

July 29, 2016

Ms. Gail Mount, Chief Clerk
North Carolina Utilities Commission
430 N. Salisbury Street
Raleigh, NC 27603

RE: *NTE Carolinas II, LLC*
Testimony of Michael C. Green
Docket No. EMP-92, Sub 0

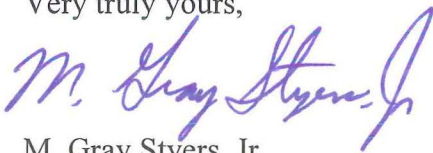
Dear Ms. Mount:

In support of NTE Carolinas II, LLC's Application for a Certificate of Public Convenience and Necessity for Merchant Plant, we are herewith electronically submitting, in the above-referenced docket, the Testimony of Michael C. Green.

If you have any questions or comments regarding this filing, please do not hesitate to call me.

Thank you in advance for your assistance.

Very truly yours,



M. Gray Styers, Jr.

pbb

Enclosures

cc: Christopher J. Ayers, Esq.
 Antoinette Wike, Esq.

**PREFILED DIRECT TESTIMONY OF
MICHAEL C. GREEN
ON BEHALF OF NTE CAROLINAS II, LLC**

NCUC DOCKET NO. EMP-98, SUB 0

I. INTRODUCTION AND SUMMARY

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Michael C. Green. I am the Vice President of NTE Carolinas II, LLC ("NTE"). I am responsible for the development of the 500 MW natural gas-fired generating facility ("Facility") proposed for Rockingham County, North Carolina, by NTE. My business address is: 24 Cathedral Place, Suite 300, Saint Augustine, Florida 32084.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science in Civil Engineering from the University of Tennessee in 1972.

My professional experience includes several roles and over 40 years' energy industry experience with 30 years of that with Duke Power/Duke Energy beginning in 1972 when I began as a design engineer, working on various aspects of Belews Creek coal-fired steam station, supervised and managed structural engineering efforts at the Catawba Nuclear Station, and supervised and managed engineering efforts for the analysis and design of the underground Bad Creek Pumped Storage Facility.

After being loaned from Duke Power to the Institute of Nuclear Power Operations for two years, for the evaluation of design and construction practices at eleven domestic nuclear facilities under construction, I returned to Duke Power where I held a number of positions, including: Assistant to the Executive Vice President, Manager – Project Control

1 Department, Manager – Strategic Business Department, Vice President –
2 Corporate Accounts at Duke Energy. Following the merger between Duke
3 Power and Pan Energy, I served as Vice President and General Manager of
4 Duke Energy North America where I managed DENA's independent power
5 plant (IPP) development efforts in Florida and the Southeast.

6 Following my departure from Duke in 2002, I provided private consulting
7 services for several IPP's in Florida and the Southeast and worked for
8 Calpine for a short period of time prior to joining NTE in 2010. Currently, as
9 Vice President of Development for NTE, I am responsible for providing
10 leadership in the development of power projects in which I coordinate
11 permitting, public outreach, legislative and regulatory communications, as
12 well as engineering and design efforts.

13
14 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

15 A. Yes, I have testified in NCUC Docket EMP-76 Sub 0, in which NTE Carolinas,
16 LLC received a Certificate of Public Convenience and Necessity to
17 construction a natural-gas fired electric generating facility near the City of
18 Kings Mountain, North Carolina described in greater detail below.

19
20 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

21 A. The purpose of my testimony is to support the application of NTE for a
22 Certificate of Public Convenience and Necessity to construct and operate
23 the Facility and ancillary transmission facilities ("Application"), which is filed
24 concurrently with this testimony and which I hereby incorporate in my
25 testimony as evidence in this docket.

26
27 **Q. PLEASE DESCRIBE NTE CAROLINAS II, LLC.**

28 A. NTE is a limited liability company organized under the laws of the State of
29 Delaware with its principal place of business in Saint Augustine, Florida, and

1 is authorized to do business in North Carolina. NTE is a wholly-owned first
2 tier subsidiary of NTE Carolinas II Holdings, LLC, which is an affiliate of NTE
3 Energy, LLC ("NTE Energy"). An organizational chart showing the
4 relationship of the affiliates of NTE is attached to the Application and
5 labelled Attachment 1.

6
7 **Q. PLEASE DESCRIBE NTE ENERGY, LLC.**

8 A. NTE Energy is a privately-held, Florida-based company, which focuses,
9 through its subsidiaries and affiliate, on the development, construction,
10 acquisition and operation of strategically located electric generation and
11 transmission facilities within North America. Its management team
12 executes all aspects of project development, from initial market and site
13 evaluations and permitting to financing, construction and operation. NTE
14 Energy recently closed financing and began construction on two of its
15 development projects totaling 950 MW of capacity and \$1.25 billion in
16 financing – the Kings Mountain Energy Center in Kings Mountain, North
17 Carolina and the Middletown Energy Center in Middletown, Ohio. In
18 addition to these two facilities, NTE Energy, through its subsidiaries, is
19 currently developing approximately 2,835 MW of generating capacity, with
20 projects located in Texas, Ohio, Connecticut, Florida, and North Carolina.
21 The energy and capacity from the facilities within NTE Energy's corporate
22 structure are marketed to wholesale customers in the United States in
23 accordance with all applicable law.

24
25 **Q. WILL THE PROPOSED FACILITY IN ROCKINGHAM COUNTY BE SIMILAR TO**
26 **THE ONE PREVIOUSLY CERTIFICATED BY THIS COMMISSION IN KINGS**
27 **MOUNTAIN AND MENTIONED IN YOUR PREVIOUS ANSWER?**

28 A. Yes.
29

1 **Q. PLEASE DESCRIBE THE STATUS OF CONSTRUCTION OF THE FACILITY IN**
2 **KINGS MOUNTAIN.**

3 A. The Commission issued a Certificate of Public Convenience and Necessity to
4 NTE Carolinas, LLC, in Docket No. EMP-76, Sub 0, on October 28, 2014, for
5 the construction and operation of the Kings Mountain Energy Center. Since
6 the issuance of the CPCN, all required permits for construction have been
7 received, and equity and debt financing for the KMEC project has closed
8 and been funded. Construction began in August 2015.

9 As of this date, the KMEC site is at rough grade. All piles have been
10 installed, the heat recovery steam generator ("HRSG") and exhaust stack
11 foundations have been placed, the combustion turbine generator ("CTG")
12 and steam turbine generator ("STG") foundations are being formed, and
13 rebar has been installed. Concrete placement for the CTG foundation has
14 recently begun. Excavation for underground water, fuel gas, instrument air,
15 drain piping, and the duct bank is ongoing. The fabrication, installation and
16 backfilling of equipment for the process water, fuel gas, fire water, and raw
17 water pipes, as well as the oily water drains, and the pipe systems for
18 instrument air and hydrogen are ongoing. Mitsubishi Hitachi Power
19 Systems Americas, Inc. ("Mitsubishi") has begun fabrication of the CTG,
20 Toshiba America Energy Systems Corporation ("Toshiba") has begun
21 fabrication of the STG, and Vogt Power International, Inc. ("Vogt") has
22 begun fabrication of the HRSG. Construction is on schedule.

23
24 **Q. WILL THE SAME MANAGEMENT TEAM OF NTE ENERGY THAT HAS BEEN**
25 **RESPONSIBLE FOR THE DEVELOPMENT, FINANCING, AND CONSTRUCTION**
26 **OF THE KINGS MOUNTAIN FACILITY ALSO BE INVOLVED IN THE**
27 **DEVELOPMENT AND CONSTRUCTION OF THE PROPOSED FACILITY IN**
28 **ROCKINGHAM COUNTY?**

29 A. Yes, that is our plan and intent at this time.
30

1 **Q. PLEASE IDENTIFY THE AREA IN WHICH THE FACILITY IN ROCKINGHAM**
2 **COUNTY WILL BE LOCATED.**

3 A. The Facility will be constructed near Reidsville on approximately 20 acres of
4 an approximately 90-acre site off NC-65 bounded by NC-65 to the east and
5 New Lebanon Church Road to the west. A vicinity map showing the
6 location of the Facility is attached to the Application and labeled
7 Attachment 4.

8
9 **Q. PLEASE DESCRIBE THE PROPOSED FACILITY.**

10 A. The Facility will be constructed as a one-on-one combined cycle
11 combustion turbine electric generating facility in Rockingham County,
12 North Carolina. The Facility will consist of one (1) combustion turbine
13 generator, either a Mitsubishi M501GAC or Siemens Energy, Inc.
14 ("Siemens") SGT6-8000H, one (1) heat recovery steam generator, and one
15 (1) steam turbine generator. The combustion turbine will be fired solely
16 with natural gas. Additional equipment to support the Facility includes
17 exhaust stacks, auxiliary boiler, combustion turbine enclosure, turbine air
18 inlet ducts and silencers, continuous emission monitor systems ("CEMS"),
19 generator step-up transformers ("GSUs"), a station service transformer
20 ("SST"), switchgears, a gas metering/conditioning station, water treatment
21 trailers, a de-mineralized water tank, transmission and interconnection
22 equipment, mechanical draft evaporative cooling towers, a standby diesel
23 generator, and a fire protection system.

24 The expected service life of the Facility is projected to be 30 years. The
25 estimated construction costs are contained in a confidential attachment to
26 the Application labelled Attachment 3.

27 **Q. HOW WILL THE FACILITY BE FUELED?**

28 A. Natural gas will be the only fuel burned by the Facility, requiring up to
29 95,000 MMBtu/Day to operate at full output. Transcontinental Gas Pipe
30 Line Company, LLC ("Transco") has existing interstate pipelines crossing the

1 Facility site. The existing pipelines, the proposed gas interconnection
2 facilities, and the Facility's proposed Natural Gas Lateral ("Facility Lateral")
3 are reflected in the diagrams of the site layout which are included as
4 Attachment 5.

5 The Facility Lateral is expected to be approximately 650 feet long, and its
6 sole purpose is to connect the Facility with Transco's interstate natural gas
7 pipelines. NTE is currently in discussions with Piedmont Natural Gas
8 Company, Inc. ("Piedmont"), the local distribution company serving
9 Rockingham County, regarding construction, ownership, maintenance, and
10 operation of the Facility Lateral. NTE anticipates that Piedmont will
11 construct, own, maintain, and be responsible for compliance testing on the
12 Facility Lateral. Based on discussions to date, Piedmont expects to provide
13 natural gas transportation to the Facility on the Facility Lateral under a
14 Special Purpose Tariff specific to the Facility Lateral. The agreements,
15 service contracts, and tariffs referenced above are not yet finalized, but
16 copies will be filed in this docket once finalized.

17 NTE's natural gas procurement strategy for the Facility includes procuring
18 firm delivered natural gas service priced at a Gas Daily index representative
19 of the delivery location from one or more wholesale natural gas suppliers.
20 A natural gas supplier to be selected will be responsible for providing firm
21 delivered natural gas supply to the point of interconnection between
22 Transco's interstate pipelines and the Facility Lateral. The Facility will not
23 itself hold, nor have the fixed costs associated with, firm transportation
24 capacity on Transco.

25
26 **Q. HOW WILL THE FACILITY BE CONNECTED TO THE TRANSMISSION**
27 **FACILITIES IN THE AREA?**

28 **A.** The Facility will interconnect with the electric transmission system of Duke
29 Energy Carolinas, LLC ("DEC"), via the Ernest Switching Station, immediately
30 adjacent to the Facility site. NTE has completed the feasibility study with
31 DEC and has begun the system impact study. Only minor expansion of the

Ernest Switching Station is required to accommodate NTE's interconnection. The 230 kV circuits from the CTG and STG's GSUs will meet at the Facility's substation, located on NTE's property. From the Facility's substation, a single 230 kV circuit will run to the Ernest Switching Station. This line will cross only NTE and DEC properties and no other parcels. No third-party private rights-of-way will need to be acquired for any of these facilities. All of the interconnection-related equipment is ancillary to the Facility and will be located entirely on the Facility site and the Ernest Switching Station site. The Application for certification is intended to encompass all these ancillary transmission facilities up to the Ernest Switching Station. A color map showing the general location of the transmission facilities is attached to the Application and labelled as Attachment 5.

Q. WHAT TYPES OF PERMITS OR REGULATORY APPROVALS ARE REQUIRED FOR THE FACILITY AND HAVE THEY BEEN OBTAINED?

A. As of the date of this filing, Attachment 6 attached to the Application summarizes the required permit and approvals, submittal dates, and their status.

The Major approvals needed for the Facility include:

- The Certificate of Public Convenience and Necessity for the Facility
- PSD Air Quality Permit
- Section 404/401 (Clean Water Act)
- Special Use Permit

Q. PLEASE EXPLAIN THE NEED FOR THE FACILITY.

A. The need for new generation in North Carolina is demonstrated in the 2015 Integrated Resource Plans ("IRP") filed by DEC and Duke Energy Progress, LLC ("DEP"). DEC's 2015 IRP projects annual growth rates of 1.5% in summer and winter peak demand for its retail and wholesale customers for

1 the years 2016 through 2030. This growth results in a summer peak
2 demand of 18,764 MW in 2016 that grows to 23,125 MW in 2030, which is
3 an increase of 4,361 MW. With the expected load growth, DEC's IRP
4 concludes that an additional 5,711 MW of capacity is needed to support
5 growth, while maintaining system reliability through 2030.

6 DEP's 2015 IRP projects growth rates in summer peak demand of 1.5% and
7 in winter peak demand of 1.3% for its retail and wholesale customers for
8 the years 2016 through 2030. This growth results in a summer peak
9 demand of 13,048 MW in 2016 that grows to 15,981 MW in 2030, which is
10 an increase of 2,933 MW. With the expected load growth, DEP anticipates
11 adding 5,292 MW of additional generating resources through 2030. Of the
12 5,292 MW of new generation, DEP expects 3,483 MW to be natural gas-
13 fired combined cycle facilities. Collectively, DEC and DEP have a projected
14 need for over 11,000 MW of additional generating resources through 2030.

15 A summary of the new generation requirements, as reported in DEC's and
16 DEP's IRPs, follows:

- 17 • Duke Energy Carolinas – Integrated Resource Plan (2015)
 - 18 ○ Service area requires an additional 5,711 MW of capacity by 2030
 - 19 ■ Baseload / Intermediate: 5,711 MW
- 20 • Duke Energy Progress – Integrated Resource Plan (2015)
 - 21 ○ Service area requires an additional 5,292 MW of Capacity by 2030
 - 22 ■ Baseload / Intermediate: 3,552 MW
 - 23 ■ Peaking / Simple Cycle: 1,740 MW

24
25 Based on its assessments and its investigation of market activity by regional
26 load-serving entities, NTE has concluded that there is a need for additional
27 peaking, intermediate and baseload capacity in North Carolina. NTE has
28 identified specific wholesale customers who are interested in purchasing
29 the output of the Facility, and is currently negotiating power supply
30 agreements. A summary of the proposed power supply contracts relating
31 to the output of the unit being constructed is attached to the Application
32 and labeled Attachment 7. The successful subscription of available electric

1 power and capacity from the Kings Mountain Facility under construction,
2 and the successful financing of that project are further evidence of the
3 demand – as recognized both by load serving entities and by the financial
4 markets – and the need for additional electric power generation facilities in
5 the region.

6 An additional benefit of the Facility is that this plant will be developed and
7 financed by private companies, rather than ratepayers. The construction
8 costs of the Facility will not be considered in a future determination of the
9 rate base of any public utility under N.C.G.S. § 62-130 et seq. The
10 information in this Application demonstrates that North Carolina needs
11 additional electric generation capacity. The Facility will be a contributor to
12 the solution, meeting future needs for electricity in the state and region.

13
14 **Q. DO YOU RECOMMEND THAT THE NORTH CAROLINA UTILITIES**
15 **COMMISSION GRANT A CERTIFICATE OF PUBLIC CONVENIENCE AND**
16 **NECESSITY FOR THE FACILITY AND ANCILLARY TRANSMISSION FACILITIES?**

17 A. Yes. NTE has completed its analysis of the need for the additional
18 generation and believes that the Facility will provide highly reliable,
19 competitively priced, and necessary new capacity. In addition, this new
20 capacity will be developed and financed by private companies, rather than
21 ratepayers. The construction costs of the Facility will not be considered in a
22 future determination of the rate base of any public utility under N.C.G.S. §
23 62-130 et seq. The management team of NTE Energy has demonstrated its
24 ability to successfully develop and finance the construction of the Kings
25 Mountain facility and looks forward to enabling additional private
26 investment in North Carolina's electric generation infrastructure with this
27 proposed Facility in Rockingham County.

28
29 **Q. DOES THIS CONCLUDE YOUR PRE-FILED TESTIMONY?**

30 A. Yes, at this time.