

PREFILED DIRECT TESTIMONY OF
DEEPESH RANA
ON BEHALF OF TIMBERMILL WIND, LLC

NCUC DOCKET NO. EMP-118, SUB 0

INTRODUCTION

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

A. My name is Deepesh Rana. I am a Senior Manager, Transmission and Interconnection 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 hold a B.S. and M.S. in Electrical Engineering, Power Systems, from Drexel University. I started working professionally as an engineer in the energy industry in 2013. I have been working full time in a managerial role on transmission & interconnection of Apex Clean Energy, Inc. facilities since July of 2018.

Q. PLEASE SUMMARIZE YOUR CURRENT EMPLOYMENT RESPONSIBILITIES.

A. In my current position, I am responsible for managing the interconnection portfolio and associated studies for Apex Clean Energy Holdings, LLC's ("Apex") portfolio of generation resources in multiple independent system operator ("ISO") regions, including PJM Interconnection ("PJM"). My specific responsibilities include reviewing, managing and negotiating Interconnection Agreements and associated technical studies, including Feasibility and System Impact Studies; providing strategic, regulatory compliance, technical and financial input on grid integration of renewable projects on transmission and interconnection-related matters; and filing interconnection request applications and tracking their progress through the project life-cycle of an interconnection queue.

24 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

25 A. No.

26 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

27 A. The purpose of my testimony is to support the Application for Certificate
28 of Public Convenience and Necessity (the “CPCN Application”) filed by Timbermill, and
29 to provide the Commission with information on the interconnection of the Facility to the
30 electrical grid via the existing 230kV Winfall-Mackeys transmission line (the “Winfall
31 Line”) owned by Virginia Electric and Power Company d/b/a Dominion Energy North
32 Carolina (“DENC”).

33 **Q. WERE YOU INVOLVED IN PREPARING TIMBERMILL’S**
34 **APPLICATION IN THIS DOCKET?**

35 A. Yes.

36 **INTERCONNECTION**

37 **Q. PLEASE GIVE A BRIEF HISTORY OF THE INTERCONNECTION**
38 **PROCESS FOR THE FACILITY.**

39 A. Timbermill submitted an Interconnection Request (“IR”) to PJM
40 Interconnection, LLC (“PJM”) in July 2013, and was assigned PJM Queue Number Z1-
41 036. PJM finalized the Facility Study Report (“FSR”) for the Facility in September 2015,
42 and Timbermill entered into an Interconnection Service Agreement (“ISA”) and an
43 Interconnection Construction Service Agreement (“ICSA”) with PJM and DENC, with
44 effective dates of December 3, 2015 and December 15, 2015, respectively. In May 2020
45 Timbermill requested for the ICSA to be placed in suspension while permitting work
46 continues. Under the ICSA and PJM interconnection procedures, the ICSA may remain
47 in suspension for up to three years. Additionally, the Facility’s milestone dates in the ISA
48 are deemed to be extended coextensively for the duration of ICSA suspension.

49 **Q. PLEASE DESCRIBE HOW THE FACILITY WILL INTERCONNECT**
50 **WITH THE ELECTRIC GRID AND THE RESULTS OF THE FSR.**

51 A. The Facility will interconnect via a new three-breaker ring bus switching
52 station, referred to in the CPCN Application as the Interconnection Switching Station,
53 that connects to the existing Winfall Line. The FSR performed by PJM concluded that
54 the interconnection of the Facility will require only Attachment Facilities and Direct
55 Connection Network Upgrades associated with the new switching station, along with
56 minimal relay upgrades at stations along the Winfall Line. Remote station relay
57 upgrades are quite common to help coordinate protection schemes when new switching
58 stations are constructed between existing remote stations. As reflected in the FSR and
59 the ISA, Timbermill will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 891,265
Direct Connection Network Upgrades	\$4,434,840
Non Direct Connection Network Upgrades	\$1,766,979
Allocation for New System Upgrades	\$ 0
Contribution for Previously Identified Upgrades	\$ 0
Total Cost	\$7,093,084

60

61 **Q. WHEN DOES APEX ANTICIPATE REQUESTING THAT THE FACILITY**
62 **COME OUT OF SUSPENSION WITH PJM?**

63 A. The Facility may remain in suspension without impact to the ISA or ICSA
64 through May 2023. The timing for Timbermill's request to come out of suspension will
65 depend on issuance of outstanding permits, including the CPCN at issue in this docket
66 and the related application for Certificate of Environmental Compatibility and Public
67 Convenience and Necessity that will be filed in EMP-118, Sub 1. Timbermill anticipates
68 requesting the ISA come out of suspension by May 2022 to achieve an anticipated start
69 of construction by November 2022.

70 **Q. WILL ADDITIONAL STUDIES BE TRIGGERED WHEN THE FACILITY**
71 **COMES OUT OF SUSPENSION?**

72 A. PJM and/or DENC may engage in a limited sensitivity analysis typical of
73 projects exiting suspension, but the Facility will not be subject to restudy and will
74 maintain its interconnection queue position. The initial Facility IR was for 300.3 MW_{AC}
75 and the Facility proposed in this CPCN application is 189 MW_{AC}. This reduction is not a
76 Material Modification and will not impact the Facility's queue position or trigger a new
77 study. For avoidance of doubt, a "Material Modification" is a modification that has a
78 material adverse effect on the cost of timing of interconnection studies, or cost of
79 Network Upgrades for a later queued project.

80 Because Timbermill does not have any system upgrades other than those
81 associated with its own new three-breaker switching station and related relay upgrades
82 at stations along the Winfall Line, it cannot materially alter the timing or cost of studies
83 and/or upgrades for later queued projects. The reduction in output can only benefit later-
84 queued projects.

85 **INTERCONNECTION COSTS AND AFFECTED SYSTEMS**

86 **Q. ARE THERE AFFECTED SYSTEM STUDY COSTS FOR THE**
87 **FACILITY?**

88 A. No.

89 **Q. ARE YOU AWARE OF THE AFFECTED SYSTEM QUESTIONS**
90 **RAISED BY THE COMMISSION IN DOCKET E-100 SUB 170?**

91 A. Yes, I am generally aware of the affected system questions raised with
92 respect to a number of merchant plant applications for solar facilities and which are
93 addressed in Docket E-100 Sub 170.

94 **Q. ARE THE AFFECTED SYSTEM ISSUES RELEVANT TO THE**
95 **FACILITY?**

96 A. No. The Facility has no impact on any affected system, as evidenced by
97 the System Impact Study, the FSR, and the fully executed ISA.

98 **Q. HAS TIMBERMILL CALCULATED THE LEVELIZED COST OF**
99 **TRANSMISSION (“LCOT”) FOR ANY REQUIRED TRANSMISSION SYSTEM**
100 **UPGRADES?**

101 A. Yes. Using the formula included in the 2019 study by Lawrence Berkeley
102 National Laboratory (“LBNL Study”) referenced by the Public Staff in NCUC Docket
103 EMP-105 Sub 0, the LCOT for the Facility has been calculated for two scenarios: 1)
104 assuming a 30-year Facility life, and 2) assuming a 60-year transmission asset life.¹ The
105 resulting LCOT for the Facility is \$1.07/MWh in Scenario 1 and \$0.90/MWh in Scenario
106 2. The Timbermill LCOT is comparable to the average wind LCOT in PJM (\$0.3/MWh)
107 and in MISO (\$2.48/MWh), and the LCOT average calculated by EIA (\$0.97/MWh), from
108 the LBNL Study. Timbermill’s LCOT analysis is provided as **Rana CPCN Direct**
109 **Exhibit 1.**

110 **Q. COULD THE FACILITY BE SUBJECT TO NEW AFFECTED SYSTEM**
111 **STUDY COSTS ONCE THE FACILITY COMES OUT OF SUSPENSION?**

112 A. No. As reflected in the studies for the Facility, the Facility does not
113 impact any affected system. Timbermill re-initiating work with DENC and taking the
114 ICSA out of suspension has no impact on an affected system because, as discussed
115 above, the Facility was taken into consideration in the study of any later-queued project.

116 **Q. WILL TIMBERMILL BE RESPONSIBLE FOR ALL OF THE**
117 **INTERCONNECTION COSTS CALLED FOR IN THE ISA?**

¹ Gorman, W., Mills, A., & Wisner, R. (2019). Improving estimates of transmission capital costs for utility-scale wind and solar projects to inform renewable energy policy. Energy Policy, 135. DOI: <https://doi.org/10.1016/j.enpol.2019.110994>. Preprint version accessed at http://eta-publications.lbl.gov/sites/default/files/td_costs_formatted_final.pdf.

118 A. Yes. Timbermill will pay for all of the interconnection costs outlined in the
119 Facility's ISA and will not be entitled to reimbursement for such costs from DENC or
120 PJM.

121 **Q. WILL ANY OF THE COSTS TO INTERCONNECT THE FACILITY BE**
122 **BORNE BY RATEPAYERS?**

123 A. No.

124 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

125 A. Yes.

Timbermill Wind, LLC
 EMP-118, Sub 0
 Rana CPCN Direct Exhibit 1
 Levelized Cost of Transmission

Scenario 1:

FORMULA	ITEM	INPUT
c	Transmisison Upgrade	\$7,093,084
r	Rate	0.0564
n	Asset Life	30
K	Name Plate	189
CF	Capacity Factor	0.279850088
Levelized Cost of Transmission (LCOT)		\$ 1.07

/ Total AF + Direct & Non-Direct NUs
 / VEPCO's Discount Rate
 / Assumed Project Life
 / Project Nameplate Capacity in Mwach
 / NCF Based on Project P50 8760

Scenario 2:

FORMULA	ITEM	INPUT
c	Transmisison Upgrade	\$7,093,084
r	Rate	0.0564
n	Asset Life	60
K	Name Plate	189
CF	Capacity Factor	0.279850088
Levelized Cost of Transmission (LCOT)		\$ 0.90

/ Total AF + Direct & Non-Direct NUs
 / VEPCO's Discount Rate
 / Assumed Transmission Line Life
 / Project Nameplate Capacity in Mwach
 / NCF Based on Project P50 8760