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APPLICATION OF SOUTHWESTERN PUBLIC SERVICE COMPANY TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY TO CONVERT HARRINGTON GENERATION STATION FROM COAL TO NATURAL GAS	§ § § § § § §	**PUBLIC UTILITY COMMISSION** **OF TEXAS**

DIRECT TESTIMONY

of

JOHN M. GOODENOUGH

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

(*Filename:* GoodenoughDirect.doc; *Total Pages: 57*)

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
CCN	Certificate of Convenience and Necessity
Commission	Public Utility Commission of Texas
GWh	Gigawatt-Hour
Harrington	Harrington Generating Station
MW	Megawatt
SPS	Southwestern Public Service Company, a New Mexico corporation
Xcel Energy	Xcel Energy Inc.

LIST OF ATTACHMENTS

Attachment	Description
JMG-1	Goodenough Workpapers (*non-native format)*
JMG-2	Modeling Results (*non-native format)*

DIRECT TESTIMONY
OF
JOHN M. GOODENOUGH

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name, business address, and job title.

A. My name is John M. Goodenough. My business address is 1800 Larimer Street, Denver, Colorado 80202. I am the Manager, Energy Forecasting for Xcel Energy Services Inc., the service company subsidiary of Xcel Energy Inc. ("Xcel Energy").

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.

Q. Please briefly outline your responsibilities as Manager, Energy 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, including SPS. I am also responsible for the presentation of this information to Xcel Energy's senior management, other Xcel Energy departments, and various regulatory and reporting agencies. I am also responsible for developing and implementing forecasting and planning studies for regulatory proceedings such as this one.

Q. Please summarize your educational and professional background.

A. I graduated from the University of Delaware with a Doctor of Philosophy degree in Economics, and I hold a Masters of Arts degree in Economics from the University of Delaware and a Bachelor of Arts degree in Economics from the University of Maryland.

In terms of professional background, I have worked in a sales forecasting role since 2007. I began my career in forecasting as a Regulatory Affairs Analyst at Pepco Holdings, Inc. from 2007-2010, followed by a role as a Principal Analyst at Baltimore Gas and Electric from 2010-2014. I worked as an Energy Markets Specialist at Southern California Edison from 2014-2016 and as a Manager, Energy and Revenue Forecasting and Analysis at Arizona Public Service from 2016-2019. I started my current role as Manager, Energy Forecasting for Xcel Energy in October 2019.

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

A. Yes. I have attended Itron's Load Forecasting Workshops. I am also 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 energy forecasting (including weather normalization).

Q. Have you testified before any regulatory authorities?

A. Yes, I filed testimony with the New Mexico Public Regulation Commission in Case No. 20-00238-UT in December 2020 and in Case No. 21-00200-UT in August 2021. I also filed testimony with the Colorado Public Utilities Commission in Proceeding No. 21A-0141E in March 2021.

II. PURPOSE AND SUMMARY OF TESTIMONY AND RECOMMENDATIONS

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the load forecasts that were used to assess SPS's need for existing or new generation resources, and I discuss the methodology and assumptions used to develop the forecasts. I am providing this testimony in the context of regulatory action in Texas related to commitments SPS made to cease coal operations at the Harrington Generating Station ("Harrington") by 2025. Other SPS witnesses address those regulatory actions in more detail. Specifically, SPS witness William A. Grant provides an overview of SPS's request to amend its Certificates of Convenience and Necessity ("CCNs") for Harrington. SPS witness Jeffrey L. West addresses SPS's obligation to comply with an Agreed Order issued by the Texas Commission on Environmental Quality in October 2020 that requires SPS to cease coal-fired operations at Harrington by 2025.

Q. What recommendation do you support through your testimony?

A. I support the recommendation that the Public Utility Commission of Texas ("Commission") approve SPS's request in this case to amend its Certificate of Convenience and Necessity ("CCN"). My testimony shows the load forecasts are reasonable, and I provided the forecasts to SPS witness Ben R. Elsey who shows through his resource planning analysis that converting Harrington to natural gas is a prudent approach for SPS to comply with its regulatory and reliability commitments.[1]

[1] In addition to this direct testimony, I am also providing workpapers that support and show the results of the forecast and modeling I address in my testimony.

III. SPS'S LOAD FORECAST

Q. What is the purpose of this section of your testimony?

A. The purpose of this section of my testimony is to describe the energy and peak demand forecasts used in the Harrington analysis. I will discuss the methodology used to develop the forecasts, key assumptions, and how the forecasts compare with recent trends. For the forecast period, I will focus the discussion of trends on the period ending in 2041. Finally, I will explain the process used to develop the planning forecast used in this analysis and compare the planning and financial forecasts.

Q. Please explain what you mean by "financial forecast" and "planning forecast."

A. The financial forecast represents SPS's median expectation for future energy and peak demand. Therefore, SPS expects that there is a 50% chance the actual results will exceed this forecast, and a 50% chance the actual results will be lower than the forecast. Several factors, notably faster or slower economic growth than forecasted, or hotter or colder than normal weather, may cause the actual results to differ from the financial forecast. SPS models this uncertainty through Monte Carlo simulations and develops a planning or "high" forecast and "low" forecast.[2] For this analysis, the Resource Planning group also utilized the "planning" forecast in assessing the continuing need for generation at Harrington to account for the uncertainty in the pace of oil and gas expansion in the service territory.

[2] A Monte Carlo simulation is a technique used to model the probability of different forecast outcomes by simulating the forecasts using a random draw of possible outcomes for predictor variables.

Q. Please describe SPS's financial energy sales and peak demand forecast.

A. SPS projects its electric firm obligation load (firm retail and firm wholesale requirements customers) to increase at a compounded annual growth rate of 0.7% per year through 2041. Growth in retail demand is expected to more than offset the impact of losing wholesale customers through the forecast period. SPS's energy sales are forecasted to increase at a compounded annual growth rate of 0.6% during the same period. The load growth through 2041 contrasts with the historical annual average load decline of -2.7% over the last 10 years (ending 2020). The historical annual average energy sales decline over the ten years ending 2020 is -1.9%. Load and energy sales decreases were driven primarily by the decline of wholesale load due to expiration of the New Mexico Cooperatives' wholesale contracts and contractual changes within existing wholesale contracts. In addition, the decline in oil prices that started in the third quarter of 2015 paused the oil and gas expansion in southeastern New Mexico, and the SPS region has seen a decline in potash mining in the last decade. Finally, 2020 energy sales and demands were negatively impacted by the business shutdowns and economic slowdown as a result of the COVID-19 pandemic.

Q. What is driving expected growth in retail sales and demand?

A. The expected growth in retail energy sales and demand through 2041 is driven by population growth, an expanding economy in the SPS service territory, expansion of the oil and gas industry in southeastern New Mexico, and the adoption of electric vehicles. SPS's service territory population is expected to average 0.3% growth per year over the next 20 years, while the gross county product for the counties served by SPS is expected to grow at an average annual rate of 2.0%. Additional oil and gas loads are expected to add 112 megawatts ("MW") worth of summer peak demand and 1,686 gigawatts ("GWh") of annual energy sales by 2025, and that impact is expected to continue through 2041. The adoption of electric vehicles is expected to add 240 MW of peak demand and 1,970 GWh of energy sales by 2041.

Q. Can you provide annual data for energy sales and peak forecast demand for the period 2010 through 2041?

A. Table 1 shows the energy sales and peak forecast and recent history. Table 2 shows the same data broken down into retail and wholesale. In both tables, values for the years 2010-2020 are actual data, and values for 2021 and beyond are forecasted.

Table JMG1 – Energy Sales and Peak Demand History and Forecasts

	Energy Sales (GWh)	Annual Increase (GWh)	Peak Demand (MW)	Annual Increase (MW)
2010	27,935	568	4,951	(36)
2011	28,843	908	5,155	204
2012	26,614	(2,229)	5,145	(10)
2013	27,443	829	5,026	(119)
2014	26,162	(1,281)	4,844	(182)
2015	24,584	(1,578)	4,643	(201)
2016	24,678	93	4,800	157
2017	24,223	(455)	4,344	(456)
2018	25,433	1,210	4,618	274
2019	24,677	(756)	3,888	(730)
2020	23,082	(1,595)	3,748	(140)
2021	23,338	256	4,060	312
2022	23,731	393	3,969	(91)
2023	23,671	(60)	3,874	(94)
2024	23,748	77	3,899	24
2025	23,987	239	3,937	38
2026	23,772	(214)	3,867	(69)
2027	23,650	(123)	3,905	38
2028	23,808	159	3,934	29
2029	23,994	185	3,961	26
2030	24,145	151	3,982	21
2031	24,290	145	4,007	25
2032	24,451	161	4,033	26
2033	24,647	196	4,061	28
2034	24,849	202	4,085	24
2035	25,104	255	4,122	37
2036	25,267	163	4,153	31
2037	25,527	260	4,183	30
2038	25,722	196	4,207	24
2039	25,976	254	4,241	34
2040	26,212	235	4,275	35
2041	26,418	206	4,302	27

Table JMG2 – Retail and Wholesale History and Forecasts

	Energy Sales (GWh)			Peak (MW)		
	Retail Firm	Wholesale Firm	System Firm	Retail Firm	Wholesale Firm	System Firm
2010	18,575	9,359	27,935	3,361	1,590	4,951
2011	18,639	10,204	28,843	3,297	1,858	5,155
2012	18,532	8,082	26,614	3,378	1,767	5,145
2013	18,768	8,675	27,443	3,285	1,741	5,026
2014	19,108	7,055	26,162	3,316	1,531	4,847
2015	19,127	5,457	24,584	3,304	1,344	4,648
2016	19,259	5,419	24,678	3,436	1,370	4,806
2017	19,305	4,917	24,223	3,407	941	4,348
2018	20,450	4,982	25,433	3,590	1,032	4,622
2019	21,027	3,650	24,677	3,542	521	4,063
2020	20,574	2,508	23,082	3,507	417	3,924
2021	20,973	2,365	23,338	3,624	436	4,060
2022	21,728	2,003	23,731	3,668	301	3,969
2023	22,358	1,314	23,671	3,749	125	3,874
2024	22,874	874	23,748	3,799	100	3,899
2025	23,199	788	23,987	3,837	100	3,937
2026	23,440	333	23,772	3,867	0	3,867
2027	23,650	0	23,650	3,905	0	3,905
2028	23,808	0	23,808	3,934	0	3,934
2029	23,994	0	23,994	3,961	0	3,961
2030	24,145	0	24,145	3,982	0	3,982
2031	24,290	0	24,290	4,007	0	4,007
2032	24,451	0	24,451	4,033	0	4,033
2033	24,647	0	24,647	4,061	0	4,061
2034	24,849	0	24,849	4,085	0	4,085
2035	25,104	0	25,104	4,122	0	4,122
2036	25,267	0	25,267	4,153	0	4,153
2037	25,527	0	25,527	4,183	0	4,183
2038	25,722	0	25,722	4,207	0	4,207
2039	25,976	0	25,976	4,241	0	4,241
2040	26,212	0	26,212	4,275	0	4,275
2041	26,418	0	26,418	4,302	0	4,302

In addition, Figures 1 and 2 show the retail and wholesale contributions to historical and forecasted energy sales and demand. The vertical black line separates the historical, through 2020, from the forecast.

Figure JMG1 – Retail and Wholesale Historical and Forecast, Energy Sales

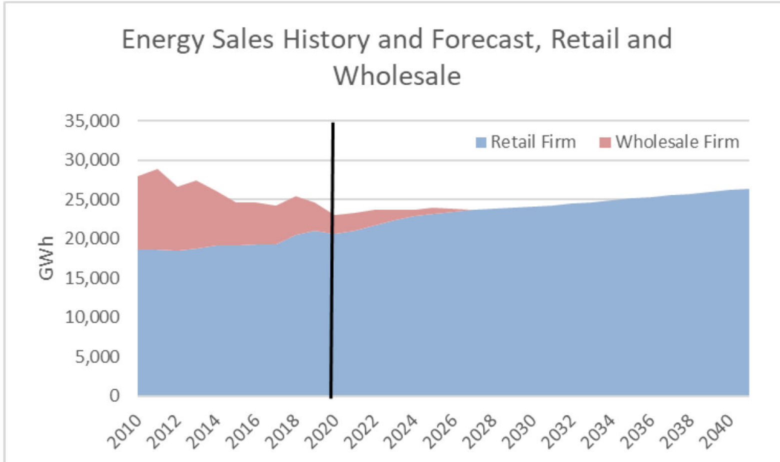
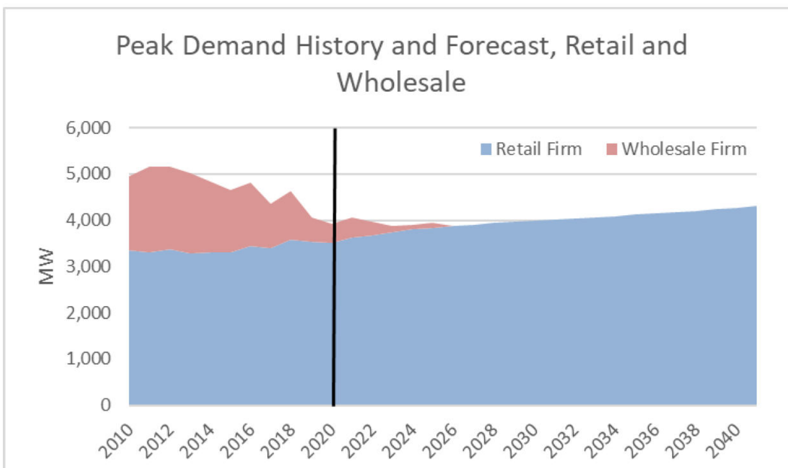


Figure JMG2 – Retail and Wholesale Historical and Forecast, Peak Demand



Q. What methodology does SPS use to forecast energy sales and peak demand?

A. SPS uses monthly historical customer, sales, and peak demand data, together with weather, economic, and demographic history and forecasts to develop its retail energy sales and peak demand forecasts. SPS uses regression models and trend analysis in its forecasting process. The forecasts are then adjusted for SPS's Demand Side Management programs. Next, the expected impacts of the expansion of the oil and gas industry in southeastern New Mexico are added to the forecast. Finally, SPS adds the energy sales and peak impacts associated with the adoption of electric vehicles in its service territory.

Energy sales forecasts for SPS's full and partial requirements wholesale customers are developed based on historical consumption patterns or regression models as described above, subject to contractual agreement with the wholesale customer. The full requirements wholesale coincident peak demand is developed on an individual customer basis. SPS uses a load factor methodology to calculate the coincident peak demand associated with the energy sales for each full requirements wholesale customer. For each customer, SPS calculates a monthly load factor based on historical energy sales, and coincident peak demand data as recorded at the delivery point. The monthly load factors are then applied to each full requirements wholesale customer's respective energy sales forecast to derive the monthly peak demand forecasts. The peak demand forecasts are then adjusted for line losses to derive the peak demand forecast at the source. The partial requirements wholesale customer coincident peak demand forecasts are determined by individual contractual agreements with customers.

Q. How does SPS define normal weather in its forecasts?

A. Normal weather is assumed to be an average of the last 30 years. For this forecast, the 30-year period is 1991-2020.

Q. What is the source for SPS's economic and demographic data and forecasts?

A. SPS relies on the economic and demographic forecast provided by IHS Markit (formerly IHS Global Insight). The January 2021 outlook was used in this forecast, which runs through the entirety of the forecast period, which is 2050.

Q. When was this forecast developed?

A. SPS's energy and peak demand forecasts submitted in this filing were developed in March 2021.[3]

Q. Has SPS developed a planning forecast that was used in this analysis?

A. Yes, a planning forecast was developed and used in this analysis. The forecast was developed through a Monte Carlo simulation. The planning forecast used in this analysis represents the 85th percentile of the simulation results. The planning forecast shows energy sales of 8,279 GWh (31%) higher and peak demand that is 880 MW (20%) higher than the financial forecast in 2041. A comparison of the results of the financial and planning forecasts is included in Table 3. Note that the financial forecast in Table 3 is the same financial forecast in Table 2, above (in which values for the years 2010-2020 are actual data, and values for 2021 and beyond are forecasted). Figures 3 and 4 show a comparison of the forecasts graphically.

[3] The same forecasts were used in SPS's Integrated Resource Plan filing with the New Mexico Public Regulation Commission.

Table JMG3 – Comparison of Financial and Planning Forecasts

	Energy Sales (GWh)			Peak Demand (MW)		
	Financial	Planning	Diff	Financial	Planning	Diff
2010	27,935	27,935	-	4,951	4,951	-
2011	28,843	28,843	-	5,155	5,155	-
2012	26,614	26,614	-	5,145	5,145	-
2013	27,443	27,443	-	5,026	5,026	-
2014	26,162	26,162	-	4,844	4,844	-
2015	24,584	24,584	-	4,643	4,643	-
2016	24,678	24,678	-	4,800	4,800	-
2017	24,223	24,223	-	4,344	4,344	-
2018	25,433	25,433	-	4,618	4,618	-
2019	24,677	24,677	-	3,888	3,888	-
2020	23,082	23,082	-	3,748	3,748	-
2021	23,338	24,408	1,070	4,060	4,141	81
2022	23,731	25,451	1,720	3,969	4,133	164
2023	23,671	25,878	2,207	3,874	4,115	240
2024	23,748	26,452	2,704	3,899	4,207	308
2025	23,987	27,108	3,121	3,937	4,269	332
2026	23,772	27,282	3,509	3,867	4,240	372
2027	23,650	27,519	3,870	3,905	4,333	428
2028	23,808	27,996	4,187	3,934	4,403	469
2029	23,994	28,470	4,477	3,961	4,464	504
2030	24,145	28,929	4,784	3,982	4,522	540
2031	24,290	29,371	5,081	4,007	4,565	558
2032	24,451	29,807	5,356	4,033	4,652	619
2033	24,647	30,342	5,696	4,061	4,706	644
2034	24,849	30,882	6,034	4,085	4,767	682
2035	25,104	31,400	6,296	4,122	4,799	678
2036	25,267	31,885	6,619	4,153	4,890	737
2037	25,527	32,503	6,976	4,183	4,952	769
2038	25,722	32,996	7,274	4,207	4,987	780
2039	25,976	33,556	7,580	4,241	5,066	826
2040	26,212	34,137	7,925	4,275	5,125	849
2041	26,418	34,697	8,279	4,302	5,182	880

Figure JMG3 – Comparison of Energy Sales Forecasts

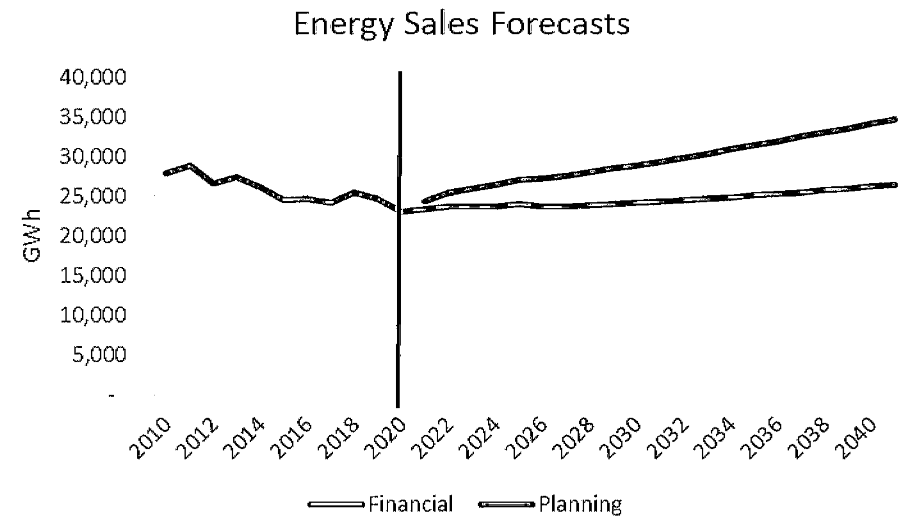
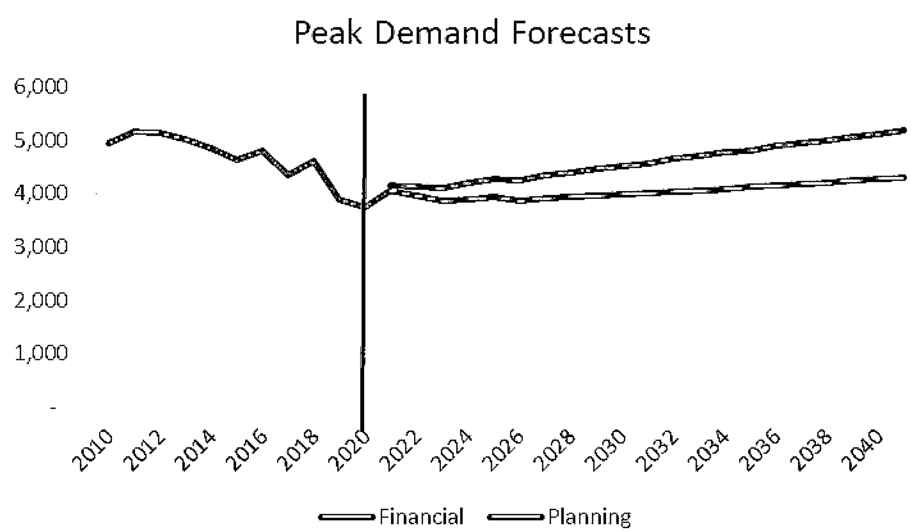


Figure JMG4 – Comparison of Peak Demand Forecasts



Q. How does the load forecast you present and address in this testimony fit into SPS's analysis of existing generation resources?

A. The load forecast is used by the Resource Planning group to assess the need for existing or additional generation resources. Mr. Elsey addresses this in detail in his direct testimony.

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

A. Yes.

AFFIDAVIT

STATE OF COLORADO)
)
COUNTY OF DENVER)

JOHN M. GOODENOUGH, first being sworn on his 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.

JOHN M. GOODENOUGH

Subscribed and sworn to before me this 23 day of August, 2021 by JOHN M. GOODENOUGH

JACOB BACHMAN
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20194010102
MY COMMISSION EXPIRES 3/15/2023

Notary Public, State of Colorado

My Commission Expires: 03-15-2023

CERTIFICATE OF SERVICE

I certify that on August 27, 2021 notice of the filing of this document was filed with the Public Utility Commission of Texas and a true and correct copy of it was served on the Staff of the Public Utility Commission of Texas, the Office of Public Utility Counsel, and all parties of record in SPS's current base rate proceeding, Docket No. 51802, by hand delivery, Federal Express, certified mail, electronic mail, or facsimile transmission pursuant to the March 16, 2020 order in Docket No. 50664.

Texas Harrington CCN

Attachment JMG-1(V)(CD)

Retail Sales - New Mexico Residential Service

Dependent Variable: S_ResService_NM				
Method: Least Squares				
Sample: 2003M01 2020M12				
Included observations: 216				
S_ResService_NM = C(1)*CYPperHH_NM + C(2)*(Jan*HDD65B_ROS*C_ResService_NM) + C(3)*(Feb*HDD65B_ROS*C_ResService_NM) + C(4)*Mar*HDD65B_ROS*C_ResService_NM) + +C(5)*(Dec*HDD65B_ROS*C_ResService_NM) + C(6)*(May*CDD65B_ROS*C_ResService_NM) + C(7)*(Jun*CDD65B_ROS*C_ResService_NM) + C(8)*(Jul*CDD65B_ROS*C_ResService_NM) + C(9)*(Aug*CDD65B_ROS*C_ResService_NM) + C(10)*(Sep*CDD65B_ROS*C_ResService_NM) + C(11)*(Oct*CDD65B_ROS*C_ResService_NM) + C(12)*Bin0706 + C(13)*StructuralChange2 + C(14)*Expr1 +[SAR(1)=C(15)] + [SMA(1)=C(16)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	258.227808	7.588402	34.029	0.00%
C(2)	0.000699	0.000056	12.474	0.00%
C(3)	0.000494	0.000067	7.432	0.00%
C(4)	0.000506	0.000068	7.455	0.00%
C(5)	0.000556	0.000057	9.692	0.00%
C(6)	0.000618	0.000150	4.114	0.01%
C(7)	0.000994	0.000068	14.654	0.00%
C(8)	0.001092	0.000053	20.514	0.00%
C(9)	0.001117	0.000051	21.848	0.00%
C(10)	0.000954	0.000063	15.147	0.00%
C(11)	0.000979	0.000109	8.942	0.00%
C(12)	-3870.867065	2130.500111	-1.817	7.08%
C(13)	1386.430785	542.704447	2.555	1.14%
C(14)	-4425.837334	2197.523057	-2.014	4.54%
C(15)	0.887336	0.032295	27.476	0.00%
C(16)	-0.696677	0.067086	-10.385	0.00%

Retail Sales - New Mexico Residential Service

Model Statistics	
Adjusted Observations	204
R-Squared	0.968
Adjusted R-Squared	0.966
AIC	15.532
BIC	15.792
Log-Likelihood	-1,857.73
Model Sum of Squares	29,657,987,743.69
Sum of Squared Errors	970,485,689.27
Std. Error of Regression	2,272.04
Durbin-Watson Statistic	1.654
Mean dependent var	46,836.47
StdDev dependent var	12,223.57

Retail Sales - New Mexico Residential Service

Variable Name	Definition
S_ResSvc_NM	Residential Service sales in New Mexico
CYPperHH_NM_MA12	12 Month Moving Average of Real personal income per household in New Mexico service area
H65_bill_ResSvc_NM_Jan	Heating degree days (January) multiplied by customers
H65_bill_ResSvc_NM_Feb	Heating degree days (February) multiplied by customers
H65_bill_ResSvc_NM_Mar	Heating degree days (March) multiplied by customers
H65_bill_ResSvc_NM_Dec	Heating degree days (December) multiplied by customers
C65_bill_ResSvc_NM_May	Cooling degree days (May) multiplied by customers
C65_bill_ResSvc_NM_Jun	Cooling degree days (June) multiplied by customers
C65_bill_ResSvc_NM_Jul	Cooling degree days (July) multiplied by customers
C65_bill_ResSvc_NM_Aug	Cooling degree days (August) multiplied by customers
C65_bill_ResSvc_NM_Sep	Cooling degree days (September) multiplied by customers
C65_bill_ResSvc_NM_Oct	Cooling degree days (October) multiplied by customers
Bin0706	Binary variable for July 2006=1, otherwise =0
StructuralChange2	Binary variable for (January or greater)=1 and 2018=1, otherwise =0
Expr1	Binary variable for June 2019=1, otherwise =0
SAR(1)	First-order Seasonal Autoregressive term
SMA(1)	First-order Seasonal Moving Average term

Retail Sales - New Mexico Residential Space Heat Service

Dependent Variable: S_ResSpaceHeat_NM				
Method: Least Squares				
Sample: 2010M01 2020M12				
Included observations: 132				
S_ResSpaceHeat_NM = C(1)*Trend2014 +C(2)*(Jan*HDD65B_ROS*C_ResSpaceHeat_NM) + C(3)*(Feb*HDD65B_ROS*C_ResSpaceHeat_NM) + C(4)*(Mar*HDD65B_ROS*C_ResSpaceHeat_NM) + C(5)*(Nov*HDD65B_ROS*C_ResSpaceHeat_NM) + C(6)*(Dec*HDD65B_ROS*C_ResSpaceHeat_NM) + C(7)*(Jun*CDD65B_ROS*C_ResSpaceHeat_NM) + C(8)*(Jul*CDD65B_ROS*C_ResSpaceHeat_NM) + C(9)*(Aug*CDD65B_ROS*C_ResSpaceHeat_NM) + C(10)*(Sep*CDD65B_ROS*C_ResSpaceHeat_NM) + C(11)*HolidayVariable + C(12)*BILLINGDAYS + [AR(1)=C(13)] + [MA(1)=C(14)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	-24.561494	12.078	-2.034	4.43%
C(2)	0.001321	0.000	38.694	0.00%
C(3)	0.001214	0.000	28.062	0.00%
C(4)	0.001003	0.000	19.242	0.00%
C(5)	0.001192	0.000	3.515	0.06%
C(6)	0.001233	0.000	8.881	0.00%
C(7)	0.000717	0.000	10.685	0.00%
C(8)	0.000974	0.000	20.557	0.00%
C(9)	0.001070	0.000	23.918	0.00%
C(10)	0.000782	0.000	13.505	0.00%
C(11)	-7982.155992	2373.515	-3.363	0.11%
C(12)	1036.796183	18.926	54.782	0.00%
C(13)	0.583023	0.220	2.646	0.93%
C(14)	-0.285	0.259	-1.101	27.31%

Retail Sales - New Mexico Residential Space Heat Service

Model Statistics	
Adjusted Observations	131
R-Squared	0.962
Adjusted R-Squared	0.958
AIC	15.578
BIC	15.885
Log-Likelihood	-1,192.23
Model Sum of Squares	15,644,886,965.30
Sum of Squared Errors	616,295,772.17
Std. Error of Regression	2,295.10
Durbin-Watson Statistic	1.961
Mean dependent var	42,037.66
StdDev dependent var	11,347.34

Retail Sales - New Mexico Residential Space Heat Service

Variable Name	Definition
S_ResSpaceHeat_NM	Residential Space Heating Service sales in New Mexico
Trend2014	Trend Variable beginning in January 2014
H65_bill_ResSpHt_NM_Jan	Heating degree days (January) multiplied by customers
H65_bill_ResSpHt_NM_Feb	Heating degree days (February) multiplied by customers
H65_bill_ResSpHt_NM_Mar	Heating degree days (March) multiplied by customers
H65_bill_ResSpHt_NM_Nov	Heating degree days (November) multiplied by customers
H65_bill_ResSpHt_NM_Dec	Heating degree days (December) multiplied by customers
C65_bill_ResSpHt_NM_Jun	Cooling degree days (June) multiplied by customers
C65_bill_ResSpHt_NM_Jul	Cooling degree days (July) multiplied by customers
C65_bill_ResSpHt_NM_Aug	Cooling degree days (August) multiplied by customers
C65_bill_ResSpHt_NM_Sep	Cooling degree days (September) multiplied by customers
HolidayVariable	Binary variable for November and December=1, otherwise =0
BILLINGDAYS	Number of scheduled billing day per revenue month
AR(1)	First-order autoregressive term
MA(1)	First-order Moving Average term

Retail Sales - Texas Residential Service

Dependent Variable: S_ResService_TX				
Method: Least Squares				
Sample: 2000M01 2020M12				
Included observations: 252				
S_ResService_TX = C(1)*CYPperHH_TX + C(2)*(Jan*HDD65B_PAN*TX_Res_Cust) + C(3)*(Feb*HDD65B_PAN*TX_Res_Cust) + C(4)*Mar*HDD65B_PAN*TX_Res_Cust) + C(5)*Apr*HDD65B_PAN*TX_Res_Cust) + C(6)*(Nov*HDD65B_PAN*TX_Res_Cust) + C(7)*(Dec*HDD65B_PAN*TX_Res_Cust) + C(8)*(May*CDD65B_PAN*TX_Res_Cust) + C(9)*(Jun*CDD65B_PAN*TX_Res_Cust) + C(10)*(Jul*CDD65B_PAN*TX_Res_Cust) + C(11)*(Aug*CDD65B_PAN*TX_Res_Cust) + C(12)*(Sep*CDD65B_PAN*TX_Res_Cust) + C(13)*(Oct*CDD65B_PAN*TX_Res_Cust) + C(14)*BILLINGDAYS + [AR(1)=C(15)] + [AR(2)=C(16)] + [MA(1)=C(17)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	272.248	84.169	3.23455	0.00141
C(2)	0.000582	0.000	20.58002	0.00000
C(3)	0.000453	0.000	14.26200	0.00000
C(4)	0.000405	0.000	10.41985	0.00000
C(5)	0.000241	0.000	3.58883	0.00042
C(6)	0.000307	0.000	3.94370	0.00011
C(7)	0.000457	0.000	12.39506	0.00000
C(8)	0.000968	0.000	3.40971	0.00078
C(9)	0.001358	0.000	15.79350	0.00000
C(10)	0.001458	0.000	27.01273	0.00000
C(11)	0.001485	0.000	30.60569	0.00000
C(12)	0.001	0.000	21.53475	0.00000
C(13)	0.001	0.000	8.48935	0.00000
C(14)	3315.763	338.895	9.78405	0.00000
C(15)	1.091	0.064	17.01030	0.00000
C(16)	-0.132	0.061	-2.15576	0.03212
C(17)	-1.049	0.029	-36.42447	0.00000

Retail Sales - Texas Residential Service

Model Statistics	
Adjusted Observations	250
R-Squared	0.940
Adjusted R-Squared	0.935
AIC	18.843
BIC	19.083
Log-Likelihood	-2,693.14
Model Sum of Squares	517,202,104,321.40
Sum of Squared Errors	33,296,840,096.46
Std. Error of Regression	11,954.28
Durbin-Watson Statistic	2.061
Mean dependent var	192,024.56
StdDev dependent var	46,930.27

Retail Sales - Texas Residential Service

Variable Name	Definition
S_ResService_TX	Residential Service sales in Texas
CYP_HH_TX	Real personal income per household in Texas service area
H65_bill_Res_TX_Jan	Heating degree days (January) multiplied by customers
H65_bill_Res_TX_Feb	Heating degree days (February) multiplied by customers
H65_bill_Res_TX_Mar	Heating degree days (March) multiplied by customers
H65_bill_Res_TX_Apr	Heating degree days (April) multiplied by customers
H65_bill_Res_TX_Nov	Heating degree days (November) multiplied by customers
H65_bill_Res_TX_Dec	Heating degree days (December) multiplied by customers
C65_bill_Res_TX_May	Cooling degree days (May) multiplied by customers
C65_bill_Res_TX_Jun	Cooling degree days (June) multiplied by customers
C65_bill_Res_TX_Jul	Cooling degree days (July) multiplied by customers
C65_bill_Res_TX_Aug	Cooling degree days (August) multiplied by customers
C65_bill_Res_TX_Sep	Cooling degree days (September) multiplied by customers
C65_bill_Res_TX_Oct	Cooling degree days (October) multiplied by customers
BILLINGDAYS	Number of scheduled billing day per revenue month
AR(1)	First-order autoregressive term
AR(2)	Second-order autoregressive term
MA(1)	First-order Moving Average term

Retail Sales - New Mexico Small Commercial and Industrial

Dependent Variable: S_SMCI_NM				
Method: Least Squares				
Sample: 2006M01 2020M12				
Included observations: 180				
S_SMCI_NM = C(1)*EE_NM + C(2)*(Jan*HDD65B_ROS*CUST_SMCI_NM) + C(3)*(Feb) + C(4)*(Jun*CDD65B_ROS*CUST_SMCI_NM) + C(5)*(Jul*CDD65B_ROS*CUST_SMCI_NM) + C(6)*(Aug*CDD65B_ROS*CUST_SMCI_NM) + C(7)*(Sep*CDD65B_ROS*CUST_SMCI_NM) + C(8)*(Nov*HDD65B_ROS*CUST_SMCI_NM + Dec*HDD65B*CUST_SMCI_NM) + C(9)*HolidayVariable + C(10)*CustomerShift2016 + C(11)*BIN0707 + C(12)*SalesShift_SMCI_2018 + C(13)*TrendVar				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	698.868	41.802	16.71844	0.00000
C(2)	0.001	0.000	4.17538	0.00005
C(3)	-14962.694	2097.619	-7.13318	0.00000
C(4)	0.002	0.000	6.99881	0.00000
C(5)	0.002	0.000	11.09063	0.00000
C(6)	0.002	0.000	11.86464	0.00000
C(7)	0.002	0.000	5.93449	0.00000
C(8)	0.001	0.000	2.22387	0.02757
C(9)	-17337.954	3609.071	-4.80399	0.00000
C(10)	6471.271	1680.583	3.85061	0.00018
C(11)	18779.816	7139.522	2.63040	0.00937
C(12)	13353.742	1741.182	7.66935	0.00000
C(13)	138.996	17.428	7.97551	0.00000

Retail Sales - New Mexico Small Commercial and Industrial

Model Statistics	
Adjusted Observations	180
R-Squared	0.894
Adjusted R-Squared	0.887
AIC	17.926
BIC	18.156
Log-Likelihood	-1,855.72
Model Sum of Squares	80,319,787,568.79
Sum of Squared Errors	9,496,279,717.91
Std. Error of Regression	7,540.82
Durbin-Watson Statistic	2.188
Mean dependent var	124,911.84
StdDev dependent var	22,400.13

Retail Sales - New Mexico Small Commercial and Industrial

Variable Name	Definition
S_SMCI_NM	Small Commercial & Industrial sales in New Mexico
CYP_NM	Real Personal Income for New Mexico Service Territory
H65_bill_SMCI_NM_Jan	Heating degree days (January) multiplied by customers
Feb	Binary variable for February, otherwise =0
C65_bill_SMCI_NM_Jun	Cooling degree days (June) multiplied by customers
C65_bill_SMCI_NM_Jul	Cooling degree days (July) multiplied by customers
C65_bill_SMCI_NM_Aug	Cooling degree days (August) multiplied by customers
C65_bill_SMCI_NM_Sep	Cooling degree days (September) multiplied by customers
H65_bill_SMCI_NM_NovDec	Heating degree days (November and December) multiplied by customers
HolidayVariable	Binary variable for November and December=1, otherwise =0
CustomerShift2016	Shift effective September 2016 forward=1, prior values =0
Bin0707	Binary variable for July 2007=1, otherwise =0
SalesShift_SMCI_2018	Binary variable for (greater than August=1) and Year=2018, otherwise =0
TrendVar	Increasing linear trend variable starting January 1990

Retail Sales - New Mexico Large Commercial and Industrial

Dependent Variable: S_LGCI_NM				
Method: Least Squares				
Sample: 2006M01 2020M12				
Included observations: 180				
S_LGCI_NM = C(1)*NM_Large_Adj + C(2)*BIN0309 + C(3)*BIN0709 + C(4)*BIN0110 + C(5)*BIN0115 + C(6)*BIN0419 + C(7)*BinJan + C(8)*BinFeb + C(9)*BinMar + C(10)*BinAug + C(11)*BinSep + C(12)*IPSG211A3 + C(13)*LGCItrend + [MA(1) = C(14)] + [MA(2) = C(15)] + [MA(3) = C(16)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	37907.032	4734.167	8.00712	0.00000
C(2)	-22518.913	10212.811	-2.20497	0.02884
C(3)	28420.556	10054.518	2.82665	0.00529
C(4)	-23618.678	10066.448	-2.34628	0.02015
C(5)	27226.838	9843.612	2.76594	0.00633
C(6)	29531.108	9979.964	2.95904	0.00355
C(7)	7271.341	3234.601	2.24799	0.02590
C(8)	-13022.207	3141.793	-4.14483	0.00006
C(9)	-7421.001	3277.558	-2.26419	0.02486
C(10)	5208.536	2822.913	1.84509	0.06683
C(11)	8752.749	2773.290	3.15609	0.00191
C(12)	1652.904	26.410	62.58671	0.00000
C(13)	158494.744	22904.190	6.91990	0.00000
C(14)	0.539	0.081	6.63776	0.00000
C(15)	0.574	0.080	7.16925	0.00000
C(16)	0.208	0.084	2.45877	0.01497

Retail Sales - New Mexico Large Commercial and Industrial

Model Statistics	
Adjusted Observations	180
R-Squared	0.950
Adjusted R-Squared	0.946
AIC	18.844
BIC	19.127
Log-Likelihood	-1,935.34
Model Sum of Squares	441,255,189,012.08
Sum of Squared Errors	23,002,066,617.89
Std. Error of Regression	11,842.99
Durbin-Watson Statistic	1.853
Mean dependent var	185,863.01
StdDev dependent var	50,927.56

Retail Sales - New Mexico Large Commercial and Industrial

Variable Name	Definition
S_LGCI_NM	Large Commercial & Industrial sales in New Mexico
NM_Large_Adj	Shift effective January 2016 forward=1, prior values =0
Bin0309	Binary for March 2009=1, otherwise =0
Bin0709	Binary for July 2009=1, otherwise =0
Bin0110	Binary for January 2010=1, otherwise =0
Bin1115	Binary for November 2015=1, otherwise =0
Bin0419	Binary for April 2019=1, otherwise =0
Jan	Binary variable for January, otherwise =0
Feb	Binary variable for February, otherwise =0
Mar	Binary variable for March, otherwise =0
Aug	Binary variable for August, otherwise =0
Sep	Binary variable for September, otherwise =0
IPSG211A3	Oil and gas extraction index
LGCItrend	Trend Variable for Large Commercial sales
MA(1)	First-order Moving Average term
MA(2)	Second-order Moving Average term
MA(3)	Third-order Moving Average term

Retail Sales - Texas Small Commercial and Industrial				
Dependent Variable: S_SMCI_TX				
Method: Least Squares				
Sample: 2010M01 2020M12				
Included observations: 132				
S_SMCI_TX = C(1)*CONST+ C(2)*(May*CDD65B_PAN*CUST_SMCI_TX) + C(3)*(JUN*CDD65B_PAN*CUST_SMCI_TX) + C(4)*(JUL*CDD65B_PAN*CUST_SMCI_TX) + C(5)*(AUG*CDD65B_PAN*CUST_SMCI_TX) + C(6)*(SEP*CDD65B_PAN*CUST_SMCI_TX) + C(7) * (OCT*CDD65B_PAN*CUST_SMCI_TX) + C(8) * (JAN*HDD65B_PAN*CUST_SMCI_TX) + C(9) * (NOV*HDD65B_PAN*CUST_SMCI_TX+DEC*HDD65B_PAN*CUST_SMCI_TX) + C(10)*Bin1016 + C(11)*Bin0318 + C(12)*Bin0112 + C(13)*Bin0413 + C(14)*Bin1118 + C(15)*Bin1017 + C(16)*Nov + C(17)*TrendVar + C(18)*COVID_19_Impact_Mar2020 + [SAR(1) = C(19)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	278606.864	11314.817	24.62319	0.00000
C(2)	0.006	0.001	6.08810	0.00000
C(3)	0.003	0.000	11.10758	0.00000
C(4)	0.004	0.000	19.69236	0.00000
C(5)	0.004	0.000	24.70917	0.00000
C(6)	0.004	0.000	16.74412	0.00000
C(7)	0.004	0.001	7.06419	0.00000
C(8)	0.001	0.000	10.54065	0.00000
C(9)	0.001	0.000	8.00367	0.00000
C(10)	-32840.140	10539.616	-3.11588	0.00239
C(11)	29660.416	10128.482	2.92842	0.00421
C(12)	-35799.985	10328.744	-3.46605	0.00078
C(13)	25592.401	10081.348	2.53859	0.01265
C(14)	-15321.610	10347.931	-1.48064	0.14182
C(15)	-21865.710	10508.134	-2.08084	0.03998
C(16)	-17666.276	4345.521	-4.06540	0.00010
C(17)	-151.284	36.143	-4.18574	0.00006
C(18)	-14581.223	4764.283	-3.06053	0.00283
C(19)	0.142	0.081	1.74867	0.08339

Retail Sales - Texas Small Commercial and Industrial

Model Statistics	
Adjusted Observations	120
R-Squared	0.929
Adjusted R-Squared	0.917
AIC	18.680
BIC	19.121
Log-Likelihood	-1,272.08
Model Sum of Squares	148,926,268,592.65
Sum of Squared Errors	11,332,173,119.58
Std. Error of Regression	10,592.44
Durbin-Watson Statistic	1.898
Mean dependent var	267,608.51
StdDev dependent var	37,184.23

Retail Sales - Texas Small Commercial and Industrial

Variable Name	Definition
S_SMCI_TX	Small Commercial and Industrial Service sales in Texas
CONST	Constant variable
C65_bill_SMCI_TX_May	Cooling degree days (May) multiplied by customers
C65_bill_SMCI_TX_Jun	Cooling degree days (June) multiplied by customers
C65_bill_SMCI_TX_Jul	Cooling degree days (July) multiplied by customers
C65_bill_SMCI_TX_Aug	Cooling degree days (August) multiplied by customers
C65_bill_SMCI_TX_Sep	Cooling degree days (September) multiplied by customers
C65_bill_SMCI_TX_Oct	Cooling degree days (October) multiplied by customers
H65_bill_SMCI_TX_Jan	Heating degree days (January) multiplied by customers
H65_bill_SMCI_TX_Aggregate	Heating degree days (November and December) multiplied by customers
Bin1016	Binary variable for October 2016=1, otherwise=0
Bin0318	Binary variable for March 2018=1, otherwise=0
Bin0112	Binary variable for January 2012=1, otherwise=0
Bin0413	Binary variable for April 2013=1, otherwise=0
Bin1118	Binary variable for November 2018=1, otherwise=0
Bin1017	Binary variable for October 2017=1, otherwise=0
Nov	Seasonal binary variable, November=1, otherwise =0
TrendVar	Trend Variable starting January 1990
COVID_19_Impact_Mar2020	Binary variable to account for Covid impacts; from March 2020 to June 2024
SAR(1)	First-order Seasonal Autoregressive term

Retail Sales - Texas Large Commercial and Industrial-Other

Dependent Variable: S_LGCI_TX
Method: Least Squares
Sample: 2009M01 2020M12
Included observations: 144
S_LGCI_TX = C(1)*CONST + C(2)*GDPR_Log + C(3)*BINFEB + C(4)*BINMAR + C(5)*BINMAY + C(6)*BINAUG + C(7)*BINSEP + C(8)*BINNOV+ C(9)*BIN0612 + C(10)*BIN0712+ C(11)*BIN1212 + C(12)*BIN0418 + C(13)*BIN0311 + C(14)*BIN0211+ C(15)*Trend2016 + [AR(1)=C(16)]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-2458759.474	296377.849	-8.296	0.00%
C(2)	289386.039	30537.950	9.476	0.00%
C(3)	-10586.330	3128.473	-3.384	0.10%
C(4)	-21341.319	3136.482	-6.804	0.00%
C(5)	-13130.426	2839.929	-4.624	0.00%
C(6)	16731.558	3055.226	5.476	0.00%
C(7)	21698.292	3006.075	7.218	0.00%
C(8)	-5866.161	2811.833	-2.086	3.90%
C(9)	-54085.296	10062.376	-5.375	0.00%
C(10)	52402.072	10074.800	5.201	0.00%
C(11)	-34787.911	9586.807	-3.629	0.04%
C(12)	-24657.477	9605.347	-2.567	1.14%
C(13)	-19270.604	10422.801	-1.849	6.68%
C(14)	-21997.955	10419.888	-2.111	3.67%
C(15)	-5467.741	619.813	-8.822	0.00%
C(16)	0.351	0.085	4.138	0.01%

Retail Sales - Texas Large Commercial and Industrial-Other

Model Statistics	
Adjusted Observations	143
R-Squared	0.814
Adjusted R-Squared	0.792
AIC	18.533
BIC	18.864
Log-Likelihood	-1,512.016
Model Sum of Squares	55,942,867,847.988
Sum of Squared Errors	12,791,492,626.85
Std. Error of Regression	10,035.96
Durbin-Watson Statistic	2.01
Mean dependent var	346,535.08
StdDev dependent var	21,972.11

Retail Sales - Texas Large Commercial and Industrial-Other

Variable Name	Definition
S_LGCI_TX	Large Commercial and Industrial sales in Texas
CONST	Constant variable
GDPR_log	Log of Real Gross Domestic Product
Feb	Seasonal binary variable, February=1, otherwise =0
Mar	Seasonal binary variable, March=1, otherwise =1
May	Seasonal binary variable, May=1, otherwise =2
Aug	Seasonal binary variable, August=1, otherwise =3
Sep	Seasonal binary variable, September=1, otherwise =4
Nov	Seasonal binary variable, November=1, otherwise =5
Bin0612	Binary variable for June 2012=1, otherwise =0
Bin0712	Binary variable for July 2012=1, otherwise =0
Bin1212	Binary variable for December 2012=1, otherwise =0
Bin0418	Binary variable for April 2018=1, otherwise =0
Bin0311	Binary variable for March 2011=1, otherwise =0
Bin0211	Binary variable for February 2011=1, otherwise =0
Trend2016	Trend Variable starting January 2016
AR(1)	First-order Autoregressive term

Retail Sales - Texas Large Commercial and Industrial -OXY

Dependent Variable: S_LGCI_OXY_TX				
Method: Least Squares				
Sample: 2008M01 2020M12				
Included observations: 156				
S_LGCI_OXY_TX = C(1)*CONST + C(2)*TrendVar + C(3)*BINJAN + C(4)*BINFEB + C(5)*BINMAR + C(6)*BINAPR + C(7)*BINJUN + C(8)*BINAUG + C(9)*BINSEP + C(10)*BINNOV + C(11)*BIN1109 + C(12)*BIN01209+ [AR(1)=C(13)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	246382.660	17137.123	14.37713	0.00000
C(2)	179.641	56.829	3.16108	0.00193
C(3)	9853.029	2579.676	3.81948	0.00021
C(4)	11177.928	2975.604	3.75652	0.00026
C(5)	-14885.577	2942.820	-5.05827	0.00000
C(6)	12613.117	2445.664	5.15734	0.00000
C(7)	10621.026	1988.059	5.34241	0.00000
C(8)	9624.568	2266.373	4.24668	0.00004
C(9)	12766.292	2266.246	5.63323	0.00000
C(10)	6349.905	2068.502	3.06981	0.00257
C(11)	55862.193	8430.392	6.62629	0.00000
C(12)	54967.485	8292.680	6.62843	0.00000
C(13)	0.718	0.059	12.15785	0.00000

Retail Sales - Texas Large Commercial and Industrial -OXY

Model Statistics	
Adjusted Observations	155
R-Squared	0.762
Adjusted R-Squared	0.742
AIC	18.251
BIC	18.507
Log-Likelihood	-1,621.425
Model Sum of Squares	35,438,768,067.746
Sum of Squared Errors	11,066,203,471.03
Std. Error of Regression	8,827.85
Durbin-Watson Statistic	2.39
Mean dependent var	304,650.11
StdDev dependent var	17,555.17

Retail Sales - Texas Large Commercial and Industrial -OXY

Variable Name	Definition
S_LGCI_OXY_TX	Large Commercial and Industrial sales in Texas - OXY
CONST	Constant variable
TrendVar	Trend Variable starting January 1990
Jan	Seasonal binary variable, January=1, otherwise =0
Feb	Seasonal binary variable, February=1, otherwise =0
Mar	Seasonal binary variable, March=1, otherwise =0
Apr	Seasonal binary variable, April=1, otherwise =0
Jun	Seasonal binary variable, June=1, otherwise =0
Aug	Seasonal binary variable, August=1, otherwise =0
Sep	Seasonal binary variable, September=1, otherwise =0
Nov	Seasonal binary variable, November=1, otherwise =0
Bin1109	Binary variable for November 2009=1, otherwise=0
Bin1209	Binary variable for December 2009=1, otherwise=0
AR(1)	First-order autoregressive term

Retail Sales - New Mexico Street Lighting

Dependent Variable: S_STLIGHT_NM				
Method: Least Squares				
Sample: 2012M01 2020M12				
Included observations: 108				
S_STLIGHT_NM=C(1)*BINJAN+ C(2)*BINFEB + C(3)*BINMAR + C(4)*BINAPR + C(5)*BINMAY + C(6)*BINJUN + C(7)*BINJUL + C(8)*BINAUG + C(9)*BINSEP + C(10)*BINOCT + C(11)*BINNOV + C(12)*BINDEC + C(13)*SalesShift_StLt_2018 + C(14)*LEDConversionTrend + [AR(1)=C(15)] + [AR(2)=C(16)] + [AR(3)=C(17)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	1107.398	14.071	78.69864	0.00000
C(2)	1104.445	14.120	78.21975	0.00000
C(3)	1107.055	14.192	78.00692	0.00000
C(4)	1109.038	14.315	77.47113	0.00000
C(5)	1108.763	14.314	77.46046	0.00000
C(6)	1114.300	14.280	78.03051	0.00000
C(7)	1112.116	14.246	78.06673	0.00000
C(8)	1114.463	14.202	78.47189	0.00000
C(9)	1109.450	14.154	78.38639	0.00000
C(10)	1111.453	14.098	78.83797	0.00000
C(11)	1109.349	14.052	78.94602	0.00000
C(12)	1106.855	14.053	78.76467	0.00000
C(13)	-2.803	8.940	-0.31356	0.75461
C(14)	-17.200	4.895	-3.51354	0.00071
C(15)	1.267	0.105	12.02866	0.00000
C(16)	0.085	0.168	0.50432	0.61530
C(17)	-0.428	0.125	-3.42812	0.00093

Retail Sales - New Mexico Street Lighting

Model Statistics	
Adjusted Observations	105
R-Squared	0.9784
Adjusted R-Squared	0.9744
AIC	4.661
BIC	5.090
Log-Likelihood	-376.679
Model Sum of Squares	363,249.711
Sum of Squared Errors	8,029.83
Std. Error of Regression	9.55
Durbin-Watson Statistic	2.14
Mean dependent var	1,086.72
StdDev dependent var	59.06

Retail Sales - New Mexico Street Lighting

Variable Name	Definition
C_StreetLight	Street Lighting Service sales in the New Mexico service area
Jan	Seasonal binary variable, January=1, otherwise =0
Feb	Seasonal binary variable, February=1, otherwise =0
Mar	Seasonal binary variable, March=1, otherwise =0
Apr	Seasonal binary variable, April=1, otherwise =0
May	Seasonal binary variable, May=1, otherwise =0
Jun	Seasonal binary variable, June=1, otherwise =0
Jul	Seasonal binary variable, July=1, otherwise =0
Aug	Seasonal binary variable, August=1, otherwise =0
Sep	Seasonal binary variable, September=1, otherwise =0
Oct	Seasonal binary variable, October=1, otherwise =0
Nov	Seasonal binary variable, November=1, otherwise =0
Dec	Seasonal binary variable, December=1, otherwise =0
SalesShift_StLt_2018	Binary variable for month>September and year 2018=1, otherwise =0
LEDConversionTrend	Binary variable starting April 2019 to December 2050
AR(1)	Autoregressive corrective term 1st period
AR(2)	Autoregressive corrective term 2nd period
AR(3)	Autoregressive corrective term 3nd period

Retail Sales - Texas Street Lighting

Dependent Variable: SL_UPC_TX				
Method: Least Squares				
Sample: 2011M05 2020M12				
Included observations: 116				
S_STREET_TX = C(1)* CONST + C(2)*Street_TXJun2019 + C(3)*LEDConversionTrend + [AR(1)=C(4)] +[MA(1)=C(5)] + [MA(2)=C(6)] +[MA(3)=C(7)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	29.062	0.251	115.87519	0.00000
C(2)	0.108	0.050	2.14012	0.03459
C(3)	-0.316	0.036	-8.70394	0.00000
C(4)	0.903	0.010	92.55278	0.00000
C(5)	1.116	0.091	12.30655	0.00000
C(6)	0.849	0.118	7.21741	0.00000
C(7)	0.399	0.092	4.32121	0.00004

Retail Sales - Texas Street Lighting

Model Statistics	
Adjusted Observations	115
R-Squared	0.9982
Adjusted R-Squared	0.9981
AIC	-5.271
BIC	-5.104
Log-Likelihood	146.918
Model Sum of Squares	295.975
Sum of Squared Errors	0.52
Std. Error of Regression	0.07
Durbin-Watson Statistic	1.67
Mean dependent var	28.23
StdDev dependent var	1.70

Retail Sales - Texas Street Lighting

Variable Name	Definition
SL_UPC_TX	Street Lighting Use Per Customer Sales in Texas
CONST	Constant variable
Street_TXJun2019	Binary variable for month > March and year = 2019
LEDConversionTrend	Binary variable starting April 2019 to December 2050
AR(1)	Autoregressive corrective term 1st period
MA(1)	Moving Average term 1st period
MA(2)	First-order autoregressive term
MA(3)	First-order autoregressive term

Retail Sales - Texas Other Public Authority

Dependent Variable: S_MUNISCHOOL_TX				
Method: Least Squares				
Sample: 2008M01 2020M12				
Included observations: 156				
S_MUNISCHOOL_TX = C(1)*CONSTANT + C(2)*TRENDVAR + C(3)*(BINJUN *CDD65B_PAN*C_MUNISCH_TX) + C(4)*(BINJUL *CDD65B_PAN*C_MUNISCH_TX) + C(5)*(BINAUG *CDD65B_PAN*C_MUNISCH_TX) + C(6)*(BINSEP *CDD65B_PAN*C_MUNISCH_TX) + C(7)*(BINOCT *CDD65B_PAN*C_MUNISCH_TX) + C(8)*Bin0317 + C(9)*Bin0917 + C(10)*Bin0814 + C(11)*Bin0316 + [AR(1)=C(12)] + [MA(1)=C(13)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	34618.545	1855.151	18.66077	0.00000
C(2)	-18.683	6.161	-3.03251	0.00289
C(3)	0.002	0.000	4.92185	0.00000
C(4)	0.002	0.000	7.43184	0.00000
C(5)	0.003	0.000	10.04114	0.00000
C(6)	0.005	0.000	12.83228	0.00000
C(7)	0.012	0.001	13.16823	0.00000
C(8)	-6153.489	1936.838	-3.17708	0.00183
C(9)	-4881.717	1980.348	-2.46508	0.01488
C(10)	-3810.756	1984.947	-1.91983	0.05688
C(11)	4847.701	1936.697	2.50308	0.01344
C(12)	0.718	0.185	3.88848	0.00016
C(13)	-0.523	0.224	-2.32901	0.02126

Retail Sales - Texas Other Public Authority

Model Statistics	
Adjusted Observations	155
R-Squared	0.7490
Adjusted R-Squared	0.7278
AIC	15.269
BIC	15.524
Log-Likelihood	-1,390.260
Model Sum of Squares	1,672,447,634.315
Sum of Squared Errors	560,522,960.32
Std. Error of Regression	1,986.79
Durbin-Watson Statistic	1.98
Mean dependent var	31,358.08
StdDev dependent var	3,795.97

Retail Sales - Texas Other Public Authority

Variable Name	Definition
S_MUNISCHOOL_TX	Municipal and School Service sales in Texas
CONST	Constant variable
TrendVar	Trend variable
C65_bill_MSS_TX_Jun	Cooling degree days (June) multiplied by customers
C65_bill_MSS_TX_Jul	Cooling degree days (July) multiplied by customers
C65_bill_MSS_TX_Aug	Cooling degree days (August) multiplied by customers
C65_bill_MSS_TX_Sep	Cooling degree days (September) multiplied by customers
C65_bill_MSS_TX_Oct	Cooling degree days (October) multiplied by customers
Bin0317	Binary variable for March 2017=1, otherwise=0
Bin0917	Binary variable for September 2017=1, otherwise=0
Bin0814	Binary variable for August 2018=1, otherwise=0
Bin0316	Binary variable for March 2016=1, otherwise=0
AR(1)	Autogressive corrective 1st term
MA(1)	Moving Average 1st term

Wholesales Sales - Central Valley

Dependent Variable: S_Central Valley
Method: Least Squares
Sample: 2006M01 2020M12
Included observations: 180
S_CentralValley=C(1)*Extraction_Index+C(2)*BINJAN+C(3)*BINMAR+C(4)*BINAPR+C(5)*BINMAY+C(6)*C65_CAL_ROS_NM_MAY+C(7)*C65_CAL_ROS_NM_JUN+C(8)*C65_CAL_ROS_NM_JUL+C(9)*C65_CAL_ROS_NM_AUG+C(10)C65_CAL_ROS_NM_SEP+C(11)*BINOCT+C(12)*BINNOV+C(13)*BINDEC+C(14)*BIN0710+C(15)*BIN0211+C(16)*BIN1114+C(17)*BIN0215+C(18)*BIN0416+C(19)*BIN1217+C(20)*BIN0419+C(21)*BIN0908+C(22)*BIN0520+[AR(1)=C(23)]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	12,962.0965	201.5280	64.3191	0.00%
C(2)	5,212.5278	515.5687	10.1102	0.00%
C(3)	7,585.7274	516.2084	14.6951	0.00%
C(4)	7,226.6295	679.2461	10.6392	0.00%
C(5)	4,759.0417	1,315.1387	3.6187	0.04%
C(6)	14.7647	5.3847	2.7420	0.68%
C(7)	23.4295	1.5820	14.8099	0.00%
C(8)	27.5720	1.4213	19.3991	0.00%
C(9)	27.6281	1.5042	18.3675	0.00%
C(10)	20.1133	2.7401	7.3403	0.00%
C(11)	3,824.8668	758.7895	5.0407	0.00%
C(12)	1,624.8858	741.7145	2.1907	2.99%
C(13)	4,378.4721	672.3446	6.5122	0.00%
C(14)	-3,816.0518	1,496.8512	-2.5494	1.17%
C(15)	-7,865.8344	1,511.0469	-5.2056	0.00%
C(16)	3,795.6610	1,512.6079	2.5093	1.31%
C(17)	-4,810.2017	1,511.8328	-3.1817	0.18%
C(18)	-4,050.2816	1,523.3538	-2.6588	0.87%
C(19)	3,232.2374	1,515.0764	2.1334	3.44%
C(20)	-3,808.7180	1,516.5028	-2.5115	1.30%
C(21)	-6,628.9145	1,496.3465	-4.4301	0.00%
C(22)	-9,377.7214	1,639.4367	-5.7201	0.00%
C(23)	0.8253	0.0459	17.9966	0.00%

Wholesales Sales - Central Valley

Model Statistics	
Adjusted Observations	179
R-Squared	0.9286
Adjusted R-Squared	0.9185
AIC	15.218
BIC	15.627
Log-Likelihood	-1,592.977
Model Sum of Squares	7,317,874,441.644
Sum of Squared Errors	562,631,019.19
Std. Error of Regression	1,899.11
Durbin-Watson Statistic	2.11
Mean dependent var	66,743.49
StdDev dependent var	6,659.74

Wholesales Sales - Central Valley

Variable Name	Definition
S_CentralValley	Central Valley sales
Extraction_Index	Oil and Gas Extraction Index
Jan	Seasonal binary variable, January=1, otherwise =0
Mar	Seasonal binary variable, March=1, otherwise =0
Apr	Seasonal binary variable, April=1, otherwise =0
May	Seasonal binary variable, May=1, otherwise =0
C65_cal_ROS_NM_May	May cooling degree days
C65_cal_ROS_NM_Jun	June cooling degree days
C65_cal_ROS_NM_Jul	July cooling degree days
C65_cal_ROS_NM_Aug	August cooling degree days
C65_cal_ROS_NM_Sep	September cooling degree days
Oct	Seasonal binary variable, October=1, otherwise =0
Nov	Seasonal binary variable, November=1, otherwise =0
Dec	Seasonal binary variable, December=1, otherwise =0
Bin0710	Binary variable for July 2010=1, otherwise =0
Bin0211	Binary variable for February 2011=1, otherwise =0
Bin1114	Binary variable for November 2014=1, otherwise =0
Bin0215	Binary variable for February 2015=1, otherwise =0
Bin0416	Binary variable for April 2016=1, otherwise =0
Bin1217	Binary variable for December 2017=1, otherwise =0
Bin0419	Binary variable for April 2019=1, otherwise =0
Bin0908	Binary variable for September 2008=1, otherwise =0
Bin0520	Binary variable for May 2020=1, otherwise =0
AR(1)	First-order autoregressive term

Wholesales Sales - Farmers

Dependent Variable: S_Farmers
Method: Least Squares
Sample: 2007M01 2020M12
Included observations: 168
S_Farmers=C(1)*CGCP_FARMERS_LOG+C(2)*BINJAN+C(3)*BINFEB+C(4)*BINAPR+C(5)*C65_CAL_ROS_NM_JUN+C(6)*C65_CAL_ROS_NM_JUL+C(7)*C65_CAL_ROS_NM_AUG+C(8)*BINOCT+C(9)*BINNOV+C(10)*BINDEC+C(11)*BIN0515+C(12)*NM_PRECIP_MARAPR+C(13)*BIN0916+C(14)*BIN0817+C(15)*BIN0614+C(16)*FarmersLoadStable+[AR(1)=C(17)]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	4044.650	101.535	39.835	0.00%
C(2)	-3178.167	696.124	-4.566	0.00%
C(3)	-5231.456	575.615	-9.088	0.00%
C(4)	1546.206	457.072	3.383	0.09%
C(5)	7.347	1.092	6.728	0.00%
C(6)	16.875	1.073	15.726	0.00%
C(7)	17.396	1.007	17.279	0.00%
C(8)	-3732.422	554.006	-6.737	0.00%
C(9)	-5255.219	682.097	-7.705	0.00%
C(10)	-3778.028	720.267	-5.245	0.00%
C(11)	-5031.576	1691.376	-2.975	0.34%
C(12)	-946.336	531.515	-1.780	7.70%
C(13)	-4802.837	1654.024	-2.904	0.42%
C(14)	-6202.416	1658.656	-3.739	0.03%
C(15)	-3275.615	1673.947	-1.957	5.22%
C(16)	-3470.050	1147.886	-3.023	0.30%
C(17)	0.755	0.054	14.066	0.00%

Wholesales Sales - Farmers

Model Statistics	
Adjusted Observations	167
R-Squared	0.8969
Adjusted R-Squared	0.8859
AIC	15.328
BIC	15.646
Log-Likelihood	-1,499.883
Model Sum of Squares	5,381,082,541.606
Sum of Squared Errors	618,485,811.06
Std. Error of Regression	2,030.58
Durbin-Watson Statistic	1.96
Mean dependent var	32,432.05
StdDev dependent var	6,020.69

Wholesales Sales - Farmers

Variable Name	Definition
S_Farmers	Farmers sales
CGCP_Farmers	New Mexico Gross County Product - Farmers Service Area
Jan	Seasonal binary variable, January=1, otherwise =0
Feb	Seasonal binary variable, February=1, otherwise =0
Apr	Seasonal binary variable, April=1, otherwise =1
C65_cal_ROS_NM_Jun	June cooling degree days
C65_cal_ROS_NM_Jul	July cooling degree days
C65_cal_ROS_NM_Aug	August cooling degree days
Oct	Seasonal binary variable, October=1, otherwise =0
Nov	Seasonal binary variable, November=1, otherwise =0
Dec	Seasonal binary variable, December=1, otherwise =0
Bin0515	Binary variable for May 2015=1, otherwise =0
NM_Precip_MarApr	Precipitation for March and April, otherwise=0
Bin0916	Binary variable for September 2016=1, otherwise =0
Bin0817	Binary variable for August 2017=1, otherwise =0
Bin0614	Binary variable for June 2014=1, otherwise =0
FarmersLoadStable	Binary variable for (month>January and year=2015)=1 , otherwise =0
0	First-order autoregressive term

Wholesales - GSEC_FullLoad_Sales

Dependent Variable: GSECSALES_LOG				
Method: Least Squares				
Sample: 2004M01 2020M12				
Included observations: 204				
GSECSALES_LOG=C(1)*CONST+C(2)*C65_CAL_PAN_MAY+C(3)*C65_CAL_PAN_JUNE+C(4)*C65_CAL_PAN_JULY+C(5)*C65_CAL_PAN_AUG+C(6)*C65_CAL_PAN_SEP+C(7)*Bin0407+C(8)*BIN0113+C(9)*BIN0916+C(10)*BIN0817+C(11)*PRECIP_CAL_PANAPRTOJUL+C(12)*Feb+C(13)*Mar+C(14)*Apr+C(15)*May+C(16)*Bin0417+C(17)*LogEE_TX_MA+[AR(1)=C(18)]+[MA(1)=C(19)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	-7.412	1.655	-4.480	0.00%
C(2)	0.001	0.000	5.401	0.00%
C(3)	0.001	0.000	17.639	0.00%
C(4)	0.002	0.000	26.027	0.00%
C(5)	0.002	0.000	27.197	0.00%
C(6)	0.001	0.000	11.947	0.00%
C(7)	-0.275	0.070	-3.932	0.01%
C(8)	-0.556	0.067	-8.273	0.00%
C(9)	-0.464	0.069	-6.746	0.00%
C(10)	-0.216	0.068	-3.194	0.17%
C(11)	-0.032	0.005	-5.877	0.00%
C(12)	-0.085	0.023	-3.651	0.04%
C(13)	0.116	0.031	3.792	0.02%
C(14)	0.381	0.033	11.571	0.00%
C(15)	0.213	0.053	4.000	0.01%
C(16)	-0.278	0.070	-3.987	0.01%
C(17)	3.675	0.303	12.114	0.00%
C(18)	0.310	0.107	2.894	0.43%
C(19)	0.454	0.102	4.435	0.00%

Wholesales - GSEC_FullLoad_Sales

Model Statistics	
Adjusted Observations	203
R-Squared	0.9489
Adjusted R-Squared	0.9439
AIC	-4.796
BIC	-4.486
Log-Likelihood	217.725
Model Sum of Squares	25.822
Sum of Squared Errors	1.39
Std. Error of Regression	0.09
Durbin-Watson Statistic	1.98
Mean dependent var	12.87
StdDev dependent var	0.37

Wholesales - GSEC_FullLoad_Sales

Variable Name	Definition
GSECSales_Log	Log of Golden Spread full load sales plus Tri-County Sales
CONST	Constant variable
C65_Cal_Pan_May	May cooling degree days
C65_cal_Panhandle_Jun	June cooling degree days
C65_cal_Panhandle_Jul	July cooling degree days
C65_cal_Panhandle_Aug	August cooling degree days
C65_cal_Panhandle_Sep	September cooling degree days
Bin0407	Binary variable for April 2007=1, otherwise =0
Bin0113	Binary variable for January 2013=1, otherwise =0
Bin0916	Binary variable for September 2016=1, otherwise =0
Bin0817	Binary variable for August 2017=1, otherwise =0
Precip_cal_PanhandleAprtoJul	Precipitation, April May June and July
Feb	Seasonal binary for February=1, otherwise=0
Mar	Seasonal binary for March=1, otherwise=0
Apr	Seasonal binary for April=1, otherwise=0
May	Seasonal binary for May=1, otherwise=0
Bin0417	Binary variable for April 2017=1, otherwise=0
LogEE_TX_MA	Log of 12 month moving average Non-farm Employment in Texas service area
AR(1)	First-order autoregressive term
MA(1)	First-order moving average term

Wholesale - Lea County

Dependent Variable: S_LeaCounty				
Method: Least Squares				
Sample: 2006M01 2020M12				
Included observations: 180				
S_LEACOUNTY=C(1)*EXTRACTION_INDEX+C(2)*FEB+C(3)*C65_CAL_ROS_NM_MAY+C(4)*C65_CAL_ROS_NM_JUN+C(5)*C65_CAL_ROS_NM_JUL+C(6)*C65_CAL_ROS_NM_AUG+C(7)*C65_CAL_ROS_NM_SEP+C(8)*BIN0810+C(9)*BIN0914+C(10)*BIN1218+C(11)*BIN0419+C(12)*BIN0519+[AR(1)=C(13)]+[SMA(1)=C(14)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	19,955.449	389.649	51.214	0.00%
C(2)	(8,362.747)	1,676.085	(4.989)	0.00%
C(3)	36.863	8.188	4.502	0.00%
C(4)	31.555	4.864	6.487	0.00%
C(5)	52.710	4.474	11.781	0.00%
C(6)	60.111	4.558	13.188	0.00%
C(7)	28.709	6.988	4.108	0.01%
C(8)	11,542.302	5,025.815	2.297	2.29%
C(9)	(16,901.114)	5,028.791	(3.361)	0.10%
C(10)	(31,574.789)	4,942.108	(6.389)	0.00%
C(11)	(28,158.201)	5,581.820	(5.045)	0.00%
C(12)	(33,736.420)	5,593.271	(6.032)	0.00%
C(13)	0.655	0.061	10.803	0.00%
C(14)	0.275	0.085	3.259	0.14%

Wholesale - Lea County

Model Statistics	
Adjusted Observations	179
R-Squared	0.8428
Adjusted R-Squared	0.8304
AIC	17.525
BIC	17.775
Log-Likelihood	-1,808.500
Model Sum of Squares	33,514,890,743.334
Sum of Squared Errors	6,252,280,149.23
Std. Error of Regression	6,155.70
Durbin-Watson Statistic	1.97
Mean dependent var	99,039.84
StdDev dependent var	14,923.21

Wholesale - Lea County

Variable Name	Definition
S_LeaCounty	Lea County sales
Extraction_Index	Oil and Gas Extraction Index
Feb	Seasonal binary variable for February
C65_cal_ROS_NM_May	May cooling degree days
C65_cal_ROS_NM_Jun	June cooling degree days
C65_cal_ROS_NM_Jul	July cooling degree days
C65_cal_ROS_NM_Aug	August cooling degree days
C65_cal_ROS_NM_Sep	September cooling degree days
Bin0810	Binary variable for August 2010=1, otherwise =0
Bin0914	Binary variable for September 2014=1, otherwise =0
BIN1218	Binary variable for December 2018=1, otherwise =0
BIN0419	Binary variable for April 2019=1, otherwise =0
BIN0519	Binary variable for May 2019=1, otherwise =0
AR(1)	First-order autoregressive term
SMA(1)	First-order seasonal moving average term

Wholesales Sales - Roosevelt

Dependent Variable: S_Roosevelt				
Method: Least Squares				
Sample: 2008M01 2020M12				
Included observations: 156				
S_ROOSEVELT=C(1)*CONST+C(2)*TREND2012+C(3)*BINMAR+C(4)*BINAPR+C(5)*BINMAY+C(6)*C65_CAL_ROS_NM_JUN+C(7)*C65_CAL_ROS_NM_JUL+C(8)*C65_CAL_ROS_NM_AUG+C(9)*C65_CAL_ROS_NM_SEP+C(10)*BINNOV+C(11)*BIN0515+C(12)*BIN1015+C(13)*BIN0916+C(14)*BIN0817+[AR(1)=C(15)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	14,506.053	509.136	28.491	0.00%
C(2)	(36.589)	9.211	(3.972)	0.01%
C(3)	2,673.173	278.058	9.614	0.00%
C(4)	3,380.847	352.452	9.592	0.00%
C(5)	2,181.768	391.361	5.575	0.00%
C(6)	7.780	0.781	9.956	0.00%
C(7)	11.119	0.675	16.474	0.00%
C(8)	12.103	0.658	18.388	0.00%
C(9)	8.769	1.019	8.602	0.00%
C(10)	(766.034)	218.897	(3.500)	0.06%
C(11)	(3,079.331)	812.407	(3.790)	0.02%
C(12)	(2,318.457)	813.842	(2.849)	0.51%
C(13)	(3,503.395)	802.335	(4.366)	0.00%
C(14)	(4,086.121)	804.292	(5.080)	0.00%
C(15)	0.758	0.057	13.319	0.00%

Wholesales Sales - Roosevelt

Model Statistics	
Adjusted Observations	155
R-Squared	0.9107
Adjusted R-Squared	0.9018
AIC	13.871
BIC	14.165
Log-Likelihood	-1,279.912
Model Sum of Squares	1,376,638,282.440
Sum of Squared Errors	134,967,320.65
Std. Error of Regression	981.86
Durbin-Watson Statistic	2.01
Mean dependent var	15,154.32
StdDev dependent var	3,128.39

Wholesales Sales - Roosevelt

Variable Name	Definition
S_Roosevelt	Roosevelt sales
CONST	Constant Variable
Trend2012	Trend variable beginning in January 2012
Mar	Seasonal binary variable for March
Apr	Seasonal binary variable for April
May	Seasonal binary variable for May
C65_cal_ROS_NM_Jun	June cooling degree days
C65_cal_ROS_NM_Jul	July cooling degree days
C65_cal_ROS_NM_Aug	August cooling degree days
C65_cal_ROS_NM_Sep	September cooling degree days
Nov	Seasonal binary variable for November
Bin0515	Binary variable for May 2015=1, otherwise =0
Bin1015	Binary variable for October 2015=1, otherwise =0
Bin0916	Binary variable for September 2016=1, otherwise =0
Bin0817	Binary variable for August 2017=1, otherwise =0
AR(1)	First-order autoregressive term

Coincident Peak Demand - Retail

Dependent Variable: Retail_Load_Log				
Method: Least Squares				
Sample: 2007M01 2020M12				
Included observations: 168				
LOG(RETAILLOAD-CELANESELOAD+RETAIL_INTERRUPTIONS-LUBBLOAD+SUNRAYII) = C(1) + C(2)*LOG(@MOVAV(TOTAL_RETAIL_SALES-S_CELANESE_TX+DSM_MWH_SAVINGS-LUBB_SALES-NEW_RETAIL_LOAD_SALES+SUNRAYIISALES,12)) + C(3)*(JAN*HDD65_PD_SPS*CUST_SPS) + C(4)*(FEB*HDD65_PD_SPS*CUST_SPS) + C(5)*(MAR*HDD65_PD_SPS*CUST_SPS)+ C(6)*(APR*CDD65_PD_SPS*CUST_SPS) + C(7)*(MAY*CDD65_PD_SPS*CUST_SPS) + C(8)*(JUN*CDD65_PD_SPS*CUST_SPS) + C(9)*(JUL*CDD65_PD_SPS*CUST_SPS) + C(10)*(AUG*CDD65_PD_SPS*CUST_SPS) + C(11)*(SEP*CDD65_PD_SPS*CUST_SPS) + C(12)*(OCT*CDD65_PD_SPS*CUST_SPS) + C(13)*(NOV*HDD65_PD_SPS*CUST_SPS) + C(14)*(DEC*HDD65_PD_SPS*CUST_SPS) + C(15)*BIN1008 + C(16)*BIN1011 + C(17)*BIN0415 + C(18)*BIN0316 + C(19)*BIN0118 + C(20)*BIN2020 + C(21)*BINJUN + C(22)*BINJUL + C(23)*BINAUG + C(24)*BINSEP + [MA(1)=C(25)] + [MA(2)=C(26)]				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	-3.588	0.712	-5.03603	0.00%
C(2)	0.797	0.050	15.93460	0.00%
C(3)	0.000	0.000	10.52449	0.00%
C(4)	0.000	0.000	10.50991	0.00%
C(5)	0.000	0.000	5.28083	0.00%
C(6)	0.000	0.000	7.43580	0.00%
C(7)	0.000	0.000	17.58511	0.00%
C(8)	0.000	0.000	5.04123	0.00%
C(9)	0.000	0.000	4.02160	0.01%
C(10)	0.000	0.000	2.38387	1.84%
C(11)	0.000	0.000	4.97752	0.00%
C(12)	0.000	0.000	10.04931	0.00%
C(13)	0.000	0.000	7.30365	0.00%
C(14)	0.000	0.000	11.17656	0.00%
C(15)	-0.083	0.030	-2.78298	0.61%
C(16)	-0.084	0.029	-2.88441	0.45%
C(17)	-0.064	0.030	-2.15983	3.25%
C(18)	-0.093	0.028	-3.27755	0.13%
C(19)	0.063	0.029	2.15783	3.26%
C(20)	-0.036	0.015	-2.47661	1.44%
C(21)	0.092	0.042	2.18554	3.05%
C(22)	0.178	0.040	4.46264	0.00%
C(23)	0.203	0.053	3.80642	0.02%
C(24)	0.077	0.036	2.12494	3.53%
C(25)	0.329	0.085	3.86315	0.02%
C(26)	0.232	0.086	2.69271	0.79%

Coincident Peak Demand - Retail

Model Statistics	
Adjusted Observations	168
R-Squared	0.9581
Adjusted R-Squared	0.9508
AIC	-6.880
BIC	-6.397
Log-Likelihood	365.562
Model Sum of Squares	2.900
Sum of Squared Errors	0.13
Std. Error of Regression	0.03
Durbin-Watson Statistic	1.98
Mean dependent var	7.93
StdDev dependent var	0.13

Coincident Peak Demand - Retail

Variable Name	Definition
Retail_Load_Log	SPS retail coincident peak demand
CONST	Constant variable
Retail_Sales_LogMA12	Log of 12 month moving average of retail sales
H65_bill_Retail_SPS_Jan	Heating degree days (January) multiplied by customers
H65_bill_Retail_SPS_Feb	Heating degree days (February) multiplied by customers
H65_bill_Retail_SPS_Mar	Heating degree days (March) multiplied by customers
C65_bill_Retail_SPS_Apr	Cooling degree days (April) multiplied by customers
C65_bill_Retail_SPS_May	Cooling degree days (May) multiplied by customers
C65_bill_Retail_SPS_Jun	Cooling degree days (June) multiplied by customers
C65_bill_Retail_SPS_Jul	Cooling degree days (July) multiplied by customers
C65_bill_Retail_SPS_Aug	Cooling degree days (August) multiplied by customers
C65_bill_Retail_SPS_Sep	Cooling degree days (September) multiplied by customers
C65_bill_Retail_SPS_Oct	Cooling degree days (October) multiplied by customers
H65_bill_Retail_SPS_Nov	Heating degree days (November) multiplied by customers
H65_bill_Retail_SPS_Dec	Heating degree days (December) multiplied by customers
Bin1008	Binary variable for October 2008=1, otherwise =0
Bin1011	Binary variable for October 2011=1, otherwise =0
Bin0415	Binary variable for April 2015=1, otherwise =0
Bin0316	Binary variable for March 2016=1, otherwise =0
Bin0118	Binary variable for January 2018=1, otherwise=0
Bin2020	Binary variable for year 2020=1, otherwise=0
Jun	Seasonal binary variable for June=1, otherwise=0
Jul	Seasonal binary variable for July=1, otherwise=0
Aug	Seasonal binary variable for August=1, otherwise=0
Sep	Seasonal binary variable for September=1, otherwise=0
MA(1)	First-order moving average term
MA(2)	Second-order moving average term

Full Requirement Energy Excluding WTMPA

Probability Energy

Dependent Variable: Energy
Method: Least Squares
Sample: 2000M01 2020M12
Included observations: 252
Energy = C(1) + C(2)*(MOVAV(CGSPNM+CGCPTX),12) + C(3)*(CDD65_SPS*BINMAY*TOTAL_CUSTOMERS) + C(4)*(CDD65_SPS*BINJUN*TOTAL_CUSTOMERS) + C(5)*(CDD65_SPS*BINJUL*TOTAL_CUSTOMERS) + C(6)*(CDD65_SPS*BINAUG*TOTAL_CUSTOMERS) + C(7)*(CDD65_SPS*BINSEP*TOTAL_CUSTOMERS) + C(8)*(HDD65_SPS*BINJAN*TOTAL_CUSTOMERS) + C(9)*(HDD65_SPS*BINFEB*TOTAL_CUSTOMERS) + C(10)*(HDD65_SPS*BINMAR*TOTAL_CUSTOMERS) + C(11)*(HDD65_SPS*BINOCT*TOTAL_CUSTOMERS) + C(12)*(HDD65_SPS*BINNOV*TOTAL_CUSTOMERS) + C(13)*(CDD65_SPS*BINDEC*TOTAL_CUSTOMERS) + C(14)*BIN0412 + C(15)*BINFEB + [AR(1)=C(16)] + [AR(2)=C(17)]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1011820.833	224750.472	4.50197	0.00%
C(2)	12.637	3.712	3.40437	0.08%
C(3)	0.002	0.000	15.93293	0.00%
C(4)	0.002	0.000	26.79662	0.00%
C(5)	0.003	0.000	40.39966	0.00%
C(6)	0.003	0.000	38.26489	0.00%
C(7)	0.002	0.000	13.80201	0.00%
C(8)	0.001	0.000	13.51462	0.00%
C(9)	0.001	0.000	3.11468	0.21%
C(10)	0.000	0.000	5.58673	0.00%
C(11)	0.001	0.000	3.89976	0.01%
C(12)	0.000	0.000	2.88904	0.42%
C(13)	0.001	0.000	15.08933	0.00%
C(14)	-417986.217	36369.816	-11.49267	0.00%
C(15)	-227716.222	58731.318	-3.87725	0.01%
C(16)	0.719	0.063	11.32320	0.00%
C(17)	0.218	0.064	3.41769	0.08%

Probability Energy

Model Statistics	
Adjusted Observations	250
R-Squared	0.9743
Adjusted R-Squared	0.9725
AIC	21.485
BIC	21.725
Log-Likelihood	-3,023.369
Model Sum of Squares	17,715,413,838,134
Sum of Squared Errors	467,438,829,839.67
Std. Error of Regression	44,790.35
Durbin-Watson Statistic	2.01
Mean dependent var	1,866,130.66
StdDev dependent var	272,757.55

Probability Energy

Variable Name	Definition
Energy	SPS full requirement energy, excluding WTMPA sales
CONST	Constant
CGCP_SPS_MA12	12-Month Moving Average of New Mexico and Texas Gross County Product
C65_SPS_May	May weather index for customer weighted cooling degree days
C65_SPS_Jun	June weather index for customer weighted cooling degree days
C65_SPS_Jul	July weather index for customer weighted cooling degree days
C65_SPS_Aug	August weather index for customer weighted cooling degree days
C65_SPS_Sep	September weather index for customer weighted cooling degree days
H65_SPS_Jan	January weather index for customer weighted heating degree days
H65_SPS_Feb	February weather index for customer weighted heating degree days
H65_SPS_Mar	March weather index for customer weighted heating degree days
H65_SPS_Oct	October weather index for customer weighted heating degree days
H65_SPS_Nov	November weather index for customer weighted heating degree days
H65_SPS_Dec	December weather index for customer weighted heating degree days
Bin0412	Binary variable for April 2012=1, otherwise =0
Feb	Seasonal Binary variable for February=1, otherwise=0
AR(1)	First-order autoregressive term
AR(2)	Second-order autoregressive term

Full Requirement Peak Excluding WTMPA

Probability Peak Demand

Dependent Variable: Peak
Method: Least Squares
Sample: 2000M01 2020M12
Included observations: 252
PEAK = C(1)*(MOVAV(ENERGY,12) + C(2)*(CDD65_SPS*BINAPR) + C(3)*(CDD65_SPS*BINMAY) + C(4)*(BINJUN*((MAXTEMP+MINTEMP)/2) + C(5)*(BINJUL*((MAXTEMP+MINTEMP)/2) + C(6)*(BINAUG*((MAXTEMP+MINTEMP)/2) + C(7)*(CDD65_SPS*BINSEP) + C(8)*(CDD65_SPS*BINOCT) + C(9)*TREND_PD + C(10)*HDD_SPS + C(11)*BIN0905 + C(12)*BIN1008 + C(13)*BIN1011 + C(14)*BIN0514 + C(15)*BINDEC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.001	0.000	70.51418	0.00000
C(2)	4.805	0.762	6.30989	0.00000
C(3)	3.380	0.215	15.71620	0.00000
C(4)	11.292	0.528	21.39179	0.00000
C(5)	12.455	0.536	23.23589	0.00000
C(6)	12.406	0.534	23.22357	0.00000
C(7)	3.361	0.186	18.06078	0.00000
C(8)	3.884	0.643	6.04432	0.00000
C(9)	0.439	0.060	7.28086	0.00000
C(10)	513.817	121.642	4.22402	0.00004
C(11)	-325.357	122.398	-2.65819	0.00839
C(12)	-294.284	118.326	-2.48707	0.01356
C(13)	-215.441	120.425	-1.78900	0.07490
C(14)	-323.457	124.919	-2.58933	0.01021
C(15)	0.530	0.057	9.34928	0.00000

Probability Peak Demand

Model Statistics	
Adjusted Observations	251
R-Squared	0.9110
Adjusted R-Squared	0.9057
AIC	9.841
BIC	10.051
Log-Likelihood	-1,576.159
Model Sum of Squares	42,814,843.849
Sum of Squared Errors	4,183,302.01
Std. Error of Regression	133.14
Durbin-Watson Statistic	2.21
Mean dependent var	3,099.04
StdDev dependent var	435.34

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Probability Peak Demand

Variable Name	Definition
Peak	SPS full requirement peak demand, excluding WTMPA peak demand
Energy_MA12	12-month moving average of SPS full requirement energy, excluding WTMPA sales
C65_SPS_Apr	April cooling degree days
C65_SPS_May	May cooling degree days
SPS_Avg_Temp_Jun	Peak day average temperature in June
SPS_Avg_Temp_Jul	Peak day average temperature in July
SPS_Avg_Temp_Aug	Peak day average temperature in August
C65_SPS_Sep	September cooling degree days
C65_SPS_Oct	October cooling degree days
HDD_SPS	Service territory heating degree days
Bin1000	Binary variable for October 2000=1, otherwise =0
Bin0905	Binary variable for September 2005=1, otherwise =0
Bin1008	Binary variable for October 2008=1, otherwise =0
Bin1011	Binary variable for October 2011=1, otherwise =0
Bin0915	Binary variable for September 2015=1, otherwise =0
AR(1)	First-order autoregressive term