BEFORE THE ARKANSAS PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF
OKLAHOMA GAS AND ELECTRIC COMPANY
FOR A CERTIFICATE OF PUBLIC CONVENIENCE
AND NECESSITY TO UPGRADE, OPERATE
AND CONSTRUCT A 161 KV TRANSMISSION LINE
AND A SUBSTATION AND RELATED FACILITIES
IN SEBASTIAN COUNTY, ARKANSAS

DIRECT TESTIMONY

OF

MARK HAMILTON

ON BEHALF OF

OKLAHOMA GAS AND ELECTRIC COMPANY

OCTOBER 4, 2011
I. EDUCATION AND BACKGROUND

Q. PLEASE STATE YOUR NAME, BUSINESS AFFILIATION AND ADDRESS.
A. My name is Mark Hamilton. I am employed by Oklahoma Gas and Electric Company ("OG&E"). My business address is P.O. Box 321, Mail Code M110, Oklahoma City, Oklahoma 73101. My office is located at 3220 South High Street, Oklahoma City, Oklahoma 73129.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?
A. I am testifying on behalf of OG&E.

Q. WHAT POSITION DO YOU HOLD WITH OKLAHOMA GAS AND ELECTRIC COMPANY?
A. I am a Lead Transmission Planning Engineer in OG&E's Transmission Planning Department.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATION, QUALIFICATIONS AND EXPERIENCE.
A. I graduated from Oklahoma State University in 1973 with a Bachelor of Science Degree in Electrical Engineering. I graduated from Central State University of Oklahoma (now University of Central Oklahoma) in 1984 with a Bachelor of Science Degree in Computer Science.
I joined the Company in December of 1973 as an Engineer in the Distribution Engineering Department. I have 7 years of experience in distribution design and standards, 5 years of electrical system studies, 11 years of distribution and transmission planning, 2 years as Supervisor of Design and Technology Services, 2 years as a District Engineer Supervisor, 3 years in design of major distribution projects, and 5 years as a distribution planning engineer in the System Expansion business area. In September of 2008 I transferred to the Transmission Planning Department as a Lead Transmission Planning Engineer. I am registered as a Professional Engineer in the State of Oklahoma. My registration number is 12051. I am a member of the Institute of Electrical and Electronic Engineers and the National Society of Professional Engineers.

Q. WHAT ARE YOUR SPECIFIC DUTIES IN THE TRANSMISSION PLANNING BUSINESS AREA?

A. I am responsible for working within the Transmission Planning department charged with OG&E's compliance with the Planning Standards issued by the North American Electric Reliability Council (NERC). The Transmission Planning group evaluates the compliance of OG&E transmission system reliability, including computer modeling and reliability testing of the OG&E transmission system, using power flow analysis. The department evaluates how outages or interruptions in one part of the transmission system affect power flow, voltage and stability in other parts. The department identifies planning criteria violations and also initiates projects to eliminate these violations.
Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THE DOCKET?

A. I will briefly describe the proposed project and explain why the Company needs to (1) convert a segment of existing 69 kV transmission line to 161 kV capacity; (2) commence operation of a segment of existing transmission line at 161 kV which was initially constructed to 161 kV specifications, but is currently operated at 69 kV; (3) construct and operate a new 0.36 mile segment of 161 kV transmission line; and (4) construct and operate a new substation.

Q. PLEASE DESCRIBE THE PROPOSED PROJECT AND FACILITIES.

A. OG&E is seeking authorization to construct, upgrade, convert and operate a proposed 161 kV transmission line from its Oak Park Substation to its Massard Substation and to build the new Johnson Substation. The total length of the proposed line is approximately 7.74 miles.

Q. DOES THE PROPOSED ROUTE UTILIZE ANY EXISTING OG&E FACILITIES OR RIGHT-OF-WAY?

A. Yes. Under OG&E's proposed route only 0.36 miles of the total 7.74 project miles will be new 161 kV transmission line construction with its associated seventy (70) foot easement requirement. 4.45 miles of the project will utilize current transmission line constructed to 161 kV specifications, but operated currently at 69 kV. This segment will require an increase in right-of-way from fifty (50) feet to seventy (70) feet to accommodate operation at the higher 161 kV level. 2.93 miles of the proposed project will entail the upgrading of an existing
69 kV transmission line to 161 kV capacity and an increase in right-of-way from fifty (50) to seventy (70) feet.

Q. PLEASE DESCRIBE THE SUBSTATION TO BE CONSTRUCTED.
A. Two 161-12.5 kV transformers and related equipment will be installed in the proposed Johnson Substation. The substation will step-down the transmission voltage to 12.5 kV for distribution over the Company's overhead lines.

II. NEED FOR THE PROPOSED FACILITIES
Q. PLEASE BRIEFLY EXPLAIN THE NEED FOR THE PROPOSED FACILITIES.
A. The growth of electrical demand in Ft. Smith, Arkansas is projected to exceed OG&E’s electrical capacity for the Massard 161 / 69 kV transformer located in the Massard Substation by the summer of 2012 for the contingency loss of portions of the local OG&E 161 kV transmission system. To reduce the loading on the Massard 161 / 69 kV transformer, the conversion of the existing 7.38 mile 69 kV Massard to Spalding transmission line to 161 kV, the removal of the Exposition Park and Spalding 69 kV Substations, and the construction of the new 161 kV Johnson Substation, as shown on Exhibit MH-A, is proposed. A 0.36 mile section of new 161 kV transmission line will need to be constructed from where the existing transmission line terminates at Spalding Substation to the existing Oak Park Substation. This will result in the new 7.74 mile 161 kV Massard – Oak Park OG&E transmission line. The 4.45 mile portion of the transmission conversion project already built to 161 kV standards will remain wood pole construction. The remaining 2.93 miles of existing 69 kV transmission line and
the 0.36 miles of new 161 kV transmission line are planned to be on steel poles.

Exhibit MH-B provides an overview of the project. Performing the above work will assure compliance with existing NERC standards.

The proposed transmission route for this new 161 kV electrical source was selected to utilize the existing 69 kV transmission line route as much as possible. The conversion of an existing transmission line is the least cost alternative, as addressed below, as well as having the least impact on land owners and the environment as explained in the testimony of Mr. Steve Thornhill.

Q. HAS OG&E PREVIOUSLY MADE IMPROVEMENTS TO HELP WITH ITS ELECTRICAL LOADING IN THIS AREA?

A. Yes. The Company has previously made improvements that would allow the transfer of the electrical load from the existing 69 kV transmission system served from the Massard 69 kV electrical source to the area 161 kV transmission system. This was accomplished with the construction of the new 161 kV Adabell Substation and the removal of the 69-12.5 kV Van Buren Substation. This project reduced the loading on the 69 kV system allowing for this conversion project to be delayed for approximately two years.

Q. BESIDES THE TRANSMISSION LINE WORK DESCRIBED, WILL THERE BE A NEED FOR ADDITIONAL WORK?
A. Yes. In addition to the transmission work associated with this project, there is
distribution work required as well as the need for the construction of the Johnson
Substation. The elimination of the 69-12.5 kV Exposition Park Substation, due to
insufficient property space to facilitate the conversion to 161 kV, requires the
construction of the Johnson Substation. The installation of two 161-12.5
transformers, the rest of the 12.5 kV substation equipment, the 12.5 kV network
to get the distribution capacity out of the new substation to the overhead
distribution system.

Q. WITHOUT THE CONSTRUCTION AND UPGRADE OF THESE PROPOSED
FACILITIES, WHAT RISK, IF ANY, WOULD THE SYSTEM INCUR?

A. Should there be a loss of the 161 kV Ft. Smith to Arkoma transmission line or a
loss of the 161 kV Arkoma – Third St. transmission line, the Massard 161-69 kV
bus tie transformer will overload. The two remaining 161 kV transmission lines
serving Ft. Smith from the Ft. Smith substation tie together at Massard
Substation forcing electrical load to travel through the Massard 161/69 kV bus tie
transformer resulting in its overload. See Exhibit MH-B for reference to the 161
kV lines at Massard Substation. An overload of the Massard 161/69 kV
transformer may cause the transformer to fail. This would result in further
overloads on the transmission grid resulting in further outages to OG&E electrical
customers.
Q. **CAN YOU MORE SPECIFICALLY DESCRIBE THE INTERRUPTION THAT COULD OCCUR?**

A. Yes. The loss of either of the existing of 161 kV Ft. Smith to Arkoma or the 161 kV Arkoma to Third St. transmission lines will result in the Massard Substation 161/69 kV bus tie transformer overloading to over 100% of its emergency rating.

Q. **HOW WILL THE PROPOSED FACILITIES IMPROVE SERVICE TO AREA CUSTOMERS?**

A. The reduction of loading on the area 69 kV transmission system will help assure continued electrical service to the area customers by lowering the load on all the 69 kV transmission facilities to less than 100% of capacity under normal and contingency conditions.

The replacement of the old Exposition Park and Spalding Substations with their very old equipment with new equipment in the Johnson Substation will reduce the probability of equipment failure. The Johnson Substation is designed to be expanded to serve additional distribution load while the existing Exposition Park and Spalding Substations are not.

Q. **HAS OG&E CONSIDERED ALTERNATIVES TO THE PROPOSED CONSTRUCTION?**

A. Yes, but OG&E sees no reasonable alternative that resolves the overloading condition on the existing Massard 161 / 69 kV transformer serving Ft. Smith,
Arkansas. Mr. Thornhill addresses the possibility of utilizing an alternate route for the construction of the facilities, but OG&E has identified no alternative to the actual need for construction of the facilities.

Q. CAN YOU EXPLAIN THESE ALTERNATIVES AND WHY THEY WERE NOT SELECTED?

A. Adding more 69 kV transmission facilities and 161-69 kV step-down transformers can temporarily mitigate the loading problems on the aging 69 kV transmission system. The estimated long term costs would be far higher than converting the existing load on the 69 kV transmission system to 161 kV. The construction of a new 161 kV transmission line would result in higher costs due to:

- More new transmission line required to be built while 4.45 miles of the existing 7.38 mile 69 kV line to be converted is already constructed to 161 kV standards. This is shown on Exhibit MH-C-1, Exhibit MH-C-2 and Exhibit MH-C-3.

- More right-of-way land required for a new 4 mile Massard – Johnson 161 kV transmission line. The only right-of-way required with the conversion is expanding the existing right-of-way on the present line operated as 69 kV and 0.36 miles of new 161 kV right-of-way.

- The expected cost for a new 161 kV transmission line from Massard substation to the new Johnson Substation will be approximately $3,500,000 more that the proposed conversion.
Q. HOW WILL THE TRANSMISSION LINE ACCESS THE JOHNSON SUBSTATION SITE?
A. As shown on Exhibit “MH-A” the 161-kV transmission line is located in front of the Johnson Substation site. Two dead-end structures will be installed in the existing transmission line to turn the line toward the new substation.

Q. HAS THE SUBSTATION SITE BEEN ACQUIRED?
A. The site was acquired in year 1975 and OG&E has fee simple title to this property.

Q. WHAT IS THE ESTIMATED COST OF THE PROPOSED PROJECT?
A. Estimated cost of the project is broken down as follows:

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<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tr>
<td>Transmission Right of Way</td>
<td>$1,798,491</td>
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<tr>
<td>Transmission Line</td>
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<tr>
<td>Substation Construction and Upgrade</td>
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<tr>
<td>System Protection &amp; Control</td>
<td>$2,892,409</td>
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<tr>
<td>Distribution – 12.5 kV</td>
<td>$1,077,444</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$13,082,410</strong></td>
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Q. HOW WILL OG&E FINANCE THE PROJECT?
A. OG&E will finance the construction of these facilities with funds from various sources, including retained earnings, debt, and capital securities. No other alternate financing methods are being considered at this time.
Q. BASED UPON YOUR EXPERIENCE AND KNOWLEDGE OF OG&E'S LOADS AND FACILITIES IN THE AREA UNDER CONSIDERATION, DO YOU HAVE AN OPINION AS TO WHETHER THE PROPOSED CONSTRUCTION IS IN THE PUBLIC INTEREST AND, IF SO, WHAT IS THAT OPINION?

A. Yes. The proposed project serves the public interest. The project is the most logical and cost effective method to provide continued reliable service to OG&E customers in the Ft. Smith, Arkansas area. Customers will benefit from the assured reliability of the operation of the area transmission system. The public interest is also served by customers receiving the benefit of the ability of the new substation to expand in the future with the increased electrical needs of the area customers.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.
ATTESTATION

I do hereby swear and affirm that the foregoing is my testimony in this docket.

/s/ Mark Hamilton

10.4.11
Date