DOCKET NO. _____

APPLICATION OF SOUTHWESTERN PUBLIC SERVICE COMPANY FOR AUTHORITY TO CHANGE RATES	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

DIRECT TESTIMONY
of
JANNELL E. MARKS

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

(Filename: MarksRDDirect.doc)

Table of Contents

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
Census Class	Customer class in which all customers have IDR meters
Commission	Public Utility Commission of Texas
DW	Durbin-Watson
Golden Spread	Golden Spread Electric Cooperative, Inc.
IDR	Interval Demand Recorder
kW	Kilowatt
kWh	Kilowatt-hour
MW	Megawatt
MWh	Megawatt-hour
NCE	New Century Energies, Inc.
NOAA	National Oceanic and Atmospheric Administration
Non-census Class	Customer class in which not all customers have IDRs
NSPM	Northern States Power Company, a Minnesota corporation
NSPW	Northern States Power Company, a Wisconsin corporation
Operating Companies	NSPM, NSPW, PSCo, and SPS
PSCo	Public Service Company of Colorado, a Colorado corporation
R^2 statistic	Coefficient of determination
RFP	Rate Filing Package

Acronym/Defined Term	Meaning
SPS	Southwestern Public Service Company, a New Mexico corporation
Test Year	April 1, 2018 through March 31, 2019
Update Period	April 1, 2019 through June 30, 2019
Updated Test Year	July 1, 2018 through June 30, 2019
Xcel Energy	Xcel Energy Inc.

LIST OF ATTACHMENTS

Attachment	Description
JEM-RD-1	Weather Normalization of Test Year and Updated Test Year Sales (*Filename:* JEM-RD-1.xlsx)
JEM-RD-2	Weather Normalization of Test Year and Updated Test Year Sales Wholesale and New Mexico (*Filename:* JEM-RD-2.xlsx)
JEM-RD-3	Weather Normalization of Test Year and Updated Test Year Peak Demand (*Filename:* JEM-RD-3.xlsx)

DIRECT TESTIMONY
OF
JANNELL E. MARKS

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Jannell E. Marks. My business address is 1800 Larimer Street, Denver, Colorado 80202.

Q. On whose behalf are you testifying in this proceeding?

A. I am filing testimony on behalf of Southwestern Public Service Company, a New Mexico corporation ("SPS") and wholly-owned electric utility subsidiary of Xcel Energy Inc. ("Xcel Energy").

Q. By whom are you employed and in what position?

A. I am employed by Xcel Energy Services Inc., the service company subsidiary of Xcel Energy, as Director of Sales, Energy and Demand Forecasting.

Q. Please briefly outline your responsibilities as Director of Sales, Energy and Demand Forecasting.

A. I am responsible for the development of forecasted customer, sales, and peak demand data and economic conditions for the Xcel Energy Operating Companies, and for the presentation of this information to Xcel Energy's senior management, other Xcel Energy departments, and various regulatory and reporting agencies. I also am responsible for Xcel Energy's Load Research function, which designs, maintains, monitors, and analyzes electric load research samples in the Xcel Energy Operating Companies' service territories. Finally, I am responsible for developing and implementing forecasting, planning, and load analysis studies for regulatory proceedings.

Q. Please describe your educational background.

A. I graduated from Colorado State University with a Bachelor of Science degree in Statistics.

Q. Please describe your professional experience.

A. I began my employment with Public Service Company of Colorado, a Colorado corporation ("PSCo") in 1982 in the Economics and Forecasting Department. In 1985, I became a Research Analyst, and, in 1991, I was promoted to Senior Research Analyst. In that position, I was responsible for developing the customer and sales forecasts for PSCo and the economic, customer, sales, and demand forecasts for Cheyenne Light, Fuel and Power Company. In 1997, when PSCo merged with SPS to form New Century Energies, Inc. ("NCE"), I assumed the position of Manager, Demand, Energy and Customer Forecasts. In that position, I was responsible for developing demand, energy, and customer forecasts for NCE's operating companies, including SPS. I also directed the preparation of statistical reporting for regulatory agencies and others regarding historical and forecasted reports. In August 2000, following the merger of NCE and Northern States Power Company that created Xcel Energy, I was named Manager, Energy Forecasting, with the added responsibility for Northern States Power Company—Minnesota ("NSPM") and Northern States Power Company—Wisconsin ("NSPW"). I assumed my current position in February 2007, with the added responsibility for the Operating Companies' load research function.

Q. Have you attended or taken any special courses or seminars relating to public utilities?

A. Yes. I have attended the Institute for Professional Education's Economic Modeling and Forecasting class and Itron's Load Forecasting Workshops. I have also attended industry forecasting conferences and forecasting software user group meetings and training classes sponsored by the Electric Power Research Institute. I am a member of Itron's Energy Forecasting Group and Edison Electric Institute's Load Forecasting Group. Membership in these groups helps me to stay up-to-date on industry standards in load research and energy forecasting (including weather normalization).

Q. Have you testified before any regulatory authorities?

A. Yes. I have testified before the Public Utility Commission of Texas ("Commission"), the Colorado Public Utilities Commission, the Minnesota Public Utilities Commission, the New Mexico Public Regulation Commission, the North Dakota Public Service Commission, and the Public Service Commission of Wisconsin on the issues of load research, sales and demand forecasts, weather normalization of sales and demand, and other related topics. I also have submitted written testimony to the South Dakota Public Utilities Commission.

II. ASSIGNMENT AND SUMMARY OF TESTIMONY AND RECOMMENDATIONS

Q. What is your assignment in this proceeding?

A. The purpose of my testimony is to explain the function of load research as it is used in this proceeding, and to explain how SPS adjusts sales and demand for the period July 1, 2018 through June 30, 2019 ("Updated Test Year") to minimize the impact of abnormal weather patterns experienced during the Updated Test Year on the sales and demand used to set rates for the future.

To explain the purpose of load research and the weather normalization adjustment, I:

1. describe SPS's load research function and the load research information that is used for cost allocation and rate design in this proceeding;

2. explain the methodology that SPS undertakes to measure normal weather and to adjust both sales and demand that have been affected by abnormal weather during the Updated Test Year to determine the sales and demand for the Updated Test Year;[1] and

3. discuss the process by which SPS forecasts information required for Schedule O-7.1 of the Rate Filing Package ("RFP").

In addition, I sponsor or co-sponsor the RFP schedules discussed in Section III of this testimony, as well as the portions of the Executive Summary that contain information from these schedules.

[1] The Test Year in this case is the period from April 1, 2018 through March 31, 2019, and the Update Period is April 1, 2019 through June 30, 2019. The Updated Test Year consists of the last nine months of the Test Year and the three months in the Update Period.

Q. Please provide a summary of conclusions and recommendations in your testimony.

A. **Load Research** – Load research is the systematic collection and analysis of customers' electrical energy and demand requirements. SPS uses information from Interval Demand Recorders ("IDR")[2] to determine the coincident and non-coincident peaks for all customer classes. For the "Census classes," which are customer classes in which all customers have IDRs, the IDR meters provide actual measurements of demand. However, it is costly and not feasible to install an IDR meter for every customer in every class. Therefore, for those customer classes in which not all customers have IDRs, which are referred to as the "non-Census classes," it is necessary to develop load research samples to estimate the coincident and non-coincident peaks for the classes.

Using information from the IDR meters for the Census classes and information from the load research samples for the non-Census classes, I have provided various load research statistics to SPS witnesses Richard M. Luth and Evan D. Evans, who incorporate those statistics in the class cost of service study and rate design they present. Specifically, I provided the class coincident and non-coincident peak demand for Census classes and the class coincident and non-coincident load factors at peak for the non-Census classes. I recommend the Commission approve those peak demands and load factors for purposes of allocating costs among classes and designing rates.

[2] IDRs are meters capable of recording loads for each interval of time.

Weather Normalization – SPS has calculated the effects of abnormal weather on Updated Test Year sales. Consistent with the Commission's decisions in Docket Nos. 40443[3] and 43695,[4] SPS used a 10-year average to define normal weather using the last 10 calendar years for which 12 months of data exists prior to the Test Year. Normal daily weather was based on the average of the last 10 years of historical heating degree days, cooling degree days, and precipitation data. The Updated Test Year heating degree days were 9.1% above normal; cooling degree days were 16.4% above normal; and precipitation was 20.7% below normal. SPS calculated the effects of abnormal weather on Updated Test Year sales for customer classes whose consumption patterns are affected by the weather using weather normalization regression coefficients and econometric models. The overall adjustment was a decrease of 121,802 megawatt-hours ("MWh") from the Updated Test Year sales. This amounts to 0.9% of total Texas retail sales and is the result of colder-than-normal winter weather combined with hotter- and dryer-than-normal summer weather. Similarly, SPS also calculated the effects of abnormal weather on the coincident peak demands in the Updated Test Year for total retail and aggregated full requirements wholesale. Taken together, the weather deviations resulted in an average of 15 megawatts ("MW") more retail peak demand per month and an average of 6 MW more full requirements

[3] *Application of Southwestern Electric Power Company for Authority to Change Rates and Reconcile Fuel Costs*, Docket No. 40443, Order on Rehearing (Mar. 6, 2014).

[4] *Application of Southwestern Public Service Company for Authority to Change Rates*, Docket No. 43695 (Dec. 18, 2015).

wholesale peak demand per month from June through September of the Updated Test Year.

SPS also calculated the effect of abnormal weather on Golden Spread Electric Cooperative, Inc.'s ("Golden Spread") full load peak demand coincident with the SPS system peak demand. The average weather adjustment for the Golden Spread full load peak demand coincident with the SPS system peak demand for the four months of June, July, August, and September of the Updated Test Year was 18 MW per month.

I provided the MWh and MW impacts of abnormal weather to Mr. Luth, who uses them to calculate present revenues and the allocation of production and transmission capacity costs among classes.

I explain the methodology that SPS uses to weather normalize monthly sales and demand amounts, as required by Schedule O-2 of the RFP. SPS's weather-impacted sales are developed using industry standard regression modeling techniques. SPS relies on a number of quantitative and qualitative tests to ensure that its regression models are statistically valid. Thus, SPS's estimates of weather normalized sales are reasonable and should be used to set rates in this proceeding.

I recommend that the Commission approve the adjusted sales and demand amounts resulting from the weather normalization discussed in this testimony.

Forecast Methodology – I explain the methodology that SPS uses to forecast the monthly sales and demand amounts, as required by Schedule O-7.1 of the RFP. Those monthly sales and demand forecasts are not used in the cost of service, but instead are provided merely to comply with Schedule O-7.1.

Q. Will your testimony and certain schedules you sponsor be updated to reflect data for the period from April 1, 2019 through June 30, 2019, the Update Period?

A. Yes. As explained by SPS witness William A. Grant**,** SPS will be using an Updated Test Year in this case to determine its revenue requirement. Specifically, in determining its proposed revenue requirement, SPS will replace the first three months of the Test Year (April 2018 – June 2018) with the three months of the "Update Period" (April 2019 – June 2019) to derive the "Updated Test Year." The use of an Updated Test Year necessarily requires that certain costs provided in SPS's Application will be based on estimates.

SPS will file an update no later than 45 days after filing its Application that will replace the Update Period estimates with actual numbers. As part of SPS's update filing, I will update my testimony to include the load research data and calculations used for cost allocation and rate design. I also will update my testimony to include the actual weather normalization adjustment for the Updated Test Year. I note that in the Update Filing, Mr. Luth will update the calculations that affect jurisdictional allocation, customer class cost allocation, and present revenues to reflect the actual billing determinants for the Update Period. At that time, the actual billing determinants for the Update Period will be adjusted by the weather normalization amounts that I will calculate for the Update Period.

Q. Were Attachments JEM-RD-1, JEM-RD-2 and JEM-RD-3 prepared by you or under your direct supervision and control?

A. Yes.

Q. Were the portions of the RFP schedules and the portions of the Executive Summary you sponsor or co-sponsor prepared by you or under your supervision and control?

A. Yes.

Q. Do you incorporate the RFP Schedules and portions of the Executive Summary sponsored or co-sponsored by you into this testimony?

A. Yes.

III. RATE FILING PACKAGE SCHEDULES

Q. Please list the RFP schedules that you sponsor or co-sponsor in this case.

A. I sponsor or co-sponsor the RFP schedules listed in Table JEM-RD-1:

Table JEM-RD-1

Schedule O	1.3, 1.4, 1.9, 2.1(CD), 2.2(V)(CD), 2.3(V)(CD), 7.1, 8.1, 8.2, 8.3, 8.4, 9.1(CD), 9.2(V)(CD), 9.3(V)(CD), 10.1, and 10.2
Schedule Q	5.1, 5.2, and 5.3

Q. Please list the RFP schedules that you will update as part of SPS's update filing.

A. As part of SPS's update filing, I will update the following schedules to reflect data for the Updated Test Year (i.e., July 1, 2018 through June 30, 2019):

- Schedule O – 1.3, 1.4, 1.9, 8.1, and 8.2; and
- Schedule Q – 5.1 and 5.2.

Q. What information is contained in the O-1 schedules that you sponsor?

A. The O-1 schedules that I sponsor contain the following information:

- Schedule O-1.3 contains unadjusted Test Year data by class for each month of the Test Year and estimates for the Update Period for coincident peaks at the source and at the meter, non-coincident peaks at the source and at the meter, energy sales at the source, energy sales by voltage level at the meter, and monthly class load factors and class coincident peak load factors based on load research for the Test Year and three previous years. I co-sponsor this schedule with Mr. Luth. For this schedule, I sponsor the underlying load research used to determine the coincident and non-coincident peaks.

- Schedule O-1.4 contains adjusted Test Year data by class for each month of the Test Year and estimates for the Update Period for coincident peaks at the source and at the meter, non-coincident peaks at the source and at the meter, energy sales at the source, energy sales by voltage level at the meter, and monthly class load factors and class coincident peak load factors based on load research for the Test Year and three previous years. I co-sponsor this schedule with Mr. Luth.

For this schedule, I sponsor the underlying load research and weather normalization calculations used to determine the coincident and non-coincident peaks presented.

- Schedule O-1.9 contains total system and Texas retail peak demand by class for the Test Year and for each month of the Test Year and estimates for the Update Period. I co-sponsor this schedule with Mr. Luth. For this schedule, I sponsor the underlying load research and weather normalization calculations used in determining the peak demands presented.

Q. What information is provided in the O-2 schedules that you sponsor?

A. The O-2 schedules contain information regarding the models used to derive adjustments to the Test Year and Updated Test Year operating statistics provided in Schedule O-1. The O-2 Schedules and Attachments JEM-RD-1, JEM-RD-2, and JEM-RD-3 together provide the work supporting SPS's weather normalization adjustments to energy sales and peak demand. I explain the process by which I derived the adjustments in Sections V and VI of this testimony.

Q. What information is provided in Schedule O-7.1?

A. Schedule O-7.1 contains the sales and demand forecasts for the rate year and 24 months following the rate year. I explain the process by which I derived the forecasts in Section VII of this testimony.

Q. What information is contained in the O-8 schedules?

A. The O-8 schedules contain the information needed to perform a weather normalization analysis:

- Schedule O-8.1 contains 12 years of monthly weather data by weather station, with calculations of actual heating degree days and cooling degree days through the current time period.

- Schedule O-8.2 contains the same information as is included in Schedule O-8.1, except the information has been weighted and adjusted for billing cycles.

- Schedule O-8.3 contains one year of normal heating degree days and normal cooling degree days.

- Schedule O-8.4 contains additional responses using a 65 degrees Fahrenheit base temperature.

Q. What information is provided in the O-9 schedules?

A. The O-9 schedules contain information regarding the models used to derive the sales and demand forecasts provided as part of Schedule O-7.1.

Q. What information is provided in the O-10 schedules you sponsor?

A. Schedule O-10.1 contains 15 years of information on customer counts, revenues from the sale of electricity, population, total employment, and total non-agricultural employment. Schedule O-10.2 provides 15 years of information on nominal personal income and real personal income.

Q. You stated earlier that you also sponsor the Q-5 schedules. Please explain what is included in those schedules.

A. The Q-5 schedules contain load research information for the Test Year and estimated information for the Update Period. Schedule Q-5.1 contains the sum of customer non-coincident maximum demand and class peak demand for the Census classes, whereas Schedule Q-5.2 contains specified load research data for non-Census classes. Schedule Q-5.3 contains a description of the method used to develop demand estimates, including the sources of the data. I co-sponsor Schedule Q-5.3 with Mr. Luth. For Schedule Q-5.3, I sponsor the description of the load research methodology and data.

IV. LOAD RESEARCH

Q. What is the purpose of load research?

A. Load research is the systematic collection and analysis of customers' electrical energy and demand requirements by time-of-day, month, season, and year. This data, which includes load research samples, is collected and analyzed by customer classes, stratums of customer classes, and other subsets of customer classes. Load research enables utilities to better understand customers, their consumption patterns, their consumption responses to various factors, and the impact of customers' energy requirements on the electric utility's system. In addition, load research data is used to develop demand and energy allocators for cost allocation studies and is used in designing rates.

Q. What are load research samples?

A. It is costly and not feasible to install IDR meters for all customers in all customer classes. Therefore, it is necessary for SPS to develop load research samples to determine the coincident and non-coincident peaks for certain classes. Load research samples are subsets of the entire population that SPS surveys to estimate the characteristics of the entire population. SPS's load research samples are developed using a stratified random sampling method. This technique divides the class of interest into smaller groups with like-characteristics. This method effectively reduces the overall variance of the class, thereby reducing the sample size. The samples are designed to meet or exceed the "90/10" load research standard specified by Federal Energy Regulatory Commission regulations implementing the Public Utilities Regulatory Policies Act of 1978.

> Accuracy Level. If sample metering is required, the sampling method and procedures for collecting, processing, and analyzing the sample loads, taken together, shall be designed so as to provide reasonably accurate data consistent with available technology and equipment. An accuracy of plus or minus 10 percent at the 90 percent confidence level shall be used as a target for the measurement of group loads at the time of system and customer group peaks.

While this no longer is a standard in the Code of Federal Regulations, it is still commonly used as the guideline for load research accuracy within the utility industry. Data validation is performed regularly on the load research samples to ensure that the energy use of the sample corresponds closely with the population energy use.

Q. Does SPS use load research samples to determine the demand of all its customer classes?

A. No. It is not necessary to conduct load research samples for customer classes in which all customers have IDR meters because the IDR meters provide actual measurements of demand. It also is not necessary to conduct load research samples for the Street Lighting and Area Lighting classes because lighting facilities are generally unmetered. Most of the customers with IDR meters are in the Large General Service-Transmission class, although some Primary General Service customers, including those with on-site generation, also have IDR meters. In addition, a few of the customers with individual rate schedules have IDR meters installed. As noted earlier, I refer to the classes in which all customers have IDR meters as "Census" classes. SPS uses the output of those IDR meters to determine the Census classes' demands for purposes of allocation, rate design, and billing.

Q. For which customer classes has SPS developed load research samples?

A. SPS develops load research samples for its non-Census classes throughout its service territory in both Texas and New Mexico. SPS developed load research samples for the following Texas retail customer classes:

- Residential Service;
- Residential Space Heating Service;[5]
- Large Municipal Service;
- Large School Service;
- Primary General Service;
- Secondary General Service;
- Small General Service; and
- Small Municipal and School Service.

Q. How does SPS go about performing the load research for the non-Census classes?

A. As I discussed earlier in my testimony, it is cost-prohibitive to install an IDR meter for every customer. Consequently, SPS installs IDR meters on a random sample of customers in each non-Census class (developed as I previously described). SPS then uses the electric usage data from those sample customers to extrapolate the demand data for the remainder of the class.

[5] Residential Space Heating Service currently is a closed optional rider, available through the Residential Service tariff, for customers who had previously taken service under a separate Residential Space Heating rate. Although it is not a separate customer class, it is broken out for load research and weather adjustment purposes in my analysis and throughout my testimony. It is my understanding, however, that Mr. Luth combined Residential Service and Residential Space Heating Service into one class for the development of system coincident peak demands and class peak demands.

Q. What load research statistics did you provide for SPS's cost allocation study and rate design?

A. For each SPS Census customer class, I provided the class coincident peak demand and non-coincident peak demand. For each SPS non-Census customer class, I provided: (1) the load factors at the time of the monthly system peak, which is the class coincident peak; and (2) the load factors at the time of the monthly class peak, which is the class non-coincident peak.

Q. Please define the terms "monthly system peak," "class coincident peak," "monthly class peak," and "class non-coincident peak."

A. The *monthly system peak* is the 60-minute interval in each month in which SPS's system experiences the highest demand, and each class's demand during that 60-minute interval is the *class coincident peak*. The *monthly class peak* is the 30-minute interval in each month in which a class experiences its highest demand. Unless the monthly class peak occurs during the same 60-minute interval as the monthly system peak, the monthly class peak is a *class non-coincident peak.*

Q. What is a load factor?

A. A load factor is the ratio of the average load in kilowatts ("kW") supplied during a designated period to the peak or maximum load in kW occurring in that period. For example, assume a customer used 10,000 kilowatt-hours ("kWh") during a 30-day period (720 hours) and had a maximum demand of 21 kW during this same period. The customer's average load would be 13.89 kW (10,000 kWh / 720 hours = 13.89 kW). Dividing that number by 21 kW leads to 0.66 (13.89 / 21 = 0.66). That is then multiplied by 100% to arrive at a load factor of 66%.

Q. How did you determine each non-Census class's peak load factor?

A. I derived each non-Census class's system peak load factor from load research samples.

Q. How did SPS use the non-Census class's load factors derived from your load research and the Census class's peak demand data?

A. I provided the non-Census class coincident and non-coincident load factors at peak and the Census class coincident and non-coincident peak demand for each month to Mr. Luth who used them to develop demand allocators. Mr. Luth discusses SPS's demand allocators in further detail in his testimony.

Q. How did SPS calculate the demand at the time of the monthly system peak and the demand at the monthly class peak for the non-Census classes?

A. As explained by Mr. Luth, each non-Census class's demand at the time of the system peak was calculated by applying the monthly system peak load factors derived from the load research to the monthly sales by customer class. Each non-Census class's demand at the time of the non-coincident peak was calculated by applying the monthly class peak load factors derived from the load research to the monthly energy sales by customer class.

Q. Did you make any adjustments to the class demands at the time of the monthly system peaks?

A. Yes. Because the hourly loads for the sample classes are estimates, the sum of each hourly demand, adjusted to generation level, will almost never equal SPS's total system load. To account for this difference, the sample classes were adjusted each month so that the sum of all hourly demand equals the hourly

system load at the hour of SPS's monthly system peak demand. Mr. Luth describes this process in his direct testimony. Both monthly system peak demand by class and monthly non-coincident class peak demands were adjusted consistent with the proportional allocation process discussed above.

V. WEATHER'S EFFECT ON TEST YEAR SALES

Q. Did SPS calculate the effects on sales of abnormal weather for the Updated Test Year?

A. Yes. SPS performed weather normalization to ensure that its Updated Test Year sales and the present revenues calculated using those sales are adjusted to eliminate the effects of abnormal weather.

Because the twelve months that comprise the Updated Test Year were hotter and dryer than the 10-year average in SPS's service area during the cooling season and colder than the 10-year average during the heating season, SPS calculated the effects of abnormal weather, as it has done in prior cases. The Updated Test Year heating degree days were 9.1% above normal; the Updated Test Year cooling degree days were 16.4% above normal; and the Updated Test Year precipitation was 20.7% below normal. The percent difference from normal is calculated using the following formula:

(Actual weather – Normal weather) / Normal weather

The calculation of the percent difference from normal weather is shown on page 1 of Attachment JEM-RD-1.

SPS calculated the effects on sales of abnormal weather during its Updated Test Year for the following customer classes:

- Residential Service;
- Residential Space Heating Service;
- Small General Service;
- Secondary General Service;

- Small Municipal and School Service;
- Large Municipal Service; and
- Large School Service.

SPS also weather normalized Updated Test Year sales for the Canadian River Municipal Water Authority. SPS's research indicates that weather has little or no effect on the consumption of the Primary General Service, Large General Service-Transmission, and Street Lighting classes. Therefore, SPS did not make weather adjustments for those classes.

Taken together the weather deviations resulted in 121,802 MWh more being consumed in the Updated Test Year than would have been consumed in the Updated Test Year with normal weather, which amounts to 0.9% of total Texas retail sales. The calculation of the 0.9% appears on page 3 of Attachment JEM-RD-1.

Q. How did SPS define the normal weather?

A. SPS used a 10-year average to define normal weather for purposes of this rate case. Generally speaking, SPS agrees with the National Oceanic and Atmospheric Administration's ("NOAA") practice that normal weather should be measured based on a 30-year period of time. But because the Commission concluded in Docket No. 40443 that a 10-year period should be used to establish normal values,[6] SPS calculated its weather adjustment in its most recent, fully-

[6] Docket No. 40443, Order on Rehearing at 43-44, Finding of Fact Nos. 257-258 (Mar. 6, 2014).

litigated base rate case, Docket No. 43695, based on a 10-year normal period.[7] SPS's weather normalization adjustment in Docket No. 43695 was approved by the Commission, and SPS has taken the same approach in performing its weather normalization adjustment in this case.

Q. What 10-year period did SPS use for weather normalization?

A. SPS used 120 months of actual weather data from January 1, 2008 through December 31, 2017.

Q. Did SPS include the Updated Test Year in the 10-year period used to calculate normal weather?

A. No. It is standard practice to calculate normal weather using full 12 month periods, each ending in December, and not to include the test year being normalized in the calculation of normal weather. Using actual weather data from the 12-month period used as the test year period in the calculation of the "normal" weather may create a bias toward the actual test year weather, which would potentially misstate the variance of the test year weather from normal weather conditions. SPS has applied this methodology for weather normalization adjustments in its past eight rate cases, including Docket No. 43695. In Docket No. 43695, the Commission adopted the Administrative Law Judge's determination that the factors included in the calculation of normal weather should be independent of the test year weather to which the normal weather is

[7] SPS continues to use a 30-year definition of normal weather in preparing all of its internal reporting, forecasting, and other management reporting. The other Xcel Energy Operating Companies—NSPM, NSPW, and PSCo—use different definitions of normal weather. Similarly to SPS, PSCo uses a 30-year period for defining normal weather in all of its internal reporting, forecasting, and management reporting. However, NSPM and NSPW have a long-standing practice of using a 20-year period for defining normal weather for internal reporting, forecasting, and management reporting.

compared. In addition, NOAA also excludes the current year's weather when calculating its 30-year normal weather statistics for purposes of comparing and analyzing the weather for a particular month.

Q. How did SPS determine the normal weather?

A. Normal daily weather was based on the average of the last 10 years of historical heating degree days, cooling degree days, and precipitation data used to develop the weather adjustment coefficients for the Updated Test Year. The Updated Test Year actual and normal cooling degree days, heating degree days, and precipitation are reflected on page 1 of Attachment JEM-RD-1.

Q. What measure did SPS use to calculate heating degree days, cooling degree days, and precipitation?

A. SPS used heating degree days and cooling degree days based on a 65-degree Fahrenheit temperature base and rainfall equivalent precipitation measured in inches as reported by NOAA for Amarillo and Lubbock, Texas. The weather data is aggregated to the state level by weighting the individual weather station data by the share of load in the Amarillo and Lubbock regions of the Texas service area.[8]

Q. Please explain how SPS calculated heating degree days.

A. SPS calculated heating degree days for each day by subtracting the average daily temperature from 65 degrees Fahrenheit. For example, if the average daily temperature was 45 degrees Fahrenheit, then 20 heating degree days were calculated for that day. If the average daily temperature was greater than 65

[8] The weight for Amarillo is approximately 0.745, and the weight for Lubbock is approximately 0.255.

degrees Fahrenheit, then that day recorded zero heating degree days. Daily heating degree days are aggregated to monthly totals.

Q. How did SPS calculate cooling degree days?

A. SPS calculated cooling degree days for each day by subtracting 65 degrees Fahrenheit from the average daily temperature. For example, if the average daily temperature was 75 degrees Fahrenheit, 10 cooling degree days were calculated for that day. If the average daily temperature was less than 65 degrees Fahrenheit, then that day recorded zero cooling degree days. Daily cooling degree days are aggregated to monthly totals.

Q. How did SPS calculate precipitation?

A. SPS calculated monthly precipitation by summing the daily precipitation, measured in inches, for each day of the month.

Q. Did the weather reflect the same billing days as the sales data?

A. Yes. To align the weather data with the same period of time as the billing-month sales data, the heating degree days, cooling degree days, and precipitation data were weighted by the number of times a particular day was included in a particular billing month. These weighted heating degree days and cooling degree days were divided by the total billing cycle days to arrive at average heating degree days and cooling degree days for a billing month.

Q. How was the Updated Test Year weather adjustment calculated?

A. SPS calculated the weather adjustment using the deviation between normal and actual weather, customer counts, and weather adjustment coefficients that quantify the impact of a one-unit change in weather on sales per customer.

Q. How did SPS develop the weather adjustment coefficients used in the weather normalization of sales?

A. SPS developed the billing-month coefficients for each weather-sensitive class using econometric models.[9] SPS then converted the billing-month coefficients to a calendar-month basis by prorating the modeled weather coefficients based on the number of billing days in each billing month that occur in a particular calendar month. Pages 12-17 of Attachment JEM-RD-1 reflect the conversion of modeled weather coefficients to a calendar-month basis.

The data used in each of the models are:

- Historical billing-month sales by weather-sensitive class;
- Real personal income per household for the SPS Texas service territory;
- Non-farm employment for the SPS Texas service territory;
- Weather (heating or cooling degree days);
- Seasonal binary variables;
- Precipitation variables;
- Customer counts;
- Number of billing days in each month;
- Population for the SPS Texas service territory;
- Other binary variables; and
- Autoregressive correction terms.

[9] An econometric model is a widely accepted modeling approach in which a linear regression equation relates a dependent variable, such as sales, to a set of explanatory variables, such as economic and demographic concepts, customers, price, and weather. After the relationships are identified, forecasts of the explanatory variables can be used to predict future sales.

Q. How do the factors listed in the previous question affect sales?

A. Sales are expected to increase as each of the economic indicators increases and to decrease as each economic indicator decreases. For example, if personal income increases, electricity consumption will increase because customers have the means to purchase and use more electricity-consuming products. Likewise, as employment and population levels grow, electricity consumption is expected to increase.

Weather is also an independent variable that affects sales. The further the average daily temperature deviates from 65 degrees Fahrenheit, the more cooling degree days or heating degree days SPS will experience, which increases electricity consumption. Similarly, SPS expects more sales to irrigation customers when there is little precipitation, and it expects fewer sales to irrigation customers when there is more precipitation. This impacts customers in the small general service, secondary general service, and municipals and schools rate classes, as well as the Canadian River Municipal Water Authority.

Q. Please explain the difference between "billing-month" sales and "calendar-month" sales.

A. SPS reads electric meters each working day according to a meter-reading schedule based on 21 billing cycles per billing month. Meters read early in the calendar month mostly reflect consumption that occurred during the previous calendar month. Meters read late in the calendar month mostly reflect consumption that occurred during the current calendar month. Consequently, the

"billing-month" sales for the current calendar month reflect consumption that occurred in both the previous calendar month and the current calendar month. Thus, billing-month sales lag calendar-month sales. In order to determine the sales for a calendar month, SPS estimates "unbilled" sales, which is the electricity consumed in the current calendar month that is not billed to the customer until the succeeding calendar month.

Q. What is the purpose of estimating calendar-month sales?

A. Calendar-month sales are used to align the Test Year (or Updated Test Year) revenues with the relevant Test Year (or Updated Test Year) expenses, which are reported on a calendar-month basis. SPS reflects calendar-month revenue on its books for accounting and financial reporting purposes.

Q. Why is it necessary to convert the billing-month coefficients to calendar-month coefficients?

A. Because the Test Year (or Updated Test Year) sales being weather normalized are calendar-month sales, the billing-month coefficients need to be converted to calendar-month coefficients. After the billing-month coefficients are developed through the econometric modeling process, the next step is to convert the billing-month coefficients to a coefficient that represents a calendar month. SPS determines the percentage of billing days for a calendar month that is billed in the current month and that is billed in a future month. The monthly billing-month coefficient is converted to a monthly calendar-month coefficient using these percentages.

Q. What was your source of economic and demographic data?

A. Historical economic and demographic variables for the counties in SPS's service territory, the state of Texas, and the nation were obtained from IHS Markit.[10] The variables used in the models were service territory non-farm employment, population, and real personal income per household. This information is used to determine the historical relationship between sales and economic and demographic measures.

Q. Please describe the regression models and associated analyses used in SPS's weather normalization process.

A. The formulae in the regression models and associated statistics used in SPS's weather normalization process are provided in Schedule O-2.1 of the RFP. Specifically, Schedule O-2.1 shows, by customer class or major rate group, the formulae in the regression models with their summary statistics and descriptions for each variable included in the model.

Q. What techniques did SPS employ to evaluate the validity of its regression models?

A. There are a number of quantitative and qualitative validity tests that are applicable to multiple regression analysis. Several of the more common tests SPS uses are as follows:

First, the coefficient of determination ("R^2 statistic") test statistic is a measure of the quality of the model's fit to the historical data. It represents the proportion of the variation of the historical sales around their mean value that can

[10] IHS Markit is a well-known provider of economic forecast information frequently relied on by energy forecasting professionals.

be attributed to the functional relationship between the historical sales and the explanatory variables included in the model. If the R^2 statistic is high, the set of explanatory variables specified in the model are explaining a high degree of the historical sales variability. All regression models used to develop the weather normalization coefficients demonstrate R^2 statistics larger than 76%, which is satisfactory under this standard.

Second, the t-statistic of each variable indicates the degree of correlation between that variable's data series and the sales data series being modeled. The t-statistic is a measure of the statistical significance of each variable's individual contribution to the prediction model. Generally, the absolute value of each t-statistic should be greater than 1.960 to be considered statistically significant at the 95% confidence level and greater than 1.645 to be considered statistically significant at the 90% confidence level. This criterion was applied in the development of the regression models used to develop the sales forecast. All variables in the final regression models used to develop the weather normalization coefficients tested satisfactorily under the 90% confidence level standard.

Third, each model was inspected for the presence of first-order autocorrelation, as measured by the Durbin-Watson ("DW") test statistic. Autocorrelation refers to the correlation of the model's error terms for different time periods. For example, under the presence of first-order autocorrelation, an overestimate in one time period is likely to lead to an overestimate in the succeeding time period, and vice versa. Thus, when forecasting with a regression model, absence of autocorrelation between the error terms is very important. The

DW test statistic ranges between 0 and 4, and provides a measure to test for autocorrelation. In the absence of first-order autocorrelation, the DW test statistic equals 2.0. Autoregressive correction terms were applied where appropriate so that the final regression models used to develop the weather normalization coefficients tested satisfactorily for the absence of first-order autocorrelation, as measured by the DW test statistic.

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

Q. Please explain the steps you went through to complete the weather-normalization calculation.

A. After calculating the calendar-month coefficients, I undertook a six-step process to calculate the effect on sales of weather variance from normal conditions during the Updated Test Year. The numbers used as examples in the six steps recounted below appear on pages 4-5 of Attachment JEM-RD-1:

- Step 1 – I calculated the difference between the 10-year average heating degree days in a particular month and the heating degree days in that month of the Updated Test Year. For example, the 10-year average number of heating degree days in October is 180, whereas the number of heating degree days in October of the Updated Test Year was 270, for a difference of approximately 90.

- Step 2 – I multiplied the difference calculated in Step 1 times the number of customers in each class. For example, the Residential Service class had 174,868 customers in October 2018, so I multiplied 90 times 174,868, for a total of approximately 15,746,339.

- Step 3 – I then multiplied the result from Step 2 times the heating degree day coefficient for that class to determine the number of MWh resulting from the abnormal weather. Multiplying 15,746,339 times the October 2018 coefficient for the Residential Service class, which is 0.0000009, yields 14 MWh.

- Step 4 – I then performed Steps 1-3 using the cooling degree data. For October 2018, that calculation results in -68 MWh.

- Step 5 – I netted the heating degree MWh against the cooling degree MWh for each class by month. That produces a total of -54 MWh for the Residential Service class for October 2018 (14 MWh + -68 MWh = -54 MWh).

- Step 6 – Finally, I totaled the number of MWh of all classes in each month, and then I added the monthly amounts to arrive at the 12-month total of 121,802 MWh attributable to abnormal weather. In other words, actual weather resulted in total Updated Test Year retail sales being 121,802 MWh higher than if weather had been normal.

Q. How did SPS use the weather-adjusted sales figures?

A. After calculating the weather-adjusted sales by class, I supplied those sales figures to Mr. Luth, who used them to calculate present revenues. The numbers that I provided to Mr. Luth are on page 4 of Attachment JEM-RD-1.

Q. Did SPS adjust its New Mexico retail sales during the Updated Test Year to account for the effects of abnormal weather on New Mexico retail sales?

A. Yes. SPS adjusted the Updated Test Year sales for the weather-sensitive New Mexico retail classes using the same process described for Texas retail sales. These calculations are provided in Attachment JEM-RD-2. SPS relied on NOAA weather data measured at the weather station in Roswell, New Mexico.

Q. Did SPS adjust its firm wholesale sales during the Updated Test Year to account for the effects of abnormal weather on wholesale sales?

A. Yes. SPS adjusted the Updated Test Year sales for SPS firm wholesale customers using weather adjustment coefficients developed for each wholesale customer and weather specific to the location of each wholesale customer. The weather adjustment coefficients for the wholesale customers were developed using historical calendar-month sales for each customer, weather variables (heating or cooling degree days or precipitation), and an economic indicator such as Gross State Product. Since the coefficients are based on calendar-month sales, there is no need to convert the coefficients from a billing-month basis to a calendar-month basis. Sales to the wholesale customers in New Mexico were weather normalized based on Roswell weather, and sales to wholesale customers in Texas were weather normalized based on weather for either Amarillo or Lubbock. The calculations of the weather adjustment for firm wholesale sales are provided in Attachment JEM-RD-2.

Q. Why does SPS adjust its New Mexico retail sales and its firm wholesale sales for purposes of this Texas retail rate case?

A. Certain of the allocation factors SPS uses to allocate the components of the total company cost of service among its three rate jurisdictions depend on relative levels of sales for each jurisdiction. Consequently, to ensure that the allocation percentages for each jurisdiction are determined on the same basis, it is necessary to adjust the sales in all three jurisdictions to account for the effects of abnormal weather on sales.

Q. Why does SPS use data from one weather station in New Mexico and two weather stations in Texas?

A. SPS uses three weather stations because these three weather stations are representative of SPS's service territory weather conditions. For example, based on annual 2018 sales, 45.7% of SPS's weather-sensitive sales in Texas are to customers located in Randall County and Potter County, which include and surround Amarillo. Another 16.6% of SPS's weather-sensitive sales in Texas are to customers located in the counties immediately surrounding Lubbock. In addition, Roswell is a major population and economic center in the SPS New Mexico service territory, and is close to the geographic center of the SPS New Mexico service territory and, more specifically, close to the center of the weather sensitive loads.

VI. WEATHER'S EFFECT ON UPDATED TEST YEAR PEAK DEMAND

Q. Did SPS calculate the effects of abnormal weather on its Updated Test Year system peak demand?

A. Yes. Because weather varied from normal during the Updated Test Year, it was necessary to adjust the Updated Test Year coincident peak demand[11] to account for weather for the following customer groups:

- Total retail; and
- Aggregated full requirements wholesale.

For the same reason I explained in Section V of my testimony, I adjusted the peak demands in all three of SPS's rate jurisdictions to ensure that the allocation percentages for each jurisdiction are determined on the same basis for purposes of this rate case.

Q. What source of weather did SPS use to measure the adjustment?

A. SPS used a combination of peak day average daily temperature, peak day heating degree days, and accumulated precipitation for the week prior to the peak day to measure weather adjustments for peak demand. These weather values were calculated using weather data reported from the NOAA weather stations in Amarillo, Lubbock, and Roswell. The total SPS weather is an average of the Amarillo, Lubbock, and Roswell weather station data weighted by sales associated with the respective regions of the SPS service area.[12]

[11] SPS does not weather-normalize non-coincident peak demands.

[12] The weight for Amarillo is approximately 0.563, the weight for Lubbock is approximately 0.194, and the weight for Roswell is approximately 0.243.

Q. How did SPS calculate average peak day temperature?

A. The peak day average temperature was calculated by adding the peak day maximum daily temperature and peak day minimum daily temperature, and then by dividing that amount by 2. For example, if the peak day maximum temperature was 55 degrees Fahrenheit and the peak day minimum temperature was 35 degrees Fahrenheit, the average peak day temperature would be 45 degrees Fahrenheit.

Q. Please explain how SPS calculated the peak day heating degree days.

A. SPS calculated peak day heating degree days by subtracting the peak day average temperature from 65 degrees Fahrenheit. For example, if the peak day average daily temperature was 45 degrees Fahrenheit, then 20 heating degree days were calculated for that day. If the average peak day temperature was greater than 65 degrees Fahrenheit, then that peak day recorded zero heating degree days.

Q. How did SPS calculate precipitation?

A. SPS calculated the accumulation of water-equivalent precipitation for the seven days prior to the peak day, measured in inches.

Q. How did SPS define the normal weather?

A. As noted earlier, SPS agrees with NOAA's definition that normal weather is representative of typical weather based on a 30-year period. However, given the Commission's ruling in favor of using a 10-year period to measure normal weather in Docket No. 40443 and SPS's most recent, fully-litigated base rate case, Docket No. 43695, SPS calculated its weather adjustment based on a 10-year normal period for this filing.

Q. How did SPS determine the normal weather?

A. Normal peak day weather was based on the average of the 10-year period from January 2008 to December 2017 for the peak day of each month for historical average daily temperature, heating degree days, and precipitation. The Updated Test Year and normal-weather data for maximum temperatures, heating degree days, and precipitation are summarized on page 1 of Attachment JEM-RD-3.

Q. How was the Updated Test Year weather adjustment calculated?

A. SPS calculated the peak demand weather adjustment using the deviation between normal and actual weather and weather adjustment coefficients that quantify the impact of a one-unit change in weather on retail and full requirements wholesale peak demand.

Q. How did SPS calculate the coefficients used in the peak demand weather normalization calculations?

A. SPS developed the peak demand weather coefficients for the retail coincident peak demand and full requirements wholesale coincident peak demand using econometric models. The data used in the models include historical peak demand and sales for each customer group, as well as the weather concept variables (average temperature, heating degree days, and precipitation for the week prior to the peak day). Each regression model also has an autoregressive error correction term variable. The regression models and associated statistics are provided in Schedule O-2.1 of the RFP.

Q. What dependent variables does SPS use in the regression models?

A. The dependent variables used to develop peak demand weather coefficients are the monthly coincident peak demands for each customer class. The first

explanatory variable in each regression model is a 12-month moving average for the respective sales for each customer class. The next set of explanatory variables in each regression model uses the following weather concept variables:

- Average peak day temperature;
- Peak day heating degree days; and
- The accumulation of precipitation for the seven days prior to the peak day of each month.

Q. How did the Updated Test Year peak day weather for the June through September period compare to normal weather?

A. The total SPS Updated Test Year summer months (July through September, 2018 and June 2019) peak day average daily temperature was 1.3% above normal, and accumulated precipitation was 2.0% below normal. As shown on Page 2 of Attachment JEM-RD-3, taken together these weather deviations resulted in an average of 15 MW, or 0.5%, more retail peak demand per month and an average of 6 MW, or 0.6%, more full requirements wholesale peak demand per month from June, July, August, and September in the Updated Test Year compared to normal weather. SPS adjusted the Updated Test Year peak demand for deviations of the actual Updated Test Year weather from the 10-year average weather.

Q. Please explain the steps you went through to complete the peak demand weather-normalization calculation.

A. I undertook a four-step process to calculate the effect on peak demand of weather variance from the 10-year normal conditions during the Updated Test Year. The numbers used as examples in the four steps recounted below are for the retail peak demand and appear on page 3 of Attachment JEM-RD-3:

- Step 1 – I calculated the difference between: (i) the 10-year average weather concepts (as measured in average peak day temperature, peak day heating degree days, and precipitation) in a particular month, and (ii) the actual weather concept in that month of the Updated Test Year. For example, for the retail peak demand the 10-year average peak day temperature in July is 85.4 degrees Fahrenheit, whereas the actual average peak day temperature in July of the Test Year was 90.0 degrees Fahrenheit, a difference of 4.5 degrees Fahrenheit. This step is repeated for each weather concept. The 10-year average of precipitation for the week preceding the peak day in July is 0.31 of an inch of precipitation, whereas the actual precipitation for the week preceding the peak day in July of the Updated Test Year was 0.60 of an inch, for a difference of 0.30 of an inch of precipitation. The 10-year average of heating degree days on the peak day in July is 0.0, and the actual peak day heating degree days in July of the Updated Test Year was also 0.0, resulting in no difference from normal.

- Step 2 – The variance in weather from the 10-year average from Step 1 for each weather concept is multiplied by the respective weather adjustment coefficient to determine the number of MW resulting from the variance in actual weather from the 10-year average weather. Weather adjustment coefficients are developed with econometric models using the same methodology described earlier. To continue with the retail peak demand example from Step 1, multiplying the variance in average peak day temperature of 4.5 degrees Fahrenheit times the July 2018 coefficient for average peak day temperature, which is 11.2468, yields 51 MW. This step is repeated for each weather concept. Multiplying the variance in precipitation one week prior to the peak day of 0.30 inches times the July 2018 coefficient for precipitation one week prior to the peak day, which is -62.25455, yields -18 MW. Because there is no weather adjustment coefficient in July for heating degree days, this weather concept did not have a weather adjustment in July.

- Step 3 – For each month, I summed the weather adjustments calculated in Step 2 from each weather concept. Continuing with the example from Step 1 and Step 2, this step produces a total weather adjustment of 33 MW for the total retail peak demand for July 2018 (51 MW + -18 MW = 33 MW).

- Step 4 – Finally, I averaged the weather adjusted MW for the summer months of the Updated Test Year for June 2019, July 2018, August 2018, and September 2018 to arrive at a 4-month average of weather's impact on the peak demand. Continuing with the example from the previous steps, the average weather adjustment for the retail peak demand for the four months of June, July, August, and September of the Updated Test Year was 15 MW per month. Using the same methodology described in Step 1

through Step 4, the average weather adjustment for the full requirements wholesale peak demand for the four months of June, July, August, and September of the Updated Test Year was 6 MW per month. Pages 3 and 4 of Attachment JEM-RD-3 contain the weather adjustment calculations for the retail peak demand and the full requirements wholesale peak demand, respectively.

Q. Did SPS calculate the effect of weather on the Golden Spread full load peak demand coincident with the SPS system peak demand?

A. Yes. I calculated the effect of weather on the Golden Spread full load peak demand coincident with the SPS system peak demand using the same methodology previously described for weather adjusting the retail and full requirements wholesale peak demand. The weather values used to adjust the Golden Spread full load peak demand were calculated for the Texas Panhandle region. As I explained earlier, the Texas Panhandle weather is an average of the Amarillo and Lubbock weather station data weighted by sales associated with the respective regions of the SPS service area located in Texas. The peak demand weather coefficients for Golden Spread were developed using an econometric model. The data used in the model includes historical peak demand for Golden Spread, as well as the weather concept variables for average temperature and accumulated precipitation for the week prior to the peak day, and an autoregressive error correction term variable. For the Texas Panhandle, the Updated Test Year summer months (June, 2019 and July, August, and September, 2018) peak day average daily temperature was 2.6% above normal, and the accumulated precipitation was 12.7% below normal.

Q. What is the weather adjustment for the Golden Spread full load peak demand coincident with the SPS system peak demand for the Updated Test Year?

A. As shown on Page 2 of Attachment JEM-RD-3, the average weather adjustment for the Golden Spread full load peak demand coincident with the SPS system peak demand for the four months of June, 2019, and July, August, and September, 2018 of the Updated Test Year was 18 MW per month. Page 5 of Attachment JEM-RD-3 provides the weather adjustment calculation for the Golden Spread full load peak demand.

Q. How did SPS use the weather-adjusted peak demand figures?

A. After calculating the weather adjustments for peak demand by customer class, I supplied those peak demand adjustments to Mr. Luth, who used them to calculate the allocation of production and transmission capacity costs among classes. The numbers that I provided to Mr. Luth are on page 2 of Attachment JEM-RD-3.

VII. FORECAST METHODOLOGY

Q. Please briefly describe SPS's methodology for forecasting rate year energy and demand values.

A. SPS forecasts monthly customer counts, retail sales, retail peak demand, and full requirements wholesale sales using econometric forecasting models. These forecasts have been provided as required by Schedule O-7.1 of the RFP. However, I note that SPS does not use the forecasted information discussed in this section of my testimony to set rates. The forecasting is done solely for the purpose of complying with the Schedule O-7.1 requirements.

Q. What inputs does SPS use in its econometric forecasting models?

A. The inputs used to arrive at the dependent variable in the econometric forecasting models are: (1) SPS's historical customer counts and billing-month retail MWh sales by jurisdiction and class; (2) SPS's historical calendar-month MWh sales for each full requirements wholesale customer; and (3) SPS's historical retail peak demand. For the explanatory variables, SPS obtains historical and forecasted economic and demographic variables for the nation, state, and SPS service territory from IHS Markit. Those explanatory variables are:

- population;
- number of households;
- number of customers;
- Gross County Product;
- Gross State Product;
- Gross Domestic Product;
- Consumer Price Index;

- employment;
- personal income;
- Industrial Production index for oil and gas extraction and drilling.

SPS also obtains weather information to use as explanatory variables in the models. As discussed earlier, that weather information, which comes from NOAA weather stations at the Amarillo International Airport located in Amarillo, Texas, at the Lubbock Regional Airport located in Lubbock, Texas, and at the Roswell Industrial Air Center located in Roswell, New Mexico, is composed of 65 degree based heating degree days, 65 degree based cooling degree days, precipitation, and temperature. Other variables used by SPS include autoregressive and moving average correction terms, the number of days in the calendar month and the billing month, total retail sales, seasonal binary variables, trend variables, and various other binary variables.

Q. What are the outputs from SPS's econometric models?

A. The outputs from the econometric models are forecasts of customer counts, billing-month retail MWh sales by jurisdiction and class, calendar-month MWh sales for each full requirements wholesale customer, and retail peak demand.

Q. What techniques does SPS use to evaluate the validity of its quantitative forecasting models and sales projections?

A. Similar to the weather normalization models, SPS uses the R^2 statistic, t-statistics, DW test statistic, and graphical inspection of each model's error terms to evaluate the validity of its models and projections.

The linear regression models used to develop SPS's sales forecasts produced high R^2 statistics, ranging between 0.780 and 0.994. The linear

regression models used to develop SPS's customer forecasts produced similarly high R^2 statistics, ranging between 0.997 and 0.999. The t-statistics of the explanatory variables were statistically significant at the 95% confidence level except for five variables which were statistically significant at the 90% confidence level. Autoregressive correction terms were applied where appropriate so that the final models used to develop the sales forecast tested satisfactorily for the absence of first-order autocorrelation, as measured by the DW test statistic.

Additionally, analysis of each model's residuals indicated that the residuals were homoscedastic (of constant variance) and randomly distributed, which demonstrated that the linear regression modeling technique was an appropriate selection for each customer class's sales that were statistically modeled.

Finally, SPS reviewed the statistically modeled sales forecasts for each customer class for reasonableness as compared to the respective monthly sales history for that class. Graphical inspection reveals that the forecast patterns fit well with the respective historical patterns for each customer class. The annual total forecasted sales have been compared to their respective historical trends for consistency. The forecast models and model data are provided in Schedules O-9.1(CD) through O-9.3(V)(CD).

Q. Did SPS make any adjustments to the outputs?

A. Yes. SPS converted the billing-month sales data to calendar-month sales data. In addition, SPS adjusted the model output for incremental Demand Side

Management savings, as well as load growth or load reductions that are identified by commercial customer account managers and that would not be captured in the historical modeling data.

Q. How did SPS determine the estimated monthly calendar-month sales for the forecast period?

A. SPS calculated the calendar-month sales based on the projected billing-month sales for the following customer classes:

- Residential Service;
- Residential Space Heating Service;
- Small Commercial and Industrial;
- Large Commercial and Industrial;
- Municipal and School Service;
- Street and Area Lighting.

SPS calculated the calendar-month sales both in terms of the sales load component that is not associated with weather (i.e., "base load") and the sales load component that is influenced by weather (i.e., "total weather load"). The weather was measured in terms of normal heating degree days, cooling degree days, and precipitation as described earlier. SPS calculated the base load sales and the total weather load sales components for each class, and the two components were then combined to provide the total calendar-month volumes.

Q. How did SPS calculate the calendar-month base load component?

A. SPS calculated the calendar-month base load component using four steps:

- Step 1 – SPS calculated the billing-month total weather load by multiplying the billing-month sales weather normalization regression coefficients (defined in terms of billing-month heating degree days,

cooling degree days, and number of customers), times billing-month normal heating degree days and cooling degree days, and then multiplying the product times the projected customers.

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

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

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

Q. How did SPS calculate the calendar-month total weather load component?

A. SPS calculated the calendar-month total weather load component in the same way it calculated the billing-month total weather load (as described in Step 1 above). SPS performed the calculation by substituting the calendar-month sales weather normalization regression coefficient (defined in terms of calendar-month heating degree days, cooling degree days, and number of customers) and the calendar-month normal heating degree days and cooling degree days.

Q. How did SPS calculate the calendar-month total sales?

A. SPS calculated the calendar-month total sales for the customer classes listed earlier by combining the calendar-month base load and calendar-month total weather load components. For the Street and Area Lighting class and the Large Commercial and Industrial class, SPS calculated the forecasted calendar-month sales based on the projected billing-month sales in the same manner as detailed above. However, for these classes, there are no total weather load sales. The calendar-month total sales for these classes were calculated only in terms of their

base load, where the billing-month base load equaled the projected billing-month sales.

Q. Please describe how the other portions of SPS's customer count and sales forecasts are developed.

A. The sales forecasts for SPS's firm partial requirements and non-firm wholesale loads are based on contract terms and analysis of historical trends.

Q. How are the Texas voltage level MWh sales estimates derived?

A. Texas retail sales by customer class are allocated to voltage levels using historical sales proportions. After developing both the SPS system and Texas retail sales estimates by voltage level, SPS derives the MWh sales estimates at the source by applying the voltage level loss factors to the sales estimates. A loss factor represents transmission and distribution losses, plus all unaccounted for energy.

Q. How is SPS's system peak demand forecast developed?

A. SPS develops the retail peak demand forecast using an econometric model, with monthly historical system retail peak demand (MW) as the dependent variable, and system retail sales, weather concepts, a linear trend, seasonal binary, and month specific binary variables as explanatory variables. For full requirements wholesale peak demand forecasts at the delivery point, SPS uses historical monthly load factors to develop monthly peak demands based on the projected monthly sales. A load factor is the ratio of sales to the peak demand sustained over a period of time. The formula to calculate the load factors is:

$$Load\ Factor\ (\%) = \frac{Sales\ (MWh)}{Peak\ Demand\ (MW)\ x\ hours\ per\ month}$$

Peaks at the delivery point are then grossed up to the source by applying loss factors.

The projected load factors are based on historical load factors. The monthly load factors and loss factors used for the forecast period are assumed to be the same as the historical load factors and loss factors.

Q. Have you provided SPS's forecasted monthly sales and system peak demands?

A. Yes. SPS's sales forecast and system peak demands are provided in Schedule O-7.1.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

AFFIDAVIT

STATE OF COLORADO)
)
COUNTY OF DENVER)

JANNELL E. MARKS, first being sworn on her oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachment(s) and am familiar with the contents. Based upon my personal knowledge, the facts stated in the testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

Jannell E Marks
JANNELL E. MARKS

Subscribed and sworn to before me this 29th day of July, 2019 by JANNELL E. MARKS.

Shirene M. VanDunk
Notary Public, State of Colorado

My Commission Expires: 2/23/21

SHIRENE M VAN DUNK
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20014002634
MY COMMISSION EXPIRES FEBRUARY 23, 2021

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Panhandle Weather Data (Amarillo TX and Lubbock TX)
Normal Weather Based on a 10-year Historical Average

Month	Year			Weather Act Cal HDD65	Weather Act Cal CDD65	Weather Act Cal Precip	Weather Norm Cal HDD65	Weather Norm Cal CDD65	Weather Norm Cal Precip	Dev HDD65	Dev CDD65	Dev Precip
Apr	2018	Apr-18	Actual	288	32	0.45	206	37	1.49	82	-5	-1.04
May	2018	May-18	Actual	7	324	0.46	81	142	2.64	-74	182	-2.19
Jun	2018	Jun-18	Actual	0	464	2.01	0	406	2.34	0	58	-0.33
Jul	2018	Jul-18	Actual	0	497	1.65	0	473	3.28	0	24	-1.63
Aug	2018	Aug-18	Actual	0	461	2.39	0	427	3.16	0	34	-0.77
Sep	2018	Sep-18	Actual	13	219	1.40	18	217	2.10	-5	2	-0.70
Oct	2018	Oct-18	Actual	270	44	4.09	180	45	1.48	90	-1	2.61
Nov	2018	Nov-18	Actual	600	0	0.32	460	2	0.69	140	-2	-0.37
Dec	2018	Dec-18	Actual	792	0	0.80	797	0	0.48	-5	0	0.32
Jan	2019	Jan-19	Actual	755	0	0.04	803	0	0.69	-48	0	-0.65
Feb	2019	Feb-19	Actual	637	0	0.22	641	1	0.77	-4	-1	-0.55
Mar	2019	Mar-19	Actual	558	4	1.86	407	8	0.66	151	-4	1.20
Apr	2019	Apr-19	Estimate	288	32	0.45	206	37	1.49	82	-5	-1.04
May	2019	May-19	Estimate	7	324	0.46	81	142	2.64	-74	182	-2.19
Jun	2019	Jun-19	Estimate	0	464	2.01	0	406	2.34	0	58	-0.33
Annual (Apr18 - Mar19)				**3,920**	**2,045**	**15.69**	**3,593**	**1,756**	**19.79**	**327**	**289**	**-4.10**
Annual Dev %										**9.1%**	**16.4%**	**-20.7%**
Annual (Jul18 - Jun19)				**3,920**	**2,045**	**15.69**	**3,593**	**1,756**	**19.79**	**327**	**289**	**-4.10**
Annual Dev %										**9.1%**	**16.4%**	**-20.7%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Southwestern Public Service Company Electric Sales - Texas
Calendar Month - MONTHLY MWH

		Actual Sales Cal Mth Res	Actual Sales Cal Mth Small C&I	Actual Sales Cal Mth Large C&I	Actual Sales Cal Mth Street	Actual Sales Cal Mth Other Sale Auth	Actual Sales Cal Mth Retail	WN Sales Cal Mth Res	WN Sales Cal Mth Small C&I	WN Sales Cal Mth Large C&I	WN Sales Cal Mth Street	WN Sales Cal Mth Other Sale Auth	WN Sales Cal Mth Retail
Apr-18	Actual	144,325	232,531	621,202	2,830	29,347	1,030,235	143,872	228,216	621,027	2,830	28,479	1,024,423
May-18	Actual	200,894	280,182	679,281	2,828	31,597	1,194,783	167,821	263,611	678,891	2,828	27,361	1,140,512
Jun-18	Actual	266,722	308,064	667,806	2,821	35,186	1,280,599	250,766	299,353	667,454	2,821	34,388	1,254,782
Jul-18	Actual	287,729	329,862	713,731	2,822	36,321	1,370,465	280,557	323,556	713,303	2,822	35,575	1,355,813
Aug-18	Actual	271,859	327,212	720,981	2,821	35,898	1,358,770	262,024	320,140	720,664	2,821	35,195	1,340,843
Sep-18	Actual	179,836	268,008	688,720	2,820	35,615	1,175,000	179,358	267,349	688,590	2,820	35,536	1,173,654
Oct-18	Actual	159,300	246,470	702,001	2,820	26,879	1,137,470	158,813	246,492	702,001	2,820	26,898	1,137,026
Nov-18	Actual	175,536	230,190	681,479	2,821	27,601	1,117,626	169,384	227,104	681,474	2,821	27,601	1,108,384
Dec-18	Actual	233,315	273,027	691,624	2,821	28,878	1,229,666	233,691	273,177	691,624	2,821	28,878	1,230,192
Jan-19	Actual	243,856	261,343	656,140	2,776	28,412	1,192,527	247,773	262,070	656,141	2,776	28,412	1,197,171
Feb-19	Actual	176,207	217,179	600,784	2,758	23,935	1,020,864	176,437	214,947	600,784	2,758	23,934	1,018,860
Mar-19	Actual	188,300	247,067	674,472	2,682	31,440	1,143,962	182,877	255,673	674,472	2,682	32,276	1,147,981
Apr-19	Estimate	144,325	232,531	621,202	2,830	29,347	1,030,235	143,847	228,131	621,027	2,830	28,470	1,024,303
May-19	Estimate	200,894	280,182	679,281	2,828	31,597	1,194,783	168,229	263,939	678,891	2,828	27,334	1,141,222
Jun-19	Estimate	266,722	308,064	667,806	2,821	35,186	1,280,599	250,713	299,333	667,454	2,821	34,396	1,254,718
Test Year Total	**Actual**	**2,527,881**	**3,221,136**	**8,098,222**	**33,620**	**371,110**	**14,251,969**	**2,453,374**	**3,181,687**	**8,096,426**	**33,620**	**364,533**	**14,129,641**
Updated Test Year Total	**Estimate**	**2,527,881**	**3,221,136**	**8,098,222**	**33,620**	**371,110**	**14,251,969**	**2,453,705**	**3,181,910**	**8,096,427**	**33,620**	**364,506**	**14,130,168**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Southwestern Public Service Company Electric Sales - Texas
Calendar Month - MONTHLY MWH

		Act var fr WN Res	Act var fr WN Small C&I	Act var fr WN Large C&I	Act var Cal Mth Street	Act var Cal Mth Other Sale Auth	Act var fr WN Retail	% var Res	% var Small C&I	% var Large C&I	% var Street	% var Other Sale Auth	% var Retail
Apr-18	Actual	453	4,315	176	0	868	5,812	0.3%	1.9%	0.0%	0.0%	3.0%	0.6%
May-18	Actual	33,074	16,571	390	0	4,236	54,272	19.7%	6.3%	0.1%	0.0%	15.5%	4.8%
Jun-18	Actual	15,956	8,711	352	0	798	25,817	6.4%	2.9%	0.1%	0.0%	2.3%	2.1%
Jul-18	Actual	7,172	6,307	428	0	746	14,652	2.6%	1.9%	0.1%	0.0%	2.1%	1.1%
Aug-18	Actual	9,835	7,072	317	0	703	17,927	3.8%	2.2%	0.0%	0.0%	2.0%	1.3%
Sep-18	Actual	478	659	130	0	80	1,346	0.3%	0.2%	0.0%	0.0%	0.2%	0.1%
Oct-18	Actual	487	(22)	(0)	0	(20)	445	0.3%	0.0%	0.0%	0.0%	-0.1%	0.0%
Nov-18	Actual	6,152	3,086	5	0	0	9,242	3.6%	1.4%	0.0%	0.0%	0.0%	0.8%
Dec-18	Actual	(376)	(149)	(0)	0	0	(526)	-0.2%	-0.1%	0.0%	0.0%	0.0%	0.0%
Jan-19	Actual	(3,916)	(727)	(1)	0	0	(4,644)	-1.6%	-0.3%	0.0%	0.0%	0.0%	-0.4%
Feb-19	Actual	(230)	2,232	0	0	1	2,003	-0.1%	1.0%	0.0%	0.0%	0.0%	0.2%
Mar-19	Actual	5,423	(8,606)	0	0	(836)	(4,019)	3.0%	-3.4%	0.0%	0.0%	-2.6%	-0.4%
Apr-19	Estimate	478	4,401	176	0	877	5,932	0.3%	1.9%	0.0%	0.0%	3.1%	0.6%
May-19	Estimate	32,665	16,244	390	0	4,263	53,562	19.4%	6.2%	0.1%	0.0%	15.6%	4.7%
Jun-19	Estimate	16,009	8,731	352	0	790	25,881	6.4%	2.9%	0.1%	0.0%	2.3%	2.1%
Test Year Total	**Actual**	**74,506**	**39,449**	**1,796**	**0**	**6,576**	**122,328**	**3.0%**	**1.2%**	**0.0%**	**0.0%**	**1.8%**	**0.9%**
Updated Test Year Total	**Estimate**	**74,176**	**39,226**	**1,795**	**0**	**6,604**	**121,802**	**3.0%**	**1.2%**	**0.0%**	**0.0%**	**1.8%**	**0.9%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Retail Weather Adjustment Summary	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year	Updated Test Year
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Heating Degree Days 10-yr Normal	206	81	0	0	0	18	180	460	797	803	641	407	206	81	0	3,593	3,593
Heating Degree Days Actual	288	7	0	0	0	13	270	600	792	755	637	558	288	7	0	3,920	3,920
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	(48)	(4)	151	82	(74)	(0)	327	327
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Cooling Degree Days 10-yr Normal	37	142	406	473	427	217	45	2	0	0	1	8	37	142	406	1,756	1,756
Cooling Degree Days Actual	32	324	464	497	461	219	44	0	0	0	0	4	32	324	464	2,045	2,045
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58	289	289
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Precipitation 10-yr Normal	1.49	2.64	2.34	3.28	3.16	2.10	1.48	0.69	0.48	0.69	0.77	0.66	1.49	2.64	2.34	19.79	19.79
Precipitation Actual	0.45	0.46	2.01	1.65	2.39	1.40	4.09	0.32	0.80	0.04	0.22	1.86	0.45	0.46	2.01	15.69	15.69
Variance from Normal	(1.04)	(2.19)	(0.33)	(1.63)	(0.77)	(0.70)	2.61	(0.37)	0.32	(0.65)	(0.55)	1.20	(1.04)	(2.19)	(0.33)	(4.10)	(4.10)
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Texas Residential Service **(1)**	(231)	29,129	13,474	6,033	8,299	406	(54)	2,876	(210)	(2,153)	(116)	1,927	(226)	28,814	13,514	59,380	59,110
Texas Residential Space Heat **(2)**	684	3,945	2,482	1,139	1,536	72	540	3,276	(166)	(1,763)	(114)	3,496	704	3,851	2,495	15,127	15,066
Texas Small General Service **(3)**	0	1,819	1,162	577	874	42	(5)	385	(28)	(267)	(16)	293	0	1,776	1,168	4,838	4,801
Texas Secondary General Service **(4) & (5)**	4,315	14,773	7,562	5,736	6,207	617	(18)	2,705	(122)	(460)	2,248	(8,899)	4,401	14,488	7,575	34,664	34,478
CRMWA Weather Adjustment **(6)**	176	370	339	421	308	129	0	0	0	0	0	0	176	370	339	1,743	1,743
Small Municipal and School Service **(7)**	50	204	39	39	40	4	(1)	0	0	0	0	(52)	50	205	39	323	324
Large Municipal and School Service **(8)**	458	2,222	411	425	382	41	(8)	0	0	0	1	(383)	462	2,236	407	3,548	3,562
Large School Service **(9)**	360	1,810	348	282	281	35	(10)	0	0	0	1	(401)	364	1,822	344	2,705	2,717
Texas Retail Weather Adjustment Total	5,812	54,272	25,817	14,652	17,927	1,346	445	9,242	(526)	(4,644)	2,003	(4,019)	5,932	53,562	25,881	122,328	121,802

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Residential Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	(48)	(4)	151	82	(74)	(0)
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000009	0.0001177	0.0002596	0.0002550	0.0001843	0.0000724	0.0000000	0.0000000	0.0000000
Res Service Customers	172,062	172,864	173,261	173,820	174,270	174,425	174,868	175,010	175,309	175,859	176,033	176,297	172,062	172,864	173,261
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	14	2,876	-210	-2,153	-116	1,927	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0002878	0.0009237	0.0013320	0.0014180	0.0013974	0.0012103	0.0005204	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0002814	0.0009137	0.0013360
Res Service Customers	172,062	172,864	173,261	173,820	174,270	174,425	174,868	175,010	175,309	175,859	176,033	176,297	172,062	172,864	173,261
Cooling Degree Days Weather Adjustment (MWh)	(231)	29,129	13,474	6,033	8,299	406	(68)	0	0	0	0	0	(226)	28,814	13,514
TX Residential Service Weather Adjustment (1)	(231)	29,129	13,474	6,033	8,299	406	(54)	2,876	(210)	(2,153)	(116)	1,927	(226)	28,814	13,514

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Residential Space Heat	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)																	
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19		
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	0	(4)	151	82	(74)	(0)		
Heating Degree Days Weather Coefficients	0.0002658	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0002064	0.0007956	0.0012248	0.0012590	0.0011035	0.0008028	0.0002737	0.0000000	0.0000000		
Res Space Heat Customers	31,403	31,094	30,792	30,477	30,178	29,950	29,694	29,494	29,326	29,154	28,986	28,825	31,403	31,094	30,792		
Heating Degree Days Weather Adjustment (MWh)	684	0	0	0	0	0	552	3,276	-166	-1,763	-114	3,496	704	0	0		
Cooling Degree Days Weather Adjustment (10-yr Normal)																	
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19		
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58		
Cooling Degree Days Weather Coefficients	0.0000000	0.0006954	0.0013806	0.0015266	0.0014936	0.0012440	0.0005225	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0006789	0.0013877		
Res Space Heat Customers	31,403	31,094	30,792	30,477	30,178	29,950	29,694	29,494	29,326	29,154	28,986	28,825	31,403	31,094	30,792		
Cooling Degree Days Weather Adjustment (MWh)	0	3,945	2,482	1,139	1,536	72	(12)	0	0	0	0	0	0	3,851	2,495		
TX Residential Space Heat Weather Adjustment (2)	684	3,945	2,482	1,139	1,536	72	540	3,276	(166)	(1,763)	(114)	3,496	704	3,851	2,495		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Small General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	(48)	(4)	151	82	(74)	(0)
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000007	0.0000853	0.0001853	0.0001731	0.0001370	0.0000605	0.0000000	0.0000000	0.0000000
Small General Service Customers	32,788	32,454	32,452	32,473	32,435	32,401	32,373	32,320	32,302	32,154	32,114	32,112	32,788	32,454	32,452
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	2	385	-28	-267	-16	293	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0003072	0.0006135	0.0007261	0.0007910	0.0006814	0.0002793	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0003000	0.0006165
Small General Service Customers	32,788	32,454	32,452	32,473	32,435	32,401	32,373	32,320	32,302	32,154	32,114	32,112	32,788	32,454	32,452
Cooling Degree Days Weather Adjustment (MWh)	0	1,819	1,162	577	874	42	(7)	0	0	0	0	0	0	1,776	1,168
TX Small General Service Weather Adjustment	0	1,819	1,162	577	874	42	(5)	385	(28)	(267)	(16)	293	0	1,776	1,168

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Small Secondary General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	(48)	(4)	151	82	(74)	(0)
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000129	0.0016393	0.0022300	0.0008693	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Small Secondary General Customers	11,721	11,767	11,775	11,787	11,792	11,798	11,806	11,798	11,802	11,991	12,036	12,042	11,721	11,767	11,775
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	14	2,701	-122	-501	0	0	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0054668	0.0103144	0.0120690	0.0127906	0.0095656	0.0035380	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0053341	0.0103344
Small Secondary General Customers	11,721	11,767	11,775	11,787	11,792	11,798	11,806	11,798	11,802	11,991	12,036	12,042	11,721	11,767	11,775
Cooling Degree Days Weather Adjustment (MWh)	0	11,735	7,091	3,482	5,140	217	-31	0	0	0	0	0	0	11,451	7,105
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(1.04)	(2.19)	(0.33)	(1.63)	(0.77)	(0.70)	2.61	(0.37)	0.32	(0.65)	(0.55)	1.20	(1.04)	(2.19)	(0.33)
Precipitation Weather Coefficients	-0.354027	-0.117263	-0.117184	-0.117064	-0.115936	-0.048453	0.000000	0.000000	0.000000	-0.005309	-0.341740	-0.617677	-0.361029	-0.117263	-0.117184
Small Secondary General Customers	11,721	11,767	11,775	11,787	11,792	11,798	11,806	11,798	11,802	11,991	12,036	12,042	11,721	11,767	11,775
Precipitation Weather Adjustment (MWh)	4,315	3,017	458	2,247	1,058	400	0	0	0	41	2,248	(8,899)	4,401	3,017	458
TX Small Secondary General Service Weather Adjustment (4)	4,315	14,752	7,549	5,729	6,198	617	(18)	2,701	(122)	(459)	2,248	(8,899)	4,401	14,468	7,563

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Large Secondary General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	82	(74)	(0)	0	0	(5)	90	140	(5)	(48)	(4)	151	82	(74)	(0)
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000129	0.0016393	0.0022300	0.0008693	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Large Secondary General Customers	21	21	21	21	21	21	21	21	21	20	20	20	21	21	21
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	0	5	0	-1	0	0	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0054668	0.0103144	0.0120690	0.0127906	0.0095656	0.0035380	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0053341	0.0103344
Large Secondary General Customers	21	21	21	21	21	21	21	21	21	20	20	20	21	21	21
Cooling Degree Days Weather Adjustment (MWh)	0	21	13	6	9	0	0	0	0	0	0	0	0	20	13
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal															
Precipitation Weather Coefficients															
Small Secondary General Customers							Large SG customer usage is not impacted by precipitation								
Precipitation Weather Adjustment (MWh)															
TX Large Secondary General Service Weather Adjustment (5)	0	21	13	6	9	0	(0)	5	(0)	(1)	0	0	0	20	13

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Canadian River Municipal Water Authority (CRMWA)	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0000000	4.8487055	5.9721436	5.1930011	5.7373734	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	4.8487055
CRMWA Customers	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cooling Degree Days Weather Adjustment (MWh)	0	0	283	146	177	11	0	0	0	0	0	0	0	0	283
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(1.04)	(2.19)	(0.33)	(1.63)	(0.77)	(0.70)	2.61	(0.37)	0.32	(0.65)	(0.55)	1.20	(1.04)	(2.19)	(0.33)
Precipitation Weather Coefficients	-169.01166	-169.01166	-169.01166	-169.01166	-169.01166	-169.01166	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-169.01166	-169.01166	-169.01166
Small Secondary General Customers	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Precipitation Weather Adjustment (MWh)	176	370	56	275	131	118	0	0	0	0	0	0	176	370	56
CRMWA Weather Adjustment (6)	176	370	339	421	308	129	0	0	0	0	0	0	176	370	339

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Municipal and School Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(5)	182	58	24	34	2	(1)	(2)	0	0	(1)	(4)	(5)	182	58
Cooling Degree Days Weather Coefficients	0.0028380	0.0040238	0.0027053	0.0025537	0.0038972	0.0092803	0.0058638	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0027749	0.0040439	0.0026720
Municipal & School Customers	4,463	4,457	4,451	4,454	4,462	4,459	4,460	4,464	4,466	4,469	4,469	4,466	4,463	4,457	4,451
Cooling Degree Days Weather Adjustment (MWh)	(59)	3,272	703	278	593	80	(20)	0	0	0	0	0	(58)	3,288	694
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(1.04)	(2.19)	(0.33)	(1.63)	(0.77)	(0.70)	2.61	(0.37)	0.32	(0.65)	(0.55)	1.20	(1.04)	(2.19)	(0.33)
Precipitation Weather Coefficients	(0.19973)	(0.09897)	(0.06443)	(0.06443)	(0.03197)	0.00000	0.00000	0.00000	0.00000	0.00000	(0.00047)	(0.15645)	(0.20142)	(0.10005)	(0.06443)
Small Secondary General Customers	4,463	4,457	4,451	4,454	4,462	4,459	4,460	4,464	4,466	4,469	4,469	4,466	4,463	4,457	4,451
Precipitation Weather Adjustment (MWh)	927	964	95	467	110	0	0	0	0	0	1	(836)	935	975	95
Weather Adjustment	868	4,236	798	746	703	80	(20)	0	0	0	1	(836)	877	4,263	790
Texas - Municipal and School Weather Impact Allocation (Billed Sales in KWh)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
SMSTX	1,628	1,377	1,593	1,892	1,927	1,604	1,586	1,520	2,043	2,413	1,751	1,810	1,628	1,377	1,593
LMSTX	14,922	15,016	16,589	20,452	18,483	17,725	14,595	13,027	13,929	14,003	13,751	13,305	14,922	15,016	16,589
LSSTX	11,751	12,236	14,029	13,565	13,562	15,335	17,565	12,668	13,892	13,811	12,090	13,941	11,751	12,236	14,029
Total	28,301	28,629	32,211	35,909	33,971	34,664	33,746	27,215	29,864	30,228	27,592	29,056	28,301	28,629	32,211
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
SMSTX	5.75%	4.81%	4.94%	5.27%	5.67%	4.63%	4.70%	5.58%	6.84%	7.98%	6.35%	6.23%	5.75%	4.81%	4.94%
LMSTX	52.72%	52.45%	51.50%	56.95%	54.41%	51.13%	43.25%	47.87%	46.64%	46.33%	49.84%	45.79%	52.72%	52.45%	51.50%
LSSTX	41.52%	42.74%	43.55%	37.78%	39.92%	44.24%	52.05%	46.55%	46.52%	45.69%	43.82%	47.98%	41.52%	42.74%	43.55%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Municipal and School Allocation of Sales impacted by Weather															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
SMSTX **(7)**	50	204	39	39	40	4	(1)	0	0	0	0	(52)	50	205	39
LMSTX **(8)**	458	2,222	411	425	382	41	(8)	0	0	0	1	(383)	462	2,236	407
LSSTX **(9)**	360	1,810	348	282	281	35	(10)	0	0	0	1	(401)	364	1,822	344

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Residential Service Coefficients (Modeled with MWH)

			Model Coefficients		Monthly Weights Model to Calendar			Calendar Month	
Year	Month	Date	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD
2018	4	Apr-18	0.000000	0.000000	42.86%	57.14%	0.00%	0.0000000	0.0002878
2018	5	May-18	0.000000	0.000504	44.24%	55.61%	0.15%	0.0000000	0.0009237
2018	6	Jun-18	0.000000	0.001257	44.76%	54.92%	0.32%	0.0000000	0.0013320
2018	7	Jul-18	0.000000	0.001393	45.47%	54.53%	0.00%	0.0000000	0.0014180
2018	8	Aug-18	0.000000	0.001439	49.62%	49.46%	0.92%	0.0000000	0.0013974
2018	9	Sep-18	0.000000	0.001361	41.43%	58.57%	0.00%	0.0000000	0.0012103
2018	10	Oct-18	0.000000	0.001104	47.16%	52.38%	0.46%	0.0000009	0.0005204
2018	11	Nov-18	0.000000	0.000000	41.11%	58.41%	0.48%	0.0001177	0.0000000
2018	12	Dec-18	0.000199	0.000000	41.94%	58.06%	0.00%	0.0002596	0.0000000
2018	1	Jan-19	0.000303	0.000000	48.39%	50.69%	0.92%	0.0002550	0.0000000
2019	2	Feb-19	0.000210	0.000000	40.48%	59.35%	0.17%	0.0001843	0.0000000
2019	3	Mar-19	0.000167	0.000000	43.32%	56.68%	0.00%	0.0000724	0.0000000
2019	4	Apr-19	0.000000	0.000000	44.13%	55.87%	0.00%	0.0000000	0.0002814
2019	5	May-19	0.000000	0.000504	45.62%	53.92%	0.46%	0.0000000	0.0009137
2019	6	Jun-19	0.000000	0.001257	41.75%	58.25%	0.00%	0.0000000	0.0013360
2019	7	Jul-19	0.000000	0.001393	46.70%	53.30%	0.00%	0.0000000	0.0014174
2019	8	Aug-19	0.000000	0.001439	46.39%	52.84%	0.77%	0.0000000	0.0013953
2019	9	Sep-19	0.000000	0.001361	42.70%	57.30%	0.00%	0.0000000	0.0012135
2019	10	Oct-19	0.000000	0.001104	48.39%	50.69%	0.92%	0.0000018	0.0005340
2019	11	Nov-19	0.000000	0.000000	36.35%	63.02%	0.63%		
2019	12	Dec-19	0.000199	0.000000	43.32%	56.68%	0.00%		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Residential Space Heat Coefficients (Modeled with MWH)

		Model Coefficients		Monthly Weights Model to Calendar			Calendar Month	
Year	Month	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD
2018	4	0.000620	0.000000	42.86%	57.14%	0.00%	0.0002658	0.0000000
2018	5	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	0.0006954
2018	6	0.000000	0.001246	44.76%	54.92%	0.32%	0.0000000	0.0013806
2018	7	0.000000	0.001489	45.47%	54.53%	0.00%	0.0000000	0.0015266
2018	8	0.000000	0.001558	49.62%	49.46%	0.92%	0.0000000	0.0014936
2018	9	0.000000	0.001436	41.43%	58.57%	0.00%	0.0000000	0.0012440
2018	10	0.000000	0.001108	47.16%	52.38%	0.46%	0.0002064	0.0005225
2018	11	0.000385	0.000000	41.11%	58.41%	0.48%	0.0007956	0.0000000
2018	12	0.001080	0.000000	41.94%	58.06%	0.00%	0.0012248	0.0000000
2018	1	0.001329	0.000000	48.39%	50.69%	0.92%	0.0012590	0.0000000
2019	2	0.001196	0.000000	40.48%	59.35%	0.17%	0.0011035	0.0000000
2019	3	0.001042	0.000000	43.32%	56.68%	0.00%	0.0008028	0.0000000
2019	4	0.000620	0.000000	44.13%	55.87%	0.00%	0.0002737	0.0000000
2019	5	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	0.0006789
2019	6	0.000000	0.001246	41.75%	58.25%	0.00%	0.0000000	0.0013877
2019	7	0.000000	0.001489	46.70%	53.30%	0.00%	0.0000000	0.0015257
2019	8	0.000000	0.001558	46.39%	52.84%	0.77%	0.0000000	0.0014902
2019	9	0.000000	0.001436	42.70%	57.30%	0.00%	0.0000000	0.0012482
2019	10	0.000000	0.001108	48.39%	50.69%	0.92%	0.0002049	0.0005362
2019	11	0.000385	0.000000	36.35%	63.02%	0.63%		
2019	12	0.001080	0.000000	43.32%	56.68%	0.00%		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Small General Service Coefficients (Modeled with MWH)

		Model Coefficients			Monthly Weights Model to Calendar			Calendar Month		
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	0.000000	42.86%	57.14%	0.00%	0.0000000	0.0000000	0.0000000
2018	5	0.000000	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	0.0003072	0.0000000
2018	6	0.000000	0.000551	0.000000	44.76%	54.92%	0.32%	0.0000000	0.0006135	0.0000000
2018	7	0.000000	0.000664	0.000000	45.47%	54.53%	0.00%	0.0000000	0.0007261	0.0000000
2018	8	0.000000	0.000778	0.000000	49.62%	49.46%	0.92%	0.0000000	0.0007910	0.0000000
2018	9	0.000000	0.000808	0.000000	41.43%	58.57%	0.00%	0.0000000	0.0006814	0.0000000
2018	10	0.000000	0.000592	0.000000	47.16%	52.38%	0.46%	0.0000007	0.0002793	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000853	0.0000000	0.0000000
2018	12	0.000144	0.000000	0.000000	41.94%	58.06%	0.00%	0.0001853	0.0000000	0.0000000
2018	1	0.000215	0.000000	0.000000	48.39%	50.69%	0.92%	0.0001731	0.0000000	0.0000000
2019	2	0.000134	0.000000	0.000000	40.48%	59.35%	0.17%	0.0001370	0.0000000	0.0000000
2019	3	0.000140	0.000000	0.000000	43.32%	56.68%	0.00%	0.0000605	0.0000000	0.0000000
2019	4	0.000000	0.000000	0.000000	44.13%	55.87%	0.00%	0.0000000	0.0000000	0.0000000
2019	5	0.000000	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	0.0003000	0.0000000
2019	6	0.000000	0.000551	0.000000	41.75%	58.25%	0.00%	0.0000000	0.0006165	0.0000000
2019	7	0.000000	0.000664	0.000000	46.70%	53.30%	0.00%	0.0000000	0.0007247	0.0000000
2019	8	0.000000	0.000778	0.000000	46.39%	52.84%	0.77%	0.0000000	0.0007923	0.0000000
2019	9	0.000000	0.000808	0.000000	42.70%	57.30%	0.00%	0.0000000	0.0006842	0.0000000
2019	10	0.000000	0.000592	0.000000	48.39%	50.69%	0.92%	0.0000013	0.0002866	0.0000000
2019	11	0.000000	0.000000	0.000000						
2019	12	0.000144	0.000000	0.000000						

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Secondary General Service Coefficients (Modeled with MWH)

		Model Coefficients			Monthly Weights Model to Calendar			Calendar Month						
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip	Actual Cust	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	-7856.573035	42.86%	57.14%	0.00%	0.0000000	0.0000000	-4156.9869438	11,742	0.0000000	0.0000000	-0.3540272
2018	5	0.000000	0.000000	-1382.297376	44.24%	55.61%	0.15%	0.0000000	64.4426026	-1382.2973757	11,788	0.0000000	0.0054668	-0.1172631
2018	6	0.000000	115.540523	-1382.297376	44.76%	54.92%	0.32%	0.0000000	121.6683084	-1382.2973757	11,796	0.0000000	0.0103144	-0.1171836
2018	7	0.000000	126.464815	-1382.297376	45.47%	54.53%	0.00%	0.0000000	142.5109949	-1382.2973757	11,808	0.0000000	0.0120690	-0.1170645
2018	8	0.000000	155.890345	-1382.297376	49.62%	49.46%	0.92%	0.0000000	151.0949528	-1369.5573077	11,813	0.0000000	0.0127906	-0.1159365
2018	9	0.000000	147.446719	-1382.297376	41.43%	58.57%	0.00%	0.0000000	113.0564046	-572.6660556	11,819	0.0000000	0.0095656	-0.0484530
2018	10	0.000000	88.731548	0.000000	47.16%	52.38%	0.46%	0.1520425	41.8442169	0.0000000	11,827	0.0000129	0.0035380	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	19.3749800	0.0000000	0.0000000	11,819	0.0016393	0.0000000	0.0000000
2018	12	32.993218	0.000000	0.000000	41.94%	58.06%	0.00%	26.3648869	0.0000000	0.0000000	11,823	0.0022300	0.0000000	0.0000000
2018	1	21.577759	0.000000	0.000000	48.39%	50.69%	0.92%	10.4408511	0.0000000	-63.7692002	12,011	0.0008693	0.0000000	-0.0053092
2019	2	0.000000	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.0000000	-4120.0220929	12,056	0.0000000	0.0000000	-0.3417404
2019	3	0.000000	0.000000	-6918.958217	43.32%	56.68%	0.00%	0.0000000	0.0000000	-7450.4173069	12,062	0.0000000	0.0000000	-0.6176768
2019	4	0.000000	0.000000	-7856.573035	44.13%	55.87%	0.00%	0.0000000	0.0000000	-4239.1999680	11,742	0.0000000	0.0000000	-0.3610288
2019	5	0.000000	0.000000	-1382.297376	45.62%	53.92%	0.46%	0.0000000	62.8788298	-1382.2973757	11,788	0.0000000	0.0053341	-0.1172631
2019	6	0.000000	115.540523	-1382.297376	41.75%	58.25%	0.00%	0.0000000	121.9043568	-1382.2973757	11,796	0.0000000	0.0103344	-0.1171836
2019	7	0.000000	126.464815	-1382.297376	46.70%	53.30%	0.00%	0.0000000	142.1493908	-1382.2973757	11,808	0.0000000	0.0120384	-0.1170645
2019	8	0.000000	155.890345	-1382.297376	46.39%	52.84%	0.77%	0.0000000	150.9127701	-1371.6806524				
2019	9	0.000000	147.446719	-1382.297376	42.70%	57.30%	0.00%	0.0000000	113.8019941	-590.2190382				
2019	10	0.000000	88.731548	0.000000	48.39%	50.69%	0.92%	0.3040850	42.9346199	0.0000000				
2019	11	0.000000	0.000000	0.000000	36.35%	63.02%	0.63%							
2019	12	32.993218	0.000000	0.000000	43.32%	56.68%	0.00%							

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas CRMWA Coefficients (Modeled with MWH)

		Model Coefficients (Calendar)			Monthly Weights Model to Calendar			Revenue Month		
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	-169.011655	42.86%	57.14%	0.00%	0.0000000	0.0000000	-169.0116553
2018	5	0.000000	0.000000	-169.011655	44.24%	55.61%	0.15%	0.0000000	4.8487055	-169.0116553
2018	6	0.000000	4.848705	-169.011655	44.76%	54.92%	0.32%	0.0000000	5.9721436	-169.0116553
2018	7	0.000000	5.972144	-169.011655	45.47%	54.53%	0.00%	0.0000000	5.1930011	-169.0116553
2018	8	0.000000	5.193001	-169.011655	49.62%	49.46%	0.92%	0.0000000	5.7373734	-169.0116553
2018	9	0.000000	5.737373	-169.011655	41.43%	58.57%	0.00%	0.0000000	0.0000000	0.0000000
2018	10	0.000000	0.000000	0.000000	47.16%	52.38%	0.46%	0.0000000	0.0000000	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000000	0.0000000	0.0000000
2018	12	0.000000	0.000000	0.000000	41.94%	58.06%	0.00%	0.0000000	0.0000000	0.0000000
2018	1	0.000000	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0000000	0.0000000
2019	2	0.000000	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.0000000	0.0000000
2019	3	0.000000	0.000000	0.000000	43.32%	56.68%	0.00%	0.0000000	0.0000000	-169.0116553
2019	4	0.000000	0.000000	-169.011655	44.13%	55.87%	0.00%	0.0000000	0.0000000	-169.0116553
2019	5	0.000000	0.000000	-169.011655	45.62%	53.92%	0.46%	0.0000000	4.8487055	-169.0116553
2019	6	0.000000	4.848705	-169.011655	41.75%	58.25%	0.00%	0.0000000	5.9721436	-169.0116553
2019	7	0.000000	5.972144	-169.011655	46.70%	53.30%	0.00%	0.0000000	5.1930011	-169.0116553
2019	8	0.000000	5.193001	-169.011655	46.39%	52.84%	0.77%	0.0000000	5.7373734	-169.0116553
2019	9	0.000000	5.737373	-169.011655	42.70%	57.30%	0.00%	0.0000000	0.0000000	0.0000000
2019	10	0.000000	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0000000	0.0000000
2019	11	0.000000	0.000000	0.000000	36.35%	63.02%	0.63%			
2019	12	0.000000	0.000000	0.000000	43.32%	56.68%	0.00%			

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Sales

Texas Municipals and Schools Coefficients (Modeled with MWH)

		Model Coefficients			Monthly Weights Model to Calendar			Calendar Month		
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	-0.276015	42.86%	57.14%	0.00%	0.0000000	0.0028380	-0.1997289
2018	5	0.000000	0.004966	-0.142514	44.24%	55.61%	0.15%	0.0000000	0.0040238	-0.0989718
2018	6	0.000000	0.003279	-0.064426	44.76%	54.92%	0.32%	0.0000000	0.0027053	-0.0644261
2018	7	0.000000	0.002237	-0.064426	45.47%	54.53%	0.00%	0.0000000	0.0025537	-0.0644261
2018	8	0.000000	0.002818	-0.064426	49.62%	49.46%	0.92%	0.0000000	0.0038972	-0.0319656
2018	9	0.000000	0.004821	0.000000	41.43%	58.57%	0.00%	0.0000000	0.0092803	0.0000000
2018	10	0.000000	0.012434	0.000000	47.16%	52.38%	0.46%	0.0000000	0.0058638	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000000	0.0000000	0.0000000
2018	12	0.000000	0.000000	0.000000	41.94%	58.06%	0.00%	0.0000000	0.0000000	0.0000000
2018	1	0.000000	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0000000	0.0000000
2019	2	0.000000	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.0000000	-0.0004694
2019	3	0.000000	0.000000	0.000000	43.32%	56.68%	0.00%	0.0000000	0.0000000	-0.1564512
2019	4	0.000000	0.000000	-0.276015	44.13%	55.87%	0.00%	0.0000000	0.0027749	-0.2014241
2019	5	0.000000	0.004966	-0.142514	45.62%	53.92%	0.46%	0.0000000	0.0040439	-0.1000514
2019	6	0.000000	0.003279	-0.064426	41.75%	58.25%	0.00%	0.0000000	0.0026720	-0.0644261
2019	7	0.000000	0.002237	-0.064426	46.70%	53.30%	0.00%	0.0000000	0.0025466	-0.0644261
2019	8	0.000000	0.002818	-0.064426	46.39%	52.84%	0.77%	0.0000000	0.0039501	-0.0298874
2019	9	0.000000	0.004821	0.000000	42.70%	57.30%	0.00%	0.0000000	0.0091837	0.0000000
2019	10	0.000000	0.012434	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0060166	0.0000000
2019	11	0.000000	0.000000	0.000000	0.00%	0.00%	0.00%			
2019	12	0.000000	0.000000	0.000000	0.00%	0.00%	0.00%			

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Roswell Weather Data
Normal Weather Based on a 10-year Historical Average

Month	Year			Weather Act Cal HDD65	Weather Act Cal CDD65	Weather Act Cal Precip	Weather Norm Cal HDD65	Weather Norm Cal CDD65	Weather Norm Cal Precip	Dev HDD65	Dev CDD65	Dev Precip
Apr	2018	Apr-18	Actual	111	57	0.03	124	55	0.46	-13	2	-0.43
May	2018	May-18	Actual	0	368	0.52	33	194	1.36	-33	174	-0.84
Jun	2018	Jun-18	Actual	0	554	1.40	0	496	1.30	0	58	0.11
Jul	2018	Jul-18	Actual	0	584	0.51	0	530	1.84	0	54	-1.33
Aug	2018	Aug-18	Actual	0	533	0.96	0	496	1.94	0	37	-0.98
Sep	2018	Sep-18	Actual	2	223	0.84	5	261	1.92	-3	-38	-1.08
Oct	2018	Oct-18	Actual	177	78	3.25	120	54	1.14	57	24	2.11
Nov	2018	Nov-18	Actual	522	0	0.01	427	1	0.23	95	-1	-0.22
Dec	2018	Dec-18	Actual	720	0	1.05	748	0	0.46	-28	0	0.59
Jan	2019	Jan-19	Actual	684	0	0.03	745	0	0.32	-61	0	-0.29
Feb	2019	Feb-19	Actual	474	0	0.00	515	0	0.33	-41	0	-0.33
Mar	2019	Mar-19	Actual	400	13	0.42	305	8	0.20	95	5	0.22
Apr	2019	Apr-19	Estimate	111	57	0.03	124	55	0.46	-13	2	-0.43
May	2019	May-19	Estimate	0	368	0.52	33	194	1.36	-33	174	-0.84
Jun	2019	Jun-19	Estimate	0	554	1.40	0	496	1.30	0	58	0.11
Annual (Apr18 - Mar19)			**Actual**	**3,090**	**2,410**	**9.02**	**3,022**	**2,095**	**11.49**	**68**	**316**	**-2.47**
Annual Dev %										**2.2%**	**15.1%**	**-21.5%**
Annual (Jul18 - Jun19)			**Estimate**	**3,090**	**2,410**	**9.02**	**3,022**	**2,095**	**11.49**	**68**	**316**	**-2.47**
Annual Dev %										**2.2%**	**15.1%**	**-21.5%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Lubbock Weather Data
Normal Weather Based on a 10-year Historical Average

Month	Year			Weather Act Cal HDD65	Weather Act Cal CDD65	Weather Act Cal Precip	Weather Norm Cal HDD65	Weather Norm Cal CDD65	Weather Norm Cal Precip	Dev HDD65	Dev CDD65	Dev Precip
Apr	2018	Apr-18	Actual	208	53	0.03	144	68	1.25	64	-15	-1.22
May	2018	May-18	Actual	0	412	1.26	54	207	3.15	-54	206	-1.89
Jun	2018	Jun-18	Actual	0	543	1.36	0	468	1.87	0	75	-0.51
Jul	2018	Jul-18	Actual	0	558	0.88	0	509	2.73	0	49	-1.85
Aug	2018	Aug-18	Actual	0	517	1.25	0	480	1.85	0	37	-0.60
Sep	2018	Sep-18	Actual	11	251	3.26	11	249	2.83	0	2	0.43
Oct	2018	Oct-18	Actual	232	58	4.65	136	67	1.62	96	-9	3.04
Nov	2018	Nov-18	Actual	536	0	0.07	403	4	0.54	134	-4	-0.47
Dec	2018	Dec-18	Actual	753	0	1.44	722	0	0.67	31	0	0.77
Jan	2019	Jan-19	Actual	690	0	0.00	735	0	0.65	-45	0	-0.65
Feb	2019	Feb-19	Actual	550	0	0.04	553	1	0.73	-3	-1	-0.69
Mar	2019	Mar-19	Actual	494	12	1.13	330	17	0.57	164	-5	0.56
Apr	2019	Apr-19	Estimate	208	53	0.03	144	68	1.25	64	-15	-1.22
May	2019	May-19	Estimate	0	412	1.26	54	207	3.15	-54	206	-1.89
Jun	2019	Jun-19	Estimate	0	543	1.36	0	468	1.87	0	75	-0.51
Annual (Apr18 - Mar19)			**Actual**	**3,474**	**2,404**	**15.37**	**3,088**	**2,069**	**18.47**	**386**	**335**	**-3.10**
Annual Dev %										**12.5%**	**16.2%**	**-16.8%**
Annual (Jul18 - Jun19)			**Estimate**	**3,474**	**2,404**	**15.37**	**3,088**	**2,069**	**18.47**	**386**	**335**	**-3.10**
Annual Dev %										**12.5%**	**16.2%**	**-16.8%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Amarillo Weather Data
Normal Weather Based on a 10-year Historical Average

Month	Year			Weather Act Cal HDD65	Weather Act Cal CDD65	Weather Act Cal Precip	Weather Norm Cal HDD65	Weather Norm Cal CDD65	Weather Norm Cal Precip	Dev HDD65	Dev CDD65	Dev Precip
Apr	2018	Apr2018	Actual	319	26	0.60	231	29	1.58	88	-3	-0.98
May	2018	May2018	Actual	10	288	0.18	94	121	2.47	-84	167	-2.29
Jun	2018	Jun2018	Actual	0	432	2.23	1	383	2.50	-1	50	-0.27
Jul	2018	Jul2018	Actual	0	481	1.92	0	459	3.47	0	22	-1.55
Aug	2018	Aug2018	Actual	0	442	2.78	0	407	3.61	0	35	-0.83
Sep	2018	Sep2018	Actual	16	210	0.76	21	206	1.85	-5	4	-1.09
Oct	2018	Oct2018	Actual	284	41	3.90	199	39	1.44	86	2	2.46
Nov	2018	Nov2018	Actual	624	0	0.40	482	2	0.74	142	-2	-0.34
Dec	2018	Dec2018	Actual	803	0	0.58	823	0	0.41	-20	0	0.17
Jan	2019	Jan2019	Actual	782	0	0.06	827	0	0.71	-45	0	-0.65
Feb	2019	Feb2019	Actual	672	0	0.28	673	1	0.78	-1	-1	-0.50
Mar	2019	Mar2019	Actual	587	2	2.11	436	7	0.70	152	-5	1.42
Apr	2019	Apr2019	Estimate	319	26	0.60	231	29	1.58	88	-3	-0.98
May	2019	May2019	Estimate	10	288	0.18	94	121	2.47	-84	167	-2.29
Jun	2019	Jun2019	Estimate	0	432	2.23	1	383	2.50	-1	50	-0.27
Annual (Apr18 - Mar19)			**Actual**	**4,097**	**1,922**	**15.80**	**3,786**	**1,653**	**20.25**	**311**	**269**	**-4.45**
Annual Dev %										**8.2%**	**16.2%**	**-22.0%**
Annual (Jul18 - Jun19)			**Estimate**	**4,097**	**1,922**	**15.80**	**3,786**	**1,653**	**20.25**	**311**	**269**	**-4.45**
Annual Dev %										**8.2%**	**16.2%**	**-22.0%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico - Calendar Month Weather Normal Sales
10-Year Normal Weather

Southwestern Public Service Company Electric Sales - New Mexico
Calendar Month - MONTHLY MWH

		Actual Sales Cal Mth Res	Actual Sales Cal Mth Small C&I	Actual Sales Cal Mth Large C&I	Actual Sales Cal Mth Street	Actual Sales Cal Mth Other Sale Auth	Actual Sales Cal Mth Retail	WN Sales Cal Mth Res	WN Sales Cal Mth Small C&I	WN Sales Cal Mth Large C&I	WN Sales Cal Mth Street	WN Sales Cal Mth Other Sale Auth	WN Sales Cal Mth Retail
Apr-18	Actual	61,008	133,516	267,846	1,109	10,809	474,289	61,096	133,129	267,846	1,109	10,575	473,755
May-18	Actual	91,602	153,164	254,656	1,110	10,425	510,957	84,462	149,653	254,656	1,110	9,570	499,451
Jun-18	Actual	112,124	165,273	259,457	1,114	13,831	551,799	107,328	163,247	259,457	1,114	13,580	544,725
Jul-18	Actual	123,623	170,015	274,139	1,115	12,711	581,603	118,610	167,328	274,139	1,115	12,450	573,641
Aug-18	Actual	115,848	170,461	278,746	1,115	12,445	578,614	112,466	168,308	278,745	1,115	12,202	572,836
Sep-18	Actual	77,079	160,091	262,329	1,114	13,643	514,256	79,797	160,717	262,329	1,114	14,275	518,232
Oct-18	Actual	73,993	147,744	270,170	1,115	10,404	503,426	72,951	147,490	270,170	1,115	10,144	501,870
Nov-18	Actual	89,384	140,430	261,865	1,115	9,161	501,955	86,190	140,328	261,865	1,115	9,161	498,659
Dec-18	Actual	119,748	138,811	278,770	1,115	9,966	548,410	121,429	138,883	278,770	1,115	9,966	550,163
Jan-19	Actual	124,512	166,801	289,021	1,116	9,921	591,371	128,429	166,980	289,021	1,116	9,919	595,465
Feb-19	Actual	85,766	131,648	257,128	1,111	7,631	483,284	88,005	131,309	257,128	1,111	7,481	485,034
Mar-19	Actual	85,232	166,720	302,325	1,111	11,438	566,826	82,293	166,994	302,325	1,111	11,607	564,330
Apr-19	Estimate	61,008	133,516	267,846	1,109	10,809	474,289	61,099	133,124	267,846	1,109	10,573	473,751
May-19	Estimate	91,602	153,164	254,656	1,110	10,425	510,957	84,630	149,725	254,656	1,110	9,585	499,706
Jun-19	Estimate	112,124	165,273	259,457	1,114	13,831	551,799	107,302	163,233	259,457	1,114	13,582	544,688
Test Year Total	**Actual**	**1,159,920**	**1,844,673**	**3,256,453**	**13,359**	**132,384**	**6,406,790**	**1,143,056**	**1,834,367**	**3,256,452**	**13,359**	**130,928**	**6,378,162**
Updated Test Year Total	**Estimate**	**1,159,920**	**1,844,673**	**3,256,453**	**13,359**	**132,384**	**6,406,790**	**1,143,201**	**1,834,420**	**3,256,452**	**13,359**	**130,943**	**6,378,376**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico - Calendar Month Weather Normal Sales
10-Year Normal Weather

Southwestern Public Service Company Electric Sales - New Mexico
Calendar Month - MONTHLY MWH

		Act var fr WN Res	Act var fr WN Small C&I	Act var fr WN Large C&I	Act var fr WN Street	Act var fr WN Other Sale Auth	Act var fr WN Retail	% var Res	% var Small C&I	% var Large C&I	% var Street	% var Other Sale Auth	% var Retail
Apr-16	Actual	(88)	387	0	0	235	533	-0.14%	0.29%	0.00%	0.00%	2.22%	0.11%
May-16	Actual	7,140	3,511	1	0	855	11,506	8.45%	2.35%	0.00%	0.00%	8.93%	2.30%
Jun-16	Actual	4,796	2,025	0	0	251	7,073	4.47%	1.24%	0.00%	0.00%	1.85%	1.30%
Jul-16	Actual	5,013	2,687	0	0	261	7,962	4.23%	1.61%	0.00%	0.00%	2.10%	1.39%
Aug-16	Actual	3,381	2,153	0	0	243	5,778	3.01%	1.28%	0.00%	0.00%	1.99%	1.01%
Sep-16	Actual	(2,718)	(626)	(0)	0	(632)	(3,976)	-3.41%	-0.39%	0.00%	0.00%	-4.43%	-0.77%
Oct-16	Actual	1,042	254	0	0	259	1,556	1.43%	0.17%	0.00%	0.00%	2.56%	0.31%
Nov-16	Actual	3,194	102	0	0	0	3,296	3.71%	0.07%	0.00%	0.00%	0.00%	0.66%
Dec-16	Actual	(1,682)	(72)	0	0	0	(1,753)	-1.38%	-0.05%	0.00%	0.00%	0.00%	-0.32%
Jan-17	Actual	(3,917)	(179)	0	0	2	(4,094)	-3.05%	-0.11%	0.00%	0.00%	0.02%	-0.69%
Feb-17	Actual	(2,239)	339	0	0	150	(1,750)	-2.54%	0.26%	0.00%	0.00%	2.01%	-0.36%
Mar-17	Actual	2,939	(274)	0	0	(169)	2,496	3.57%	-0.16%	0.00%	0.00%	-1.46%	0.44%
Apr-17	Estimate	(91)	391	0	0	237	537	-0.15%	0.29%	0.00%	0.00%	2.24%	0.11%
May-17	Estimate	6,972	3,439	1	0	839	11,251	8.24%	2.30%	0.00%	0.00%	8.76%	2.25%
Jun-17	Estimate	4,823	2,039	0	0	249	7,111	4.49%	1.25%	0.00%	0.00%	1.83%	1.31%
Test Year Total	**Actual**	**16,863**	**10,307**	**2**	**0**	**1,456**	**28,628**	**1.48%**	**0.56%**	**0.00%**	**0.00%**	**1.11%**	**0.4%**
Updated Test Year Total	**Estimate**	**16,719**	**10,253**	**2**	**0**	**1,441**	**28,415**	**1.46%**	**0.56%**	**0.00%**	**0.00%**	**1.10%**	**0.4%**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Weather Impacted Sales Calculation

New Mexico Retail Weather Adjustment Summary	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year	Updated Test Year
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Heating Degree Days 10-yr Normal	124	33	0	0	0	5	120	427	748	745	515	305	124	33	0	3,022	3,022
Heating Degree Days Actual	111	0	0	0	0	2	177	522	720	684	474	400	111	0	0	3,090	3,090
Variance from Normal	(13)	(33)	0	0	0	(3)	57	95	(28)	(61)	(41)	95	(13)	(33)	0	68	68
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Cooling Degree Days 10-yr Normal	55	194	496	530	496	261	54	1	0	0	0	8	55	194	496	2,095	2,095
Cooling Degree Days Actual	57	368	554	584	533	223	78	0	0	0	0	13	57	368	554	2,410	2,410
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58	316	316
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
Precipitation 10-yr Normal	0.46	1.36	1.30	1.84	1.94	1.92	1.14	0.23	0.46	0.32	0.33	0.20	0.46	1.36	1.30	11.49	11.49
Precipitation Actual	0.03	0.52	1.40	0.51	0.96	0.84	3.25	0.01	1.05	0.03	0.00	0.42	0.03	0.52	1.40	9.02	9.02
Variance from Normal	(0.43)	(0.84)	0.11	(1.33)	(0.98)	(1.08)	2.11	(0.22)	0.59	(0.29)	(0.33)	0.22	(0.43)	(0.84)	0.11	(2.47)	(2.47)
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Total	Total
New Mexico Residential Service **(1)**	0	4,509	2,987	3,059	2,074	(1,730)	449	1,113	(656)	(1,396)	(709)	629	0	4,402	3,002	10,330	10,237
New Mexico Residential Space Heat **(2)**	(88)	2,632	1,809	1,954	1,307	(988)	593	2,082	(1,026)	(2,521)	(1,530)	2,311	(91)	2,570	1,821	6,534	6,481
New Mexico Small General Service **(3)**	0	678	454	453	307	(257)	64	102	(72)	(185)	(123)	124	0	662	457	1,546	1,533
New Mexico Secondary General Service **(4) & (5)**	0	2,378	1,627	1,629	1,119	(861)	190	0	0	0	0	0	0	2,322	1,638	6,082	6,038
New Mexico Irrigation Service **(6)**	387	456	(56)	605	727	492	0	0	0	6	462	(398)	391	455	(56)	2,680	2,685
Large Municipal and School Service **(7)**	214	776	231	238	222	(587)	241	0	0	2	134	(153)	216	762	229	1,316	1,302
Small Municipal and School Service **(8)**	21	79	21	24	22	(45)	19	0	0	0	16	(16)	21	78	20	140	138
New Mexico Retail Weather Adjustment Total	533	11,506	7,073	7,962	5,778	(3,976)	1,556	3,296	(1,753)	(4,094)	(1,750)	2,496	537	11,251	7,111	28,628	28,415

New Mexico Residential Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	13	(33)	0	0	0	(3)	57	95	(28)	(61)	(41)	95	(13)	(33)	0
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000015	0.0001951	0.0003873	0.0003795	0.0002851	0.0001090	0.0000000	0.0000000	0.0000000
Res Service Customers	59,684	59,785	59,827	59,935	60,001	60,018	60,145	60,203	60,255	60,384	60,509	60,579	59,684	59,785	59,827
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	5	1,113	(656)	(1,396)	(709)	629	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(38)	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0004324	0.0008550	0.0009504	0.0009269	0.0007524	0.0003115	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0004221	0.0008592
Res Service Customers	59,684	59,785	59,827	59,935	60,001	60,018	60,145	60,203	60,255	60,384	60,509	60,579	59,684	59,785	59,827
Cooling Degree Days Weather Adjustment (MWh)	0	4,509	2,987	3,059	2,074	(1,730)	444	0	0	0	0	0	0	4,402	3,002
NM Residential Service Weather Adjustment (1)	0	4,509	2,987	3,059	2,074	(1,730)	449	1,113	(656)	(1,396)	(709)	629	0	4,402	3,002

New Mexico Residential Space Heat	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(13)	(33)	0	0	0	(3)	57	95	(28)	(61)	(41)	95	(13)	(33)	0
Heating Degree Days Weather Coefficients	0.0002354	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0002072	0.0007387	0.0012276	0.0013912	0.0012510	0.0008156	0.0002424	0.0000000	0.0000000
Res Space Heat Customers	29,694	29,715	29,718	29,696	29,727	29,700	29,743	29,758	29,744	29,759	29,758	29,760	29,694	29,715	29,718
Heating Degree Days Weather Adjustment (MWh)	(88)	0	0	0	0	0	353	2,082	(1,026)	(2,521)	(1,530)	2,311	(91)	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0005078	0.0010423	0.0012254	0.0011787	0.0008685	0.0003403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0004959	0.0010490
Res Space Heat Customers	29,826	29,715	29,718	29,696	29,727	29,700	29,743	29,758	29,744	29,759	29,758	29,760	29,694	29,715	29,718
Cooling Degree Days Weather Adjustment (MWh)	0	2,632	1,809	1,954	1,307	(988)	240	0	0	0	0	0	0	2,570	1,821
NM Residential Space Heat Weather Adjustment (2)	(88)	2,632	1,809	1,954	1,307	(988)	593	2,082	(1,026)	(2,521)	(1,530)	2,311	(91)	2,570	1,821

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Small General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-16	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	13	(33)	0	0	0	(3)	57	95	(28)	(61)	(41)	95	(13)	(33)	0
Heating Degree Days Weather Coefficients	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000007	0.0000915	0.0002166	0.0002579	0.0002540	0.0001101	0.0000000	0.0000000	0.0000000
Small General Service Customers	11,630	11,645	11,624	11,651	11,661	11,701	11,681	11,765	11,765	11,788	11,819	11,827	11,630	11,645	11,624
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	0	102	-72	-185	-123	124	0	0	0
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0003339	0.0006695	0.0007247	0.0007059	0.0005728	0.0002300	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0003261	0.0006734
Small General Service Customers	11,630	11,645	11,624	11,651	11,661	11,701	11,681	11,765	11,765	11,788	11,819	11,827	11,630	11,645	11,624
Cooling Degree Days Weather Adjustment (MWh)	0	678	454	453	307	(257)	64	0	0	0	0	0	0	662	457
NM Small General Service Weather Adjustment (3)	0	678	454	453	307	(257)	64	102	(72)	(185)	(123)	124	0	662	457

New Mexico Small Secondary General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-16	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0037871	0.0077142	0.0083252	0.0081816	0.0060956	0.0021631	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0036985	0.0077666
Small Secondary General Customers	3,586	3,599	3,611	3,642	3,667	3,688	3,712	3,739	3,751	3,769	3,778	3,801	3,586	3,599	3,611
Cooling Degree Days Weather Adjustment (MWh)	0	2,377	1,627	1,628	1,119	-861	190	0	0	0	0	0	0	2,321	1,638
NM Small Secondary General Service Weather Adjustment (4)	0	2,377	1,627	1,628	1,119	(861)	190	0	0	0	0	0	0	2,321	1,638

New Mexico Large Secondary General Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0037871	0.0077142	0.0083252	0.0081816	0.0060956	0.0021631	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0036985	0.0077666
Large Secondary General Customers	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cooling Degree Days Weather Adjustment (MWh)	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
NM Large Secondary General Service Weather Adjustment (5)	0	1	0	0	0	(0)	0	0	0	0	0	0	0	1	0

New Mexico Irrigation Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(0.43)	(0.84)	0.11	(1.33)	(0.98)	(1.08)	2.11	(0.22)	0.59	(0.29)	(0.33)	0.22	(0.43)	(0.84)	0.11
Precipitation Weather Coefficients	-0.89113	-0.53792	-0.52374	-0.44924	-0.73487	-0.44934	0.00000	0.00000	0.00000	-0.02159	-1.39242	-1.79166	-0.90179	-0.53764	-0.52303
Irrigation Customers	1,009	1,013	1,014	1,013	1,013	1,016	1,011	1,011	1,010	1,008	1,006	1,006	1,009	1,013	1,014
Precipitation Weather Adjustment (MWh)	387	456	(56)	605	727	492	0	0	0	6	462	(398)	391	455	(56)
NM Irrigation Weather Adjustment (6)	387	456	(56)	605	727	492	0	0	0	6	462	(398)	391	455	(56)

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Municipal and School Service	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.0000000	0.0017724	0.0026518	0.0028064	0.0037520	0.0094815	0.0062902	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0017254	0.0026193
Municipal & School Customers	1,741	1,740	1,737	1,735	1,739	1,740	1,740	1,740	1,740	1,741	1,736	1,737	1,741	1,740	1,737
Cooling Degree Days Weather Adjustment (MWh)	0	538	269	261	243	(632)	259	0	0	0	0	0	0	524	266
Precipitation Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Variance from Normal	(0.43)	(0.84)	0.11	(1.33)	(0.98)	(1.08)	2.11	(0.22)	0.59	(0.29)	(0.33)	0.22	(0.43)	(0.84)	0.11
Precipitation Weather Coefficients	-0.31354	-0.21776	-0.09762	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00406	-0.26238	-0.44081	-0.31637	-0.21709	-0.09105
Municipal & School Customers	1,741	1,740	1,737	1,735	1,739	1,740	1,740	1,740	1,740	1,741	1,736	1,737	1,741	1,740	1,737
Precipitation Weather Adjustment (MWh)	235	317	(18)	0	0	0	0	0	0	2	150	(169)	237	316	(17)
Municipal & School Weather Adjustment	235	855	251	261	243	(632)	259	0	0	2	150	(169)	237	839	249
New Mexico - Municipal and School Weather Impact Allocation															
Billed Sales in KWh	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
LMSNM	8,275	8,979	10,998	11,480	12,045	12,189	13,400	7,972	8,846	8,756	8,662	8,790	8,275	8,979	10,998
SMSNM	799	916	980	1,137	1,175	930	1,043	789	917	1,033	1,022	903	799	916	980
Total	9,074	9,895	11,979	12,617	13,220	13,119	14,443	8,761	9,762	9,789	9,684	9,693	9,074	9,895	11,979
Allocation Factors	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
LMSNM	91.20%	90.75%	91.82%	90.99%	91.11%	92.91%	92.78%	90.99%	90.61%	89.45%	89.45%	90.68%	91.20%	90.75%	91.82%
SMSNM	8.80%	9.25%	8.18%	9.01%	8.89%	7.09%	7.22%	9.01%	9.39%	10.55%	10.55%	9.32%	8.80%	9.25%	8.18%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Municipal and School Allocation of Sales impacted by Weather															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Mar-19	Mar-19	Mar-19
LMSNM **(7)**	214	776	231	238	222	(587)	241	0	0	2	134	(153)	216	762	229
SMSNM **(8)**	21	79	21	24	22	(45)	19	0	0	0	16	(16)	21	78	20

	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year Total	Updated Test Year Total
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19		
Res	(88)	7,140	4,796	5,013	3,381	(2,718)	1,042	3,194	(1,682)	(3,917)	(2,239)	2,939	(91)	6,972	4,823	16,863	16,719
Sm C&I	387	3,511	2,025	2,687	2,153	(626)	254	102	(72)	(179)	339	(274)	391	3,439	2,039	10,307	10,253
Lg C&I	0	1	0	0	0	(0)	0	0	0	0	0	0	0	1	0	2	2
Street Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Sales to Public Authority (OSPA)	235	855	251	261	243	(632)	259	0	0	2	150	(169)	237	839	249	1,456	1,441
Retail	533	11,506	7,073	7,962	5,778	(3,976)	1,556	3,296	(1,753)	(4,094)	(1,750)	2,496	537	11,251	7,111	28,628	28,415

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Residential Service Coefficients (Modeled with MWH)

			Model Coefficients		Monthly Weights Model to Calendar			Calendar Month	
Year	Month	Date	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD
2018	4	Apr-18	0.000000	0.000000	42.86%	57.14%	0.00%	0.0000000	0.0000000
2018	5	May-18	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	0.0004324
2018	6	Jun-18	0.000000	0.000775	44.76%	54.92%	0.32%	0.0000000	0.0008550
2018	7	Jul-18	0.000000	0.000919	45.47%	54.53%	0.00%	0.0000000	0.0009504
2018	8	Aug-18	0.000000	0.000976	49.62%	49.46%	0.92%	0.0000000	0.0009269
2018	9	Sep-18	0.000000	0.000882	41.43%	58.57%	0.00%	0.0000000	0.0007524
2018	10	Oct-18	0.000000	0.000661	47.16%	52.38%	0.46%	0.0000015	0.0003115
2018	11	Nov-18	0.000000	0.000000	41.11%	58.41%	0.48%	0.0001951	0.0000000
2018	12	Dec-18	0.000331	0.000000	41.94%	58.06%	0.00%	0.0003873	0.0000000
2019	1	Jan-19	0.000428	0.000000	48.39%	50.69%	0.92%	0.0003795	0.0000000
2019	2	Feb-19	0.000335	0.000000	40.48%	59.35%	0.17%	0.0002851	0.0000000
2019	3	Mar-19	0.000252	0.000000	43.32%	56.68%	0.00%	0.0001090	0.0000000
2019	4	Apr-19	0.000000	0.000000	44.13%	55.87%	0.00%	0.0000000	0.0000000
2019	5	May-19	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	0.0004221
2019	6	Jun-19	0.000000	0.000775	41.75%	58.25%	0.00%	0.0000000	0.0008592
2019	7	Jul-19	0.000000	0.000919	46.70%	53.30%	0.00%	0.0000000	0.0009497
2019	8	Aug-19	0.000000	0.000976	46.39%	52.84%	0.77%		
2019	9	Sep-19	0.000000	0.000882	42.70%	57.30%	0.00%		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Residential Space Heat Coefficients (Modeled with MWH)

		Model Coefficients		Monthly Weights Model to Calendar			Calendar Month	
Year	Month	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD
2018	4	0.000549	0.000000	42.86%	57.14%	0.00%	0.0002354	0.0000000
2018	5	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	0.0005078
2018	6	0.000000	0.000910	44.76%	54.92%	0.32%	0.0000000	0.0010423
2018	7	0.000000	0.001149	45.47%	54.53%	0.00%	0.0000000	0.0012254
2018	8	0.000000	0.001289	49.62%	49.46%	0.92%	0.0000000	0.0011787
2018	9	0.000000	0.001076	41.43%	58.57%	0.00%	0.0000000	0.0008685
2018	10	0.000000	0.000722	47.16%	52.38%	0.46%	0.0002072	0.0003403
2018	11	0.000387	0.000000	41.11%	58.41%	0.48%	0.0007387	0.0000000
2018	12	0.000981	0.000000	41.94%	58.06%	0.00%	0.0012276	0.0000000
2019	1	0.001406	0.000000	48.39%	50.69%	0.92%	0.0013912	0.0000000
2019	2	0.001381	0.000000	40.48%	59.35%	0.17%	0.0012510	0.0000000
2019	3	0.001164	0.000000	43.32%	56.68%	0.00%	0.0008156	0.0000000
2019	4	0.000549	0.000000	44.13%	55.87%	0.00%	0.0002424	0.0000000
2019	5	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	0.0004959
2019	6	0.000000	0.000910	41.75%	58.25%	0.00%	0.0000000	0.0010490
2019	7	0.000000	0.001149	46.70%	53.30%	0.00%	0.0000000	0.0012237
2019	8	0.000000	0.001289	46.39%	52.84%	0.77%		
2019	9	0.000000	0.001076	42.70%	57.30%	0.00%		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Small General Service Coefficients (Modeled with MWH)

		Model Coefficients		Monthly Weights Model to Calendar			Calendar Month	
Year	Month	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD
2018	4	0.000000	0.000000	42.86%	57.14%	0.00%	0.0000000	0.0000000
2018	5	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	0.0003339
2018	6	0.000000	0.000599	44.76%	54.92%	0.32%	0.0000000	0.0006695
2018	7	0.000000	0.000727	45.47%	54.53%	0.00%	0.0000000	0.0007247
2018	8	0.000000	0.000723	49.62%	49.46%	0.92%	0.0000000	0.0007059
2018	9	0.000000	0.000693	41.43%	58.57%	0.00%	0.0000000	0.0005728
2018	10	0.000000	0.000488	47.16%	52.38%	0.46%	0.0000007	0.0002300
2018	11	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000915	0.0000000
2018	12	0.000154	0.000000	41.94%	58.06%	0.00%	0.0002166	0.0000000
2019	1	0.000261	0.000000	48.39%	50.69%	0.92%	0.0002579	0.0000000
2019	2	0.000255	0.000000	40.48%	59.35%	0.17%	0.0002540	0.0000000
2019	3	0.000254	0.000000	43.32%	56.68%	0.00%	0.0001101	0.0000000
2019	4	0.000000	0.000000	44.13%	55.87%	0.00%	0.0000000	0.0000000
2019	5	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	0.0003261
2019	6	0.000000	0.000599	41.75%	58.25%	0.00%	0.0000000	0.0006734
2019	7	0.000000	0.000727	46.70%	53.30%	0.00%	0.0000000	0.0007248
2019	8	0.000000	0.000723	46.39%	52.84%	0.77%		
2019	9	0.000000	0.000693	42.70%	57.30%	0.00%		

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Secondary General Service Coefficients (Modeled with MWH)

		Model Coefficients		Monthly Weights Model to Calendar			Calendar Month			
Year	Month	RES HDD	RES CDD	Current	1st Future	2nd Future	RES HDD	RES CDD	Actual Cust	RES CDD per Cst
2018	4	0.000000	0.000000	42.86%	57.14%	0.00%	0.0000000	0.0000000	3,587	0.0000000
2018	5	0.000000	0.000000	44.24%	55.61%	0.15%	0.0000000	13.6333866	3,600	0.0037871
2018	6	0.000000	24.432838	44.76%	54.92%	0.32%	0.0000000	27.8638230	3,612	0.0077142
2018	7	0.000000	30.647466	45.47%	54.53%	0.00%	0.0000000	30.3285339	3,643	0.0083252
2018	8	0.000000	30.062608	49.62%	49.46%	0.92%	0.0000000	30.0100426	3,668	0.0081816
2018	9	0.000000	30.199155	41.43%	58.57%	0.00%	0.0000000	22.4865197	3,689	0.0060956
2018	10	0.000000	17.031241	47.16%	52.38%	0.46%	0.0000000	8.0316298	3,713	0.0021631
2018	11	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000000	0.0000000	3,740	0.0000000
2018	12	0.000000	0.000000	41.94%	58.06%	0.00%	0.0000000	0.0000000	3,752	0.0000000
2019	1	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0000000	3,770	0.0000000
2019	2	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.0000000	3,779	0.0000000
2019	3	0.000000	0.000000	43.32%	56.68%	0.00%	0.0000000	0.0000000	3,802	0.0000000
2019	4	0.000000	0.000000	44.13%	55.87%	0.00%	0.0000000	0.0000000	3,587	0.0000000
2019	5	0.000000	0.000000	45.62%	53.92%	0.46%	0.0000000	13.3146980	3,600	0.0036985
2019	6	0.000000	24.432838	41.75%	58.25%	0.00%	0.0000000	28.0531050	3,612	0.0077666
2019	7	0.000000	30.647466	46.70%	53.30%	0.00%	0.0000000	30.3357211	3,643	0.0083271
2019	8	0.000000	30.062608	46.39%	52.84%	0.77%				
2019	9	0.000000	30.199155	42.70%	57.30%	0.00%				

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Muni & School Service Coefficients (Modeled with MWH)

		Model Coefficients			Monthly Weights Model to Calendar			Calendar Month		
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	-0.440806	42.86%	57.14%	0.00%	0.0000000	0.000000	-0.3135424
2018	5	0.000000	0.000000	-0.218095	44.24%	55.61%	0.15%	0.0000000	0.001772	-0.2177596
2018	6	0.000000	0.003181	-0.218095	44.76%	54.92%	0.32%	0.0000000	0.002652	-0.0976233
2018	7	0.000000	0.002217	0.000000	45.47%	54.53%	0.00%	0.0000000	0.002806	0.0000000
2018	8	0.000000	0.003298	0.000000	49.62%	49.46%	0.92%	0.0000000	0.003752	0.0000000
2018	9	0.000000	0.004028	0.000000	41.43%	58.57%	0.00%	0.0000000	0.009482	0.0000000
2018	10	0.000000	0.013339	0.000000	47.16%	52.38%	0.46%	0.0000000	0.006290	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000000	0.000000	0.0000000
2018	12	0.000000	0.000000	0.000000	41.94%	58.06%	0.00%	0.0000000	0.000000	0.0000000
2019	1	0.000000	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.000000	-0.0040627
2019	2	0.000000	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.000000	-0.2623846
2019	3	0.000000	0.000000	-0.440806	43.32%	56.68%	0.00%	0.0000000	0.000000	-0.4408061
2019	4	0.000000	0.00000	-0.440806	44.13%	55.87%	0.00%	0.0000000	0.000000	-0.3163704
2019	5	0.000000	0.00000	-0.218095	45.62%	53.92%	0.46%	0.0000000	0.001725	-0.2170895
2019	6	0.000000	0.00318	-0.218095	41.75%	58.25%	0.00%	0.0000000	0.002619	-0.0910458
2019	7	0.000000	0.00222	0.000000	46.70%	53.30%	0.00%	0.0000000	0.002793	0.0000000
2019	8	0.000000	0.00330	0.000000	46.39%	52.84%	0.77%			
2019	9	0.000000	0.00403	0.000000	42.70%	57.30%	0.00%			

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Irrigation Service Coefficients (Modeled with MWH)

		Model Coefficients			Monthly Weights Model to Calendar			Calendar Month		
Year	Month	RES HDD	RES CDD	Precip	Current	1st Future	2nd Future	RES HDD	RES CDD	Precip
2018	4	0.000000	0.000000	-1.371042	42.86%	57.14%	0.00%	0.0000000	0.0000000	-0.8911295
2018	5	0.000000	0.000000	-0.531195	44.24%	55.61%	0.15%	0.0000000	0.0000000	-0.5379174
2018	6	0.000000	0.000000	-0.543347	44.76%	54.92%	0.32%	0.0000000	0.0000000	-0.5237386
2018	7	0.000000	0.000000	-0.508473	45.47%	54.53%	0.00%	0.0000000	0.0000000	-0.4492365
2018	8	0.000000	0.000000	-0.399845	49.62%	49.46%	0.92%	0.0000000	0.0000000	-0.7348683
2018	9	0.000000	0.000000	-1.084626	41.43%	58.57%	0.00%	0.0000000	0.0000000	-0.4493449
2018	10	0.000000	0.000000	0.000000	47.16%	52.38%	0.46%	0.0000000	0.0000000	0.0000000
2018	11	0.000000	0.000000	0.000000	41.11%	58.41%	0.48%	0.0000000	0.0000000	0.0000000
2018	12	0.000000	0.000000	0.000000	41.94%	58.06%	0.00%	0.0000000	0.0000000	0.0000000
2019	1	0.000000	0.000000	0.000000	48.39%	50.69%	0.92%	0.0000000	0.0000000	-0.0215856
2019	2	0.000000	0.000000	0.000000	40.48%	59.35%	0.17%	0.0000000	0.0000000	-1.3924218
2019	3	0.000000	0.000000	-2.342043	43.32%	56.68%	0.00%	0.0000000	0.0000000	-1.7916601
2019	4	0.000000	0.000000	-1.371042	44.13%	55.87%	0.00%	0.0000000	0.0000000	-0.9017943
2019	5	0.000000	0.000000	-0.531195	45.62%	53.92%	0.46%	0.0000000	0.0000000	-0.5376423
2019	6	0.000000	0.000000	-0.543347	41.75%	58.25%	0.00%	0.0000000	0.0000000	-0.5230318
2019	7	0.000000	0.000000	-0.508473	46.70%	53.30%	0.00%	0.0000000	0.0000000	-0.4505714
2019	8	0.000000	0.000000	-0.399845	46.39%	52.84%	0.77%			
2019	9	0.000000	0.000000	-1.084626	42.70%	57.30%	0.00%			

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

SPS Wholesale Weather Impacted Sales

Sales (In MWh) Calendar Month									Sales (In MWh) WN Calendar Month						
		Central Valley	Farmers	Lea County	Roosevelt	WTMPA	Tri County	Total	Central Valley	Farmers	Lea County	Roosevelt	WTMPA	Tri County	Total
Apr-18	Actual	50,548	15,957	65,161	8,974	192,704	27,340	360,683	50,548	15,957	65,161	8,974	192,704	27,340	360,683
May-18	Actual	51,971	16,513	79,702	8,790	263,682	31,252	451,912	48,747	11,536	68,998	6,342	231,432	29,586	396,641
Jun-18	Actual	52,728	19,624	74,911	9,419	294,246	34,230	485,157	51,752	18,449	72,471	8,869	280,912	33,548	466,001
Jul-18	Actual	54,028	24,186	86,009	10,977	302,680	36,113	513,992	52,827	22,551	82,921	9,829	292,832	35,716	496,676
Aug-18	Actual	52,941	21,527	87,704	9,645	302,002	34,651	508,469	52,146	20,456	85,220	8,877	294,058	33,983	494,741
Sep-18	Actual	50,166	16,302	65,681	6,565	238,828	30,050	407,591	50,414	16,999	66,856	6,907	238,456	30,004	409,636
Oct-18	Actual	49,673	11,704	66,895	5,383	206,730	29,103	369,488	49,673	11,043	66,895	5,383	208,330	29,103	370,426
Nov-18	Actual	50,002	10,344	65,743	6,504	210,352	29,551	372,496	50,002	10,344	65,743	6,504	208,157	29,551	370,301
Dec-18	Actual	51,381	14,437	38,329	7,803	234,508	31,220	377,678	51,381	14,437	38,329	7,803	232,958	31,298	376,206
Jan-19	Actual	49,629	13,837	72,824	7,265	227,798	31,484	402,837	49,629	13,837	72,824	7,265	230,023	31,631	405,209
Feb-19	Actual	46,530	11,171	64,453	7,929	201,235	28,420	359,739	46,530	11,171	64,453	7,929	201,292	28,420	359,795
Mar-19	Actual	50,805	16,749	69,026	8,703	209,875	28,778	383,936	50,805	16,749	69,026	8,703	206,533	28,778	380,594
Apr-19	Estimate	50,548	15,957	65,161	8,974	192,704	27,340	360,683	50,548	15,957	65,161	8,974	192,704	27,340	360,683
May-19	Estimate	51,971	16,513	79,702	8,790	263,682	31,252	451,912	48,747	11,536	68,998	6,342	231,432	29,586	396,641
Jun-19	Estimate	52,728	19,624	74,911	9,419	294,246	34,230	485,157	51,752	18,449	72,471	8,869	280,912	33,548	466,001
Test Year Total	Actual Estimate	**610,402**	**192,350**	**836,436**	**97,959**	**2,884,638**	**372,192**	**4,993,976**	**604,455**	**183,529**	**818,898**	**93,385**	**2,817,685**	**368,959**	**4,886,911**
Updated Test Year Total		**610,402**	**192,350**	**836,436**	**97,959**	**2,884,638**	**372,192**	**4,993,976**	**604,455**	**183,529**	**818,898**	**93,385**	**2,817,685**	**368,959**	**4,886,911**

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

SPS Wholesale Weather Impacted Sales

Sales (In MWh) Calendar Month		Weather Impacted Sales 10-Year Normal						
		Central Valley	Farmers	Lea County	Roosevelt	WTMPA	Tri County	Total
Apr-16	Actual	0	0	0	0	0	0	0
May-16	Actual	3,224	4,977	10,703	2,449	32,251	1,666	55,270
Jun-16	Actual	975	1,175	2,440	550	13,334	682	19,156
Jul-16	Actual	1,201	1,634	3,088	1,149	9,848	396	17,316
Aug-16	Actual	795	1,071	2,483	769	7,944	667	13,728
Sep-16	Actual	(248)	(697)	(1,176)	(342)	372	47	(2,045)
Oct-16	Actual	0	662	0	0	(1,600)	0	(938)
Nov-16	Actual	0	0	0	0	2,194	0	2,194
Dec-16	Actual	0	0	0	0	1,550	(78)	1,471
Jan-17	Actual	0	0	0	0	(2,225)	(147)	(2,373)
Feb-17	Actual	0	0	0	0	(57)	0	(57)
Mar-17	Actual	0	0	0	0	3,342	0	3,342
Apr-17	Estimate	0	0	0	0	0	0	0
May-17	Estimate	3,224	4,977	10,703	2,449	32,251	1,666	55,270
Jun-17	Estimate	975	1,175	2,440	550	13,334	682	19,156
Test Year Total	Actual	**5,947**	**8,821**	**17,538**	**4,574**	**66,953**	**3,233**	**107,066**
	Estimate							2.2%
Updated Test Year Total		**5,947**	**8,821**	**17,538**	**4,574**	**66,953**	**3,233**	**107,066**
								2.2%

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

New Mexico Wholesale Weather Impacted Sales Calculation
Using Roswell Weather (Normal Period 2006-2015)

New Mexico Wholesale Weather Adjustment Summary	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year	Updated Test Year
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Heating Degree Days 10-yr Normal	124	33	0	0	0	5	120	427	748	745	515	305	124	33	0	3,022	3,022
Heating Degree Days Actual	111	0	0	0	0	2	177	522	720	684	474	400	111	0	0	3,090	3,090
Variance from Normal	(13)	(33)	0	0	0	(3)	57	95	(28)	(61)	(41)	95	(13)	(33)	0	68	68
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Cooling Degree Days 10-yr Normal	55	194	496	530	496	261	54	1	0	0	0	8	55	194	496	2,095	2,095
Cooling Degree Days Actual	57	368	554	584	533	223	78	0	0	0	0	13	57	368	554	2,410	2,410
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58	316	316
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Precipitation 10-yr Normal	0.46	1.36	1.30	1.84	1.94	1.92	1.14	0.23	0.46	0.32	0.33	0.20	0.46	1.36	1.30	11.49	11.49
Precipitation Actual	0.03	0.52	1.40	0.51	0.96	0.84	3.25	0.01	1.05	0.03	0.00	0.42	0.03	0.52	1.40	9.02	9.02
Variance from Normal	(0.43)	(0.84)	0.11	(1.33)	(0.98)	(1.08)	2.11	(0.22)	0.59	(0.29)	(0.33)	0.22	(0.43)	(0.84)	0.11	(2.47)	(2.47)
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Central Valley **(1)**	0	3,224	975	1,201	795	(248)	0	0	0	0	0	0	0	3,224	975	5,947	5,947
Farmers **(2)**	0	4,977	1,175	1,634	1,071	(697)	662	0	0	0	0	0	0	4,977	1,175	8,821	8,821
Lea County **(3)**	0	10,703	2,440	3,088	2,483	(1,176)	0	0	0	0	0	0	0	10,703	2,440	17,538	17,538
Roosevelt **(4)**	0	2,449	550	1,149	769	(342)	0	0	0	0	0	0	0	2,449	550	4,574	4,574
New Mexico Wholesale Weather Adjustment Total	0	21,354	5,140	7,071	5,117	(2,463)	662	0	0	0	0	0	0	21,354	5,140	36,881	36,881

Central Valley	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.000	18.487	16.700	22.361	21.306	6.471	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.487	16.700
Cooling Degree Days Weather Adjustment (MWh)	0	3,224	975	1,201	795	(248)	0	0	0	0	0	0	0	3,224	975
Central Valley Weather Adjustment (1)	0	3,224	975	1,201	795	(248)	0	0	0	0	0	0	0	3,224	975

Farmers	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	(38)	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.000	28.540	20.113	30.433	28.703	18.210	27.923	0.000	0.000	0.000	0.000	0.000	0.000	28.540	20.113
Cooling Degree Days Weather Adjustment (MWh)	0	4,977	1,175	1,634	1,071	(697)	662	0	0	0	0	0	0	4,977	1,175
Farmers Weather Adjustment (2)	0	4,977	1,175	1,634	1,071	(697)	662	0	0	0	0	0	0	4,977	1,175

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Lea County	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	2	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.000	61.373	41.777	57.500	66.569	30.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	61.373	41.777
Cooling Degree Days Weather Adjustment (MWh)	0	10,703	2,440	3,088	2,483	(1,176)	0	0	0	0	0	0	0	10,703	2,440
Lea County Weather Adjustment (3)	0	10,703	2,440	3,088	2,483	(1,176)	0	0	0	0	0	0	0	10,703	2,440

Roosevelt	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	(38)	174	58	54	37	(38)	24	(1)	0	0	(0)	5	2	174	58
Cooling Degree Days Weather Coefficients	0.000	12.837	9.874	15.172	14.043	8.930	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.837	9.874
Cooling Degree Days Weather Adjustment (MWh)	0	2,239	577	815	524	-342	0	0	0	0	0	0	0	2,239	577
Precipitation Weather Adjustment (10-yr Normal)															
	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	0.37	-0.84	0.11	-1.33	-0.98	-1.08	2.11	-0.22	0.59	-0.29	-0.33	0.22	-0.43	-0.84	0.11
Precipitation Weather Coefficients	0	-251	-251	-251	-251	0	0	0	0	0	0	0	0	-251	-251
Precipitation Weather Adjustment (MWh)	0	210	-26	334	245	0	0	0	0	0	0	0	0	210	-26
Roosevelt Weather Adjustment (4)	0	2,449	550	1,149	769	(342)	0	0	0	0	0	0	0	2,449	550

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Texas Wholesale Weather Impacted Sales Calculation
Using Lubbock and Amarillo Weather (Normal Period 2006-2015)

WTMPA Wholesale Weather Adjustment Summary	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year	Updated Test Year
Lubbock Weather	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Heating Degree Days 10-yr Normal	144	54	0	0	0	11	136	403	722	735	553	330	144	54	0	3,088	3,088
Heating Degree Days Actual	208	0	0	0	0	11	232	536	753	690	550	494	208	0	0	3,474	3,474
Variance from Normal	64	(54)	(0)	0	0	(0)	96	134	31	(45)	(3)	164	64	(54)	(0)	386	386
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Cooling Degree Days 10-yr Normal	68	207	468	509	480	249	67	4	0	0	1	17	68	207	468	2,069	2,069
Cooling Degree Days Actual	53	412	543	558	517	251	58	0	0	0	0	12	53	412	543	2,404	2,404
Variance from Normal	(15)	206	75	49	37	2	(9)	(4)	0	0	(1)	(5)	(15)	206	75	335	335
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Precipitation 10-yr Normal	1.25	3.15	1.87	2.73	1.85	2.83	1.62	0.54	0.67	0.65	0.73	0.57	1.25	3.15	1.87	18.47	18.47
Precipitation Actual	0.03	1.26	1.36	0.88	1.25	3.26	4.65	0.07	1.44	0.00	0.04	1.13	0.03	1.26	1.36	15.37	15.37
Variance from Normal	(1.22)	(1.89)	(0.51)	(1.85)	(0.60)	0.43	3.04	(0.47)	0.77	(0.65)	(0.69)	0.56	(1.22)	(1.89)	(0.51)	(3.10)	(3.10)
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
WTMPA **(1)**	0	32,251	13,334	9,848	7,944	372	(1,600)	2,194	1,550	(2,225)	(57)	3,342	0	32,251	13,334	66,953	66,953
WTMPA Wholesale Weather Adjustment Total	0	32,251	13,334	9,848	7,944	372	(1,600)	2,194	1,550	(2,225)	(57)	3,342	0	32,251	13,334	66,953	66,953

WTMPA	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	(15)	206	75	49	37	2	(9)	(4)	0	0	(1)	(5)	(15)	206	75
Cooling Degree Days Weather Coefficients	0.000	156.937	178.504	200.163	212.963	195.780	181.826	0.000	0.000	0.000	0.000	0.000	0.000	156.937	178.504
Cooling Degree Days Weather Adjustment (MWh)	0	32,251	13,334	9,848	7,944	372	(1,600)	0	0	0	0	0	0	32,251	13,334
Heating Degree Days Weather Adjustment (10-yr Normal)															
Variance from Normal	(31)	(54)	(0)	0	0	(0)	96	134	31	(45)	(3)	164	64	(54)	(0)
Heating Degree Days Weather Coefficients	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.437	49.992	49.561	18.876	20.366	0.000	0.000	0.000
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	0	2,194	1,550	(2,225)	(57)	3,342	0	0	0
WTMPA Weather Adjustment (1)	0	32,251	13,334	9,848	7,944	372	(1,600)	2,194	1,550	(2,225)	(57)	3,342	0	32,251	13,334

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Tri County Wholesale Weather Adjustment Summary	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Test Year	Updated Test Year
Amarillo Weather	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Heating Degree Days 10-yr Normal	238	94	1	0	0	21	199	482	823	827	673	436	231	94	1	3,793	3,786
Heating Degree Days Actual	224	10	0	0	0	16	284	624	803	782	672	587	319	10	0	4,002	4,097
Variance from Normal	(14)	(84)	(1)	0	0	(5)	86	142	(20)	(45)	(1)	152	88	(84)	(1)	209	311
	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Cooling Degree Days 10-yr Normal	30	121	383	459	407	206	39	2	0	0	1	7	29	121	383	1,654	1,653
Cooling Degree Days Actual	8	288	432	481	442	210	41	0	0	0	0	2	26	288	432	1,904	1,922
Variance from Normal	(22)	167	50	22	35	4	2	(2)	0	0	(1)	(5)	(3)	167	50	250	269
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Precipitation 10-yr Normal	1.58	2.47	2.50	3.47	3.61	1.85	1.44	0.74	0.41	0.71	0.78	0.70	1.58	2.47	2.50	20.25	20.25
Precipitation Actual	0.60	0.18	2.23	1.92	2.78	0.76	3.90	0.40	0.58	0.06	0.28	2.11	0.60	0.18	2.23	15.80	15.80
Variance from Normal	(0.98)	(2.29)	(0.27)	(1.55)	(0.83)	(1.09)	2.46	(0.34)	0.17	(0.65)	(0.50)	1.42	(0.98)	(2.29)	(0.27)	(4.45)	(4.45)
	Apr2018	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019	Total	Total
Tri County **(2)**	0	1,666	682	396	667	47	0	0	(78)	(147)	0	0	0	1,666	682	3,233	3,233
Tri County Wholesale Weather Adjustment Total	0	1,666	682	396	667	47	0	0	(78)	(147)	0	0	0	1,666	682	3,233	3,233

TRI County	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate
Cooling Degree Days Weather Adjustment (10-yr Normal)															
	Apr2016	May2018	Jun2018	Jul2018	Aug2018	Sep2018	Oct2018	Nov2018	Dec2018	Jan2019	Feb2019	Mar2019	Apr2019	May2019	Jun2019
Variance from Normal	(22)	167	50	22	35	4	2	(2)	0	0	(1)	(5)	(3)	167	50
Cooling Degree Days Weather Coefficients	0.000	9.982	13.773	18.270	19.124	12.254	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.982	13.773
Cooling Degree Days Weather Adjustment (MWh)	0	1,666	682	396	667	47	0	0	0	0	0	0	0	1,666	682
Heating Degree Days Weather Adjustment (10-yr Normal)															
Variance from Normal	(14)	(84)	(1)	0	0	(5)	86	142	(20)	(45)	(1)	152	88	(84)	(1)
Heating Degree Days Weather Coefficients	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.894	3.243	0.000	0.000	0.000	0.000	0.000
Heating Degree Days Weather Adjustment (MWh)	0	0	0	0	0	0	0	0	(78)	(147)	0	0	0	0	0
TRI County Weather Adjustment (2)	0	1,666	682	396	667	47	0	0	(78)	(147)	0	0	0	1,666	682

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Central Valley Coefficients (Modeled with MWH)

			Model Coefficients		
Year	Month	Date	HDD	CDD	Precip
2018	Apr	Apr2018	0.0000	0.0000	0.0000
2018	May	May2018	0.0000	18.4871	0.0000
2018	Jun	Jun2018	0.0000	16.6999	0.0000
2018	Jul	Jul2018	0.0000	22.3606	0.0000
2018	Aug	Aug2018	0.0000	21.3061	0.0000
2018	Sep	Sep2018	0.0000	6.4705	0.0000
2018	Oct	Oct2018	0.0000	0.0000	0.0000
2018	Nov	Nov2018	0.0000	0.0000	0.0000
2018	Dec	Dec2018	0.0000	0.0000	0.0000
2019	Jan	Jan2019	0.0000	0.0000	0.0000
2019	Feb	Feb2019	0.0000	0.0000	0.0000
2019	Mar	Mar2019	0.0000	0.0000	0.0000
2019	Apr	Apr2019	0.0000	0.0000	0.0000
2019	May	May2019	0.0000	18.4871	0.0000
2019	Jun	Jun2019	0.0000	16.6999	0.0000
2019	Jul	Jul2019	0.0000	22.3606	0.0000
2019	Aug	Aug2019	0.0000	21.3061	0.0000
2019	Sep	Sep2019	0.0000	6.4705	0.0000

Farmers Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
2018	Apr	0.0000	0.0000	0.0000
2018	May	0.0000	28.5405	0.0000
2018	Jun	0.0000	20.1129	0.0000
2018	Jul	0.0000	30.4335	0.0000
2018	Aug	0.0000	28.7032	0.0000
2018	Sep	0.0000	18.2100	0.0000
2018	Oct	0.0000	27.9229	0.0000
2018	Nov	0.0000	0.0000	0.0000
2018	Dec	0.0000	0.0000	0.0000
2019	Jan	0.0000	0.0000	0.0000
2019	Feb	0.0000	0.0000	0.0000
2019	Mar	0.0000	0.0000	0.0000
2019	Apr	0.0000	0.0000	0.0000
2019	May	0.0000	28.5405	0.0000
2019	Jun	0.0000	20.1129	0.0000
2019	Jul	0.0000	30.4335	0.0000
2019	Aug	0.0000	28.7032	0.0000
2019	Sep	0.0000	18.2100	0.0000

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Lea County Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
2018	Apr	0.0000	0.0000	0.0000
2018	May	0.0000	61.3727	0.0000
2018	Jun	0.0000	41.7768	0.0000
2018	Jul	0.0000	57.5004	0.0000
2018	Aug	0.0000	66.5690	0.0000
2018	Sep	0.0000	30.7005	0.0000
2018	Oct	0.0000	0.0000	0.0000
2018	Nov	0.0000	0.0000	0.0000
2018	Dec	0.0000	0.0000	0.0000
2019	Jan	0.0000	0.0000	0.0000
2019	Feb	0.0000	0.0000	0.0000
2019	Mar	0.0000	0.0000	0.0000
2019	Apr	0.0000	0.0000	0.0000
2019	May	0.0000	61.3727	0.0000
2019	Jun	0.0000	41.7768	0.0000
2019	Jul	0.0000	57.5004	0.0000
2019	Aug	0.0000	66.5690	0.0000
2019	Sep	0.0000	30.7005	0.0000

Roosevelt Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
2018	Apr	0.0000	0.0000	0.0000
2018	May	0.0000	12.8370	-251.0146
2018	Jun	0.0000	9.8744	-251.0146
2018	Jul	0.0000	15.1722	-251.0146
2018	Aug	0.0000	14.0427	-251.0146
2018	Sep	0.0000	8.9305	0.0000
2018	Oct	0.0000	0.0000	0.0000
2018	Nov	0.0000	0.0000	0.0000
2018	Dec	0.0000	0.0000	0.0000
2019	Jan	0.0000	0.0000	0.0000
2019	Feb	0.0000	0.0000	0.0000
2019	Mar	0.0000	0.0000	0.0000
2019	Apr	0.0000	0.0000	0.0000
2019	May	0.0000	12.8370	-251.0146
2019	Jun	0.0000	9.8744	-251.0146
2019	Jul	0.0000	15.1722	-251.0146
2019	Aug	0.0000	14.0427	-251.0146
2019	Sep	0.0000	8.9305	0.0000

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year
Sales Wholesale and New Mexico

Tri County Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
2018	Apr	0.000	0.000	0.000
2018	May	0.000	9.982	0.000
2018	Jun	0.000	13.773	0.000
2018	Jul	0.000	18.270	0.000
2018	Aug	0.000	19.124	0.000
2018	Sep	0.000	12.254	0.000
2018	Oct	0.000	0.000	0.000
2018	Nov	0.000	0.000	0.000
2018	Dec	3.894	0.000	0.000
2019	Jan	3.243	0.000	0.000
2019	Feb	0.000	0.000	0.000
2019	Mar	0.000	0.000	0.000
2019	Apr	0.0000	0.0000	0.0000
2019	May	0.0000	9.9816	0.0000
2019	Jun	0.0000	13.7731	0.0000
2019	Jul	0.0000	18.2696	0.0000
2019	Aug	0.0000	19.1243	0.0000
2019	Sep	0.0000	12.2538	0.0000

WTMPA Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
2018	Apr	0.0000	0.0000	0.0000
2018	May	0.0000	156.9373	0.0000
2018	Jun	0.0000	178.5036	0.0000
2018	Jul	0.0000	200.1635	0.0000
2018	Aug	0.0000	212.9634	0.0000
2018	Sep	0.0000	195.7798	0.0000
2018	Oct	0.0000	181.8257	0.0000
2018	Nov	16.4368	0.0000	0.0000
2018	Dec	49.9924	0.0000	0.0000
2019	Jan	49.5610	0.0000	0.0000
2019	Feb	18.8761	0.0000	0.0000
2019	Mar	20.3658	0.0000	0.0000
2019	Apr	0.0000	0.0000	0.0000
2019	May	0.0000	156.9373	0.0000
2019	Jun	0.0000	178.5036	0.0000
2019	Jul	0.0000	200.1635	0.0000
2019	Aug	0.0000	212.9634	0.0000
2019	Sep	0.0000	195.7798	0.0000

GSEC Coefficients (Modeled with MWH)

		Model Coefficients		
Year	Month	HDD	CDD	Precip
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000
0	0	0.0000	0.0000	0.0000

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Peak Demand

Test Year and Updated Test Year Peak Day Weather Variance from the 10-yr Average by Concept (Retail and Full Req Wholesale)

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Filing Summer 4-mth Avg	Update Summer 4-mth Avg
Norm Avg Peak Day Temperature	70.0	75.4	84.7	85.4	84.3	79.3	69.6	38.5	25.1	25.6	28.3	46.2	70.0	75.4	84.7	83.4	83.4
Act Avg Peak Day Temperature	72.5	80.2	87.6	90.0	84.5	76.1	80.0	26.1	26.5	20.1	24.8	19.6	72.5	80.2	87.6	84.5	84.5
Variance	2.5	4.8	2.9	4.5	0.2	-3.2	10.4	-12.4	1.4	-5.4	-3.5	-26.5	2.5	4.8	2.9	1.1	1.1
% Variance	3.6%	6.4%	3.5%	5.3%	0.2%	-4.0%	15.0%	-32.1%	5.6%	-21.2%	-12.2%	-57.5%	3.6%	6.4%	3.5%	1.3%	1.3%
Norm Peak Day Heating Degree Days	1.7	0.0	0.0	0.0	0.0	0.0	0.3	26.8	39.9	39.4	36.7	19.7	1.7	0.0	0.0	0.0	0.0
Act Peak Day Heating Degree Days	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9	38.5	44.9	40.2	45.4	0.0	0.0	0.0	0.0	0.0
Variance	-1.7	0.0	0.0	0.0	0.0	0.0	-0.3	12.0	-1.4	5.4	3.5	25.6	-1.7	0.0	0.0	0.0	0.0
% Variance	-100.0%						-100.0%	44.9%	-3.5%	13.7%	9.4%	129.9%	-100.0%				
Norm Precipitation for the week prior to the Peak Day	0.15	0.37	0.13	0.31	0.71	0.14	0.24	0.06	0.19	0.13	0.13	0.17	0.15	0.37	0.13	0.3	0.3
Act Precipitation for the week prior to the Peak Day	0.00	0.01	0.07	0.60	0.39	0.19	0.19	0.15	0.35	0.46	0.00	0.00	0.00	0.01	0.07	0.3	0.3
Variance	-0.15	-0.36	-0.05	0.30	-0.32	0.05	-0.05	0.09	0.17	0.33	-0.13	-0.16	-0.15	-0.36	-0.05	0.0	0.0
% Variance	-100.0%	-97.0%	-42.0%	96.0%	-44.8%	37.8%	-19.0%	137.0%	89.0%	248.7%	-100.0%	-98.8%	-100.0%	-97.0%	-42.0%	-2.0%	-2.0%

Test Year and Updated Test Year Peak Day Weather Variance from the 10-yr Average by Concept (GSEC)

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Filing Summer 4-mth Avg	Update Summer 4-mth Avg
Norm Avg Peak Day Temperature	70.0	74.7	84.3	85.5	84.3	78.9	69.2	37.6	23.8	23.8	26.4	45.3	70.0	74.7	84.3	83.2	83.2
Act Avg Peak Day Temperature	72.0	79.0	88.0	89.6	84.5	79.3	79.9	24.5	24.9	17.9	23.0	17.4	72.0	79.0	88.0	85.4	85.4
Variance	2.0	4.3	3.7	4.1	0.2	0.4	10.7	-13.1	1.1	-5.9	-3.4	-27.9	2.0	4.3	3.7	2.1	2.1
% Variance	2.8%	5.8%	4.4%	4.8%	0.3%	0.5%	15.4%	-34.8%	4.8%	-24.7%	-12.8%	-61.6%	2.8%	5.8%	4.4%	2.6%	2.6%
Norm Precipitation for the week prior to the Peak Day	0.15	0.46	0.15	0.34	0.87	0.12	0.26	0.07	0.18	0.14	0.16	0.19	0.15	0.46	0.15	0.4	0.4
Act Precipitation for the week prior to the Peak Day	0.00	0.01	0.10	0.75	0.35	0.08	0.25	0.19	0.45	0.49	0.00	0.00	0.00	0.01	0.10	0.3	0.3
Variance	-0.15	-0.45	-0.05	0.41	-0.52	-0.03	-0.01	0.12	0.26	0.35	-0.16	-0.19	-0.15	-0.45	-0.05	0.0	0.0
% Variance	-100.0%	-96.8%	-34.4%	122.6%	-59.4%	-28.3%	-4.8%	187.1%	143.9%	247.3%	-100.0%	-98.7%	-100.0%	-96.8%	-34.4%	-12.7%	-12.7%

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Peak Demand

Test Year and Updated Test Year Peak Demand Weather Adjustment Summary by Customer Class

Summary Table of Retail Peak Weather Normal Adjustment

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Filing 4-mth Avg *	Update 4-mth Avg *	Filing 12-mth Avg *	Update 12-mth Avg *
WN Peak	2,624	3,269	3,422	3,583	3,440	3,092	2,954	2,741	2,920	2,848	2,844	2,803	2,624	3,269	3,422	3,385	3,385	3,045	3,045
Weather Adj	29	88	39	33	22	-32	38	90	-12	44	25	144	29	88	39	15	15	42	42
Actual Peak	2,653	3,357	3,461	3,616	3,462	3,061	2,992	2,831	2,908	2,892	2,869	2,946	2,653	3,357	3,461	3,400	3,400	3,087	3,087
Percent Chg	-1.1%	-2.6%	-1.1%	-0.9%	-0.6%	1.0%	-1.3%	-3.2%	0.4%	-1.5%	-0.9%	-4.9%	-1.1%	-2.6%	-1.1%	0.5%	0.5%	1.4%	1.4%

Summary Table of Full Requirement Wholesale Peak Weather Normal Adjustment with Precipitation

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Filing 4-mth Avg *	Update 4-mth Avg *	Filing 12-mth Avg *	Update 12-mth Avg *
WN Peak	732	961	972	1,021	917	904	853	724	746	710	762	737	732	961	972	953	953	837	837
Weather Adj	9	26	14	11	11	-15	17	16	-4	12	7	44	9	26	14	6	6	12	12
Actual Peak	741	987	986	1,032	929	889	871	740	742	722	769	781	741	987	986	959	959	849	849
Percent Chg	-1.2%	-2.7%	-1.4%	-1.1%	-1.2%	1.6%	-2.0%	-2.2%	0.5%	-1.6%	-0.9%	-5.6%	-1.2%	-2.7%	-1.4%	0.6%	0.6%	1.5%	1.5%

Summary Table of Golden Spread Full Load Peak Weather Normal Adjustment

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Filing 4-mth Avg *	Update 4-mth Avg *	Filing 12-mth Avg *	Update 12-mth Avg *
WN Peak	748	1,004	1,070	1,290	1,219	905	542	507	519	472	492	535	748	1,004	1,070	1,121	1,121	775	775
Weather Adj	24	66	28	9	30	4	8	0	0	0	0	-55	24	66	28	18	18	9	9
Actual Peak	772	1,070	1,098	1,299	1,250	909	550	507	519	472	492	480	772	1,070	1,098	1,139	1,139	785	785
Percent Chg	-3.1%	-6.2%	-2.5%	-0.7%	-2.4%	-0.4%	-1.4%	0.0%	0.0%	0.0%	0.0%	11.5%	-3.1%	-6.2%	-2.5%	1.6%	1.6%	1.2%	1.2%

** the four month average is of June 2018, July 2018, August 2018, and September 2018 for the filing*

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Peak Demand

Test Year and Updated Test Year Retail Peak Demand Weather Adjustment Detail
Actual Historical Retail Peak Demand (MW)

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19
Test year	2,653	3,357	3,461	3,616	3,462	3,061	2,992	2,831	2,908	2,892	2,869	2,946	2,653	3,357	3,461
Average Temperature Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Average Temperature Normal	70.0	75.4	84.7	85.4	84.3	79.3	69.6	38.5	25.1	25.6	28.3	46.2	70.0	75.4	84.7
Average Temperature Actual	72.5	80.2	87.6	90.0	84.5	76.1	80.0	26.1	26.5	20.1	24.8	19.6	72.5	80.2	87.6
Variance from Normal	2.5	4.8	2.9	4.5	0.2	-3.2	10.4	-12.4	1.4	-5.4	-3.5	-26.5	2.5	4.8	2.9
Average Temperature Weather Coefficients	3.5108	8.0190	10.7661	11.2468	11.4873	8.9039	3.6472	0.0000	0.0000	0.0000	0.0000	0.0000	3.5108	8.0190	10.7661
Average Temperature Weather Adjustment (MW)	8.834	38.866	31.655	51.049	2.052	(28.520)	38.065	-	-	-	-	-	8.834	38.866	31.655
Heating Degree Days Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Heating Degree Days Normal	1.7	0.0	0.0	0.0	0.0	0.0	0.3	26.8	39.9	39.4	36.7	19.7	1.7	0.0	0.0
Heating Degree Days Actual	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9	38.5	44.9	40.2	45.4	0.0	0.0	0.0
Variance from Normal	-1.7	0.0	0.0	0.0	0.0	0.0	-0.3	12.0	-1.4	5.4	3.5	25.6	-1.7	0.0	0.0
Heating Degree Days Weather Coefficients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.4797	8.8523	8.0867	7.3008	5.5993	0.0000	0.0000	0.0000
Heating Degree Days Weather Adjustment (MW)	-	-	-	-	-	-	-	90	(12)	44	25	144	-	-	-
Precipitation 1 week before Peak Day Weather Adjustment (10-yr Normal)															
	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Precipitation Normal	0.15	0.37	0.13	0.31	0.71	0.14	0.24	0.06	0.19	0.13	0.13	0.17	0.15	0.37	0.13
Precipitation Actual	0.00	0.01	0.07	0.60	0.39	0.19	0.19	0.15	0.35	0.46	0.00	0.00	0.00	0.01	0.07
Variance from Normal	-0.15	-0.36	-0.05	0.30	-0.32	0.05	-0.05	0.09	0.17	0.33	-0.13	-0.16	-0.15	-0.36	-0.05
Precipitation Weather Coefficients	-136.573609	-136.5736	-136.57361	-62.254546	-62.254546	-62.25455	0	0	0	0	0	0	-136.57361	-136.57361	-136.57361
Precipitation Weather Adjustment (MW)	20	49	7	(18)	20	(3)	-	-	-	-	-	-	20	49	7

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Peak Demand

Test Year and Updated Test Year Full Requirement Wholesale Peak Demand Weather Adjustment Detail
Actual Historical Full Requirement Wholesale Peak Demand (MW)

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19
Test year	741	987	986	1,032	929	889	871	740	742	722	769	781	741	987	986

Average Temperature Weather Adjustment (10-yr Normal)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Average Temperature Normal	70.0	75.4	84.7	85.4	84.3	79.3	69.6	38.5	25.1	25.6	28.3	46.2	70.0	75.4	84.7
Average Temperature Actual	72.5	80.2	87.6	90.0	84.5	76.1	80.0	26.1	26.5	20.1	24.8	19.6	72.5	80.2	87.6
Variance from Normal	2.5	4.8	2.9	4.5	0.2	-3.2	10.4	-12.4	1.4	-5.4	-3.5	-26.5	2.5	4.8	2.9
Average Temperature Weather Coefficients	1.5280	2.9942	4.2363	4.6185	4.9781	4.0290	1.6495	0.0000	0.0000	0.0000	0.0000	0.0000	1.5280	2.9942	4.2363
Average Temperature Weather Adjustment (MW)	3.8	14.5	12.5	21.0	0.9	(12.9)	17.2	-	-	-	-	-	3.8	14.5	12.5

Heating Degree Days Weather Adjustment (10-yr Normal)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Heating Degree Days Normal	1.7	0.0	0.0	0.0	0.0	0.0	0.3	26.8	39.9	39.4	36.7	19.7	1.7	0.0	0.0
Heating Degree Days Actual	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9	38.5	44.9	40.2	45.4	0.0	0.0	0.0
Variance from Normal	(1.7)	-	-	-	-	-	(0.3)	12.0	(1.4)	5.4	3.5	25.6	(1.7)	-	-
Heating Degree Days Weather Coefficients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.3483	2.5391	2.1602	2.0289	1.7056	0.0000	0.0000	0.0000
Heating Degree Days Weather Adjustment (MW)	-	-	-	-	-	-	-	16.2	(3.6)	11.7	7.0	43.7	-	-	-

Precipitation 1 week before Peak Day Weather Adjustment (10-yr Normal)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Precipitation Normal	0.15	0.37	0.13	0.31	0.71	0.14	0.24	0.06	0.19	0.13	0.13	0.17	0.15	0.37	0.13
Precipitation Actual	0.00	0.01	0.07	0.60	0.39	0.19	0.19	0.15	0.35	0.46	0.00	0.00	0.00	0.01	0.07
Variance from Normal	-0.15	-0.36	-0.05	0.30	-0.32	0.05	-0.05	0.09	0.17	0.33	-0.13	-0.16	-0.15	-0.36	-0.05
Precipitation Weather Coefficients	-32.702	-32.702	-32.702	-32.702	-32.702	-32.702	0.000	0.000	0.000	0.000	0.000	0.000	-32.702	-32.702	-32.702
Precipitation Weather Adjustment (MW)	4.9	11.7	1.7	(9.7)	10.4	(1.7)	-	-	-	-	-	-	4.9	11.7	1.7

Southwestern Public Service Company

Weather Normalization of Test Year and Updated Test Year Peak Demand

Test Year and Updated Test Year Golden Spread Full Load Peak Demand Weather Adjustment Detail

Actual Historical Golden Spread Full Load Peak Demand (MW)

	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Actual Aug-18	Actual Sep-18	Actual Oct-18	Actual Nov-18	Actual Dec-18	Actual Jan-19	Actual Feb-19	Actual Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19
Test year	772	1,070	1,098	1,299	1,250	909	550	507	519	472	492	480	772	1,070	1,098

Average Temperature Weather Adjustment (10-yr Normal)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Average Temperature Normal	70.0	74.7	84.3	85.5	84.3	78.9	69.2	37.6	23.8	23.8	26.4	45.3	70.0	74.7	84.3
Average Temperature Actual	72.0	79.0	88.0	89.6	84.5	79.3	79.9	24.5	24.9	17.9	23.0	17.4	72.0	79.0	88.0
Variance from Normal	2.0	4.3	3.7	4.1	0.2	0.4	10.7	-13.1	1.1	-5.9	-3.4	-27.9	2.0	4.3	3.7
Average Temperature Weather Coefficients	3.7005	4.2287	5.9141	7.8210	7.9318	4.4100	0.7132	0.0000	0.0000	0.0000	0.0000	1.9858	3.7005	4.2287	5.9141
Average Temperature Weather Adjustment (MW)	7.4	18.2	22.1	32.3	1.9	1.8	7.6	-	-	-	-	(55.4)	7.4	18.2	22.1

Precipitation 1 week before Peak Day Weather Adjustment (10-yr Normal)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Precipitation Normal	0.2	0.5	0.1	0.3	0.9	0.1	0.3	0.1	0.2	0.1	0.2	0.2	0.2	0.5	0.1
Precipitation Actual	0.0	0.0	0.1	0.8	0.4	0.1	0.2	0.2	0.4	0.5	0.0	0.0	0.0	0.0	0.1
Variance from Normal	-0.2	-0.4	-0.1	0.4	-0.5	0.0	0.0	0.1	0.3	0.3	-0.2	-0.2	-0.2	-0.4	-0.1
Precipitation Weather Coefficients	-108.231	-108.231	-108.231	-55.178	-55.178	-55.178	0.000	0.000	0.000	0.000	0.000	0.000	-108.231	-108.231	-108.231
Precipitation Weather Adjustment (MW)	16.8	48.2	5.5	(22.9)	28.5	1.8	-	-	-	-	-	-	16.8	48.2	5.5