121	546,697
Large Comm & Ind Sales	62,604	59,744	62,433	54,811	55,990	57,042	63,104	62,324	59,400	59,402	59,922	62,881	719,657
Total Sales (Residential, SC&I and LC&I)	201,982	191,040	183,193	152,068	147,707	155,318	179,815	172,609	151,779	155,845	174,416	196,924	2,062,696
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	207,476	196,202	188,591	156,988	153,007	160,762	185,746	178,442	157,049	160,964	179,568	202,472	2,127,267
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	207,917	196,629	189,055	157,390	153,409	161,168	186,212	178,885	157,448	161,358	179,973	202,915	2,132,359
Total Requirements (Energy + Losses)	224,856	212,648	204,457	170,213	165,907	174,298	201,383	193,459	170,275	174,504	194,635	219,446	2,306,081
# of Large Comm & Ind Customers	1,206	1,205	1,206	1,209	1,209	1,209	1,207	1,205	1,203	1,201	1,201	1,199	1,205
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	402.2	374.5	350.1	307.5	283.2	375.1	407.2	394.1	343.7	319.6	329.6	378.6	407.2

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MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2026**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,087.8	1,012.8	900.0	710.9	658.3	731.5	896.9	825.7	648.9	682.3	855.9	1,032.0	10,043.3
# of Residential Customers	79,704	79,724	79,708	79,700	79,666	79,677	79,707	79,729	79,723	79,749	79,806	79,819	79,726
Total Residential Sales - MWh	86,705	80,741	71,739	56,659	52,447	58,286	71,486	65,830	51,730	54,412	68,304	82,370	800,709
Use per Small Comm & Ind Customer - kWh	4,294.2	4,121.1	3,988.7	3,294.3	3,173.9	3,229.1	3,654.2	3,585.2	3,277.7	3,397.7	3,740.3	4,185.9	43,932.2
# of Small Comm & Ind Customers	12,425	12,423	12,437	12,467	12,512	12,532	12,532	12,549	12,537	12,507	12,498	12,509	12,494
Total Small Comm & Ind Sales - MWh	53,355	51,196	49,608	41,070	39,712	40,467	45,795	44,991	41,092	42,495	46,746	52,362	548,889
Large Comm & Ind Sales	62,840	59,970	62,667	55,019	56,205	57,263	63,349	62,563	59,622	59,622	60,146	63,161	722,427
Total Sales (Residential, SC&I and LC&I)	202,900	191,907	184,014	152,748	148,364	156,016	180,630	173,384	152,444	156,529	175,196	197,893	2,072,025
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	208,394	197,069	189,412	157,668	153,664	161,460	186,561	179,217	157,714	161,648	180,348	203,441	2,136,596
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	208,835	197,496	189,876	158,070	154,066	161,866	187,027	179,660	158,113	162,042	180,753	203,884	2,141,688
Total Requirements (Energy + Losses)	225,849	213,586	205,345	170,948	166,618	175,053	202,264	194,297	170,994	175,244	195,479	220,494	2,316,171
# of Large Comm & Ind Customers	1,217	1,216	1,217	1,220	1,220	1,220	1,218	1,216	1,214	1,212	1,212	1,210	1,216
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	403.8	376.0	351.5	308.8	285.1	377.6	409.9	396.7	346.0	321.7	331.0	380.2	409.9

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2027**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,091.7	1,016.4	903.2	713.4	660.7	734.1	900.1	828.6	651.2	684.7	858.9	1,035.6	10,079.1
# of Residential Customers	79,854	79,874	79,857	79,850	79,816	79,827	79,857	79,879	79,873	79,899	79,957	79,969	79,876
Total Residential Sales - MWh	87,178	81,182	72,130	56,967	52,733	58,604	71,877	66,190	52,012	54,709	68,677	82,818	805,077
Use per Small Comm & Ind Customer - kWh	4,277.4	4,104.9	3,973.1	3,281.2	3,161.4	3,216.5	3,639.9	3,570.9	3,264.8	3,384.3	3,725.5	4,166.6	43,756.5
# of Small Comm & Ind Customers	12,536	12,534	12,548	12,579	12,624	12,644	12,644	12,662	12,649	12,619	12,610	12,621	12,606
Total Small Comm & Ind Sales - MWh	53,621	51,451	49,855	41,274	39,910	40,669	46,023	45,215	41,297	42,707	46,978	52,587	551,587
Large Comm & Ind Sales	63,141	60,258	62,964	55,284	56,477	57,542	63,658	62,867	59,905	59,902	60,432	63,426	725,856
Total Sales (Residential, SC&I and LC&I)	203,940	192,891	184,949	153,525	149,120	156,815	181,558	174,272	153,214	157,318	176,087	198,831	2,082,520
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	209,434	198,053	190,347	158,445	154,420	162,259	187,489	180,105	158,484	162,437	181,239	204,379	2,147,091
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	209,875	198,480	190,811	158,847	154,822	162,665	187,955	180,548	158,883	162,831	181,644	204,822	2,152,183
Total Requirements (Energy + Losses)	226,974	214,650	206,356	171,788	167,435	175,917	203,268	195,257	171,827	176,097	196,443	221,509	2,327,521
# of Large Comm & Ind Customers	1,228	1,227	1,228	1,231	1,231	1,231	1,229	1,227	1,225	1,223	1,223	1,221	1,227
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	405.5	377.6	352.9	310.1	287.1	380.2	412.8	399.5	348.4	324.0	332.7	382.2	412.8

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2028**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,095.6	1,020.0	906.4	716.0	663.0	736.7	903.3	831.6	653.5	687.1	862.0	1,039.3	10,114.8
# of Residential Customers	80,004	80,024	80,007	80,000	79,966	79,977	80,007	80,029	80,023	80,049	80,107	80,119	80,026
Total Residential Sales - MWh	87,651	81,623	72,521	57,277	53,020	58,922	72,267	66,549	52,294	55,005	69,049	83,265	809,443
Use per Small Comm & Ind Customer - kWh	4,256.2	4,084.9	3,953.4	3,265.2	3,145.6	3,200.4	3,621.9	3,553.5	3,248.8	3,367.7	3,707.1	4,148.6	43,543.2
# of Small Comm & Ind Customers	12,648	12,645	12,660	12,690	12,737	12,757	12,757	12,774	12,761	12,731	12,722	12,734	12,718
Total Small Comm & Ind Sales - MWh	53,832	51,653	50,050	41,435	40,066	40,828	46,204	45,392	41,458	42,874	47,162	52,828	553,782
Large Comm & Ind Sales	63,383	60,490	63,203	55,496	56,696	57,766	63,908	63,110	60,132	60,127	60,662	63,712	728,685
Total Sales (Residential, SC&I and LC&I)	204,866	193,766	185,774	154,208	149,782	157,516	182,379	175,051	153,884	158,006	176,873	199,805	2,091,910
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	210,360	198,928	191,172	159,128	155,082	162,960	188,310	180,884	159,154	163,125	182,025	205,353	2,156,481
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	210,801	199,355	191,636	159,530	155,484	163,366	188,776	181,327	159,553	163,519	182,430	205,796	2,161,573
Total Requirements (Energy + Losses)	227,975	215,596	207,249	172,527	168,151	176,675	204,156	196,100	172,552	176,841	197,293	222,562	2,337,677
# of Large Comm & Ind Customers	1,239	1,238	1,239	1,242	1,242	1,242	1,240	1,238	1,236	1,234	1,234	1,232	1,238
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	407.6	379.6	354.8	311.7	289.0	382.7	415.5	402.1	350.7	326.1	334.2	383.9	415.5

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2029**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,099.4	1,023.6	909.6	718.5	665.3	739.3	906.4	834.5	655.8	689.6	865.0	1,042.9	10,150.3
# of Residential Customers	80,154	80,174	80,157	80,150	80,116	80,127	80,157	80,179	80,173	80,199	80,257	80,269	80,176
Total Residential Sales - MWh	88,124	82,063	72,913	57,586	53,305	59,239	72,656	66,908	52,577	55,302	69,422	83,713	813,808
Use per Small Comm & Ind Customer - kWh	4,240.0	4,069.1	3,938.5	3,252.8	3,133.7	3,188.4	3,608.1	3,539.8	3,236.3	3,354.9	3,693.0	4,129.9	43,374.4
# of Small Comm & Ind Customers	12,759	12,757	12,771	12,802	12,849	12,869	12,869	12,887	12,874	12,843	12,834	12,846	12,830
Total Small Comm & Ind Sales - MWh	54,098	51,909	50,299	41,642	40,265	41,031	46,433	45,617	41,664	43,087	47,396	53,053	556,494
Large Comm & Ind Sales	63,690	60,783	63,507	55,766	56,974	58,051	64,224	63,420	60,421	60,412	60,954	63,978	732,180
Total Sales (Residential, SC&I and LC&I)	205,912	194,755	186,719	154,994	150,544	158,321	183,313	175,945	154,662	158,801	177,772	200,744	2,102,482
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	211,406	199,917	192,117	159,914	155,844	163,765	189,244	181,778	159,932	163,920	182,924	206,292	2,167,053
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	211,847	200,344	192,581	160,316	156,246	164,171	189,710	182,221	160,331	164,314	183,329	206,735	2,172,145
Total Requirements (Energy + Losses)	229,106	216,666	208,271	173,377	168,975	177,546	205,166	197,067	173,393	177,701	198,265	223,578	2,349,111
# of Large Comm & Ind Customers	1,249	1,248	1,249	1,252	1,252	1,252	1,250	1,248	1,246	1,244	1,244	1,242	1,248
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	409.4	381.2	356.3	313.0	290.9	385.3	418.3	404.8	353.1	328.3	335.8	385.7	418.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2030**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,103.3	1,027.1	912.8	721.0	667.7	741.9	909.6	837.4	658.1	692.0	868.0	1,049.1	10,188.3
# of Residential Customers	80,304	80,324	80,307	80,300	80,266	80,277	80,307	80,329	80,323	80,349	80,407	80,419	80,326
Total Residential Sales - MWh	88,597	82,504	73,304	57,895	53,592	59,558	73,046	67,267	52,859	55,599	69,795	84,367	818,383
Use per Small Comm & Ind Customer - kWh	4,219.4	4,049.3	3,919.1	3,236.8	3,118.5	3,172.9	3,590.6	3,522.7	3,220.6	3,338.5	3,675.0	4,112.7	43,166.1
# of Small Comm & Ind Customers	12,871	12,869	12,884	12,915	12,962	12,982	12,982	13,000	12,987	12,956	12,947	12,959	12,943
Total Small Comm & Ind Sales - MWh	54,308	52,111	50,494	41,803	40,422	41,190	46,613	45,795	41,826	43,254	47,580	53,296	558,692
Large Comm & Ind Sales	63,931	61,014	63,745	55,979	57,193	58,275	64,472	63,664	60,648	60,636	61,182	64,255	734,994
Total Sales (Residential, SC&I and LC&I)	206,836	195,629	187,543	155,677	151,207	159,023	184,131	176,726	155,333	159,489	178,557	201,918	2,112,069
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	212,330	200,791	192,941	160,597	156,507	164,467	190,062	182,559	160,603	164,608	183,709	207,466	2,176,640
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	212,771	201,218	193,405	160,999	156,909	164,873	190,528	183,002	161,002	165,002	184,114	207,909	2,181,732
Total Requirements (Energy + Losses)	230,105	217,611	209,162	174,116	169,692	178,305	206,050	197,911	174,119	178,445	199,114	224,847	2,359,477
# of Large Comm & Ind Customers	1,260	1,259	1,260	1,263	1,263	1,263	1,261	1,259	1,257	1,255	1,255	1,253	1,259
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	411.4	383.1	358.1	314.6	292.9	387.9	421.1	407.6	355.4	330.5	337.3	387.4	421.1

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2031**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,111.1	1,034.4	919.3	726.1	672.4	747.2	916.1	843.4	662.8	696.9	874.2	1,056.5	10,260.7
# of Residential Customers	80,453	80,474	80,457	80,450	80,416	80,427	80,457	80,479	80,473	80,499	80,557	80,570	80,476
Total Residential Sales - MWh	89,394	83,246	73,963	58,416	54,074	60,094	73,704	67,872	53,334	56,099	70,423	85,121	825,740
Use per Small Comm & Ind Customer - kWh	4,203.5	4,034.3	3,904.7	3,224.6	3,106.8	3,160.8	3,577.0	3,509.3	3,208.4	3,326.0	3,661.3	4,097.3	43,004.0
# of Small Comm & Ind Customers	12,984	12,981	12,996	13,028	13,075	13,096	13,096	13,114	13,101	13,069	13,060	13,072	13,056
Total Small Comm & Ind Sales - MWh	54,578	52,369	50,745	42,010	40,622	41,394	46,844	46,021	42,033	43,468	47,816	53,560	561,460
Large Comm & Ind Sales	64,225	61,296	64,035	56,238	57,458	58,548	64,774	63,959	60,924	60,909	61,462	64,561	738,389
Total Sales (Residential, SC&I and LC&I)	208,197	196,911	188,743	156,664	152,154	160,036	185,322	177,852	156,291	160,476	179,701	203,242	2,125,589
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	213,691	202,073	194,141	161,584	157,454	165,480	191,253	183,685	161,561	165,595	184,853	208,790	2,190,160
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	214,132	202,500	194,605	161,986	157,856	165,886	191,719	184,128	161,960	165,989	185,258	209,233	2,195,252
Total Requirements (Energy + Losses)	231,577	218,998	210,459	175,183	170,717	179,401	207,338	199,129	175,155	179,512	200,351	226,279	2,374,099
# of Large Comm & Ind Customers	1,271	1,270	1,271	1,274	1,274	1,274	1,272	1,270	1,268	1,266	1,266	1,264	1,270
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	413.2	384.8	359.7	315.9	295.1	390.8	424.3	410.7	358.1	333.0	339.5	390.0	424.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2032**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,119.0	1,041.7	925.8	731.2	677.2	752.4	922.5	849.3	667.4	701.8	880.3	1,063.9	10,332.8
# of Residential Customers	80,603	80,624	80,607	80,600	80,566	80,577	80,607	80,629	80,623	80,649	80,707	80,720	80,626
Total Residential Sales - MWh	90,191	83,988	74,623	58,936	54,556	60,629	74,361	68,477	53,809	56,599	71,050	85,876	833,095
Use per Small Comm & Ind Customer - kWh	4,188.1	4,019.3	3,890.2	3,213.0	3,095.5	3,149.3	3,563.9	3,496.6	3,196.8	3,313.9	3,647.8	4,082.4	42,846.9
# of Small Comm & Ind Customers	13,096	13,094	13,109	13,140	13,188	13,209	13,209	13,227	13,214	13,182	13,173	13,185	13,169
Total Small Comm & Ind Sales - MWh	54,848	52,629	50,996	42,219	40,823	41,599	47,076	46,249	42,242	43,684	48,053	53,826	564,244
Large Comm & Ind Sales	64,534	61,592	64,341	56,510	57,739	58,836	65,093	64,272	61,215	61,198	61,756	64,873	741,959
Total Sales (Residential, SC&I and LC&I)	209,573	198,209	189,960	157,665	153,118	161,064	186,530	178,998	157,266	161,481	180,859	204,575	2,139,298
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	215,067	203,371	195,358	162,585	158,418	166,508	192,461	184,831	162,536	166,600	186,011	210,123	2,203,869
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	215,508	203,798	195,822	162,987	158,820	166,914	192,927	185,274	162,935	166,994	186,416	210,566	2,208,961
Total Requirements (Energy + Losses)	233,065	220,401	211,776	176,266	171,759	180,512	208,645	200,368	176,209	180,599	201,603	227,721	2,388,924
# of Large Comm & Ind Customers	1,282	1,281	1,282	1,285	1,285	1,285	1,283	1,281	1,279	1,277	1,277	1,275	1,281
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	415.9	387.3	362.0	318.0	297.4	393.9	427.6	413.8	360.9	335.6	341.6	392.4	427.6

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

NORTH DAKOTA **YEAR 2033**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,126.7	1,049.0	932.2	736.3	681.9	757.7	928.9	855.2	672.1	706.7	886.5	1,071.2	10,404.7
# of Residential Customers	80,753	80,774	80,757	80,750	80,716	80,727	80,757	80,779	80,773	80,799	80,858	80,870	80,776
Total Residential Sales - MWh	90,988	84,730	75,282	59,458	55,038	61,165	75,017	69,082	54,285	57,100	71,679	86,630	840,454
Use per Small Comm & Ind Customer - kWh	4,172.9	4,004.6	3,876.0	3,201.1	3,084.2	3,137.6	3,551.0	3,483.7	3,185.1	3,301.6	3,634.3	4,067.4	42,689.7
# of Small Comm & Ind Customers	13,209	13,207	13,222	13,254	13,302	13,324	13,323	13,342	13,328	13,297	13,288	13,299	13,283
Total Small Comm & Ind Sales - MWh	55,120	52,889	51,249	42,428	41,026	41,806	47,310	46,479	42,451	43,901	48,292	54,093	567,044
Large Comm & Ind Sales	64,845	61,889	64,648	56,784	58,020	59,124	65,414	64,586	61,508	61,487	62,051	65,189	745,545
Total Sales (Residential, SC&I and LC&I)	210,953	199,508	191,179	158,670	154,084	162,095	187,741	180,147	158,244	162,488	182,022	205,912	2,153,043
Other Public Sales	4,106	3,952	4,157	3,841	4,288	4,514	4,958	4,822	4,199	3,938	3,873	4,117	50,765
Street & Highway Lighting Sales	1,372	1,194	1,226	1,066	1,001	920	962	1,001	1,061	1,169	1,265	1,415	13,652
Interdepartmental Sales	16	16	15	13	11	10	11	10	10	12	14	16	154
Total Billed Sales - MWh	216,447	204,670	196,577	163,590	159,384	167,539	193,672	185,980	163,514	167,607	187,174	211,460	2,217,614
Company Use	441	427	464	402	402	406	466	443	399	394	405	443	5,092
Total Energy	216,888	205,097	197,041	163,992	159,786	167,945	194,138	186,423	163,913	168,001	187,579	211,903	2,222,706
Total Requirements (Energy + Losses)	234,558	221,806	213,094	177,352	172,804	181,627	209,954	201,611	177,267	181,688	202,861	229,167	2,403,789
# of Large Comm & Ind Customers	1,294	1,293	1,294	1,297	1,297	1,297	1,295	1,293	1,291	1,289	1,288	1,287	1,293
# of Other Public Customers	559	559	559	562	563	562	561	561	560	557	554	551	559
# of Street & Highway Lighting Customers	586	586	586	586	586	588	589	591	593	597	600	602	591
Peak Demand Net of Energy Efficiency Progs	418.5	389.7	364.3	320.0	299.6	396.8	430.8	416.9	363.6	338.1	343.8	394.9	430.8

APPENDIX F

Monthly Forecasts – South Dakota
(2024-2033)

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2024**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,127.7	1,076.1	941.1	737.4	707.2	759.2	943.5	827.3	662.4	701.6	907.8	1,094.4	10,484.5
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,216	6,886	6,020	4,722	4,531	4,864	6,045	5,297	4,240	4,482	5,799	6,979	67,081
Use per Small Comm & Ind Customer - kWh	2,074.0	2,073.0	1,792.8	1,348.0	1,368.5	1,343.3	1,592.6	1,442.9	1,271.6	1,348.3	1,721.8	2,043.0	19,400.4
# of Small Comm & Ind Customers	1,878	1,876	1,877	1,888	1,905	1,911	1,912	1,908	1,907	1,895	1,887	1,885	1,894
Total Small Comm & Ind Sales - MWh	3,895	3,889	3,365	2,545	2,607	2,567	3,045	2,753	2,425	2,555	3,249	3,851	36,746
Large Comm & Ind Sales	2,973	2,874	2,795	2,376	2,872	2,761	3,087	2,959	2,893	2,879	3,217	3,306	34,992
Total Sales (Residential, SC&I and LC&I)	14,084	13,649	12,180	9,643	10,010	10,192	12,177	11,009	9,558	9,916	12,265	14,136	138,819
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	
Total Billed Sales - MWh	14,363	13,914	12,449	9,841	10,277	10,417	12,410	11,226	9,769	10,132	12,506	14,419	141,723
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,415	13,966	12,489	9,863	10,291	10,425	12,419	11,233	9,778	10,147	12,537	14,466	142,029
Total Requirements (Energy + Losses)	15,589	15,104	13,506	10,667	11,129	11,274	13,431	12,148	10,575	10,974	13,558	15,645	153,600
# of Large Comm & Ind Customers	108	107	108	108	108	108	108	108	108	108	108	108	108
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	26.7	23.8	22.4	18.6	16.6	24.8	27.0	26.2	22.8	19.4	21.8	25.5	27.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2025**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,128.1	1,076.7	941.7	737.7	707.7	759.5	944.0	827.7	662.7	702.1	908.3	1,097.4	10,492.5
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,219	6,890	6,024	4,724	4,534	4,866	6,048	5,300	4,242	4,485	5,802	6,998	67,132
Use per Small Comm & Ind Customer - kWh	2,072.5	2,071.0	1,790.9	1,346.8	1,367.8	1,342.7	1,591.5	1,441.7	1,271.0	1,347.1	1,719.9	2,041.1	19,384.8
# of Small Comm & Ind Customers	1,890	1,888	1,889	1,900	1,917	1,923	1,924	1,920	1,919	1,907	1,899	1,897	1,906
Total Small Comm & Ind Sales - MWh	3,917	3,910	3,383	2,559	2,622	2,582	3,062	2,768	2,439	2,569	3,266	3,872	36,949
Large Comm & Ind Sales	3,010	2,911	2,831	2,406	2,908	2,796	3,125	2,996	2,929	2,915	3,258	3,351	35,436
Total Sales (Residential, SC&I and LC&I)	14,146	13,711	12,238	9,689	10,064	10,244	12,235	11,064	9,610	9,969	12,326	14,221	139,517
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,425	13,976	12,507	9,887	10,331	10,469	12,468	11,281	9,821	10,185	12,567	14,504	142,421
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,477	14,028	12,547	9,909	10,345	10,477	12,477	11,288	9,830	10,200	12,598	14,551	142,727
Total Requirements (Energy + Losses)	15,656	15,171	13,569	10,716	11,188	11,331	13,494	12,208	10,631	11,031	13,624	15,736	154,355
# of Large Comm & Ind Customers	108	107	108	108	108	108	108	108	108	108	108	108	108
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	26.9	24.0	22.6	18.8	16.8	25.1	27.3	26.4	23.0	19.6	21.9	25.6	27.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2026**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,132.7	1,081.0	945.3	740.5	710.5	762.4	947.6	830.9	665.4	704.8	911.9	1,101.8	10,533.5
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,248	6,917	6,047	4,742	4,552	4,885	6,071	5,320	4,259	4,502	5,825	7,026	67,394
Use per Small Comm & Ind Customer - kWh	2,070.5	2,069.5	1,789.6	1,345.7	1,366.5	1,341.6	1,590.4	1,441.0	1,269.2	1,346.0	1,718.5	2,039.3	19,368.5
# of Small Comm & Ind Customers	1,902	1,900	1,901	1,912	1,929	1,935	1,936	1,932	1,932	1,919	1,911	1,909	1,918
Total Small Comm & Ind Sales - MWh	3,938	3,932	3,402	2,573	2,636	2,596	3,079	2,784	2,452	2,583	3,284	3,893	37,152
Large Comm & Ind Sales	3,052	2,951	2,870	2,439	2,948	2,834	3,169	3,038	2,970	2,955	3,303	3,397	35,926
Total Sales (Residential, SC&I and LC&I)	14,238	13,800	12,319	9,754	10,136	10,315	12,319	11,142	9,681	10,040	12,412	14,316	140,472
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,517	14,065	12,588	9,952	10,403	10,540	12,552	11,359	9,892	10,256	12,653	14,599	143,376
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,569	14,117	12,628	9,974	10,417	10,548	12,561	11,366	9,901	10,271	12,684	14,646	143,682
Total Requirements (Energy + Losses)	15,756	15,267	13,657	10,787	11,266	11,407	13,584	12,292	10,708	11,108	13,717	15,839	155,388
# of Large Comm & Ind Customers	109	108	109	109	109	109	109	109	109	109	109	109	109
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.0	24.1	22.7	18.9	16.9	25.3	27.5	26.6	23.2	19.7	22.0	25.8	27.5

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2027**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,137.1	1,085.2	948.9	743.3	713.1	765.4	951.3	834.1	667.9	707.4	915.3	1,105.8	10,573.8
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,276	6,944	6,070	4,760	4,569	4,904	6,095	5,341	4,275	4,519	5,847	7,052	67,652
Use per Small Comm & Ind Customer - kWh	2,073.3	2,070.7	1,791.1	1,347.2	1,367.9	1,342.6	1,591.8	1,441.5	1,270.0	1,347.5	1,720.3	2,039.6	19,384.2
# of Small Comm & Ind Customers	1,910	1,909	1,910	1,921	1,938	1,944	1,945	1,941	1,941	1,928	1,920	1,918	1,927
Total Small Comm & Ind Sales - MWh	3,960	3,953	3,421	2,588	2,651	2,610	3,096	2,798	2,465	2,598	3,303	3,912	37,355
Large Comm & Ind Sales	3,094	2,991	2,910	2,473	2,988	2,873	3,212	3,080	3,011	2,995	3,348	3,441	36,416
Total Sales (Residential, SC&I and LC&I)	14,330	13,888	12,401	9,821	10,208	10,387	12,403	11,219	9,751	10,112	12,498	14,405	141,423
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,609	14,153	12,670	10,019	10,475	10,612	12,636	11,436	9,962	10,328	12,739	14,688	144,327
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,661	14,205	12,710	10,041	10,489	10,620	12,645	11,443	9,971	10,343	12,770	14,735	144,633
Total Requirements (Energy + Losses)	15,855	15,362	13,745	10,859	11,344	11,485	13,675	12,375	10,783	11,186	13,810	15,935	156,414
# of Large Comm & Ind Customers	109	108	109	109	109	109	109	109	109	109	109	109	109
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.2	24.3	22.8	19.0	17.1	25.5	27.7	26.8	23.4	19.9	22.2	26.0	27.7

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2028**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,141.4	1,089.2	952.6	746.3	715.9	768.5	955.0	837.3	670.5	710.2	918.9	1,110.2	10,615.2
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,304	6,970	6,094	4,779	4,587	4,924	6,119	5,361	4,292	4,537	5,870	7,080	67,917
Use per Small Comm & Ind Customer - kWh	2,072.4	2,070.4	1,790.5	1,346.6	1,367.7	1,342.5	1,591.6	1,441.5	1,270.3	1,346.9	1,720.1	2,041.0	19,382.4
# of Small Comm & Ind Customers	1,919	1,918	1,919	1,930	1,947	1,953	1,954	1,950	1,950	1,937	1,929	1,927	1,936
Total Small Comm & Ind Sales - MWh	3,977	3,971	3,436	2,599	2,663	2,622	3,110	2,811	2,477	2,609	3,318	3,933	37,526
Large Comm & Ind Sales	3,133	3,029	2,946	2,504	3,026	2,909	3,253	3,119	3,049	3,034	3,391	3,488	36,881
Total Sales (Residential, SC&I and LC&I)	14,414	13,970	12,476	9,882	10,276	10,455	12,482	11,291	9,818	10,180	12,579	14,501	142,324
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,693	14,235	12,745	10,080	10,543	10,680	12,715	11,508	10,029	10,396	12,820	14,784	145,228
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,745	14,287	12,785	10,102	10,557	10,688	12,724	11,515	10,038	10,411	12,851	14,831	145,534
Total Requirements (Energy + Losses)	15,946	15,451	13,827	10,925	11,417	11,559	13,761	12,453	10,856	11,259	13,898	16,039	157,391
# of Large Comm & Ind Customers	110	109	110	110	110	110	110	110	110	110	110	110	110
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.4	24.4	23.0	19.1	17.3	25.7	28.0	27.1	23.6	20.1	22.4	26.2	28.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2029**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,145.8	1,093.5	956.2	749.1	718.7	771.5	958.6	840.5	673.0	712.9	922.5	1,114.5	10,655.8
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,332	6,997	6,117	4,797	4,605	4,943	6,142	5,382	4,308	4,554	5,893	7,107	68,177
Use per Small Comm & Ind Customer - kWh	2,072.5	2,070.0	1,791.1	1,346.2	1,367.2	1,342.7	1,591.3	1,441.1	1,269.8	1,347.0	1,719.6	2,040.2	19,379.6
# of Small Comm & Ind Customers	1,930	1,929	1,929	1,941	1,958	1,964	1,965	1,961	1,961	1,948	1,940	1,938	1,947
Total Small Comm & Ind Sales - MWh	4,000	3,993	3,455	2,613	2,677	2,637	3,127	2,826	2,490	2,624	3,336	3,954	37,732
Large Comm & Ind Sales	3,176	3,071	2,987	2,539	3,069	2,950	3,299	3,162	3,091	3,076	3,438	3,536	37,394
Total Sales (Residential, SC&I and LC&I)	14,508	14,061	12,559	9,949	10,351	10,530	12,568	11,370	9,889	10,254	12,667	14,597	143,303
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,787	14,326	12,828	10,147	10,618	10,755	12,801	11,587	10,100	10,470	12,908	14,880	146,207
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,839	14,378	12,868	10,169	10,632	10,763	12,810	11,594	10,109	10,485	12,939	14,927	146,513
Total Requirements (Energy + Losses)	16,048	15,549	13,916	10,997	11,498	11,640	13,854	12,539	10,933	11,339	13,993	16,143	158,449
# of Large Comm & Ind Customers	111	110	111	111	111	111	111	112	111	112	111	111	111
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.6	24.6	23.2	19.3	17.4	25.9	28.2	27.3	23.8	20.2	22.4	26.3	28.2

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2030**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,150.2	1,097.7	960.0	752.0	721.4	774.3	962.4	843.8	675.7	715.7	926.1	1,121.7	10,699.9
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,360	7,024	6,141	4,816	4,622	4,961	6,166	5,403	4,325	4,572	5,916	7,153	68,459
Use per Small Comm & Ind Customer - kWh	2,074.3	2,071.7	1,792.6	1,347.7	1,368.6	1,343.6	1,592.7	1,442.6	1,271.6	1,348.0	1,720.9	2,042.1	19,397.2
# of Small Comm & Ind Customers	1,939	1,938	1,938	1,950	1,967	1,973	1,974	1,970	1,970	1,957	1,949	1,947	1,956
Total Small Comm & Ind Sales - MWh	4,022	4,015	3,474	2,628	2,692	2,651	3,144	2,842	2,505	2,638	3,354	3,976	37,941
Large Comm & Ind Sales	3,221	3,114	3,028	2,574	3,111	2,991	3,344	3,205	3,134	3,118	3,485	3,584	37,909
Total Sales (Residential, SC&I and LC&I)	14,603	14,153	12,643	10,018	10,425	10,603	12,654	11,450	9,964	10,328	12,755	14,713	144,309
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	14,882	14,418	12,912	10,216	10,692	10,828	12,887	11,667	10,175	10,544	12,996	14,996	147,213
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	14,934	14,470	12,952	10,238	10,706	10,836	12,896	11,674	10,184	10,559	13,027	15,043	147,519
Total Requirements (Energy + Losses)	16,151	15,649	14,007	11,072	11,578	11,719	13,947	12,625	11,014	11,419	14,088	16,269	159,538
# of Large Comm & Ind Customers	111	110	111	111	111	111	111	112	111	112	111	111	111
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.7	24.7	23.3	19.3	17.5	26.1	28.4	27.5	24.0	20.4	22.6	26.5	28.4

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2031**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,159.2	1,106.3	967.5	758.0	727.2	780.4	969.7	850.4	680.8	721.2	933.3	1,130.5	10,783.4
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,418	7,079	6,189	4,854	4,659	5,000	6,213	5,445	4,358	4,607	5,962	7,209	68,993
Use per Small Comm & Ind Customer - kWh	2,076.0	2,073.4	1,794.0	1,349.2	1,370.4	1,345.1	1,594.6	1,444.2	1,272.4	1,349.4	1,722.7	2,045.0	19,417.1
# of Small Comm & Ind Customers	1,948	1,947	1,947	1,959	1,976	1,982	1,983	1,979	1,979	1,966	1,958	1,955	1,965
Total Small Comm & Ind Sales - MWh	4,044	4,037	3,493	2,643	2,708	2,666	3,162	2,858	2,518	2,653	3,373	3,998	38,153
Large Comm & Ind Sales	3,264	3,156	3,069	2,609	3,153	3,031	3,389	3,249	3,176	3,160	3,532	3,634	38,422
Total Sales (Residential, SC&I and LC&I)	14,726	14,272	12,751	10,106	10,520	10,697	12,764	11,552	10,052	10,420	12,867	14,841	145,568
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	15,005	14,537	13,020	10,304	10,787	10,922	12,997	11,769	10,263	10,636	13,108	15,124	148,472
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	15,057	14,589	13,060	10,326	10,801	10,930	13,006	11,776	10,272	10,651	13,139	15,171	148,778
Total Requirements (Energy + Losses)	16,284	15,778	14,124	11,167	11,681	11,820	14,066	12,735	11,109	11,519	14,209	16,407	160,899
# of Large Comm & Ind Customers	112	111	112	112	112	112	112	113	112	113	112	112	112
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	27.9	24.9	23.4	19.5	17.7	26.5	28.8	27.9	24.3	20.7	22.8	26.7	28.8

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2032**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,168.2	1,114.9	975.0	763.7	732.6	786.5	977.4	856.9	686.3	726.8	940.4	1,139.1	10,866.7
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,475	7,134	6,237	4,891	4,694	5,039	6,262	5,487	4,393	4,643	6,007	7,264	69,526
Use per Small Comm & Ind Customer - kWh	2,077.7	2,075.2	1,796.0	1,350.1	1,371.3	1,346.6	1,595.1	1,445.7	1,273.6	1,350.9	1,724.5	2,046.8	19,434.1
# of Small Comm & Ind Customers	1,957	1,956	1,956	1,968	1,985	1,991	1,993	1,988	1,988	1,975	1,967	1,964	1,974
Total Small Comm & Ind Sales - MWh	4,066	4,059	3,513	2,657	2,722	2,681	3,179	2,874	2,532	2,668	3,392	4,020	38,363
Large Comm & Ind Sales	3,310	3,200	3,113	2,646	3,198	3,074	3,437	3,295	3,221	3,206	3,583	3,685	38,968
Total Sales (Residential, SC&I and LC&I)	14,851	14,393	12,863	10,194	10,614	10,794	12,878	11,656	10,146	10,517	12,982	14,969	146,857
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	15,130	14,658	13,132	10,392	10,881	11,019	13,111	11,873	10,357	10,733	13,223	15,252	149,761
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	15,182	14,710	13,172	10,414	10,895	11,027	13,120	11,880	10,366	10,748	13,254	15,299	150,067
Total Requirements (Energy + Losses)	16,419	15,908	14,245	11,262	11,783	11,925	14,189	12,848	11,211	11,624	14,334	16,545	162,293
# of Large Comm & Ind Customers	112	111	112	112	112	112	112	113	112	113	112	112	112
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	28.2	25.2	23.7	19.7	17.9	26.7	29.0	28.1	24.5	20.8	23.0	26.9	29.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

SOUTH DAKOTA **YEAR 2033**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,177.1	1,123.3	982.3	769.5	738.3	792.6	984.9	863.5	691.5	732.5	947.7	1,147.9	10,949.8
# of Residential Customers	6,399	6,399	6,397	6,404	6,407	6,407	6,407	6,403	6,401	6,388	6,388	6,377	6,398
Total Residential Sales - MWh	7,532	7,188	6,284	4,928	4,730	5,078	6,310	5,529	4,426	4,679	6,054	7,320	70,058
Use per Small Comm & Ind Customer - kWh	2,080.9	2,078.4	1,798.4	1,352.2	1,373.3	1,348.2	1,597.7	1,447.9	1,275.6	1,352.5	1,726.6	2,049.7	19,462.2
# of Small Comm & Ind Customers	1,965	1,964	1,964	1,976	1,993	1,999	2,001	1,996	1,996	1,983	1,975	1,972	1,982
Total Small Comm & Ind Sales - MWh	4,089	4,082	3,532	2,672	2,737	2,695	3,197	2,890	2,546	2,682	3,410	4,042	38,574
Large Comm & Ind Sales	3,356	3,245	3,156	2,683	3,242	3,117	3,486	3,341	3,266	3,250	3,631	3,736	39,509
Total Sales (Residential, SC&I and LC&I)	14,977	14,515	12,972	10,283	10,709	10,890	12,993	11,760	10,238	10,611	13,095	15,098	148,141
Other Public Sales	161	158	159	111	166	137	141	126	116	119	139	163	1,696
Street & Highway Lighting Sales	118	107	110	87	101	88	92	91	95	97	102	120	1,208
Interdepartmental Sales	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Billed Sales - MWh	15,256	14,780	13,241	10,481	10,976	11,115	13,226	11,977	10,449	10,827	13,336	15,381	151,045
Company Use	52	52	40	22	14	8	9	7	9	15	31	47	306
Total Energy	15,308	14,832	13,281	10,503	10,990	11,123	13,235	11,984	10,458	10,842	13,367	15,428	151,351
Total Requirements (Energy + Losses)	16,555	16,040	14,363	11,359	11,885	12,029	14,313	12,960	11,310	11,725	14,456	16,685	163,680
# of Large Comm & Ind Customers	113	112	113	113	113	113	113	114	113	114	113	113	113
# of Other Public Customers	47	47	47	48	48	48	48	48	49	48	48	48	48
# of Street & Highway Lighting Customers	12	24	24	24	24	24	24	24	24	25	25	25	23
Peak Demand Net of Energy Efficiency Progs	28.4	25.3	23.8	19.8	18.1	27.0	29.4	28.5	24.8	21.1	23.2	27.2	29.4

APPENDIX G

Monthly Forecasts – Integrated System (2024-2033)

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2024**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,066.3	994.9	884.9	700.1	642.6	735.2	906.0	830.1	646.1	672.2	844.5	1,013.3	9,936.5
# of Residential Customers	105,541	105,556	105,532	105,526	105,465	105,468	105,495	105,507	105,494	105,510	105,565	105,571	105,519
Total Residential Sales - MWh	112,540	105,021	93,384	73,875	67,769	77,544	95,576	87,577	68,164	70,921	89,149	106,972	1,048,492
Use per Small Comm & Ind Customer - kWh	3,565.2	3,428.3	3,297.7	2,710.7	2,591.3	2,702.6	3,111.2	3,032.8	2,718.8	2,769.7	3,072.8	3,458.8	36,446.1
# of Small Comm & Ind Customers	19,422	19,412	19,423	19,517	19,631	19,676	19,683	19,692	19,670	19,589	19,541	19,537	19,566
Total Small Comm & Ind Sales - MWh	69,243	66,550	64,051	52,904	50,870	53,177	61,238	59,721	53,478	54,255	60,045	67,575	713,107
Large Comm & Ind Sales	102,640	95,900	101,011	90,004	93,166	90,059	99,845	98,257	95,225	96,297	97,144	102,547	1,162,095
Total Sales (Residential, SC&I and LC&I)	284,423	267,471	258,446	216,783	211,805	220,780	256,659	245,555	216,867	221,473	246,338	277,094	2,923,694
Other Public Sales	643	633	657	553	638	770	885	844	693	572	590	647	8,125
Street & Highway Lighting Sales	4,523	4,328	4,540	4,176	4,599	4,826	5,267	5,126	4,511	4,251	4,199	4,542	54,888
Interdepartmental Sales	1,386	1,207	1,238	1,076	1,009	930	972	1,009	1,070	1,178	1,276	1,428	13,779
Total Billed Sales - MWh	290,975	273,639	264,881	222,588	218,051	227,306	263,783	252,534	223,141	227,474	252,403	283,711	3,000,486
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	291,565	274,196	265,452	223,065	218,508	227,770	264,316	253,038	223,598	227,935	252,902	284,287	3,006,632
Total Requirements (Energy + Losses)	315,336	296,552	287,094	241,253	236,321	246,336	285,862	273,664	241,826	246,518	273,520	307,465	3,251,747
# of Large Comm & Ind Customers	1,557	1,554	1,556	1,559	1,562	1,562	1,561	1,560	1,557	1,553	1,552	1,549	1,557
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	570.3	523.1	484.7	430.5	389.2	517.3	572.8	550.3	475.6	436.2	466.9	531.6	572.8

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2025**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,067.4	996.0	885.8	700.8	643.2	736.0	906.9	830.9	646.8	672.9	845.4	1,015.8	9,948.4
# of Residential Customers	105,691	105,706	105,682	105,676	105,614	105,617	105,645	105,657	105,644	105,660	105,715	105,722	105,669
Total Residential Sales - MWh	112,816	105,279	93,614	74,055	67,935	77,737	95,813	87,795	68,334	71,097	89,370	107,393	1,051,238
Use per Small Comm & Ind Customer - kWh	3,557.9	3,421.3	3,290.9	2,705.0	2,586.0	2,697.1	3,104.8	3,026.5	2,713.4	2,764.0	3,066.4	3,450.1	36,369.8
# of Small Comm & Ind Customers	19,560	19,550	19,561	19,656	19,770	19,816	19,823	19,832	19,809	19,728	19,680	19,675	19,705
Total Small Comm & Ind Sales - MWh	69,593	66,886	64,373	53,169	51,126	53,446	61,547	60,022	53,749	54,528	60,347	67,880	716,666
Large Comm & Ind Sales	103,059	96,298	101,421	90,366	93,544	90,434	100,263	98,666	95,613	96,685	97,543	102,951	1,166,843
Total Sales (Residential, SC&I and LC&I)	285,468	268,463	259,408	217,590	212,605	221,617	257,623	246,483	217,696	222,310	247,260	278,224	2,934,747
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	292,036	274,647	265,858	223,408	218,862	228,153	264,758	253,472	223,980	228,323	253,339	284,857	3,011,693
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	292,626	275,204	266,429	223,885	219,319	228,617	265,291	253,976	224,437	228,784	253,838	285,433	3,017,839
Total Requirements (Energy + Losses)	316,466	297,625	288,134	242,125	237,187	247,243	286,905	274,668	242,722	247,423	274,517	308,686	3,263,701
# of Large Comm & Ind Customers	1,568	1,565	1,567	1,570	1,573	1,573	1,572	1,571	1,568	1,564	1,563	1,560	1,568
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	569.3	522.2	483.9	429.8	391.7	520.5	576.3	553.6	478.5	438.9	468.7	533.6	576.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2026**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,070.9	999.2	888.7	703.1	645.3	738.4	909.8	833.6	648.9	675.1	848.1	1,019.1	9,980.4
# of Residential Customers	105,841	105,856	105,832	105,826	105,764	105,767	105,795	105,807	105,794	105,810	105,865	105,872	105,819
Total Residential Sales - MWh	113,344	105,771	94,051	74,401	68,254	78,094	96,251	88,197	68,650	71,428	89,786	107,894	1,056,121
Use per Small Comm & Ind Customer - kWh	3,547.9	3,411.7	3,281.8	2,697.5	2,579.0	2,689.8	3,096.5	3,018.4	2,705.6	2,756.4	3,058.0	3,442.3	36,271.4
# of Small Comm & Ind Customers	19,698	19,688	19,698	19,794	19,908	19,954	19,961	19,970	19,949	19,866	19,818	19,813	19,843
Total Small Comm & Ind Sales - MWh	69,886	67,170	64,645	53,395	51,342	53,673	61,809	60,278	53,975	54,758	60,603	68,202	719,736
Large Comm & Ind Sales	103,463	96,677	101,814	90,714	93,910	90,791	100,661	99,054	95,984	97,057	97,927	103,400	1,171,452
Total Sales (Residential, SC&I and LC&I)	286,693	269,618	260,510	218,510	213,506	222,558	258,721	247,529	218,609	223,243	248,316	279,496	2,947,309
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	293,261	275,802	266,960	224,328	219,763	229,094	265,856	254,518	224,893	229,256	254,395	286,129	3,024,255
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	293,851	276,359	267,531	224,805	220,220	229,558	266,389	255,022	225,350	229,717	254,894	286,705	3,030,401
Total Requirements (Energy + Losses)	317,791	298,874	289,327	243,120	238,162	248,260	288,091	275,799	243,709	248,433	275,660	310,062	3,277,288
# of Large Comm & Ind Customers	1,581	1,578	1,580	1,583	1,586	1,586	1,585	1,584	1,581	1,577	1,576	1,573	1,581
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	571.4	524.2	485.8	431.5	394.2	523.8	580.0	557.1	481.6	441.7	470.6	535.8	580.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2027**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,074.3	1,002.4	891.5	705.3	647.4	740.7	912.7	836.2	651.0	677.2	850.8	1,022.4	10,012.4
# of Residential Customers	105,991	106,006	105,981	105,976	105,914	105,917	105,945	105,957	105,944	105,960	106,016	106,022	105,969
Total Residential Sales - MWh	113,871	106,263	94,487	74,745	68,573	78,451	96,691	88,601	68,965	71,758	90,202	108,393	1,061,000
Use per Small Comm & Ind Customer - kWh	3,541.5	3,405.4	3,275.7	2,692.4	2,574.2	2,684.9	3,090.9	3,012.5	2,700.7	2,751.3	3,052.2	3,433.5	36,201.8
# of Small Comm & Ind Customers	19,833	19,823	19,834	19,931	20,045	20,091	20,098	20,109	20,086	20,003	19,955	19,950	19,980
Total Small Comm & Ind Sales - MWh	70,238	67,506	64,971	53,663	51,600	53,943	62,120	60,579	54,246	55,034	60,907	68,499	723,306
Large Comm & Ind Sales	103,933	97,120	102,273	91,121	94,333	91,209	101,125	99,510	96,417	97,492	98,374	103,819	1,176,726
Total Sales (Residential, SC&I and LC&I)	288,042	270,889	261,731	219,529	214,506	223,603	259,936	248,690	219,628	224,284	249,483	280,711	2,961,032
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	294,610	277,073	268,181	225,347	220,763	230,139	267,071	255,679	225,912	230,297	255,562	287,344	3,037,978
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	295,200	277,630	268,752	225,824	221,220	230,603	267,604	256,183	226,369	230,758	256,061	287,920	3,044,124
Total Requirements (Energy + Losses)	319,250	300,248	290,646	244,222	239,243	249,390	289,406	277,054	244,811	249,558	276,922	311,377	3,292,127
# of Large Comm & Ind Customers	1,593	1,590	1,592	1,595	1,598	1,598	1,597	1,596	1,593	1,589	1,588	1,585	1,593
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	573.8	526.4	487.7	433.2	396.9	527.2	583.8	560.8	484.8	444.6	472.9	538.4	583.8

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2028**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,077.8	1,005.6	894.4	707.6	649.5	743.0	915.5	838.8	653.0	679.4	853.6	1,025.6	10,044.2
# of Residential Customers	106,141	106,156	106,131	106,126	106,064	106,067	106,095	106,107	106,094	106,110	106,166	106,172	106,119
Total Residential Sales - MWh	114,398	106,754	94,924	75,091	68,893	78,810	97,131	89,003	69,281	72,089	90,619	108,892	1,065,885
Use per Small Comm & Ind Customer - kWh	3,531.3	3,395.9	3,266.3	2,684.9	2,566.9	2,677.2	3,082.0	3,004.2	2,693.0	2,743.5	3,043.6	3,425.9	36,101.3
# of Small Comm & Ind Customers	19,969	19,958	19,970	20,066	20,182	20,229	20,236	20,245	20,223	20,139	20,091	20,087	20,116
Total Small Comm & Ind Sales - MWh	70,517	67,775	65,228	53,875	51,805	54,157	62,367	60,820	54,461	55,251	61,149	68,817	726,222
Large Comm & Ind Sales	104,307	97,473	102,635	91,441	94,671	91,540	101,496	99,870	96,761	97,838	98,731	104,257	1,181,020
Total Sales (Residential, SC&I and LC&I)	289,222	272,002	262,787	220,407	215,369	224,507	260,994	249,693	220,503	225,178	250,499	281,966	2,973,127
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	295,790	278,186	269,237	226,225	221,626	231,043	268,129	256,682	226,787	231,191	256,578	288,599	3,050,073
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	296,380	278,743	269,808	226,702	222,083	231,507	268,662	257,186	227,244	231,652	257,077	289,175	3,056,219
Total Requirements (Energy + Losses)	320,526	301,452	291,790	245,171	240,176	250,368	290,551	278,139	245,758	250,525	278,022	312,734	3,305,212
# of Large Comm & Ind Customers	1,605	1,602	1,604	1,607	1,610	1,610	1,609	1,608	1,605	1,601	1,600	1,597	1,605
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	576.5	528.9	490.1	435.3	399.4	530.5	587.5	564.3	487.8	447.4	474.8	540.6	587.5

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2029**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,081.2	1,008.8	897.3	709.8	651.6	745.3	918.3	841.4	655.1	681.5	856.3	1,028.9	10,076.0
# of Residential Customers	106,291	106,306	106,281	106,276	106,214	106,217	106,245	106,257	106,244	106,260	106,316	106,322	106,269
Total Residential Sales - MWh	114,925	107,246	95,361	75,435	69,211	79,165	97,568	89,406	69,597	72,420	91,036	109,393	1,070,763
Use per Small Comm & Ind Customer - kWh	3,524.8	3,389.3	3,260.3	2,679.8	2,562.0	2,672.3	3,076.3	2,998.4	2,687.9	2,738.3	3,037.8	3,417.6	36,031.4
# of Small Comm & Ind Customers	20,106	20,097	20,107	20,205	20,321	20,368	20,375	20,385	20,363	20,278	20,230	20,226	20,255
Total Small Comm & Ind Sales - MWh	70,870	68,115	65,555	54,145	52,063	54,429	62,680	61,123	54,733	55,528	61,455	69,124	729,820
Large Comm & Ind Sales	104,783	97,922	103,102	91,853	95,103	91,965	101,969	100,333	97,201	98,279	99,185	104,696	1,186,391
Total Sales (Residential, SC&I and LC&I)	290,578	273,283	264,018	221,433	216,377	225,559	262,217	250,862	221,531	226,227	251,676	283,213	2,986,974
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	297,146	279,467	270,468	227,251	222,634	232,095	269,352	257,851	227,815	232,240	257,755	289,846	3,063,920
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	297,736	280,024	271,039	227,728	223,091	232,559	269,885	258,355	228,272	232,701	258,254	290,422	3,070,066
Total Requirements (Energy + Losses)	321,992	302,837	293,121	246,281	241,266	251,506	291,873	279,404	246,870	251,659	279,294	314,083	3,320,186
# of Large Comm & Ind Customers	1,617	1,614	1,616	1,619	1,622	1,622	1,621	1,621	1,617	1,614	1,612	1,609	1,617
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	578.9	531.0	492.1	437.0	401.9	533.9	591.2	567.9	491.0	450.2	476.8	543.0	591.2

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2030**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,084.7	1,012.1	900.1	712.1	653.7	747.6	921.2	844.0	657.1	683.7	859.0	1,034.4	10,110.0
# of Residential Customers	106,441	106,456	106,431	106,426	106,364	106,367	106,395	106,407	106,394	106,410	106,466	106,472	106,419
Total Residential Sales - MWh	115,454	107,739	95,798	75,781	69,530	79,523	98,008	89,809	69,914	72,752	91,454	110,136	1,075,898
Use per Small Comm & Ind Customer - kWh	3,515.8	3,380.6	3,251.8	2,673.0	2,555.6	2,665.5	3,068.5	2,991.0	2,681.2	2,731.3	3,030.0	3,410.6	35,941.4
# of Small Comm & Ind Customers	20,242	20,233	20,244	20,341	20,458	20,505	20,512	20,522	20,500	20,415	20,367	20,363	20,392
Total Small Comm & Ind Sales - MWh	71,167	68,400	65,829	54,371	52,282	54,656	62,942	61,381	54,964	55,759	61,711	69,450	732,912
Large Comm & Ind Sales	105,199	98,313	103,505	92,211	95,477	92,330	102,374	100,730	97,582	98,661	99,578	105,142	1,191,102
Total Sales (Residential, SC&I and LC&I)	291,820	274,452	265,132	222,363	217,289	226,509	263,324	251,920	222,460	227,172	252,743	284,728	2,999,912
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	298,388	280,636	271,582	228,181	223,546	233,045	270,459	258,909	228,744	233,185	258,822	291,361	3,076,858
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	298,978	281,193	272,153	228,658	224,003	233,509	270,992	259,413	229,201	233,646	259,321	291,937	3,083,004
Total Requirements (Energy + Losses)	323,336	304,102	294,325	247,287	242,252	252,533	293,070	280,547	247,874	252,681	280,448	315,721	3,334,176
# of Large Comm & Ind Customers	1,629	1,626	1,628	1,631	1,634	1,634	1,633	1,633	1,629	1,626	1,624	1,621	1,629
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	581.5	533.4	494.3	439.0	404.5	537.4	595.0	571.7	494.1	453.2	478.9	545.2	595.0

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2031**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,091.7	1,018.6	905.9	716.6	657.9	752.4	927.0	849.3	661.3	688.1	864.5	1,041.0	10,174.6
# of Residential Customers	106,590	106,606	106,581	106,576	106,514	106,517	106,545	106,557	106,544	106,560	106,616	106,623	106,569
Total Residential Sales - MWh	116,361	108,585	96,550	76,375	70,080	80,139	98,763	90,503	70,456	73,321	92,170	110,996	1,084,299
Use per Small Comm & Ind Customer - kWh	3,509.5	3,374.7	3,246.2	2,668.2	2,551.2	2,660.8	3,063.2	2,985.7	2,676.3	2,726.5	3,024.6	3,404.8	35,878.6
# of Small Comm & Ind Customers	20,380	20,370	20,380	20,479	20,596	20,644	20,651	20,661	20,639	20,553	20,505	20,500	20,530
Total Small Comm & Ind Sales - MWh	71,524	68,743	66,158	54,643	52,544	54,930	63,258	61,688	55,237	56,038	62,020	69,798	736,581
Large Comm & Ind Sales	105,653	98,743	103,948	92,604	95,887	92,735	102,823	101,170	98,002	99,081	100,012	105,619	1,196,277
Total Sales (Residential, SC&I and LC&I)	293,538	276,071	266,656	223,622	218,511	227,804	264,844	253,361	223,695	228,440	254,202	286,413	3,017,157
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	300,106	282,255	273,106	229,440	224,768	234,340	271,979	260,350	229,979	234,453	260,281	293,046	3,094,103
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	300,696	282,812	273,677	229,917	225,225	234,804	272,512	260,854	230,436	234,914	260,780	293,622	3,100,249
Total Requirements (Energy + Losses)	325,194	305,853	295,973	248,648	243,575	253,933	294,714	282,105	249,210	254,053	282,025	317,543	3,352,826
# of Large Comm & Ind Customers	1,642	1,639	1,641	1,644	1,647	1,647	1,646	1,646	1,642	1,639	1,637	1,634	1,642
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	583.9	535.7	496.4	440.8	407.3	541.3	599.3	575.8	497.7	456.5	481.7	548.5	599.3

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2032**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,098.6	1,025.1	911.7	721.2	662.1	757.1	932.8	854.6	665.5	692.4	870.0	1,047.6	10,239.0
# of Residential Customers	106,740	106,756	106,731	106,726	106,664	106,667	106,695	106,707	106,694	106,710	106,766	106,773	106,719
Total Residential Sales - MWh	117,268	109,431	97,302	76,968	70,627	80,753	99,520	91,196	71,000	73,891	92,885	111,857	1,092,698
Use per Small Comm & Ind Customer - kWh	3,503.7	3,368.9	3,240.7	2,663.9	2,546.9	2,656.5	3,058.1	2,980.9	2,672.1	2,722.0	3,019.6	3,399.1	35,819.3
# of Small Comm & Ind Customers	20,516	20,507	20,517	20,615	20,733	20,781	20,789	20,798	20,776	20,690	20,642	20,637	20,667
Total Small Comm & Ind Sales - MWh	71,881	69,087	66,490	54,917	52,805	55,205	63,574	61,997	55,515	56,319	62,331	70,147	740,268
Large Comm & Ind Sales	106,141	99,201	104,424	93,025	96,328	93,168	103,305	101,642	98,450	99,534	100,476	106,110	1,201,804
Total Sales (Residential, SC&I and LC&I)	295,290	277,719	268,216	224,910	219,760	229,126	266,399	254,835	224,965	229,744	255,692	288,114	3,034,770
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	301,858	283,903	274,666	230,728	226,017	235,662	273,534	261,824	231,249	235,757	261,771	294,747	3,111,716
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	302,448	284,460	275,237	231,205	226,474	236,126	274,067	262,328	231,706	236,218	262,270	295,323	3,117,862
Total Requirements (Energy + Losses)	327,088	307,634	297,661	250,041	244,925	255,362	296,396	283,700	250,583	255,463	283,637	319,383	3,371,873
# of Large Comm & Ind Customers	1,653	1,650	1,652	1,655	1,658	1,658	1,657	1,657	1,653	1,650	1,648	1,645	1,653
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	587.3	538.9	499.3	443.4	410.3	545.2	603.5	579.8	501.2	459.7	484.4	551.6	603.5

MONTHLY FORECASTS
SALES AND ENERGY (MWH)
PEAK DEMAND (MW)

INTEGRATED SYSTEM **YEAR 2033**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Use per Residential Customer - kWh	1,105.6	1,031.5	917.4	725.7	666.4	761.8	938.5	859.9	669.6	696.8	875.5	1,054.2	10,303.3
# of Residential Customers	106,890	106,906	106,881	106,876	106,814	106,817	106,845	106,857	106,844	106,860	106,917	106,923	106,869
Total Residential Sales - MWh	118,175	110,277	98,052	77,562	71,176	81,369	100,275	91,890	71,543	74,462	93,603	112,716	1,101,100
Use per Small Comm & Ind Customer - kWh	3,497.8	3,363.5	3,235.3	2,659.4	2,542.8	2,652.1	3,053.2	2,975.8	2,667.7	2,717.4	3,014.4	3,393.4	35,759.6
# of Small Comm & Ind Customers	20,653	20,643	20,654	20,753	20,871	20,920	20,927	20,938	20,914	20,829	20,781	20,775	20,805
Total Small Comm & Ind Sales - MWh	72,241	69,432	66,822	55,191	53,071	55,481	63,894	62,308	55,792	56,600	62,643	70,498	743,973
Large Comm & Ind Sales	106,629	99,662	104,900	93,447	96,768	93,601	103,790	102,115	98,901	99,985	100,940	106,607	1,207,345
Total Sales (Residential, SC&I and LC&I)	297,045	279,371	269,774	226,200	221,015	230,451	267,959	256,313	226,236	231,047	257,186	289,821	3,052,418
Other Public Sales	4,749	4,585	4,814	4,394	4,926	5,284	5,843	5,666	4,892	4,510	4,463	4,764	58,890
Street & Highway Lighting Sales	1,789	1,570	1,609	1,401	1,312	1,232	1,271	1,305	1,373	1,482	1,591	1,840	17,775
Interdepartmental Sales	30	29	27	23	19	20	21	18	19	21	25	29	281
Total Billed Sales - MWh	303,613	285,555	276,224	232,018	227,272	236,987	275,094	263,302	232,520	237,060	263,265	296,454	3,129,364
Company Use	590	557	571	477	457	464	533	504	457	461	499	576	6,146
Total Energy	304,203	286,112	276,795	232,495	227,729	237,451	275,627	263,806	232,977	237,521	263,764	297,030	3,135,510
Total Requirements (Energy + Losses)	328,986	309,421	299,346	251,436	246,282	256,795	298,082	285,298	251,958	256,871	285,253	321,229	3,390,957
# of Large Comm & Ind Customers	1,667	1,664	1,666	1,669	1,672	1,672	1,671	1,671	1,667	1,664	1,661	1,659	1,667
# of Other Public Customers	704	704	704	708	709	708	707	707	707	703	700	697	705
# of Street & Highway Lighting Customers	632	644	644	644	644	646	647	649	651	656	659	661	648
Peak Demand Net of Energy Efficiency Progs	590.7	541.9	502.2	445.9	413.1	549.0	607.8	583.9	504.8	463.0	487.2	554.8	607.8