

PREFILED DIRECT TESTIMONY OF
MATT CROOK
ON BEHALF OF OAK TRAIL SOLAR, LLC

NCUC DOCKET NO. EMP-114 Sub 0

INTRODUCTION

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

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

A. My name is Matt Crook. I am a project developer at First Solar, Inc. (“First Solar”). My business address is 11757 Katy Fwy, Suite 400, Houston, TX 77079.

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

A. I am the lead project developer for the Oak Trail Solar, LLC (“Oak Trail”) solar facility (the “Facility”).

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I have over 8 years of experience in the renewable energy field. I have worked for First Solar since 2018 on the development of multiple solar energy projects throughout North Carolina and the southeast more generally. I earned a bachelor’s degree in political science from the University of North Carolina at Chapel Hill and a master’s degree in business administration from the UNC Kenan-Flagler Business School.

44 North Carolina, which is the subject of the Application. First Solar is
45 headquartered in Tempe, Arizona.

46 **Q. PLEASE DESCRIBE FIRST SOLAR'S EXPERIENCE**
47 **DEVELOPING SOLAR ENERGY FACILITIES.**

48 A. First Solar and its affiliated companies develop, own and/or operate
49 large-scale solar energy and advanced energy storage electric generation assets
50 in North America, South America, Asia, Europe, and Australia. First Solar is one
51 of the largest and most experienced PV solar developers in the world. Since its
52 inception in 1999, First Solar has developed over 4.7GW of solar projects,
53 constructed more than 5.4GW of solar, and operates over 3.8GW of solar
54 internationally. In the US alone, First Solar has developed, or is in the process of
55 developing over 60 projects.

56 **SITE AND FACILITY DESCRIPTION**

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

58 A. The Facility includes approximately 878 acres of privately-owned
59 land in Currituck County, North Carolina, near the unincorporated community of
60 Moyock (the "Facility Site"). The color map at **Addendum 4 to Application**
61 **Exhibit 2** accurately reflects the location of the proposed Facility. The property
62 that makes up the Facility Site is currently used primarily for agricultural
63 purposes.

64 Oak Trail has options for lease and purchase of the private land on the
65 Facility Site. These real property agreements afford the company the right to
66 develop and use the property for solar energy purposes, including the installation

67 of solar panels, inverters and the other elements of the Facility described in the
68 Application and in my testimony.

69 **Q. PLEASE DESCRIBE THE BASIC COMPONENTS OF THE**
70 **FACILITY.**

71 A. The Facility will consist of photovoltaic solar panels affixed to
72 ground mounted racks supported on driven piles, inverters, a collection system,
73 and interconnection facilities. The Facility will consist of approximately (185,280)
74 120 Wp First Solar Series 4 PV modules (or equivalent), and approximately
75 (257,090) 455 Wp First Solar Series 6 PV modules (or equivalent) affixed to
76 ground mounted racks supported on driven piles. The Facility will utilize
77 approximately (133) 840kW Toshiba Mitsubishi-Electric Industrial Systems
78 Corporation inverters (or equivalent) and will be interconnected to the grid
79 operated by Virginia Electric and Power Company (“VEPCO”) d/b/a Dominion
80 Energy North Carolina (“DENC”). A preliminary site layout, including all major
81 components of the Facility, is included as **Addendum 4 to Application Exhibit**
82 **2**, and meets the requirements of Rule R8-63.

83 **Q. HOW WILL THE FACILITY BE INTERCONNECTED TO THE**
84 **GRID?**

85 A. A collection substation will be constructed on the Facility Site to
86 facilitate interconnection of the Facility to the grid operated by DENC. The
87 collection substation will occupy approximately two (2) acres of the Facility Site
88 adjacent to the DENC 230kV transmission line. The collection substation will
89 consist of circuit breakers, switching devices and auxiliary equipment, and will be
90 fenced and locked in accordance with industry standards to provide safety and

91 security. A three breaker ring bus interconnection substation will be constructed,
92 owned, and operated by DENC within the Facility Site and a short generator tie
93 line will be necessary to connect this Facility to the transmission system. The
94 power that is generated will flow into the adjacent 230kV transmission line. A
95 diagram of the interconnection facilities was included with the Application as
96 **Addendum 7 to Application Exhibit 2.**

97 **Q. WHAT IS THE FACILITY'S ANTICIPATED ELECTRICITY**
98 **PRODUCTION CAPABILITY?**

99 A. The nameplate generating capacity of the Facility will be 100-MW_{AC}
100 with anticipated gross capacity of 245,000 MWh and net capacity of 218,460
101 MWh per year. Solar is an intermittent energy source, and therefore, the
102 maximum dependable capacity is 0 MW. Per the Interconnection Request with
103 PJM Interconnection, L.L.C. ("PJM"), Oak Trail has been assigned 67.3 MW_{AC} of
104 capacity.

105 **Q. PLEASE DESCRIBE THE ANTICIPATED BENEFITS TO THE**
106 **CURRITUCK COUNTY COMMUNITY.**

107 A. The Facility represents an investment of tens of millions of dollars
108 into the Currituck County community. Oak Trail anticipates that the county will
109 realize property tax revenues of approximately \$134,000¹ annually from the
110 Facility. Also, landowners will receive payments for participation in the Facility.

111

¹ This value is based on Oak Trail pursuing the unit-specific minimum offer price rule ("MOPR") process to participate in PJM's Reliability Pricing Model capacity market auction. Should the project elect to pursue an alternative path known as the Competitive Exemption, the property tax revenues associated with Oak Trail would increase for Currituck County to approximately \$577,000 annually from the Facility.

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

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

115 A. A Use Permit from Currituck County will be required. The Applicant
116 has engaged with the county and has begun the Use Permit process, including
117 hosting a community meeting. The Applicant will also have to obtain approval
118 from Currituck County for a Major Site Plan. The Applicant anticipates that a
119 building permit and an electrical permit from Currituck County will be required.

120 From the State, the Applicant anticipates that the Facility will require a
121 Stormwater Management Permit from the Department of Environmental Quality
122 and an Erosion and Sedimentation and Control Plan and Stormwater General
123 Permit Coverage for Construction-Related Activities, as well as N.C. Department
124 of Transportation Driveway Permit(s).

125 The Applicant does not anticipate that any federal permits will be required.
126 To the extent that the United States Army Corps of Engineers determines that
127 there are jurisdictional features on the site, the Facility will be designed to avoid
128 them or will seek appropriate coverage under a Nationwide Permit Oak Trail
129 anticipates it will file a certification of Exempt Wholesale Generator status
130 pursuant to Section 32 of the Public Utility Holding Company Act of 1935 and will
131 apply for Market Based Rates from the Federal Energy Regulatory Commission
132 prior to commercial operation.

133

134

135 **Q. DOES CURRITUCK COUNTY REGULATE SOLAR FACILITIES**
136 **THROUGH ITS ZONING ORDINANCE?**

137 A. Yes, Currituck County’s Unified Development Ordinance (the
138 “Ordinance”) includes use-specific standards for a Solar Energy Facility. The
139 Facility is proposed to be sited on land that is zoned Agriculture (“AG”), and the
140 Ordinance requires a Use Permit for solar projects in the AG zoning district. The
141 Applicant will also have to obtain approval from Currituck County for a Major Site
142 Plan before construction. As described above, Oak Trail has engaged with the
143 county and has begun the Use Permit process, including hosting a community
144 meeting. The Use Permit process will involve review by the County Planning
145 Department and a quasi-judicial public hearing before the County Board of
146 Commissioners. The Ordinance includes many use-specific standards for Solar
147 Energy Facilities, such as acreage and height maximums, minimum setbacks,
148 installation and maintenance of evergreen vegetative buffers, and ground water
149 monitoring. The Use Permit application for Solar Energy Facilities must include a
150 Solar Facility Impact Analysis, which is to include information on construction and
151 operation activities and impacts on various resources such as geology,
152 environmentally sensitive areas, soils, land use, socioeconomics, and health and
153 safety, among others. The Applicant must also submit a decommissioning plan
154 and comply with the established definition of abandonment for a solar farm and
155 the procedure for removing an installed solar development, should the Facility be
156 abandoned.

157

158

159

NEED FOR THE FACILITY

160

Q. PLEASE EXPLAIN THE NEED FOR THE FACILITY.

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

A. Under North Carolina’s Renewable Energy and Energy Efficiency Portfolio Standard (“REPS” or “Senate Bill 3”), investor-owned utilities in North Carolina are required to meet up to 12.5% of their energy needs through renewable energy resources or energy efficiency measures by 2021. Rural electric cooperatives and municipal electric suppliers are subject to a 10% REPS requirement since 2018. G.S. § 62-133.8(8) defines solar as a renewable energy resource. The Facility will provide a significant source of RECs for use by Electric Power Suppliers to demonstrate compliance with Senate Bill 3. This Facility is expected to generate approximately 218,460 RECs annually. North Carolina has also shown a commitment to clean energy through its Clean Energy Plan finalized by the North Carolina Department of Environmental Quality in October, 2019, which sets a statewide carbon neutrality goal by 2050.

In addition to North Carolina, demand for renewable power is expected to increase in the Southeast over the expected lifetime of the Facility. DENC’s parent company, Dominion Energy, has established a company-wide commitment to achieve net zero carbon dioxide and methane emissions by 2050. Dominion Energy’s commitment is consistent with state-level requirements set by the Virginia General Assembly through the Virginia Clean Economy Act (“VCEA”), which became law on July 1, 2020. The VCEA establishes a mandatory renewable portfolio standard aimed at 100% clean energy from Dominion Energy’s generation fleet by 2045, requires the development of significant energy efficiency, solar, wind, and energy storage resources, and

183 requires the retirement of all generation units that emit carbon dioxide by 2045
184 (unless such retirement would threaten grid reliability and security). Notably, the
185 VCEA requires Dominion Energy to seek all necessary approvals for at least
186 16,100 MW of new solar and onshore wind resources by December 31, 2035.

187 Furthermore, in its 2020 Integrated Resource Plan (“IRP”), DENC
188 forecasts its load serving entity peak and energy requirements are estimated to
189 grow at approximately 1.0% and 1.3% annually throughout the 15 year planning
190 period. Each Alternative Plan in the IRP includes a large amount of solar
191 resources, ranging from 11,520 MW to approximately 40,640 MW over the 25-
192 year study period. DENC recommends Alternative Plan B, which calls for 15,920
193 MW of solar over a 15 year period and 31,400 MW of solar over the 25-year
194 period. DENC’s IRP also states it anticipates it will soon become a full
195 participant in the Regional Greenhouse Gas Initiative, a regional effort to cap and
196 reduce CO2 emissions from the power sector.

197 In addition to the needs of Dominion Energy, including DENC, significant
198 need for solar developments exists in the PJM region. PJM is a regional
199 transmission organization (“RTO”) that coordinates the movement of wholesale
200 electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland,
201 Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia,
202 West Virginia and the District of Columbia. This region includes over 65 million
203 people, and projections of load are increasing, as described in detail below.

204 Summer peak load in PJM is expected to grow by 0.6% per year over the
205 next 10 years, and by 0.5% over the next 15 years. For the Dominion Virginia
206 Power zone, summer peak load growth is expected to grow by 1.2% per year

207 over the next 10 years, and 1.0% per year over the next 15 years. The
208 anticipated 10 year summer peak load growth in the Dominion Virginia Power
209 zone represents 4.6% growth over the January 2019 load forecast report.

210 Winter peak load growth in PJM is projected to average 0.4% per year
211 over the next 10 year period, and 0.3% over the next 15 years. Winter peak load
212 growth for the Dominion Virginia Power zone is expected to grow by 1.4% per
213 year over the 10 years, and 1.2% per year over the next 15 years. The
214 anticipated 10 year winter peak load growth in the Dominion Virginia Power zone
215 represents 15.7% growth over the January 2019 load forecast report. The PJM
216 service area in Dominion Energy territory, including North Carolina, is expected
217 to average between 1.2% and 1.4% per year over the next 10 years versus the
218 PJM RTO load growth projections to average 0.6% over the next 10 years.

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

223 **Q. HAVE YOU CALCULATED A LEVELIZED COST OF**
224 **TRANSMISSION (“LCOT”) FOR THE FACILITY?**

225 A. Yes. Based on the costs identified in the System Impact Studies,
226 which were included with the Application as ***Confidential* Addendum 5 and**
227 **Addendum 6 to Application Exhibit 3**, the LCOT for the Facility is \$1.94.

228

229

230 **Q. HOW DOES THE FACILITY’S LCOT COMPARE TO OTHER**
231 **BENCHMARK LCOTS?**

232 A. This LCOT compares favorably to the average LCOTs identified in
233 the 2019 Lawrence Berkeley National Laboratory Interconnection Cost Study
234 (“LBNL Study”) for solar in MISO (\$1.56), PJM (\$3.22), and EIA (\$2.21) that the
235 Public Staff referenced and the Commission cited in its *Order Denying Certificate*
236 *of Public Convenience and Necessity for Merchant Plant Generating Facility*
237 issued on June 11, 2020 in Docket EMP-105 Sub 0.

238 **Q. ARE THERE ANY PPA AGREEMENTS, REC SALE**
239 **CONTRACTS, OR CONTRACTS FOR COMPENSATION FOR**
240 **ENVIRONMENTAL ATTRIBUTES FOR THE OUTPUT OF THIS FACILITY?**

241 A. Yes. Oak Trail has a fully-executed Power Purchase Agreement
242 (“PPA”) with a large Commercial and Industrial customer for the entirety of the
243 Facility’s output, as well as the Renewable Energy Credits generated by the
244 Facility.

245 **MANAGERIAL AND TECHNICAL CAPABILITY**

246 **Q. PLEASE DESCRIBE FIRST SOLAR’S TECHNICAL AND**
247 **MANAGERIAL CAPABILITY TO OPERATE A SOLAR POWER PROJECT.**

248 A. First Solar is an experienced operator of renewable energy
249 generation facilities. First Solar is staffed with experienced industry personnel
250 and currently operates more than 10,047 MW of renewable energy generation
251 projects in North America. First Solar Energy Services (“FS Energy Services”)
252 will likely provide operations and maintenance (“O&M”) services for the Facility.
253 FS Energy Services has been recognized as the world’s largest solar O&M

254 service provider for four consecutive years, according to Wood Mackenzie's 2019
255 Global PV Operations and Maintenance Report. Notably, FS Energy Services
256 was selected as the top O&M provider from 2014 to 2017 by GTM Research and
257 SOLICHAMBA Consulting, the solar industry's only comprehensive analysis on
258 global solar O&M services, markets, and competitors.

259 An asset manager based in Tempe, Arizona will have overall management
260 responsibility for the Facility including all contract compliance. The asset
261 manager will coordinate regional technicians to maintain and repair the Facility
262 as necessary. Both the regional technicians and asset manager draw on the
263 resources of First Solar for all other functions such as accounting, human
264 resources, legal, finance and engineering.

265

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

267 A. Yes.