PREFILED DIRECT TESTIMONY OF
EMMANUEL WEMAKOY
ON BEHALF OF TIMBERMILL WIND, LLC

NCUC DOCKET NO. EMP-118, SUB 1

INTRODUCTION

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

A. My name is Emmanuel Wemakoy. I am a Senior Electrical Engineer for Apex Clean Energy, Inc. My business address is 310 4th St. NE, Suite 300, Charlottesville, VA 22902.

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I completed my bachelor's degree in Electrical Engineering from St. Cloud State University, in St. Cloud, Minnesota, and I am currently pursuing my master's degree in Energy Systems at Arizona State University (anticipated graduation: May 2023). I am a licensed Professional Engineer (PE) in the State of Minnesota. I have been building and designing collection systems, transmission lines, and substations throughout the United States for the past 7 years.

Q. PLEASE SUMMARIZE YOUR CURRENT EMPLOYMENT RESPONSIBILITIES.

A. I manage and coordinate technical aspects of renewable energy projects from origination to construction and operations, including for the Timbermill Wind, LLC ("Timbermill") facility in Chowan County, NC (the "Facility"). I support the delivery of technical concepts and engineering design of projects at various stages of their life-cycle and manage third party electrical engineering and design work.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to support the Application for Certificate of Public Convenience and Necessity to construct a merchant plant (the "CPCN Application") and the Application for Certificate of Environmental Compatibility and Public Convenience and Necessity (the "CECPCN Application") to construct an approximately 6 mile 230kV transmission line (the "Timbermill Line") to interconnect the Facility to the existing 230kV Winfall-Mackeys transmission line (the "Winfall Line") owned by Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina ("DENC").

Q. WERE YOU INVOLVED IN PREPARING TIMBERMILL'S CPCN and CECPCN APPLICATIONS IN THE ABOVE-REFERENCED DOCKETS?

A. Yes.

Q. PLEASE BRIEFLY DESCRIBE THE FACILITY AND TIMBERMILL LINE.

A. The Facility will consist of 45 Vestas V150-4.2MW turbines, or a turbine model with a substantially similar profile. The electrical collection lines will consist of approximately 130,000 feet of medium voltage (34.5kV) underground cables. The collection lines will connect the turbines to each other and then to the Collector Substation. My testimony focuses on the Timbermill Line, including the Collector Substation and the Interconnection Switching station, as described in the CPCN and CECPCN Applications.

The Collector Substation will be a single bus system with the following major equipment:

1. One (1) 222 MVA, 230/34.5kV Main Power Transformer,
2. One (1) 230 kV, 1200 A SF6 Breaker,
3. Five (5) 34.5 kV,1200A Vacuum Breakers,

4. Three (3) 180kV CCVTs,
5. Three (3) 180kV Arresters,
6. One (1) 230 kV Disconnector,
7. One (1) Cap Banks,
8. Various 34.5 kV Disconnectors, and
9. One (1) Control Enclosure.

The Timbermill Line between the Collector Substation and the Interconnection Switching Station will be approximately 6 miles and will be 795 kcmil ACSR, Drake conductors supported by steel and wood monopole transmission structures. Steel monopoles will be utilized in locations where the Transmission Corridor is 75 feet wide and where guy wires (which are required for wood transmission structures) will interfere with road easements or farming equipment. H-frame transmission structures will be utilized in the fenced area of the Collector Substation and Interconnection Switching Station. The transmission structures will be 75 to 120 feet in height and the minimum ground clearance will be 25.4 feet.

The Interconnection Switching Station, owned by DENC, will have a 230kV ring bus system with the following major equipment:

1. Three (3) 230 kV, 3000A SF6 Circuit Breakers,
2. Eight (8) 230 kV, 3000A Gang Operated Switches,
3. Nine (9) 180kV, Station Class Arresters,
4. Nine (9) 230kV CCVTs, and
5. One (1) Control Enclosure.

Q. WHAT ENGINEERING CONSIDERATIONS WERE TAKEN INTO ACCOUNT DURING THE DESIGN OF THE TIMBERMILL LINE?

A. The Institute of Electrical and Electronics Engineers (IEEE) and the US Department of Agriculture Rural Utilities Service have published National Electrical Safety Code and RUS Bulletin 1724E-20, which provides general transmission line design criteria utilized in transmission line design around the country. This set of criteria was utilized in the Timbermill Line design. The same set of criteria was used for weather and structure loading and safety factors. For ground clearance, the Timbermill Line was designed so as to allow the safe movement of agricultural equipment underneath the Timbermill Line at its lowest sag point. With a clearance height of approximately 33 feet, most agricultural equipment will be able to continue to operate under the Timbermill Line.

Q. WILL THE TIMBERMILL LINE CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS?

A. Yes. All construction, operations and maintenance will be conducted in accordance with applicable laws and regulations.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.