

PRE-FILED DIRECT TESTIMONY OF  
CHRISTOPHER KILLENBERG  
ON BEHALF OF HALIFAX COUNTY SOLAR LLC  
NCUC DOCKET NO. EMP-107, SUB 0

**INTRODUCTION**

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

A. My name is Christopher Killenberg. I am Director of Business Development – Southeast for Community Energy Solar LLC, a Delaware limited liability company (“Community Energy”), a solar energy development company based in Radnor, Pennsylvania. My business address is 151 E. Rosemary St., Suite 202, Chapel Hill, NC 27514. I am also Special Manager for Halifax County Solar LLC.

**Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.**

A. I have seven years’ experience in the solar development industry. I have led the development and permitting of 35 solar projects now operating or in construction in the southeastern United States, comprising a total of 290 MW (AC). I currently manage a development pipeline totaling approximately 1100 MW (AC). I have served in my current role with Community Energy since 2012. Prior to joining the solar industry, I held various corporate positions and founded and ran multiple start-ups. I earned a Bachelor of Arts in Economics from Yale University in 1985.

**Q. PLEASE DESCRIBE YOUR RELATIONSHIP WITH THE APPLICANT IN THIS DOCKET AND YOUR EMPLOYMENT RESPONSIBILITIES.**

A. Halifax County Solar LLC (the “Applicant”) is wholly owned by Community Energy Solar, LLC and Community Energy, Inc. I serve as Director of Business Development – Southeast for Community Energy Solar, LLC. My responsibilities include the management of our

22 solar development efforts across the southeastern U.S., including market analysis, site  
23 identification, land acquisition, interconnection applications, environmental reviews, local land  
24 use permitting, state and federal regulatory filings, project modeling, securing offtake, and  
25 supporting financing due diligence. I also serve as Special Manager for the Applicant, with  
26 responsibility for assuring that the proposed 80 MW solar PV generating facility in Halifax  
27 County, North Carolina (the “Project” or the “Facility”) adheres to all regulations and secures all  
28 permits necessary for solar facility construction and operation.

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

30 A. No.

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

32 A. The purposes of my testimony are to: (1) to provide the Commission with  
33 background information about Community Energy’s experience and portfolio, financial  
34 capabilities, and the financing of the Project; (2) to describe for the Commission the current offtake  
35 plans for the Project; (3) to provide the Commission with a project development overview about  
36 the proposed Facility; and (4) to describe to the Commission the anticipated community benefits  
37 of the Project and the level of community engagement that the Applicant has undertaken at the  
38 current stage of its development. My project overview will address particulars about the Facility’s  
39 proposed site, including its location, current use, proposed use, site control, and permitting status.

40 **COMPANY BACKGROUND**

41 **Q. PLEASE DESCRIBE COMMUNITY ENERGY’S TECHNICAL**  
42 **EXPERIENCE AND FINANCIAL CAPABILITIES TO DEVELOP THE PROJECT.**

43 A. Community Energy has twenty years of experience in developing renewable energy  
44 projects in the United States. Community Energy was one of the first companies to expand wind

45 power in the Midwest and East. We developed a series of successful projects, resulting in over 700  
46 MW of new wind capacity. From there, Community Energy entered the solar energy market and  
47 led the development of large-scale solar east of the Rockies, with 800 MW of completed and  
48 operational projects to date and growing. This includes solar PV projects in in Pennsylvania,  
49 Virginia, Colorado, Minnesota, Georgia, Massachusetts, Indiana, New York, Maryland, New  
50 Jersey, and North Carolina.

51 The Community Energy team consists of renewable energy project veterans with long-term  
52 and trusted industry relationships and newly minted technology-savvy employees leading the way  
53 on best development practices. We work together with technical experts and side-by-side with our  
54 customers to achieve a wide range of sustainability and financial goals.

55 We build projects with the wider local community in mind. We seek to create job  
56 opportunities and contract locally for goods and services so that our solar projects not only benefit  
57 the private landowners but also create significant economic opportunities in the community. We  
58 value our relationships with local partners and community members and work diligently to ensure  
59 our renewable energy projects will be good neighbors for many years. Our team regularly meets  
60 with local residents to seek input on proposed plans and revises plans in response to requests.

61 Over the past decade, Community Energy has been formally recognized by several  
62 governmental entities for our leadership in moving America towards a carbon-free energy future,  
63 including the Department of Energy, Environmental Protection Agency and National Renewable  
64 Energy Laboratory. We've won multiple industry awards, including Green Power Pioneer and  
65 Renewable Energy Supplier of the Year, and have been recognized for driving customer  
66 participation in various wind and solar programs nationwide.

67 **Q. HOW WILL THE PROJECT BE FINANCED?**

68 A. Community Energy is a profitable privately-held company with a strong balance  
69 sheet. We are capable of bearing all costs of development required for the Project.

70 Community Energy's long history and successful track record has led to the formation of  
71 long-term relationships with the leading sources of renewable energy investment capital in the  
72 United States. This includes major utilities, investment funds, and high-profile corporations.  
73 Increasingly, investors reach out to us for investment opportunities. This allows us to secure  
74 project capital at a very competitive rate, supporting our ability to deliver cost-effective projects  
75 that produce power at competitive rates.

76 **Q. WHAT IS THE CONSTRUCTION TIMELINE FOR THE FACILITY?**

77 A. The Facility is expected to achieve Commercial Operation in the fourth quarter of  
78 2022. Construction of the Facility will begin in late 2021 and require approximately one year.

79 **SITE AND FACILITY**

80 **Q. PLEASE DESCRIBE THE LOCATION OF THE PROJECT, AS WELL AS**  
81 **CURRENT LAND USE AND ANTICIPATED USE.**

82 A. The Project will be located on approximately 900 acres of land in Halifax County,  
83 North Carolina, in the location shown on the colored site plan map attached as Schedule 5 of the  
84 Application (the "Site"). The Site is comprised of all or a portion of seven (7) privately-owned  
85 parcels. The Applicant has entered into ground leases for two (2) parcels and purchase options for  
86 the remaining (5) parcels or a portion thereof. For those parcels under lease, the leases provide  
87 the Applicant the right to develop and use the property for solar energy generating purposes,  
88 including the installation of solar panels, inverters, transformers and other elements of the Facility  
89 described in the Application and my testimony.

90 The Site is composed of rural land that is currently used for farming and timbering  
91 activities. The Applicant proposes to construct the Facility on approximately 600 acres of the Site.  
92 The remaining approximately 300 acres of the Site will remain un-developed, for the purpose of  
93 preserving wetlands, riparian buffers, and visual screening. A detailed site map is attached as  
94 Exhibit A hereto.

95 **Q. DOES HALIFAX COUNTY HAVE A SOLAR ENERGY ORDINANCE?**

96 A. Yes. Halifax County established a Solar Energy Systems Ordinance on July 8, 2019  
97 (“Solar Ordinance”).<sup>1</sup> The Solar Ordinance requires a Conditional Use Permit (“CUP”) for solar  
98 energy facilities proposed in Halifax County based on the size of the facility and the facility’s  
99 zoning district. The Solar Ordinance requires certain setbacks, height limitations, and vegetative  
100 buffers, as well as requiring a decommissioning plan for the removal of equipment and return of  
101 the property to its prior condition upon the end of the facility’s production. The Decommissioning  
102 Plan is attached to the Application as Schedule 7 to the Application.

103 **Q. HOW WILL THE PROJECT BE INTERCONNECTED TO THE GRID?**

104 A. The Facility will interconnect with Dominion’s transmission grid via a new three-  
105 breaker ring bus switching station that connects on the Halifax - South Justice Branch 115kV line  
106 #81. A color map showing the location of the interconnection point and transmission facilities is  
107 included on Page 2 of the Site Plan attached as Schedule 5 to the Application.

108 Halifax first submitted an Interconnection Request to PJM in October 2016 and was  
109 assigned queue number AC1-208. Halifax is currently awaiting the Facilities Study Report from  
110 PJM, due no later than December 15, 2019.

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<sup>1</sup> The Solar Ordinance is available online at  
<https://www.halifaxnc.com/DocumentCenter/View/1240/-Solar-Energy-Systems-Ordinance--Draft--BOC-proposed-adoption--July-8-2019>

111           **Q.    WHAT IS THE PROJECT'S ANTICIPATED ELECTRICITY**  
112 **PRODUCTION CAPABILITY?**

113           A.    The nameplate generating capacity of the facility will be 80 MW, with an  
114 anticipated generation of 190 GWh of electricity per year. Because solar power is subject to  
115 intermittent solar irradiance, Fern's maximum dependable capacity is projected to be 0 MW by  
116 definition.

117           **Q.    PLEASE DESCRIBE THE PROJECT'S CONFIGURATION.**

118           A.    The Facility will utilize approximately 294,700 PV modules attached to a ground-  
119 mounted single-axis tracking system. The trackers will be installed on a North-South axis tilting  
120 in an East-West direction to enable the modules to follow the sun throughout the day. The trackers  
121 will consist of galvanized steel and will be anchored on H-shaped steel posts driven approximately  
122 six feet into the ground. The trackers will not have a concrete foundation.

123           The system will feed 32 central inverters, each with a nominal power capacity of 2700 kw  
124 AC, configured to transform the DC power generated by the solar modules into a maximum 80  
125 MW of AC capacity. The inverters will feed 32 step-up transformers which will increase the  
126 voltage of the generated power to 34.5kV. Power from these 32 step-up transformers will be  
127 collected at a main transformer, which will further increase voltage to 115kV, so as to align with  
128 the voltage at the point of interconnection.

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

130           A.    Halifax County Solar is expected to generate about 190 GWh per year, which will  
131 be injected into the existing power grid. Halifax expects to benefit North Carolina and its

132 surrounding region by satisfying a present and growing demand for renewable power in the region,  
133 and by providing economic development and other benefits in Halifax County.

134 The Facility will interconnect with the Dominion Energy transmission grid, affording it  
135 access to PJM, a Regional Transmission Organization (“RTO”) that coordinates the movement of  
136 electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New  
137 Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District  
138 of Columbia. Community Energy has substantial experience with offtake in the PJM market  
139 having previously secured approximately 200 MW of offtake within the PJM market.

140 Halifax is actively negotiating a power purchase agreement (“PPA”) with an out-of-state  
141 corporate buyer for all of the 80 MW Facility’s output, and is expecting the PPA to be executed in  
142 the fourth quarter of 2019. The Renewable Energy Certificates (“RECs”), which will be registered  
143 through NC-RETS, will be bundled with the energy and capacity from the Facility, and sold as  
144 part of the PPA.

145 Alternately, Halifax is confident in its ability to secure offtake from the Facility in the PJM  
146 market. As demonstrated by the chart produced by the Business Renewables Center and attached  
147 as **Schedule 8**, projections for corporate demand for renewable energy and RECs from solar  
148 facilities in the southeast market of PJM is expected to increase over the next few years. In  
149 addition, Dominion Energy has committed to increasing its use of renewable power to generate  
150 5,000 MW of electricity by 2028.

151 Dominion’s commitment is consistent with state-level policy set by the Virginia General  
152 Assembly, which affirmed the growing importance of renewable energy generation in passing the  
153 Grid Transformation and Security Act of 2018 (the “GTSA”), signed into law by Governor Ralph

154 Northam on March 9, 2018. The GTSA finds that up to an additional 5,000 MW of utility-scale  
155 electric generating facilities powered by solar and wind energy is in the public interest.

156 Summer peak load in PJM is expected to grow by 0.3% per year over the next ten years,  
157 and by 0.3% over the next 15 years.<sup>2</sup> For the Dominion Virginia Power zone, summer peak load  
158 growth is expected to grow by 0.9% per year over the next ten years, and 0.8% per year over the  
159 next fifteen years.<sup>3</sup> The anticipated ten year summer peak load growth in the Dominion Virginia  
160 Power zone represents 1.4% growth over the January 2018 load forecast report.<sup>4</sup>

161 Winter peak load growth in PJM is projected to average 0.4% per year over the next 10-  
162 year period, and 0.4% over the next 15-years.<sup>5</sup> Winter peak load growth for the Dominion Virginia  
163 Power zone is expected to grow by 0.9% per year over the ten years, and 0.9% per year over the  
164 next nine to fifteen years.<sup>6</sup> The anticipated ten year winter peak load growth in the Dominion  
165 Virginia Power zone represents 1.4% growth over the January 2018 load forecast report.<sup>7</sup>

166 The PJM service area of North Carolina has slightly higher projected load growth than  
167 Virginia. North Carolina is expected to average between 0.9 and 1.1% per year over the next 10  
168 years versus the PJM RTO load growth projections to average between 0.3% and 0.4% over the  
169 next ten years.<sup>8</sup>

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<sup>2</sup> 2019 PJM Load Forecast Report (Mar. 2019 – RPM Update), available at <https://www.pjm.com/-/media/library/reports-notices/load-forecast/2019-rpm-load-forecast.ashx?la=en>, at 43-44.

<sup>3</sup> *Id.*

<sup>4</sup> *Id.* at 40.

<sup>5</sup> *Id.* at 47-48.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> PJM, 2018 North Carolina State Infrastructure Report (January 1, 2018 – December 31, 2018), May 2019, 21, available at <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2018/2018-north-carolina-state-data.ashx?la=en>.



170 Generation retirement also demonstrates the need for new sources of electricity in the  
171 region, and in North Carolina in particular. Approximately 209 MW of capacity in North Carolina  
172 was retired in 2017. This represents more than 10 percent of the 2,084 MW that retired RTO-wide  
173 in 2017.<sup>9</sup>

174  
175 **REGULATORY APPROVALS AND PERMITS**

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

178 A. On August 13, 2019, the Applicant’s application for a Conditional Use Permit  
179 (“CUP”) for the Project was unanimously approved by the Halifax County Board of Adjustment.  
180 The proceedings included an advertised Public Hearing. In the written application for a CUP, and  
181 in the verbal testimony delivered at the Public Hearing, the Applicant proposed to adhere to all  
182 requirements of the Solar Ordinance, including meeting or exceeding requirements for setbacks  
183 and visual screening. A final order approving the CUP is attached to the Application as Schedule  
184 6 to the Application.

185 Prior to construction, the Applicant will need to secure a Stormwater Permit, Building  
186 Permit, and Electrical Permit from Halifax County. The Applicant will also need to secure a  
187 Driveway Permit from the North Carolina Department of Transportation, and an Erosion and  
188 Sedimentation Permit from the North Carolina Department of Environmental Quality.

189 The Applicant has already secured an Approved Jurisdictional Determination for the Site  
190 from the U.S. Army Corps of Engineers (the “Corps”). The Applicant may seek a Section 404

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<sup>9</sup> *Id.* at 21

191 Wetlands Permit from the Corps for the purpose of repairing, replacing, or installing culverts for  
192 the purpose of stream crossings.

193 With respect to additional federal approvals, the facility may apply for Market-Based Rate  
194 Authorization from the Federal Energy Regulatory Commission (“FERC”), pursuant to Sections  
195 205 and 206 of the Federal Power Act, and may seek to self-certify with FERC as an Exempt  
196 Wholesale Generator pursuant to the Public Utility Holding Company Act of 2005.

197 **COMMUNITY**

198 **Q. PLEASE DESCRIBE THE ANTICIPATED BENEFITS TO THE LOCAL**  
199 **COMMUNITY.**

200 A. As mentioned in the Application, the Applicant anticipates bringing economic  
201 benefits to Halifax County, primarily in the form of income to participating landowners, increased  
202 taxes paid to Halifax County, employment, and increased economic activity in the area.

203 The landowners who contracted to sell or lease their land for the Facility, all of whom are  
204 currently operating sizable farming and/or timbering concerns, will gain income that will allow  
205 them to continue agricultural activities on their remaining properties. For those properties under  
206 lease, the land will be returned to the landowners at the end of the lease in substantially its current  
207 condition, and the landowners will have the option of returning the land to agricultural/timbering  
208 use or exploring development of some other kind.

209 From a public funds perspective, Halifax County will realize a substantial increase in tax  
210 revenue generated from the participating properties. Currently, Halifax County collects less than  
211 \$5,000 per year in taxes from the 6 affected parcels. Subsequent to the construction of the Facility,  
212 Halifax County will collect a one-time payment of approximately \$31,000 in “roll-back” taxes for  
213 the conversion of the land to non-agricultural use, and annual real property tax estimated at

214 \$45,000 per year (depending on Halifax County’s re-assessment of the underlying land), and an  
215 annual business personal property tax estimated to be \$168,000 in year 1 (assuming system  
216 construction costs of approximately \$84,000,000, and factoring in North Carolina’s 80% property  
217 tax abatement on commercial solar systems under G.S. § 105-275). This tax revenue would not  
218 have offsetting costs incurred by the County; there will be no associated burden on schools or other  
219 County infrastructure.

220 The construction of the Facility will bring short-term and long-term employment  
221 opportunities. During the anticipated 9-month construction period, approximately 200 jobs will be  
222 created. These jobs require no specialized skills and will therefore be available to any able-bodied  
223 person seeking work. Given the growth of the solar industry in eastern North Carolina, and the  
224 expectation of continued development of similar projects in the area, experience gained during the  
225 construction of the Facility may translate into future employment opportunities constructing other  
226 solar facilities. Once operational, the Facility will require 4-6 full-time employees for its operation  
227 and maintenance.

228 In addition to employment, the construction and operation of the Facility will generate  
229 substantial local economic activity. This includes the subcontracting of certain trades that are  
230 typically sourced locally, including civil, landscaping, and fencing. This also includes purchases  
231 of certain materials such as stone and concrete, as well as the “casual” purchases of the many  
232 construction employees including food, gas, and lodging.

233 Aside from the financial benefits, the Project will also enhance Halifax County’s reputation  
234 as an attractive and friendly environment for business development. This is applicable to  
235 businesses in general and also to the development of renewable energy facilities; increasingly,

236 companies of all sizes are seeking locations that can offer them a source of renewable energy, or  
237 an environment in which associated renewable energy projects will be welcomed.

238 **Q. WHAT ARE THE EXPECTED ENVIRONMENTAL IMPACTS OF THE**  
239 **FACILITY?**

240 A. As a “power plant”, a solar PV generating facility provides clean renewable power  
241 with minimal environmental impacts. The Facility will create no air or water emissions or other  
242 environmental contamination, nor will it create any noise impacts outside the fence line. Minimal  
243 reflectivity or glare will be created, as the panels are designed to absorb as much sunlight as  
244 possible. At the end of the Facility’s useful life, materials can be recycled or sold for scrap, and  
245 the land can be returned to agricultural use

246 As a user of land, the Facility proposed by the Applicant will also have minimal  
247 environmental impacts. The proposed solar farm will be built on steel posts, driven into the ground.  
248 The vast majority of equipment will be bolted to these posts at a height of approximately 5 feet off  
249 the ground surface. As such, there will be very little increase in the impervious surfaces of the site.  
250 Also, the site is very flat. Little to no grading will be required. Our proposed site plan also  
251 minimizes encroachment on wetlands and riparian buffers (by avoidance). Large portions of the  
252 project site will remain untouched. For those areas where construction will take place, the Project  
253 will be bound by rules established at the federal, state, and county levels for stormwater  
254 management, sedimentation control, and erosion. Though the proposed Project is large, the  
255 environmental impact will be proportionately very small.

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

257 A. Yes.