DIRECT TESTIMONY OF

W. KELLER KISSAM

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2016-223-E

Q. PLEASE STATE YOUR FULL NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is W. Keller Kissam and my business address is 220 Operation Way, Cayce, South Carolina. I am President, Retail Operations, South Carolina Electric & Gas Company (the "Company" or "SCE&G").

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I am a summa cum laude graduate of The Citadel, the Military College of South Carolina where I also received an Honorary Doctorate of Business. I joined SCANA Corporation in 1988 in the New Utility Professional Program and held a number of industrial gas sales and gas supply positions until 1994, when I was named Vice President, South Carolina Pipeline Corporation with responsibilities for Contract Administration and Gas Supply. Then in 1996, I was named Vice President, Gas Operations, SCE&G, and in 2003, Vice President, Electric Operations. In 2011, I assumed my current responsibilities as President, Retail Operations.
Q. HAVE YOU PREVIOUSLY PRESENTED TESTIMONY BEFORE THE
PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA
(“COMMISSION”)?

A. Yes, I have testified in several proceedings before this Commission.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS
PROCEEDING?

A. The purpose of my testimony is to provide an update to the Commission regarding new nuclear transmission construction necessary to accommodate the safe and reliable delivery of energy produced by two additional nuclear units under construction by the Company in Jenkinsville, South Carolina. This update includes the details regarding the scope of this, the largest transmission construction project in the history of the Company, to include the specific transmission lines and associated substations. I will discuss the engineering, procurement, and construction process utilized to overcome the challenges of a project of this scale and present several visual examples of the construction process, as well as a map that confirms the Company is on schedule to complete construction and place all transmission lines and associated electrical infrastructure in place to accommodate the anticipated completion of the two nuclear units.
Q. PLEASE IDENTIFY THE VARIOUS TRANSMISSION LINES AND ASSOCIATED FACILITIES THAT SUPPORT EACH NUCLEAR UNIT UNDER CONSTRUCTION.

A. First, I present Exhibit No. ___ (WKK-1), V.C. Summer Nuclear Transmission map for reference as I discuss the construction of various 230 kV transmission lines and substations for which the Company appeared before the Commission and received approval to site, engineer, and construct these four main transmission lines and two associated substations.

In 2011, in Commission Docket No. 2011-325-E, the Company requested and received Commission approval for the following 230 kV transmission line construction:

1. V.C. Summer Switchyard No. 1 to Killian Transmission Substation

2. V.C. Summer Switchyard No. 2 to Lake Murray Transmission Substation Line No. 2

3. V.C. Summer Switchyard No. 2 to St. George Switching Station Line No. 1 (up to Lake Murray Transmission Substation).

Also, in 2012, in Commission Docket No. 2012-225-E, the Company requested and the Commission approved construction of the following:

1. Remainder of V.C. Summer Switchyard No. 2 to St. George Switching Station Line No. 1 (from Lake Murray Transmission Substation to St. George Switching Station)
2. V.C. Summer No. 2 to St. George Switching Station Line No. 2
3. Saluda River 230 kV to 115 kV Transmission Substation
4. St. George Transmission Switching Station.

Finally, in Docket No. 2014-421-E, the Company received a “Like Facilities Order” to rebuild, for purposes of uprating, the following:

1. Canadys to Sumter 230 kV Transmission Line

In summary, for V.C. Summer nuclear generating Unit No. 2, approximately 117 circuit miles of transmission wire and 791 transmission structures are necessary. These construction projects and all transmission work for station service power and receipt of energy from Unit No. 2 are 100% complete. For V.C. Summer nuclear generating Unit No. 3, approximately 260 circuit miles of transmission wire and 1,147 transmission structures are required. Currently 59% of wire miles have been installed along with 59% of transmission structures. Thus, for the entire transmission construction project to support both units, the current completion is 72% for transmission wire and 76% for transmission structures.

Q. WAS IT NECESSARY TO ACQUIRE NEW RIGHTS OF WAY TO ACCOMMODATE CONSTRUCTION?

A. Yes, but only six miles from the Blythewood to Killian Substations in Northeast Columbia, SC. In addition, minor acquisitions were made to provide appropriate clearances to accommodate circuit configuration, particularly where
transmission lines enter transmission substations. However, 98.4% of the
transmission construction is upon existing rights of way.

Q. HOW DID THIS DECISION TO PLACE ALMOST ALL
CONSTRUCTION WITHIN EXISTING RIGHTS OF WAY AFFECT
THE PROJECT?

A. Well, as can be expected, it greatly reduced the cost of right of way
acquisition. It also expedited the construction process in that it is extremely
likely that acquisition of such new rights of way would have resulted in
numerous condemnation proceedings and lengthy legal processes that would
have resulted in delays and increased costs. However, once the right of way was
eventually obtained construction on newly-cleared rights of way is typically free
of conflicts.

However, once the Company elected to place the majority of transmission
construction on existing rights of way, then existing, energized lines that occupy
the same corridors where construction occurs, make construction much more
difficult and complicated. Energized lines must be de-energized to obtain
working clearance. Also, Federal Energy Regulatory Commission (FERC)
regulations require operators to model projected electric system impacts to the
bulk electric grid. This modeling may not allow existing transmission lines to
be switched out to accommodate construction on the right of way during certain
seasonal operating conditions related to summer and winter peak usage. In
addition, the availability of certain lines for construction can be limited based
upon more short term events such as emergency maintenance and repair. Thus, only through years ahead planning and following a disciplined construction process that focuses on the timely completion of individual construction projects can this construction challenge be overcome.

Q. **HOW DID THE COMPANY ACCOUNT FOR THE SPORADIC NATURE OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH UTILIZING EXISTING RIGHTS OF WAY OCCUPIED BY ENERGIZED TRANSMISSION LINES?**

A. The Company entered into an EPC (Engineering, Procurement, and Construction) Agreement with Pike Corporation ("Pike") out of Mt. Airy, North Carolina. With the constant starts and stops associated with transmission construction in existing rights of way, it was necessary to choose a “one stop shop” entity who could control the entire construction chain. Former Pike companies had been involved with prior Company transmission projects’ siting studies to include route selection, permitting, environmental impact studies, and public notification. Utilizing this as a foundation, Pike was able to offer alliance agreements for the purchase of self-supporting steel poles, wire, and associated hardware. Being in charge of the entire construction chain allowed for the timely permitting and engineering of various transmission line segments, followed by line construction crews armed with maximum flexibility to move from project to project if particular energized transmission lines could not be de-energized. Also, the sequencing of material deliveries where each pole is delivered in three
unique sections is of critical importance. By having one entity contracted for the entire construction process, there is little opportunity to blame another contractor or vendor for lapses in performance that could negatively impact a project. Based upon construction progress to date, utilizing Pike to provide EPC services was the absolute right decision.

Q. **HOW DOES THE COMPANY COORDINATE NUCLEAR TRANSMISSION LINE CONSTRUCTION WITH PIKE?**

A. Every two months the Company and Pike hold New Nuclear Transmission Management meetings to review progress and jointly work to address issues as expeditiously as possible. It is mandatory for the President of SCE&G Retail Operations, the General Manager of SCE&G Electric Transmission & Construction, and the Senior Vice President of Pike to be present, or the meeting is re-scheduled. Also in attendance may be the Pike Construction Manager and various SCE&G accountants, engineers, and managers. The Senior Vice President of Pike is dedicated solely to the Company’s construction project.

In addition, there are monthly Project Team meetings between the various managers, engineers, accountants, and the SCE&G Manager of New Nuclear Development Transmission Construction to focus on more defined construction activities. The Company also utilizes seven construction inspectors to monitor progress, workmanship, and resolve daily construction issues. The Company reconciles payment to Pike for each pole that is spotted, framed, and set and also
for every thousand feet of wire installed. Payment is not rendered until
inspection records are agreed upon by both parties that the work has been
completed to Company specifications. This is certainly an additional advantage
regarding the EPC agreement with Pike.

Q. **HOW DOES THIS CONSTRUCTION IMPROVE THE COMPANY’S
OVERALL TRANSMISSION SYSTEM?**

A. As a result of tearing down existing wood H-frame poles and replacing
them with self-supporting steel poles, the Company’s transmission system has
been hardened with regards to both wind and icing conditions.

Transmission structures are either mounted on concrete foundations
drilled up to forty feet in the ground with diameters up to 15 feet, mounted upon
vibratory caissons, or direct embedded. Even rebuilt lines are upgraded to
modern specifications utilizing improved materials. Bundled wires also are
capable of transporting more load to serve a growing customer base.
Self-Supporting Steel Foundation

Vibratory Caisson
In addition, at various substations, especially V.C. Summer Switchyards Nos. 1 & 2, wires were reconfigured to eliminate lines crossing each other.

**Q. BRIEFLY DESCRIBE MAJOR CONSTRUCTION CHALLENGES AND HOW THEY WERE OVERCOME.**

A. Construction on existing rights of way containing energized lines, connected to an existing operating nuclear unit (V.C. Summer No. 1), and, at times, even other utilities, was the most significant construction challenge. Therefore, very proactive communication and collaboration with various entities, to include nuclear plant personnel, various utility planning departments,
system control of various utilities, and construction crews within existing rights of way is absolutely critical.

**Construction near Switchyard**

Even though limited, right of way acquisitions were, at times, a challenging process. In addition, over time, certain adjacent property owners encroach upon rights of way and defined easements. Due to certain line segments occupying all available width footage of a right of way, encroachments had to be handled by a systematic approach prior to construction. In addition, vegetation management required proactive communication to property owners, local elected and municipal officials, and even law enforcement. Traffic control on roads utilized for right of way ingress as well as construction was a challenge.
Q. HOW MANY INTERSTATE CROSSINGS WERE A PART OF THIS
CONSTRUCTION PROJECT?

A. Along the transmission corridors utilized for construction, there are 19
interstate crossings where 80 wires had to be removed and 202 wires clipped
back in their place. The Company has completed 13 of the 19 crossings,
removing 71 wires and clipping-in 151 wires. Fortunately no incidents have
occurred due to outstanding support from the South Carolina Highway Patrol
and the South Carolina Department of Transportation.

This is indeed an accomplishment given the fact that all interstate
crossings must be performed at night. Three days prior to an interstate crossing,
signage must be put in place. At 6:30 p.m., a traffic conference is held, followed
by a 7:00 p.m. closure of road shoulders as signage is put in place. At 8:00 p.m.
construction crews are pre-positioned to begin work. When all resources are in
place, finger lines are placed in blocks on steel structures, while stop and go
traffic controls allow the lines to be transferred across the interstate. These
finger lines are followed by heavier bull ropes that are connected and followed
by the actual electrical wires. Lines can then be clipped-in and secured. At 4:00
a.m. all equipment must be removed, and thirty minutes later, all traffic control
signage is removed as well, in anticipation of normal traffic returning at 6:00
a.m. The same process is utilized for other U.S. Highways, as well as waterways.
Q. HOW DID THE HISTORIC FLOODS OF OCTOBER 2015 AFFECT CONSTRUCTION?

A. From October 2015 – January 2016, over thirty inches of rain fell on the Company’s transmission construction rights of way. As a result, almost all construction activities had to be performed on mats. Mat usage increased from 4,500 timbers to 7,600 timbers. It appeared as if a wooden bridge stretched from pole to pole along construction corridors. In addition to additional mats, helicopters operated by steady-handed pilots were an extremely useful resource to string wire across a wide range of topography both before and after the flooding event.
Flooding Conditions
Q. WAS IT NECESSARY TO CONSTRUCT NEW SUBSTATIONS OR MODIFY EXISTING ONES AS A RESULT OF THIS PROJECT?

A. Yes. Two new substations were approved, permitted, designed, and constructed as part of this nuclear transmission construction. The first was the Saluda River 230 -115 kV Transmission Substation located near the intersection of Interstates I-20 and I-26 in Lexington County, S.C. The second substation was the St. George Switching Station located off Interstate 95 near the St. George exit in Dorchester County. These substations are complete and operational.
In addition, there were numerous other modifications to existing substations along the route in order to safely and reliably deliver energy from the future operation of V.C. Summer Units No. 2 and No. 3.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.