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August 23, 2019

Jeff Thompson  
Maryland Department of the Environment  
1800 Washington Blvd  
Baltimore, MD 21230

**RE: MD Solar 1 - Shugart Valley Solar project  
Application # 18-NT-0323/201861760**

Dear Mr. Thompson:

The Chesapeake Bay Foundation appreciates this opportunity to comment on the above-referenced application for a wetland permit to construct infrastructure associated with a proposed solar energy array. We respectfully submit these comments on behalf of our 1,649 members in Charles County pursuant to the extension of the public informational hearing record as published on the Department's website.<sup>1</sup> In addition, more than 1,700 of our members and supporters have filed comments with the Department since the beginning of this year. We request that those comments be incorporated into the official record.

**CBF urges the Department to find that the Social and Economic Justification does not justify the water quality impact from this project because:**

1. The SEJ cannot satisfy the legal requirement in COMAR 26.08.02.04-1(K) that the project be located within a Priority Funding Area;
2. The SEJ fails to quantify the project's pollution impact on the social and economic value of existing uses of the Tier II waterway; and
3. The purported energy and climate benefits pursuant to the state's renewable energy goals – a major component of the applicant's justification – will likely not accrue to Maryland because: (1) there is no nexus established between this project and the decommissioning or reduced use of a carbon-based energy generation facility in the state; and (2) the energy associated with this project is contracted to an out-of-state consumer.

**For these reasons, under COMAR 26.08.02.04-1(H) the Department should deny the permit.**

<sup>1</sup> [https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Pages/MD\\_Solar\\_1.aspx](https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Pages/MD_Solar_1.aspx), accessed August 9, 2019

The impacted wetlands on this site are hydrologically connected to Ward's Run, a stream segment identified in COMAR as a Tier II waterbody. Ward's Run is among the few Tier II streams in Maryland meeting exceptional biological criteria for both benthic and fish communities. This condition relies on relatively stable hydrology supported by a forested landscape, low levels of imperviousness and few if any discharges of pollutants, especially nutrients, which would cause algae blooms or depressed dissolved oxygen conditions. The property in question is directly adjacent to Ward's Run and a portion of the property is within the 100-year floodplain. The property drains north and west toward the Nanjemoy watershed through channelized tributaries. Charles County notes that "The Nanjemoy Peninsula, which includes portions of the Lower Potomac watershed, is one of the most ecologically and culturally significant landscapes remaining in the State" and that "the federally listed rare dwarf wedge mussel survives" in the Nanjemoy watershed.<sup>2</sup> MDE has a responsibility under its non-tidal wetlands regulations to evaluate both direct and cumulative effects from proposed regulated activities.

MDE also has a responsibility under the Clean Water Act to ensure that Tier II waters are not degraded in the absence of an adequate social and economic justification. The Clean Water Act requires states to adopt and enforce an antidegradation policy as a required component of water quality standards. 33 U.S.C.S. §1313.<sup>3</sup> Federal regulations issued under the Clean Water Act provide guidelines for state antidegradation policies that "at a minimum, are consistent" with a set of federal requirements. 40 C.F.R. §131.12. Maryland has incorporated these elements through regulation at COMAR 26.08.02.04-1. As explained below, the Social and Economic Assessment of the Shugart Solar Project (Shugart SEJ) submitted by Origis Energy fails to meet several mandatory regulatory criteria and therefore the discharge permit application must be denied.

**(I) The proposed Shugart solar project does not meet SEJ criteria and components in COMAR 26.08.02.04-1 for project location and accommodation of growth.**

The Shugart SEJ fails to meet the criteria found in COMAR 26.08.02.04-1(K) to demonstrate social and economic justification for impact to Tier II waters. To be approved, an SEJ must demonstrate that the "watershed affecting the Tier II water is located in a priority funding area." COMAR 26.08.02.04-1(K)(1)(a). The Shugart SEJ does not assert or demonstrate that the Shugart Solar Project, or the impacted Tier II waterway Wards Run 2, is located in a priority funding area. A review of the current Maryland Department of Planning Priority Funding Area map<sup>4</sup> also demonstrates that neither the Shugart Solar Project nor the Wards Run 2 watershed is located in a priority funding area. Therefore, the SEJ fails to meet the first criterion for demonstrating a social and economic justification for impacts to Tier II waters.

The regulations also require a showing that "[p]hysical development after the date of the Tier II listing is necessary to accommodate the projected growth within the watershed..." COMAR 26.08.02.04-1(K)(1)(c). The Shugart SEJ does not present any information about the necessity of

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<sup>2</sup> 2016 Charles County Comprehensive Plan, p. 5-19

<sup>3</sup> The required elements include: an analysis of practicable alternatives that would prevent or lessen degradation; a determination that lowering water quality is necessary to accommodate important economic or social development; assurance that water quality will continue to fully protect existing uses; assurance that the highest statutory and regulatory requirements for point sources and reasonable best management practices for nonpoint sources shall be achieved; and opportunity for public involvement during policy development and implementation.

<sup>4</sup> Available at: <http://mdpgis.mdp.state.md.us/pfa/>, accessed August 13, 2019.

the development to accommodate projected growth, nor can it likely be produced since the energy itself is being produced under a supply contract to Georgetown University in Washington D.C. To the extent that the accommodation of projected growth could be construed to include the need for additional electricity to support growth, the Shugart SEJ does not assert the intention to credit Charles County, or even Maryland, with the electricity provided by the proposed project. Therefore, the Shugart SEJ fails to meet the demonstration required under COMAR 26.08.02.04-1(K)(1)(c).

A similar demonstration is required under COMAR 26.08.02.04-1(K)(1)(d), requiring that the “additional physical development of undeveloped land is required to accommodate the projected growth and that development is consistent with the applicable county master plan.” For the Department’s consideration, CBF notes that Charles County’s Comprehensive Plan, adopted in 2016, implements a series of deliberate policy changes to reduce the consumption and conversion of rural farms and forests to developed uses. In adopting the Plan, the Board of Commissioners:

- Classified the property as a “Rural Conservation District” on the Land Use Map,<sup>5</sup> a “Priority Preservation Area”<sup>6</sup> for conservation priority, and a “Tier 4” area on the County’s Tier Map.<sup>7</sup> The Plan states that “it is further the intent that areas designated Tier IV are predominantly conservation areas.”<sup>8</sup>
- Modeled various future development scenarios to evaluate water quality impacts and selected a conservation-focused land use scenario that “performs better in terms of water quality impacts (i.e., impervious surface and forest cover), largely because it would concentrate new development in a smaller area, and would reduce development in stream buffer areas and other rural portions of the County.”<sup>9</sup>
- Directed the County to “adopt regulations that protect forest hubs (greater than 100 acres)” and “add a requirement that priority forests be maintained on development sites unless a variance is granted by the Board of Appeals.”<sup>10</sup>
- Adopted an action to pursue more stringent analysis, protections and regulatory controls for land uses in Tier II watersheds.<sup>11</sup>

In summary, the applicant has not demonstrated that development of this property as proposed is necessary to accommodate the projected growth within the watershed; furthermore, the proposed development is wholly inconsistent with the County’s Comprehensive Plan.

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<sup>5</sup> [https://www.charlescountymd.gov/sites/default/files/pgm/planning/land\\_use\\_map\\_2016.pdf](https://www.charlescountymd.gov/sites/default/files/pgm/planning/land_use_map_2016.pdf). Accessed August 16, 2019

<sup>6</sup> 2016 Charles County Comprehensive Plan, p. 11-4

<sup>7</sup> [https://planning.maryland.gov/Documents/OurWork/septicsbill/CHAR\\_Map.pdf](https://planning.maryland.gov/Documents/OurWork/septicsbill/CHAR_Map.pdf). Accessed August 16, 2019.

<sup>8</sup> 2016 Charles County Comprehensive Plan, p. 3-12

<sup>9</sup> Ibid., p. 4-35

<sup>10</sup> Ibid., p. 5-23

<sup>11</sup> Ibid., p. 4-38

**(II) The SEJ fails to quantify the project’s pollution impact on the social and economic value of existing uses of the Tier II waterway.**

As enumerated in 40 C.F.R. §131.12, the state’s anti-degradation review must include assurance that water quality will continue to fully protect existing uses, among other criteria. Under COMAR 26.08.02.04-1(L)(3), a SEJ “shall address the cost of maintaining high water quality in Tier II waters and the economic benefit of maintaining Tier II waters.” The Shugart SEJ does not include any information regarding the costs, whether through application of pollution controls or selection of a different site, of maintaining the Tier II water quality. And while positing the purchase of birthday gifts, for example, as a potential economic gain from the project,<sup>12</sup> the Shugart SEJ does not make any mention of the economic benefits or current uses of the Tier II waterway. In the absence of information about the cost of maintaining the high water quality and the economic benefit of maintaining the Tier II waterway, the Shugart SEJ also fails to include another required component of an SEJ that states the “economic analysis shall determine whether the costs of the pollution controls needed to maintain the Tier II water would limit growth or development in the watershed including the Tier II water.” COMAR 26.08.02.04-1(L)(4). As mentioned above, the Shugart SEJ does not include any information about how the project is necessary to accommodate growth, and similarly does not include any information about whether costs of maintaining the Tier II waterway limits growth.

CBF flatly rejects any contention that the erosion, sediment control and post-construction stormwater practices on this site would prevent a pollution increase and resulting economic impacts to Wards Run. Total proposed disturbance of the project site is 249 acres of structurally diverse forest. The SEJ emphasizes the project’s proposed ground cover with “pollinator meadows” as a water quality improvement when compared to the turf grass it describes as typical of other solar farms. The SEJ must instead use the current forested land use as its primary comparison for evaluating impacts to Wards Run. Complex forests sequester more carbon and have higher levels of water quality treatment than most grasslands,<sup>13</sup> and while clover fixes nitrogen, it is difficult to imagine any pollinator meadow long-grasses would be tolerated since shading could affect solar panel efficiency.

The SEJ does not appear to account for the compaction of soils on the site through extensive grading and removal of all trees, which would substantially reduce their ability to absorb and infiltrate rainfall as compared to the current forested condition. Service roads and lanes would either need to be paved or heavily graveled to maintain their function. Drainage “improvements,” while designed to follow existing topography and drainage patterns, do not necessarily address the potential change in flow timing and temperature of the runoff to Ward’s Run which would almost certainly affect the benthic and fish Index of Biotic Integrity (IBI) scores that drive the stream’s Tier II status. As an example, Standard #7 requires channel protection volume beyond ESD to the MEP yet there is no demonstration of how level spreader facilities placed throughout the site would promote 100% of the average annual pre-development groundwater recharge, simply that there would be some. Furthermore, grass swales receiving concentrated runoff require maintenance to promote infiltration and groundwater recharge, and these are *never* equivalent to a rich, thick forest

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<sup>12</sup> Shugart SEJ page 38.

<sup>13</sup> Christopher M. Gough et al, High rates of primary production in structurally complex forests, Ecology (2019). <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/ecy.2864>

floor and detritus. The SEJ does not describe maintenance frequency or procedures to guarantee continued performance after construction.

Nutrient and sediment loads to Wards Run are likely to substantially increase with forest loss despite the application of required control practices.<sup>14</sup> The Chesapeake Bay Program's Phase 6 Watershed Model indicates that "mixed open" land loads phosphorus at a per-acre rate that is five times higher than forest and twice higher than harvested forest. Phosphorus loads during construction could be as much as 40 times higher than the current forested condition. The Bay Model *includes* the application of standard control practices in these loading estimates.

The Bay Model does not yet account for the impact of more severe and frequent storms due to climate change. While Charles County requirements define ESD to the MEP as maintaining post-development frequency discharge levels to pre-development levels at all downstream points for 2- and 10-year events, recent climate extremes of 100 year or higher discharge levels have become common. CBF does not believe this level of protection is enough for a property within the floodplain of a Tier II stream in one of the state's most highly functioning watersheds. The SEJ acknowledges increases to the frequency discharge levels compared to current forested state but fails to describe "enhanced stormwater controls" needed to mitigate that increase. It also mentions expanded resource protection zone buffers but does not provide locations or estimates of pollution attenuation. In fact, all its assertions must be taken on faith without the inclusion or attachment of site-specific Stormwater plans.

Lastly, enhanced stabilization, filtering and sediment trapping practices above and beyond ESD to the MEP are not described or quantified as to the extent to which they would protect water quality downstream of the site. Table 3 should come with a map of the drainage areas study points.<sup>15</sup> Are they all within the site or downstream, as would be more appropriate to demonstrate ESD to the MEP? In particular, the 25, 50 and 100 year storm events, each of which increase the flow by up to 10%, should be further explained. The SEJ should explain how variations from 2.44 cfs to 767 cfs indicated in Table 3 will not significantly change benthic or fish IBI scores in the adjacent and immediately downstream segments of Ward's Run using an acceptable hydrologic and sediment transport model analysis.

CBF considers these likely nutrient, sediment, flow, temperature and recharge impacts as *degradation*, especially since Ward's Run is described as having little assimilative capacity. Achievement of the highest regulatory requirements and use of reasonable best management practices on the site is only one consideration and does not by itself provide assurance that water quality will continue to fully protect existing uses.<sup>16</sup> Absent an analysis of the project's pollution impact on the social and economic value of existing uses of the Tier II waterway, the SEJ cannot meet the criteria set forth in 26.08.02.04-1(L)(3) and should be denied.

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<sup>14</sup> This is based on rough estimates before the Model was finalized however CBF finds them to be a reasonable estimate and comparison of the loading associated with this project as compared to the existing land use. MDE should run a similar analysis for the sedimentation that will occur during construction.

<sup>15</sup> Shugart SEJ page 9.

<sup>16</sup> 40 CFR §131.12.

This omission is compounded by a lack of a full description in the SEJ of alternatives considered. The Shugart SEJ made conclusory statements about alternative locations being “non-viable or cost-prohibitive,”<sup>17</sup> but did not include the information required under COMAR 26.08.02.04-1(G)(1) which requires a reasonable alternatives analysis to contain “cost data and estimates to determine the cost effectiveness of the alternatives.” As discussed above, the Shugart SEJ also does not provide any specifics on stormwater protections but does reveal that the volume of stormwater discharges will increase. There is no discussion on the costs that would be incurred if additional stormwater protections were added, particularly those needed to address temperature, flow, and recharge issues that could reduce the impact to the Tier II segment IBI communities. Finally, regulations require “an analysis of reasonable alternatives that do not require direct discharge to a Tier II water body.”<sup>18</sup> None of the stormwater information included this no-discharge alternative or any examination of what such a no-discharge alternative would cost.

**(III) The purported climate benefits of this project are unlikely to accrue to Maryland and may be based on erroneous assumptions.**

The Shugart SEJ mentions several times that greenhouse gas offset value contributions from the proposed project will be higher than its current use. Avoided pollutants calculations in the SEJ emphasize the difference between solar farms and coal combustion in producing electricity. However, there is no legal or permitting basis to support an assumption that energy produced by this project will *replace* energy generated by carbon-based sources. In fact, the electricity generated by the facility is not intended to be applied in Maryland. Therefore, it does not benefit Maryland by reducing the overall emissions as a percent of Maryland’s electricity use. The entire analysis proceeds as though Maryland were the beneficiary of the produced electricity. This underscores that Georgetown University - whom we understand to be the purchaser for this energy by contract - should have exhausted opportunities to generate solar power on campus and perhaps elsewhere in the District of Columbia as opposed to at a distant site in another state. Even if the end user were located in Maryland, it is equally possible that the energy generated by this project would either represent additional power to the grid (and thus take no carbon offline) or replace power consumed from other carbon-free sources, such as nuclear.<sup>19</sup>

The SEJ states an average forest sequestration rate of 0.85 tons of carbon per acre per year based on an EPA estimate that references one of its own previous FAQ documents rather than the source material for the rate, and further claims a “midpoint” sequestration rate between two grassland studies for calculation of net greenhouse gas reduction. The selection of a “midpoint” value among multiple scientific studies – a method used several times in the Shugart SEJ – raises serious questions about the validity of these calculations. Only a peer-reviewed meta-analysis should be used to arrive at any value purporting to aggregate and apply the findings of multiple scientific studies that have undoubtedly used quite different methodologies to reach their conclusions.

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<sup>17</sup> Shugart SEJ page 26.

<sup>18</sup> COMAR 26.08.02.04-1(G)(1).

<sup>19</sup> “In 2017, Maryland’s only nuclear power plant, the Calvert Cliffs power station, accounted for 44% of the state’s net electricity generation.” Quick Facts, U.S. Energy Information Administration, <https://www.eia.gov/state/?sid=MD>, last viewed on July 22, 2019.

The four tons/acre per year study that creates the high-end rate going into the average calculation was based on actively managed and grazed pasture. Typically, active grazing accelerates carbon burial through the dung of ungulates and stimulated grass growth responding to grazing pressure. This grassland model is quite different from the proposed “pollinator meadow” and should not be used. Moreover, that study only cited increases in soil organic matter as the measure of greenhouse gas reduction and while mentioning nitrous oxides and methane, the study did not quantify these fluxes. So, the actual CO<sub>2</sub> equivalent net reduction would be less than the four tons/acre/ year sequestration rate claimed by the SEJ.

To fairly compare carbon offsets, units must be standardized to CO<sub>2</sub> equivalents, include all sources of greenhouse gas flux and quantify them over time, including the significant release of carbon back into the atmosphere from harvesting the trees<sup>20</sup> and heavy equipment used for clearing and construction on site. The simplified before and after table of greenhouse gas offsets in the SEJ is therefore inadequate for understanding the true carbon cost of the land conversion. Exhibit 10 (net change in carbon sequestration) does not account for the carbon loss (up to 62%) from removing trees unless the trees are turned into lumber or other durable wood products like furniture. If the trees are stockpiled or burned as firewood, then most of the carbon would be returned to the atmosphere. The SEJ does not designate the final disposition of the removed trees.

**For these reasons, under COMAR 26.08.02.04-1(H) the Department should deny the permit.**

In light of the Shugart SEJ’s failure to meet minimum demonstration requirements, and failure to include mandatory components, MDE should reject the permit application. Under COMAR 26.08.02.04-1(H)(4), *if an SEJ does not justify the water quality impact, the discharge permit application shall be denied*. As explained above, the Shugart SEJ does not meet the regulatory criteria required to demonstrate justification for the water quality impact. The Shugart SEJ also does not include enough information to allow MDE to determine whether “existing in-stream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected,” which is required as a part of the Departmental review. COMAR 26.08.02.04-1(M)(4). The Shugart SEJ does not contain any information about current uses of Wards Run 2, or whether those uses would be impacted by the degradation of the waterway. Should MDE find that the Shugart SEJ simply has not been “adequately performed” considering the lack of information about required demonstrations and the lack of required components, the regulations allow the applicant to revise the SEJ. COMAR 26.08.02.04-1(H)(3). However, as discussed above, since the project and the Tier II watershed do not occur in a priority funding area, even a revised SEJ would not be capable of meeting the required justification.

Ward’s Run and several other downstream tributaries were nominated by CBF in Maryland’s 2016 Triennial Review of Water Quality Standards because these streams are closest to the state’s virtually unattainable definition of Tier III Outstanding Natural Resource Waters under COMAR 26.08.02.04-2. Maryland’s bar for meeting Tier III status has never been reached because the concurrent requirements of exceptional biological resources, high quality water and a completely protected watershed do not align with Maryland’s arbitrary segmentation scheme. However, Ward’s Run comes very close. MDE denied CBF’s petition in 2016 but promised in their response

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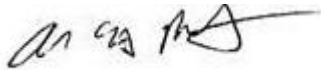
<sup>20</sup> [http://www.forestecologynetwork.org/climate\\_change/sequestration\\_facts.html](http://www.forestecologynetwork.org/climate_change/sequestration_facts.html)

that the Department would “work with” CBF to find a way to designate Outstanding National Resource Waters in Maryland<sup>21</sup>. Deliberately lowering water quality in Ward’s Run following the rationale in the Shugart SEJ would be a mistake and contrary to the State’s assertions.

In closing, CBF echoes many others that the goal of increasing clean energy is noble. We commend Georgetown University and many other forward-looking actors for prioritizing the development of carbon-free power. However, an incremental increase in solar energy should not come as a matter of course at the expense of Maryland’s highest quality waters, and the mixed forestland that currently protects them and provides numerous other environmental services. Any degradation must meet the highest standard for justification and fully address every regulatory requirement enumerated in the state’s program. CBF appreciates the Department’s decision to recognize potential degradation in Ward’s Run and require the applicant to complete an SEJ. Upon review, we believe the Shugart SEJ fails several regulatory tests and should be denied.

Thank you again for the opportunity to comment on this application. Please do not hesitate to contact me at 410-268-8816 or by email at [aprost@cbf.org](mailto:aprost@cbf.org) if you have any questions or to discuss this matter in further detail.

Sincerely,



Alison Prost, Esq.  
Maryland Executive Director  
Senior Advisor to the Vice President for Environmental Protection and Restoration

cc: Ben Grumbles, Secretary, Maryland Department of the Environment

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[https://mde.maryland.gov/programs/Water/TMDL/WaterQualityStandards/Documents/WQSwebpageDocs/comment\\_response\\_20180417\\_Final.pdf](https://mde.maryland.gov/programs/Water/TMDL/WaterQualityStandards/Documents/WQSwebpageDocs/comment_response_20180417_Final.pdf)