BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE APPLICATION OF OKLAHOMA GAS AND ELECTRIC COMPANY FOR AN ORDER OF THE COMMISSION AUTHORIZING APPLICANT TO MODIFY ITS RATES, CHARGES, AND TARIFFS FOR RETAIL ELECTRIC SERVICE IN OKLAHOMA	))))))	CAUSE NO. PUD 201700496

RESPONSIVE TESTIMONY

OF

JASON LAWTER

MAY 2, 2018

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INTRODUCTION

Q: Please state your name and your business address.

A: My name is Jason Lawter. My business address is Oklahoma Corporation Commission, Public Utility Division, Jim Thorpe Office Building, Room 580, 2101 North Lincoln Boulevard, Oklahoma City, Oklahoma 73105.

Q: Have you previously testified before the Oklahoma Corporation Commission ("OCC" or "Commission") and were your qualifications accepted?

A: I have not previously testified before the Commission and my qualifications have not been accepted.

Q: Please state your educational background and professional experience.

A: I received a Master of Arts, in Applied Economics from American University, a Master in Business Administration from Oklahoma City University and Bachelors of Business Administration in both Finance and Economics from the University of Central Oklahoma. In obtaining my degrees, I took several classes in econometrics and statistics. I was employed as a Statistical Research Specialist for the Oklahoma Corporation Commission for five years. During those five years I wrote quarterly and annual statistical reports and interpreted data.

Q: What is your occupation and who employs you?

A: I am employed by the Public Utility Division ("PUD") of the Commission as a Public Utility Regulatory Analyst.

Q: How long have you been so employed?

A: I have been employed by the Commission since November 2012. I have been with PUD since February 2018.

Q: What are your duties and responsibilities with PUD?

A: I conduct research and perform comparative analysis of utility applications, reports, financial records, and workpapers to ensure that PUD can make accurate recommendations. For a complete list of my work history and educational background, please review the attached curriculum vitae.[1]

PURPOSE

Q: What is the purpose of your testimony regarding the Application filed by Oklahoma Gas and Electric Company ("OG&E" or "Company") for an Order of the Commission authorizing Applicant to modify its rates, charges, and tariffs for retail electric service in Oklahoma as filed in Cause No. PUD 201700496?

A: The purpose of this Responsive Testimony is to present PUD's recommendations regarding the weather normalization adjustment.

EXECUTIVE SUMMARY

On January 16, 2018, Oklahoma Gas & Electric Company ("OG&E" or "Company") filed

[1] Exhibit JEL-1.

its Application for an adjustment in its rates, charges, and tariffs for retail electric service in Oklahoma. The Public Utility Division ("PUD") reviewed the Application, Company testimony and workpapers. PUD also issued data requests and reviewed associated responses, interviewed Company personnel, and conducted onsite audits at the Company's corporate office in Oklahoma City, Oklahoma.

After reviewing the area of Weather Normalization, PUD determined the models used by the Company were accurate in predicting the proposed adjustment. PUD recommends that in the future, the Company test real Gross Domestic Product ("GDP") for Oklahoma in the weather normalization model before defaulting to a constant trend line.

PUD'S REVIEW PROCESS

Q: Please explain PUD's review process in this Cause.

A: PUD reviewed the Application, Company testimony, prior rate causes, relevant statutes, and Commission rules. PUD issued a data request and reviewed the responses. PUD also reviewed the data requests and responses issued by intervenors, including the Attorney General. Additionally, PUD reviewed Company workpapers, general ledgers, invoices, and other supporting documentation. PUD also conducted multiple onsite audits at the Company's corporate office in Oklahoma City, Oklahoma, and interviewed Company personnel regarding areas under review.

WEATHER NORMALIZATION ADJUSTMENT

Q: Did OG&E make a Weather Normalization Adjustment this Cause?

A: Yes. There was an increasing adjustment for weather of $30,253,485 to adhere to the changing demand that was in accordance with weather patterns.

Q: Did OG&E make a six months post test year adjustment in its rate case?

A: Yes. The adjustment will be addressed in the testimony of Kathy Champion.

Q: How did the Company establish a "normal" level for test year revenue?

A: The level was based upon 30 years of data. The temperature data was collected in Oklahoma City, which is centrally located in the OG&E service territory. The centrality of the location in the Company's service territory makes it a suitable proxy for the rest of the OG&E service territory.[2]

Q: How did the Company decide on this model and variables?

A: The model and variables were chosen based upon the work of Dr. Hong, and adjusted to accurately represent the data.[3]

Q: Was a multiple regression model used?

A: Yes. A multiple regression model was used to find the line that best fits the pattern of the data. The formula for the regression is:

$$y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \cdots + \beta_k x_{ki} + u_i, \; i = 1, \ldots, n$$

Where: y_i = Dependent Variable

[2] 201100087 Responsive Testimony Patrick E. Davis.
[3] Long Term Probabilistic Load Forecasting and Normalization with Hourly Information, IEEE Transactions on Smart Grid, Vol. 5, No 1, Hong, Wilson, and Xie (2014).

β_0 = Intercept

$\beta_1 \ldots . \beta_k$ = Coefficients

$x_{1i} \ldots x_{ki}$ = Observations

u_i = Random Error Term [4]

Multiple Regression finds the affect on y_i when changing one variable ($x_{1i} \ldots x_{ki}$), and holding the rest constant. β_0 is equal to the value when all variables ($x_{1i} \ldots x_{ki}$) are equal to zero. $\beta_1 \ldots . \beta_k$ shows what change their particular variable ($x_{1i} \ldots x_{ki}$) makes on y_i.[5] Each part of the regression helps find a suitable line to explain the underlying information.

Multiple regression is best used to show a constant relationship of the data. The data does not have a constant relationship, and therefore squared variables were added to account for the non-linearity of the data. This improves the performance of the model to have a better fit for the corresponding data. The general formula for this is:

$$y_i = f(x_{1i}, x_{2i} + \cdots + x_{ki}) u_i, \; i = 1, \ldots, n$$

Where: y_i = Dependent Variable

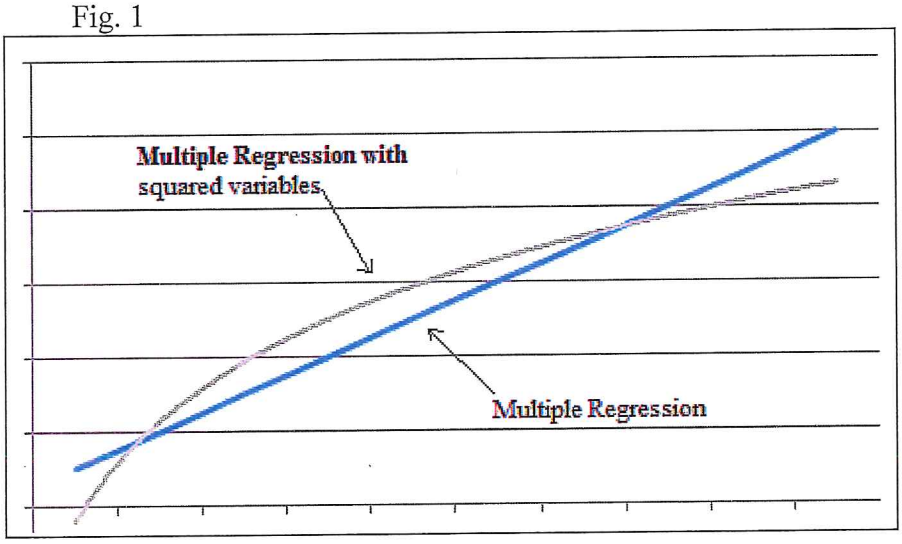
$x_{1i} \ldots x_{ki}$ = Observations

u_i = Random Error Term[6]

[4] Introduction to Econometrics 3rd Edition, pg. 179-213, Stock, Watson (2011).
[5] Ibid 4.
[6] Ibid 4, Pg. 258.

The change in the model allows for a curve in the predictability of the data, and allows the forecast to be more complete and accurate. The movement of the data is not completely linear. A model which uses this form has a higher level of precision and a stronger capacity to understand the data patterns.

Fig. 1



Q: How was the accuracy of the model calculated?

A: The accuracy of the model was shown by mean absolute percentage error ("MAPE"), which is commonly used in these types of forecasts.[7] MAPE is found using this formula:

$$MAPE = \frac{100}{N}\sum_{i=1}^{N}\left|\frac{A_i - P_i}{A_i}\right|$$

Where: N = Number of Observations

A_i = Actual Load

P_i = Predicted Load [8]

[7] Ibid. 3

MAPE shows the accuracy of estimated values by comparing to observed values.[9] In the model, A_i is the actual load, and P_i is the predicted load, and the subtraction of these two, shows the difference. The difference is divided by A_i, and shows the change in comparison to the actual load (A_i).

The use of MAPE does have its advantages as it is intuitive in terms of relative error.[10] This intuition allows the percentage that is computed to be easily understood, and compared. It is useful in other ways as well. The use of MAPE helps in calibrating demand, as it is more accurate to relative variations than those of absolutes. This distinction from relative to absolutes is helpful in forecasting demand, since customers can be more sensitive to relative changes than absolutes. The use of MAPE does have a few downfalls if the predicted quantity was to be significantly below zero, then it would not be able to accurately predict.[11] This is not found in the model, and therefore the use of MAPE is reasonable, and a correct statistic for finding the accuracy of the model.

Q: Do you have any specific concerns regarding this study?

A: Yes. There is one concerning element to the study. The use of economic data is needed in weather normalization because the general health of the economy is a strong

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[8] Ibid. 3

[9] Estimation models for heating energy and electricity costs, Construction Management and Economics, Vol. 34 No. 9 Lasshof, Stoy (2016)

[10] MAPE does have it Advantages as it is Intuitive in Terms of Relative Error, Neurocomputing, Myttenaere, Golden, Grand, Rossi (2017).

[11] Ibid.

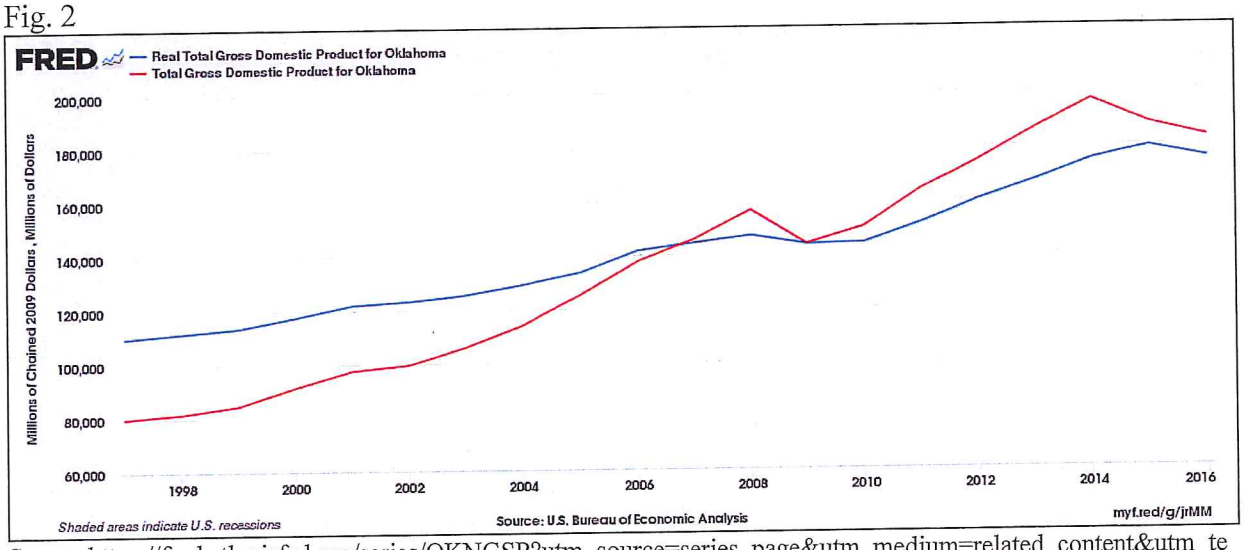
component of the long term demand for electricity consumption.[12] The trend line in the model assumes constant economic growth. While it is often found in similar models for short term forecasting, it is more accurate to use an economic indicator for long term forecasting. Growth in the economy can show a needed adjustment of demand as movement in and out of the area creates a higher and lower demand for electricity.[13]

Q: Did the Company test models without a trend line?

A: Yes. The Company tested the Gross State Product ("GSP") and GSP excluding energy product; however, variables did not accurately explain the data. GSP is also called GDP by state, which is a measurement of the value added by labor and capital located in one state.[14] GDP by state is generally in two forms – real and nominal. Real values are based upon values of goods in one year,[15] and the deviation from those values shows the inflation in the economy. While nominal is in that year's dollars, and keeps inflation.[16] The values used by the Company were nominal.[17] If a real GDP was used, the actual growth of the economy would be the force affecting the value.

[12] Ibid. 3.
[13] Ibid. 3.
[14] Gross Domestic Production by State Estimation Methodology 2006 – Bureau of Economic Analysis.
[15] Year 2009 for Fig. 2.
[16] http://www.econlib.org/library/Topics/HighSchool/RealvsNominal.html
[17] Stated as Total Gross in Fig. 2.

Fig. 2



Source:https://fred.stlouisfed.org/series/OKNGSP?utm_source=series_page&utm_medium=related_content&utm_term=related_resources&utm_campaign=categories#0

The figure above shows the change of the economy in real and nominal terms. The real shows an increase in the economy, without the impact of growth in inflation. The use of a real term would be helpful in finding how the economy grows, without the influence of inflationary forces to the economy.

OVERALL RECOMMENDATION

Q: What is PUD's overall recommendation?

A: PUD believes the Company's Weather Normalization Adjustments are reasonable. PUD recommends that in the future, the Company test real GDP for Oklahoma in the weather normalization model before defaulting to a constant trend line. PUD believes these recommendations are fair, just, reasonable, and in the public interest.

I state, under penalty of perjury under the laws of Oklahoma, that the foregoing is true and correct to the best of my knowledge and belief.

(Jason Lawter)

State of Oklahoma
County of Oklahoma

Subscribed and sworn to before me this 2nd day of May, 2018

Susan Harwell Hendrick
NOTARY PUBLIC

(Seal, if any)

SUSAN HENDRICK NOTARY # 02017119 EXP. 10/27/18 PUBLIC STATE OF OKLAHOMA

Regulatory Analyst
Title

My Commission Number: 02017119

My Commission Expires: 10/27/18

Oklahoma Gas and Electric Company – Cause No. PUD 201700496

LIST OF EXHIBITS

JEL-1	*Curriculum Vitae*

Jason Lawter

Curriculum Vitae

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580 Jim Thorpe Building
P.O. Box 52000
Oklahoma City, OK 73152

Work Experience

Oklahoma Corporation Commission — 2018 - Present

Public Utility Regulatory Analyst

- Conduct research and perform comparative analysis of utility applications, reports, financial records, and workpapers.
- Draft testimony for Causes and serve as a peer editor for other Regulatory Analysts.
- Conduct monthly review of utility purchased power and fuel adjustments.
- Perform compliance audits of utility customer billing calculations.

Oklahoma Corporation Commission — 2012-2018

Statistical Research Specialist II

- Analyzed and interpreted data
- Aggregated data into written statistical reports
- Ran and designed SQL queries
- Collected data from private, state and federal sources

City of Oklahoma City — 2012

Administrative Technician

- Entered information into PeopleSoft
- Digitized Documents

Coppermark Bank — 2011-2012

Teller

- Accurately conducted deposits
- Provided regular written corresponce with account holders

Arvest Bank Group — 2008-2011

Financial Services Representative

- Opened new personal and business accounts
- Prepared loan applications

Education

American University — 2017

- M.A. Applied Economics
  - Microeconomics
  - Macroeconomics
  - Intro Mathematical Economics
  - Applied Econometrics 1
  - Applied Econometrics 2
  - Public Economics

Oklahoma City University — 2015

- M.B.A. Finance
  - Managerial Economics
  - Management Science and Quantitative Analysis
  - Money and Capital Markets

University of Central Oklahoma — 2012

- B.B.A. Finance

University of Central Oklahoma 2011

- B.B.A. Economics
  - Intermediate Business Statistics
  - Macroeconomics
  - Microeconomics

CERTIFICATE OF SERVICE

I, the undersigned, do hereby certify that on the 2nd day of May, 2018, a true and correct copy of the above and foregoing was sent **electronically**, addressed to the following:

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