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BEFORE  
THE OHIO POWER SITING BOARD

In the Matter of the Application )  
of Angelina Solar I, LLC, for a )  
Certificate of Environmental ) Case No. 18-1579-EL-BGN  
Compatibility and Public Need )

**SUPPLEMENTAL DIRECT TESTIMONY OF WALTER MAST ON BEHALF OF THE CONCERNED CITIZENS OF PREBLE COUNTY, LLC, ROBERT BLACK, MARJA BRANDLY, CAMPBELL BRANDLY FARMS, LLC, MICHAEL IRWIN, KEVIN AND TINA JACKSON, VONDERHAAR FAMILY ARC, LLC, AND VONDERHAAR FARMS INC.**

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**Q.1. Please state your name.**

A.1. Walter Mast.

**Q.2. On whose behalf are you offering this supplemental testimony?**

A.2. I am offering testimony on behalf of the Concerned Citizens of Preble County, LLC (“CCPC”), Robert Black, Marja Brandly, Campbell Brandly Farms, LLC, Michael Irwin, Kevin and Tina Jackson, Vonderhaar Family ARC, LLC, and Vonderhaar Farms Inc. Throughout my testimony, I will refer to these intervenors collectively as the “Concerned Citizens.”

**Q.3. Have you reviewed the Stipulation filed in this case?**

A.3. Yes.

**Q.4. Do the conditions proposed in the Stipulation adequately address the concerns you raised in your direct testimony filed previously in this case?**

A.4. No, it does not satisfactorily address any of the concerns I described in my prior testimony. In particular, it does not adequately address the increases in flooding and crime that I expect to result from the solar project.

32 **Q.5. Why do you believe that the Stipulation is inadequate to address the Concerned**  
33 **Citizens' concerns about flooding?**

34 A.5. As I stated in my earlier testimony, I am extremely concerned that the solar project will  
35 increase flooding in Fairhaven and onto Israel Township farmlands as compared to what  
36 now occurs. Fairhaven, for reference, is located about a mile downstream of a portion of  
37 the solar fields. There is no margin for error in the storm runoff water analysis and flood  
38 risk assessment. The loss of life in Fairhaven is a distinct possibility given nearly the  
39 entire hamlet is in a flood plain of a stream that receives drainage from the Project Area.  
40 Major sections of the village flood every year and often multiple times each year. During  
41 2019, the village has already experienced three major floods and the National Weather  
42 Service has issued many flash-flood watches and flash-flood warnings for the area. I  
43 have personally been unexpectedly trapped between a raging creek and a flooded state  
44 highway. A heavy rain occurred one afternoon in mid-June 2003 and in a little over an  
45 hour, a flash flood surprisingly trapped me in my home. My home was entirely  
46 surrounded by roaring water and a rushing current that was impenetrable and beyond  
47 description. I had no method to escape my home. To make matters worse, emergency  
48 assistance may not be available when needed most because all three of the state highways  
49 and other roads near Fairhaven become covered with water during heavy rains.  
50 Unfortunately, the weather bureau cannot predict when localized heavy rain will result in  
51 a life-threatening flash flood in a given community until live radar indicates the rains are  
52 already occurring. At night, a person may not even know there is a heavy rain or that a  
53 flash flood is occurring. Children and the elderly both live in Fairhaven and are  
54 especially vulnerable. Despite this flooding risk, the Stipulation contains no provision to

55 prevent the Project from increasing storm water runoff into this stream or other drainage  
56 ways. The Stipulation should have included the requirement to construction storm water  
57 retention basins or ponds to intercept runoff from the areas occupied by solar panels  
58 and/or other measures to address this flooding threat.

59 **Q.6. Do you have any information supporting your view that the flooding threat is severe**  
60 **enough to justify the inclusion of storm water retention basins or ponds and/or**  
61 **other measures in the Stipulation to address this threat of flooding?**

62 A.6. Yes. The addition of solar panels will create a field that acts somewhere between a field  
63 of solid grass and a field of solid glass. First and foremost, it is absolutely critical that the  
64 soil absorb as much water as possible to prevent downstream flooding. Some of the  
65 issues in a solar field are:

- 66 • The solar panels will block rain from contacting the earth directly below the panels. This  
67 will reduce the amount of soil that is fully saturated. If you have ever stood in a barn  
68 and looked out an open door at the rain, the soil floor on the interior of the barn does not  
69 become fully saturated and hardly becomes wet. Neither will the soil under the panels  
70 and thus the soil will not absorb as much water as the current farmland where all land is  
71 exposed directly to the rain.
- 72 • The direction of the wind and rain will also be a variable. A rain from the south will not  
73 contact as much of the ground under the panels due to the panel slope as a rain from the  
74 north. Hence, less soil will be saturated during a rain from the south.
- 75 • Direct solar radiation will not contact the ground and grass under the panels and hence  
76 not dry the soil and increase the amount of water the soil can absorb in the future. If you

77 want something to dry quickly, place it in direct sunlight, not in the diffuse light under a  
78 tree.

79 • The solar panels will deflect winds upward when the wind is from the west through the  
80 south to the east. Winds help dry the soil and the entire solar field will have less air  
81 motion near the ground to dry the soil. Stand behind a car during a windstorm and you  
82 will observe that most of the air goes over the car.

83 • Dew condenses on cool surfaces. The glass and metal framework of the solar panels will  
84 cool more quickly than the surround ground because of their thermal conductivity and  
85 cause more dew to condense and thus increase the amount of moisture in the soil. This  
86 will reduce the amount of water the soil can absorb in a rainstorm.

87 • Given the tremendous number of solar panel support piles that will need to be driven or  
88 rotated into the ground, it is highly probable that some drainage tiles will be broken  
89 during the installation. It will not be possible to even determine when a tile has been  
90 broken during the construction. Broken tiles will prevent the field from draining and thus  
91 reduce the amount of water that can be absorbed during a heavy rain.

92 • The 150-acre solar field with waters entering Four Mile Creek north of Fairhaven  
93 (acreage provided by Open Road Renewables employee Doug Herling) drains to a culvert  
94 under State Route 177 east of the field. The field also slopes to the north and south to a  
95 swale that cuts across the field. This sloping surface reduces the potential for water to  
96 flow uniformly and evenly under all of the panels and hence reduces the amount of water  
97 absorbed by the soil.

98 • Corn and soybeans require large amounts of water in periods when most grasses tend to  
99 become more dormant. I have a farm field with a row of trees along the north edge of the

100 field. The trees do not shade the area farmed since the trees are to the north of the field.  
101 The corn and soybeans near the trees have the same amount of fertilizer and sunlight as  
102 the rest of the field. Grasses grow fine under the trees, but corn and soybeans wither in  
103 the area of the tree root base because they require more water than grass during the  
104 critical growing season.

105 • Tilling the soil in preparation for spring planting and even the slicing of the soil during no  
106 till allows more of the soil surface to be exposed to the drying effects of the sun and  
107 wind. Grasses around the panels will tend to retain the moisture. Thus, winds dry the  
108 soil more when the earth is being farmed so more water can be absorbed during a rain.

109 • The ground under the lower edge of the panels will experience large amounts of water  
110 during heavy rains. Over time, a small channel will form and become a means for rain to  
111 runoff more quickly. This fact can be observed under the eaves of any building with no  
112 gutters.

113 • Dew on grass takes longer to dissipate than dew on concrete, asphalt, or bare soil. Faster  
114 dew dissipation means less moisture in the soil. More moisture means a higher relative  
115 humidity which reduces the amount of moisture air can capture. Consider how long you  
116 must wait on mornings of a heavy dew before you can mow the grass.

117 • Rows of corn and soybeans provide space between the rows for air to flow near the soil  
118 surface while grasses tend to be matted to the soil. This air flow tends to dry the soil and  
119 increase its potential to absorb more water during a rain.

120 • Sloping land makes it impossible to predict where the water flowing off the south edge of  
121 the solar panels will go. Even in a sloped paved parking lot, most of the area under cars  
122 is often dry after a rain.

123 These are just some of the issues that will cause storm water runoff to be higher in a solar  
124 field than farm fields. Nevertheless, the Stipulation contains no conditions to address this  
125 increased potential for flooding, other than to require the repair of drainage tiles.

126 **Q.7. Why do you believe that the Stipulation is inadequate to address the Concerned**  
127 **Citizens' concerns about crime?**

128 A.7. The small, unincorporated village of Fairhaven has become progressively less safe and  
129 secure during the 22 years I have owned property in the once quaint village. Fairhaven  
130 contains residents who are convicted felons, drug lords, and meth and heron users.  
131 During my deposition, I was asked if adding deputies would solve the crime problem. I  
132 stated adding deputies would be necessary but not sufficient. The Stipulation does not  
133 provide for funding from Angelina so that the county can hire additional deputies to  
134 patrol the areas near the Project Area. Nor does it do anything else to combat the  
135 additional crime that the Project will bring.

136 **Q.8. Do you have any comments on whether the Stipulation protects the soil and water**  
137 **from chemical contamination?**

138 A.8. The Stipulation does not adequately protect soil and water from contamination that could  
139 occur if severe weather arises such as high winds, hail, and the recent tornadoes that hit  
140 Preble County and Montgomery County, a fire starts in the solar field, lightning strikes  
141 the field, or thieves break or damage the solar panels. All of these events can release  
142 contaminants onto the ground and consequently into the ground water and into the  
143 surface water run-off. Since literature from Open Road Renewables states the solar  
144 panels contain "some chemicals," water and soil contamination are a major concern. To  
145 ensure a safe water quality throughout the entire project duration, it is requested the

146 company managing the solar facility fund and jointly select with the Concerned Citizens  
147 of Preble County (CCPC) an independent, third party company to analyze the entire  
148 chemical composition of the well water on farms adjacent to the solar farm and in  
149 Fairhaven. The testing should be conducted (1) prior to the start of any construction, (2)  
150 annually during every year of facility operation, (3) annually during decommissioning,  
151 site clearance, and the return of the land to productive farm use, and (4) at the end of all  
152 activity on the site. The Stipulation should require the facility to immediate remediate  
153 any abnormalities in the chemical composition of the water and to supply replacement  
154 water to all impacted individuals so long as the water quality is impacted. The  
155 Stipulation also should require the Applicant to provide an accurate and complete listing  
156 of all water wells and their locations in the vicinity of the Project Area as part of the  
157 Application.

158 **Q.9. Do you have any comments on whether the Stipulation sufficiently addresses the**  
159 **Concerned Citizens' concerns about decommissioning, site clearance, and the return**  
160 **to productive farmland?**

161 A.9. The Stipulation does not adequately guarantee that enough funds will be available to  
162 decommission the solar project, clear all solar equipment from the Project Area, and  
163 return the land to farming. While proposed Condition 29 requires Angelina to post  
164 financial security, it allows Angelina to select the means of financial security. This lack  
165 of specificity could result in the selection of a security mechanism that may fail. This  
166 issue would be resolved if Angelina were required to enter into an agreement with the  
167 State of Ohio in which the State would guarantee to fund any shortfall and return the land  
168 to farm production if Angelina fails to do so. The Stipulation also needs to provide a

169 deadline for decommissioning and restoring the Project Area to farming use. The  
170 Concerned Citizens request a deadline of one year after electrical production ends.

171 **Q.10. Does the Stipulation provide for measures that are sufficient to inform and involve**  
172 **the public in decisions made by the Applicant and the Staff after certificate issuance**  
173 **involving the design, construction, and operation of the Project?**

174 A.10. No, the Stipulation allows the Applicant and the Board's Staff to make numerous  
175 decisions about the design, construction, and operation of the Project without involving  
176 the public in the decision-making process. The Stipulation should provide that all plans  
177 for the design, construction, and operation of the Project be submitted prior to issuance of  
178 the certificate as part of the Application in this proceeding, rather than submitted solely  
179 for Staff approval after certificate issuance. As part of the Applicant's public information  
180 program, the Applicant should be required to post notices of and copies on its website of  
181 all permit applications, permits, plan submittals, and other correspondence to and from  
182 public agencies about the design, construction, and operation of the Project and provide  
183 the public with a mechanism by which the public can obtain more information about and  
184 comment on issues associated with these actions. Any facility requests for permits and  
185 other governmental action should be posted on the Applicant's website at least 15 days  
186 prior to submission to the government so that the public can provide the Applicant and  
187 the pertinent government agency with comments on the proposals. These notices should  
188 identify a contact person and email address for the Applicant and for the government  
189 official who is the contact person for the Applicant, so that the public can submit  
190 comments to them. Notice of the pre-construction meeting and other meetings between  
191 the Applicant and the Staff about the Project should be posted on the Applicant's website



192 at least 14 days prior to the meetings and should be open to the public. The Applicant  
193 should also be required to send all notices described in this answer to the owners and  
194 occupants of land adjoining the Project Area.

195 **Q.11. Do you have any other recommendations for conditions that should be included in**  
196 **the Stipulation to protect the public?**

197 A.11. Yes. The Applicant should be required to fund the following studies by an independent  
198 consultant or consultants to conduct these activities under the Staff's supervision in order  
199 to investigate the following safety issues:

- 200 • A complete risk assessment (chemicals, weather, fire, theft, etc.) and review of the solar  
201 company's risk mitigation plans including training of fire and emergency personnel, etc.  
202 to ensure the risk mitigation plans adequately address all of the risks;
- 203 • A retention basin or pond sizing and outflow analysis that considers the flood plains  
204 downstream of the Project; and
- 205 • An analysis of what wind speeds the solar panels can withstand including an assessment  
206 of how the panels are attached to the pilings.

207 These studies should be performed before the Board acts on the Application, so that the  
208 certificate, if issued, can include any protective conditions found by the studies to be  
209 necessary. Drafts of the consultant(s) studies should be made available for public  
210 comment prior to finalization.

211 **Q.12. Does this conclude your supplemental direct testimony?**

212 A.12. Yes.

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**CERTIFICATE OF SERVICE**

The Ohio Power Siting Board’s e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, I hereby certify that, on July 12, 2019, a copy of the foregoing document also is being served by electronic mail on the following: Michael Settineri at mjsettineri@vorys.com, MacDonald Taylor at mwtaylor@vorys.com, Kathryn West at kwest@prebco.org, Dylan Borchers at dborchers@bricker.com, Chad Endsley at cendsley@ofbf.org, Leah Curtis at lcurtis@ofbf.org, Amy Milam at amilam@ofbf.org, Jodi Bair at Jodi.bair@ohioattorneygeneral.gov, Thaddeus Boggs at tboggs@btlaw.com, W. Joseph Scholler at jscholler@fbtlaw.com, and Patricia Schabo at patricia.schabo@puco.ohio.gov.

/s/ Jack A. Van Kley  
Jack A. Van Kley

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Summary: Testimony of Walter Mast electronically filed by Mr. Jack A Van Kley on behalf of Concerned Citizens of Preble County, LLC and Black, Robert Mr. and BRANDLY, MARJA and Irwin, Michael Mr. and CAMPBELL BRANDLY FARMS LLC and Jackson, Kevin Mr. and Jackson, Tina Ms. and Vonderhaar Family ARC, LLC and Vonderhaar Farms Inc.