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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.**

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.

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

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

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

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

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

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

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

- The solar panels will deflect winds upward when the wind is from the west through the south to the east. Winds help dry the soil and the entire solar field will have less air motion near the ground to dry the soil. Stand behind a car during a windstorm and you will observe that most of the air goes over the car.
- Dew condenses on cool surfaces. The glass and metal framework of the solar panels will cool more quickly than the surround ground because of their thermal conductivity and cause more dew to condense and thus increase the amount of moisture in the soil. This will reduce the amount of water the soil can absorb in a rainstorm.
- Given the tremendous number of solar panel support piles that will need to be driven or rotated into the ground, it is highly probable that some drainage tiles will be broken during the installation. It will not be possible to even determine when a tile has been broken during the construction. Broken tiles will prevent the field from draining and thus reduce the amount of water that can be absorbed during a heavy rain.
- The 150-acre solar field with waters entering Four Mile Creek north of Fairhaven (acreage provided by Open Road Renewables employee Doug Herling) drains to a culvert under State Route 177 east of the field. The field also slopes to the north and south to a swale that cuts across the field. This sloping surface reduces the potential for water to flow uniformly and evenly under all of the panels and hence reduces the amount of water absorbed by the soil.
- Corn and soybeans require large amounts of water in periods when most grasses tend to 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

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

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

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

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

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

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

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

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

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

A.12. Yes.

214 **CERTIFICATE OF SERVICE**

215 The Ohio Power Siting Board's e-filing system will electronically serve notice of the
216 filing of this document on the parties referenced in the service list of the docket card who have
217 electronically subscribed to this case. In addition, I hereby certify that, on July 12, 2019, a copy
218 of the foregoing document also is being served by electronic mail on the following: Michael
219 Settineri at mjsettineri@vorys.com, MacDonald Taylor at mwtaylor@vorys.com, Kathryn West
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224 /s/ Jack A. Van Kley
225 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.