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VIA ELECTRONIC FILING

Ms. Martha Lynn Jarvis
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, N.C. 27603

Re: **Docket No. EMP-101, Sub 0**

Pre-filed Direct Testimony of Ryan Van Portfliet and Meghan Schultz in Support of Edgecombe Solar LLC's Application for a Certificate of Public Convenience and Necessity to Construct a Merchant Plant

Dear Clerk Jarvis:

Enclosed for filing is the pre-filed direct testimony of Ryan Van Portfliet and Meghan Schultz incorporating and supporting Edgecombe Solar LLC's Application for a Certificate of Public Convenience and Necessity to Construct a Merchant Plant in the above-referenced docket.

Thank you for your assistance. Please contact me if you have any questions.

Sincerely,

/s/ Katherine E. Ross

Enclosure

cc: Bob Gillam, Public Staff

PPAB 4481352v1

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Oct 05 2018

PREFILED DIRECT TESTIMONY OF
RYAN VAN PORTFLIET
ON BEHALF OF EDGECOMBE SOLAR LLC

NCUC DOCKET NO. EMP-101 Sub 0

INTRODUCTION

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

A. My name is Ryan Van Portfliet. I am an Associate of Renewable Development at Invenergy LLC. My business address is One South Wacker Drive, Suite 1800, Chicago, Illinois 60606.

Q. WHAT IS YOUR RELATIONSHIP WITH THE APPLICANT IN THIS DOCKET?

A. I am the lead project developer for the Edgcombe Solar facility (the "Facility").

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I have over two years of experience in the renewable energy field. I have worked for Invenergy since 2016 on the development of multiple wind and solar energy projects throughout North Carolina and the Mid-Atlantic more generally. I earned a Bachelor of Science in Environmental Science from Loyola University Chicago and a Master's in Business Administration from Loyola University Chicago.

Q. PLEASE SUMMARIZE YOUR CURRENT EMPLOYMENT RESPONSIBILITIES.

45 and developer. IWH and Invenergy LLC are affiliates with the same ultimate
46 parent company, Invenergy Investment Company LLC. An organization chart
47 depicting the relationship of the affiliated companies was included with the
48 Application as Addendum 2 to Application Exhibit 1. Invenergy is
49 headquartered in Chicago, Illinois.

50 **Q. PLEASE DESCRIBE INVENERGY'S EXPERIENCE**
51 **DEVELOPING SOLAR ENERGY FACILITIES.**

52 A. Invenergy and its affiliated companies develop, own and/or operate
53 large-scale wind energy, solar energy, advanced energy storage and natural gas-
54 fueled electric generation assets in North America, Latin America, Japan, Israel,
55 and Europe. The company serves a wide range of utilities, load serving entities,
56 and also sells energy to hedge counterparties in liquid electrical markets.
57 Invenergy's first operational solar project was the 20 MW Grand Ridge Solar
58 facility in Illinois, which was constructed in 2012. The company has since
59 installed an additional 124.1 MW of solar in the US and Canada, including the 20
60 MW Morgans Corner facility located in Pasquotank County, North Carolina. The
61 company has another 10 GW in advanced development in the US, Canada,
62 Mexico, and Japan, and additional projects in various stages of development
63 across North America.

64

65 **SITE AND FACILITY DESCRIPTION**

66 **Q. DESCRIBE THE PROPOSED LOCATION FOR THE FACILITY.**

67 A. The Facility includes approximately 660 acres of privately-owned
68 land in Edgecombe County, North Carolina near the community of Kingsboro (the

69 "Facility Site"). The color map at Addendum 5 to Application Exhibit 2
70 accurately reflects the location of the proposed Facility. The property that makes
71 up the Facility Site is currently used primarily for agricultural purposes.

72 Edgecombe has executed leases and purchase options for the private
73 land on the Site. These real property agreements afford the company the right to
74 develop and use the property for solar energy purposes, including the installation
75 of solar panels, inverters and the other elements of the Facility described in the
76 Application and in my testimony.

77 **Q. PLEASE DESCRIBE THE BASIC COMPONENTS OF THE**
78 **FACILITY.**

79 A. The Facility will consist of solar panels affixed to ground mounted
80 racks supported on driven piles, inverters, a collection system, and
81 interconnection facilities. The Facility will consist of approximately two hundred
82 sixty six thousand two hundred and eleven (266,211) 375 Wp PV modules (or
83 equivalent) affixed to ground mounted racks supported on driven piles. The
84 system will utilize twenty four (24) 3.36 MW TMEIC inverters (or equivalent) and
85 will be interconnected to the electric grid operated by Virginia Electric Power
86 Company d/b/a Dominion North Carolina Power ("DNCP"). A preliminary site
87 layout, including all major components of the Facility, is included as Addendum
88 5 to Application Exhibit 2, and meets the requirements of Rule R8-63.

89 **Q. HOW WILL THE FACILITY BE INTERCONNECTED TO THE**
90 **GRID?**

91 A. A collection substation will be constructed on the Facility Site to
92 facilitate interconnection of the Facility to the grid operated by DNCP. The

93 collection substation will occupy approximately two (2) acres of the Facility Site
94 adjacent to the DNCP 115 kV transmission line. The collection substation will
95 consist of circuit breakers, switching devices and auxiliary equipment, and will be
96 fenced and locked in accordance with industry standards to provide safety and
97 security. A three breaker ring bus interconnection substation will constructed,
98 owned, and operated by DNCP within the Facility Site and a short generator tie
99 line will be necessary to connect this Facility to the transmission system. The
100 power that is generated will flow into the adjacent 115 kV transmission line. A
101 diagram of the interconnection facilities was included with the Application as
102 **Addendum 7 to Application Exhibit 2.**

103 **Q. WHAT IS THE FACILITY'S ANTICIPATED ELECTRICITY**
104 **PRODUCTION CAPABILITY?**

105 A. The nameplate generating capacity of the Facility will be 75-MW_{AC}
106 with anticipated gross capacity of 218,332 MWh and net capacity of 179,979
107 MWh per year. Solar is an intermittent energy source, and therefore, the
108 maximum dependable capacity is 0 MW. Per the Interconnection Request with
109 PJM Interconnection ("PJM"), Edgecombe has been assigned 42.75-MW_{AC} of
110 capacity.

111 **Q. PLEASE DESCRIBE THE ANTICIPATED BENEFITS TO THE**
112 **EDGECOMBE COUNTY COMMUNITY.**

113 A. The Facility represents an investment of tens of millions of dollars
114 into the Edgecombe County community. Edgecombe anticipates that the county
115 will realize property tax revenues of approximately \$85,000 annually from the

116 Facility. Also, landowners will receive lease payments for participation in the
117 Facility.

118

119 **ANTICIPATED LOCAL, STATE AND FEDERAL PERMITS AND APPROVALS**

120 **Q. DESCRIBE THE PERMITS AND APPROVALS YOU ANTICIPATE**
121 **WILL BE NECESSARY TO COMMENCE CONSTRUCTION OF THE FACILITY.**

122 A. A Special Use Permit from Edgecombe County was approved for
123 the Facility on September 4, 2018. The Applicant anticipates that a building
124 permit and an electrical permit from Edgecombe County will be required.

125 From the State, the Facility has been granted a Stormwater Management
126 Permit from the Department of Environmental Quality and an Erosion and
127 Sedimentation and Control Plan and Stormwater General Permit Coverage for
128 Construction-Related Activities, which were included with the Application as
129 **Addendum 6 to Application Exhibit 2.** The Applicant also anticipates that N.C.
130 Department of Transportation Driveway Permit(s) will be required.

131 The only federal permit anticipated for the Facility is a Section 10 permit
132 from the Army Corps of Engineers to cross the Tar River with the collection
133 system. Edgecombe anticipates it will file a certification of Exempt Wholesale
134 Generator status pursuant to Section 32 of the Public Utility Holding Company
135 Act of 1935 and will apply for Market Based Rates from the Federal Energy
136 Regulatory Commission prior to commercial operation.

137 **Q. DOES EDGECOMBE COUNTY HAVE A SOLAR ENERGY**
138 **ORDINANCE?**

139 A. Yes, Edgecombe County established a "Solar Energy Development
140 Ordinance for Edgecombe County, North Carolina," passed by the Board of
141 Commissioners on December 1, 2014, and amended on March 2, 2015 (the
142 "Ordinance"). The Ordinance requires a Special Use Permit for all solar projects
143 proposed in Edgecombe County. As described above, Edgecombe was granted
144 a Special Use Permit from the County Board of Commissioners on September 4,
145 2018. The Special Use Permit process involved review by the County Planning
146 Department and public hearings before the County Planning Board and County
147 Board of Commissioners. The approved Special Use Permit requires
148 Edgecombe to maintain minimum setbacks, install evergreen vegetative buffers,
149 submit a decommissioning plan, and comply with the established definition of
150 abandonment for a solar farm and the procedure for removing an installed solar
151 development, should the Facility be abandoned.

152

153

NEED FOR THE FACILITY

154 **Q. PLEASE EXPLAIN THE NEED FOR THE FACILITY.**

155 A. Under North Carolina's Renewable Energy and Energy Efficiency
156 Portfolio Standard ("REPS" or "Senate Bill 3"), investor-owned utilities in North
157 Carolina are required to meet up to 12.5% of their energy needs through
158 renewable energy resources or energy efficiency measures by 2021. Rural
159 electric cooperatives and municipal electric suppliers are subject to a 10% REPS
160 requirement, which must be met by 2018. G.S. § 62-133.8(8) defines solar as a
161 renewable energy resource. This Facility is expected to generate approximately

162 179,979 RECs annually, which could be used by Electric Power Suppliers to
163 demonstrate compliance with Senate Bill 3.

164 Furthermore, in its 2018 Integrated Resource Plan (IRP), DNCP forecasts
165 its load serving entity peak and energy requirements are estimated to grow at
166 approximately 1.4% and 1.4% annually throughout the 15 year planning period.
167 DNCP forecasts wholesale and retail customer energy sales will grow at annual
168 rate of 1.2% and 1.5% respectively over the planning period. The DNCP IRP
169 considers the retirement of up to 16 units of existing generation, with an average
170 392 MW capacity per unit, between 2021 to 2025, and states that 10 of these
171 units, totaling 1,292 MW, have been or will be put into cold reserve in 2018.

172 In its IRP, DNCP also notes that the cost effectiveness of solar is a
173 significant emerging development. Each Alternative Plan in the IRP includes a
174 large amount of solar resources, ranging from approximately 5,000 MW to
175 approximately 7,000 MW over the 25-year study period. From 2019 to 2033, the
176 Alternative Plans in the IRP call for solar additions ranging from approximately
177 4,500 MW to approximately 6,400 MW.

178 In addition to the needs of DNCP, significant need for solar developments
179 exists in the PJM Interconnection ("PJM") region. PJM is a regional transmission
180 organization ("RTO") that coordinates the movement of wholesale electricity in all
181 or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New
182 Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia
183 and the District of Columbia. This region includes 60 million people, and
184 projections of load are increasing, as described in detail below.

185 In 2011, PJM initiated a study to analyze the integration of renewable
186 energy into the PJM Interconnection system. As of March 31, 2014, "every
187 jurisdiction within the PJM footprint, except for Kentucky and Tennessee, has a
188 renewable portfolio standard (RPS), or Alternative Energy Portfolio Standard
189 (AEPS), or non-binding Renewable Portfolio Goal (RPG)."¹ One of the study
190 scenarios of the report is for wind and solar generation to meet existing RPS
191 mandates by 2026, with 14% renewable energy penetration in PJM.² In order to
192 meet this RPS goal, the study required 7,356MW of centralized and distributed
193 solar generation.³

194 Thus, the PJM projected load increases, announced generation
195 retirements, and renewable portfolio standards provide a need for new resources
196 in the PJM footprint. The Facility will help fill this need.

197 A significant benefit of this Facility is that it will be privately financed and
198 constructed and will not affect ratepayers. While evidence for need for this
199 independent renewable facility is strong, any risk of default is on private
200 financiers and not North Carolina retail electric customers.

201

202 **MANAGERIAL AND TECHNICAL CAPABILITY**

203 **Q. PLEASE DESCRIBE INVENERGY'S TECHNICAL AND**
204 **MANAGERIAL CAPABILITY TO CONSTRUCT AND OPERATE A SOLAR**
205 **POWER PROJECT.**

¹ PJM, "PJM Renewable Integration Study, Executive Summary Report, Revision 05." March 31, 2014.
Pg. 1. <http://www.pjm.com/~media/committees-groups/subcommittees/irs/postings/pris-executive-summary.ashx>.

² *Id.* at 3.

³ *Id.* at 4.

206 A. Invenergy is an experienced operator of renewable and thermal
207 energy generation facilities through its wholly owned subsidiary, Invenergy
208 Services. Invenergy Services is staffed with experienced industry personnel and
209 currently operates more than 8,800 MW of thermal and renewable energy
210 generation projects in North America. In 2011 and 2017, Invenergy was
211 recognized for its strong O&M capabilities with the AWEA award for Operational
212 Excellence.

213 An asset manager based in Chicago will have overall management
214 responsibility for the Facility including all contract compliance. The asset
215 manager will coordinate regional technicians to maintain and repair the Facility
216 as necessary. Both the regional technicians and asset manager draw on the
217 resources of Invenergy for all other functions such as accounting, human
218 resources, legal, finance and engineering.

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

220 A. Yes.

PREFILED DIRECT TESTIMONY OF
MEGHAN SCHULTZ
ON BEHALF OF EDGECOMBE SOLAR LLC

NCUC DOCKET NO. EMP-101 SUB 0

INTRODUCTION

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

A. My name is Meghan Schultz. I am a Senior Vice President of Finance for Invenergy LLC ("Invenergy" or the "Company"). My business address is One South Wacker Drive, Suite 1800, Chicago, IL 60606.

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I have approximately 18 years of experience working in a strategy and financial capacity in the field of large scale energy infrastructure. I joined Invenergy in 2008. I have a Bachelor's Degree in Business from the University of Wisconsin – Madison and a Master's in Business Administration, with a concentration in Finance from Northwestern University – Kellogg School of Management.

Q. PLEASE SUMMARIZE YOUR CURRENT EMPLOYMENT RESPONSIBILITIES.

A. My current responsibilities include managing domestic and international project financings and corporate financings for Invenergy. In this capacity, I have raised approximately fifteen billion dollars in capital to support the construction and operation of wind, solar and natural gas based power generation. My responsibilities include directing all financing activity for the

22 Edgecombe Solar LLC ("Edgecombe") facility in Edgecombe County, NC (the
23 "Facility"). In addition, I oversee the valuation of the Company's business
24 development pipeline, provide strategic support to the Company's CFO, CEO
25 and CDO, and am responsible for evaluating new product and geographic
26 markets that the Company may wish to enter. I manage a team of finance
27 professionals.

28 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS**
29 **COMMISSION?**

30 A. Yes, in the Wilkinson Solar LLC docket, EMP-93, Sub 0.

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

32 A. The purpose of my testimony is to provide the Commission with
33 background information about Invenergy's financial capabilities, and in particular
34 the financing of the Facility.

35

36 **FINANCIAL CAPABILITY**

37 **Q. PLEASE DESCRIBE THE APPLICANT'S FINANCIAL**
38 **CAPABILITY TO OWN AND OPERATE THE FACILITY.**

39 A. As discussed in the application, Edgecombe is a limited liability
40 company organized for the development and ownership of this Facility.
41 Edgecombe is a direct subsidiary of Invenergy Wind Global LLC ("IWG") and a
42 fifth tier subsidiary of IWH Holdings LLC ("IWH"). IWH is an affiliate of Invenergy
43 LLC. IWG and IWH have the financial capability and experience to build, own,
44 and operate solar power generation facilities, including the Facility. The most
45 recent unaudited balance sheet and income statement, which covers Q1-Q2 of

46 2018, have been provided, under seal, as **Addendum 3 to Application Exhibit**

47 **1.** As an affiliate of Invenergy, IWH has the capability to arrange adequate
48 assurances, guarantees, financing and insurance for the Facility's development,
49 construction and operation. Invenergy structures and arranges project financings
50 through a dedicated, in-house staff of finance professionals located in Chicago,
51 IL.

52 **Q. HOW WILL THE FACILITY BE FINANCED?**

53 A. Consistent with its prior experience, Invenergy plans to use a
54 combination of third-party debt and equity to finance the Facility. Specifically,
55 Invenergy expects to engage a lender or group of lenders approximately six to
56 nine months prior to commercial operations to provide a construction loan for the
57 Facility. The construction loan plus equity provided by Invenergy is expected to
58 be sufficient for the entire construction cost of the Facility. The estimated
59 construction costs have been provided, under seal, as **Addendum 4 to**
60 **Application Exhibit 2.** Once a project achieves commercial operation,
61 Invenergy often brings in an additional third-party to provide tax-equity financing
62 which allows the project to more efficiently utilize the federal tax benefits
63 associated with renewable energy projects. Proceeds from the tax equity
64 financing would offset a portion of the capital previously provided by Invenergy
65 and its lender(s).

66 Invenergy typically arranges its financing on a non-recourse basis, which
67 is to mean that Invenergy, as the parent company, does not provide an explicit
68 guarantee for repayment of the project debt. As such, financing for the project is

69 typically structured with cash reserve accounts that can be used to mitigate
70 certain risks of the project.

71 **Q. DESCRIBE INVENERGY'S EXPERIENCE WITH RAISING**
72 **PROJECT FINANCING.**

73 A. Invenergy is highly experienced in raising corporate and project
74 level financing in support of developing, constructing and operating its energy
75 projects. Since its inception in 2001, Invenergy has raised more than \$30 billion
76 of financing and has worked with more than 60 financial institutions worldwide in
77 connection with the successful development of projects in the United States,
78 Canada, Europe, Central America, and Japan. In the US alone, Invenergy has
79 financed projects in 23 states, including a prior North Carolina solar project in
80 2015 (20 MW Morgans Corner Solar Energy project in docket EMP-86, Sub 0).
81 Invenergy's financing relationships include such institutions as Wells Fargo,
82 MUFG, GE Capital, JP Morgan, Santander, Morgan Stanley, Natixis, Bank of
83 America and Rabobank.

84 Invenergy's financing capabilities have been recognized by many within
85 the industry. Invenergy was previously been awarded the Structured Power
86 Finance 2005 Deal of the Year for its financing of Invenergy Wind Finance
87 Company – a portfolio of 260 MW of wind facilities, the North America Public
88 Power 2007 Deal of the year for its financing of St. Clair – a 584 MW combined
89 cycle natural-gas fired facility in Ontario, Canada, and Power, Finance and Risk
90 magazine's 2012, 2013, and 2016 Project Finance Borrower of the Year for the
91 breadth, diversity and volume of deals brought to market and successfully
92 financed by Invenergy.

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

94 **A. Yes.**