Carya Ecological Services, LLC

183 Guinevere Ridge
Cheshire, CT 06410
(203) 271-1949

sigrun.n.gadwa@gmail.com

November 16, 2020

Melanie A. Bachman, Esq. Executive Director/Staff Attorney

Connecticut Siting Council

10 Franklin Square New Britain, CT 06051

Re: *Petition 1425 - Gaylord Mountain Solar Project 2019,LLC*
Petition for a Declaratory Ruling, Pursuant to Connecticut General Statutes §4-176 and §16-50k, for the Proposed Construction, Maintenance and Operation of a 1.9-Megawatt AC Solar Photovoltaic Electric Generating Facility Located at 360 Gaylord Mountain Road in Hamden, Connecticut, and Associated Electrical Interconnection

Dear Ms. Bachman,

Thank you for the opportunity to provide written testimony. Carya Ecological Services, LLC was retained by several adjoining property owners to review Petition No. 1425 for a solar facility at 360 Gaylord Mountain Road. I have reviewed the Environmental Assessment (EA) prepared by All Point Technology Corp. of Waterford, Connecticut and the accompanying plan set for the proposed Gaylord Mountain Solar Project 2019, submitted to the Siting Council in August 2020. I also reviewed on-line mapping resources, read the RWA testimony dated November 9, 2020, and walked the property on 9-30-2020, since “No trespassing” signs were not evident.

I am a professional wetland scientist, a botanist/plant ecologist with a special interest in traprock flora, and a registered soil scientist. I chair the Ecology & Conservation Committee of the CT Botanical Society. My resume is attached.

Forest Services to Ecosystem, Climate & Society

First, a petition for a declaratory ruling of no environmental impact is inappropriate for the mature forested site proposed for this facility, because it is widely acknowledged that mature forest provides valuable ecosystem and societal services, and in particular, helps lessen climate change. Regardless of the particular forest community, the benefits from this new solar facility to climate and society would be offset by the forest losses. The Forest Subgroup of the Governor's Task Force on Climate Change (GC3) researched and prepared a detailed report on forests which does not recommend using mature forested sites for solar facilities, in view of their value *for carbon sequestration, air pollution filtering and associated health benefits, cooling, as well as for wildlife, property, values, and spiritual/psychological health.* Attachment A is a compilation of pertinent excerpts of this draft GC3 report, whose public comment review period ended last month. For the Siting Council to grant this petition would be an unwise precedent, undermining the GC3 initiative.

Carya also agrees with the RWA testimony entered into the record by John Hudak, an environmental scientist, that forest trees and forest soils also prevent and desynchronize flooding, thereby lessening soil erosion, property losses, and degradation by runoff of drinking water reservoirs as well as natural watercourses. The mechanism is as follows:

1) Tree foliage and branches intercept and slow down precipitation, so that more infiltration into soil occurs, and less runoff, and some of the water evaporates;

2) Tree roots take up substantial groundwater from surface soils, which increases soil porosity and capacity for infiltration.

3) The porosity of forest soil is enhanced by tree roots and humus from decomposing leaf litter.

4) Trees also *transpire* large volumes of water vapor, of great value, for cooling the local climate, preventing drought, and quality of life.

Site-Specific Ecological Losses

The petitioner provided only generic information on the forest resource to be lost, underestimating its value. Several dominant woody species were mentioned, but the report omits that this site is the south slope of a traprock/arkose ridge! All Point's brief tree list omitted woody species typical of trap/arkose hillsides, like maple leaf viburnum, ironwood, shagbark hickory, and hop hornbeam. There is no information on the herb stratum, which is expected to be rich in wildflowers to include unusual ferns and sedges in a traprock/arkose hillside forest community.

Because the bedrock beneath this particular hillside is traprock and arkose, soils are *less acidic and expected to be more botanically diverse,* with greater ecological value than forests underlain by the more acidic bedrock types, provided they have not been degraded by significant land disturbance. We saw no evidence of past farming, grazing, or other intensive uses during a site visit on September 30th, 2020, just selective logging. This moist to well-drained south-facing hillside has steep, irregular ground topography, variable vegetation structure and hydrology, rich moss and fern flora, old fungus-covered logs, snags, and boulders. Invasive species are scarce; there are multiple ecological niches for vascular plants, insects, bryophytes, and wildlife. It is comparable to the diverse, forested slopes of other preserved local traprock hills and ridges, such as Rocky Top, Sleeping Giant, and West Rock.

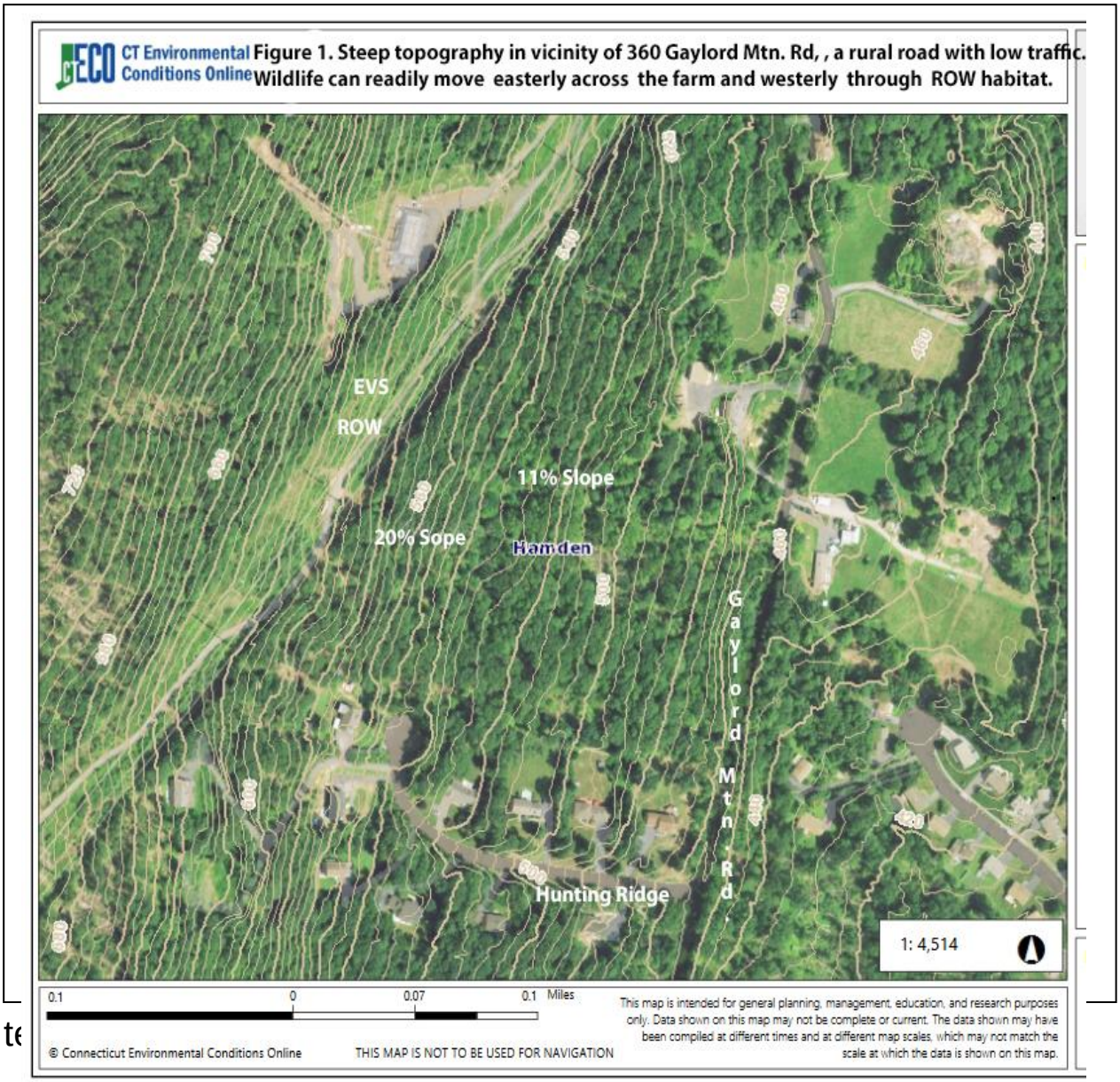
Hydrologic impacts

Botanists in the Connecticut Botanical Society know from past field experience that spring wildflower and sedge flora are typically especially well developed on the moist lower slopes and in the slope base wetlands of these hillsides, though few are identifiable in mid fall. Their habitats are high in organic matter and fed by hillside seepage rich in mineral nutrients weathered from traprock and red rock parent materials. This seepage is, however*, not* enriched with nitrogen and phosphorus, which is effectively removed by tree roots.
.

Unavoidably, the proposed project will alter groundwater chemistry and well as the existing diffuse flow patterns of groundwater infiltration and lateral flow, over the long term. Infiltration will not take place through the clay-lined sides of the stormwater basin or the berm for aesthetics. The riprap conveyance swale from the northeast will bring in addition runoff, with chemistry different from forest seepage, e.g. with elevated dissolved phosphorus levels. This favors Phragmites and cattail growth, rather than the existing diverse wetland flora, which is lower and less competitive. Discharge from the upgradient stormwater basin will all be directed to the southwestern end of the wetland. Note that the slope-base wetland (300 series) that parallels Gaylord Mountain Road received the highest functional rating of the site's wetlands. Changes in the quality and flow patterns of groundwater are also a potential threat to the downgradient mature sugar maple grove, which supports a local maple syrup operation with tourism value (South of Gaylord Mountain Rd.)

Erosion & Sedimentation

In the short term, during construction, sedimentation risks to this slope base wetland, Eaton's Brook, and eventually Lake Whitney, are unusually high for a solar project due to the steepness of the slopes, as shown in Figure 1, and the erodibility of the soils, as also noted in



te

Wethersfield loams and Ludlow silt loams rated by USDA as having high erosion potential. The

1) They have a high content of *fine soil particles, which are* readily dislodged by raindrops or flowing water

2) The small soil particles remain suspended for multiple days in stormwater detention areas, often exiting as overflow.
3) Under pressure, they pass though haybales and the mesh in silt fence, also though the fiber filling in a coir log. Compost filled coir logs do filter clay and silt, but their permeability is low, and there are prone to overtopping.

Wilbraham and Ludlow soils will also be *prone to puddling*, rather than infiltration on the construction site*. Saturation occurs quickly* because the soils are underlain by a *confining layer* of lodgement till or bedrock. In view of the seasonal groundwater expression in several small wetlands in the close vicinity of the proposed array, e.g. the "500 wetland flag series), and the lush understory vegetation, *depth to maximum groundwater* should have been measured at the site of the proposed infiltration basin, in the spring. This is the season when erosion risk is highest, when protective vegetative cover is not well-developed.

Underestimation of Wildlife Habitat Function

The petitioner argues that the proposed site has minimal value for wildlife, because of the low proportion of core forested habitat (more than 300 feet from a forest edge, needed by forest interior birds.) A look at the location of the site in the context of the larger landscape setting (See Figure 2) shows an very large expanse of continuous forest to the west, northwest, and southwest, along West Rock Ridge, but relatively little land with fields and other open habitat. Forest interior birds are just one of multiple different guilds of fauna that can use naturally vegetated Connecticut habitat.

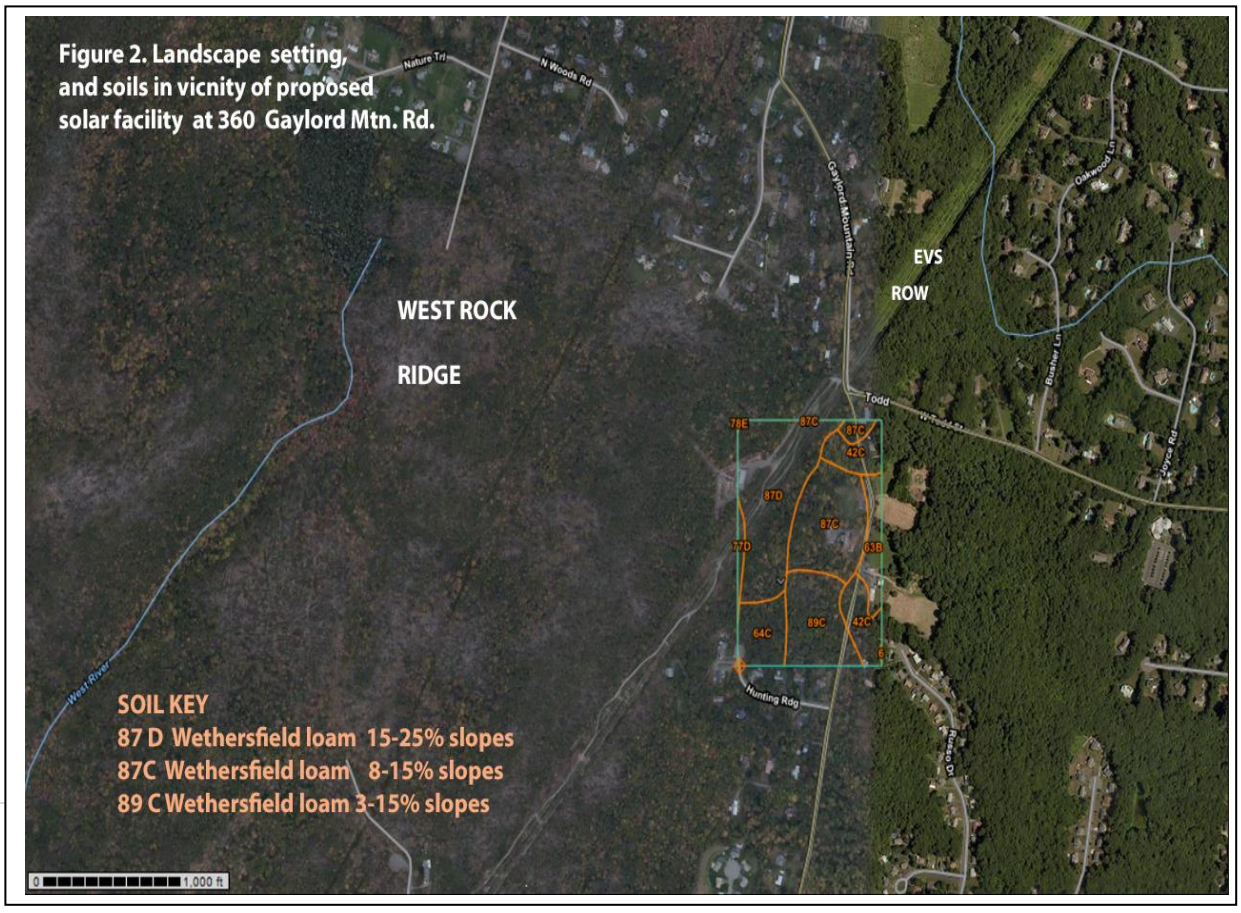
As multiple wildlife specialists know, early successional habitat is indeed valuable ecologically to a suite of declining wildlife species. Forest edges do not lessen the wildlife value of a property; they support a suite of flowering and fruiting species used by birds and insects, not found within core forest – hence all the concern about

gravelling and excessive mowing of utilities rights of way. Disturbed forest edges are, however, vulnerable to colonization by invasives, as noted by Mr. Hudak. Several forest songbirds, like Rose-breasted grosbeak, red shouldered hawk, and gray fox need landscapes with both forested and early successional habitat.

Incidentally, Table 1 on p. 14 of the EA has a serious error, inconsistent with the text: It states that the project will occupy 12.9 acres of early successional habitat and 2.4 acres of forested habitat, whereas the reverse is true.

Underestimation of Scenic value

The scenic appeal of the "backwoods of Hamden" may not have been formalized by placement local roads on a list of scenic highways, but its beauty and potential tourism appeal are undisputed. This section of Gaylord Mountain Road is appreciated more than most since many people come to KayCee Farm (just across the road

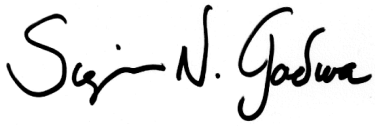


from the proposed facility) to buy maple syrup, and enjoy views of grazing cows and large, spreading sugar maples.

Conclusion

In summary, for all the above-stated reasons, we ask that you not approve this petition. There are many potential sites for solar facilities that are entirely appropriate, such as capped landfills, large mugwort infestations, and roofs of warehouses or industrial buildings, that have gone out of business. Denying this petition would lead to more solar applications with suitable locations.

Respectfully submitted,



Sigrun N. Gadwa, MS, PWS
Plant Ecologist, Professional Wetland Scientist,
Registered Soil Scientist
CARYA ECOLOGICAL SERVICES, LLC

Attachment 1:

EXCERPTS OF TESTIMONY TO CT SITING COUNCIL

BY JOHN HUDAK, ENVIRONMENTAL PLANNING MANAGER

SOUTH CENTRAL REGIONAL WATER AUTHORIT, INTERVENOY

pp. 2 & 3: “Forestlands on the RWA’s water supply watersheds are the first layer of a multi-barrier approach to ensure that high quality drinking water is delivered to our customers.

Forests are the most beneficial land cover for protecting water quality for the following reasons:

• Trees intercept rain and snow before guiding this precipitation to the humus layer of the forest floor, which acts like a sponge. Water is held in the forest floor soil layers, promoting infiltration and uptake by tree roots;

• Forests have very little soil erosion; thus less sediment and nutrients are transported to streams, lakes, and reservoirs; • Forests reduce runoff flow and velocities, further reducing streambank erosion and sediment transport;

• *Forests use nutrients* from soil, atmospheric deposition, and stormwater runoff that *would otherwise help fuel harmful algae blooms in lakes and reservoirs.*

• Forests help mitigate impacts of climate change on water quality, such as moderating stream temperatures and, attenuating runoff from extreme precipitation events. The water quality of lakes and reservoirs is in large part a function of watershed forest cover. The overall cost of treatment necessary to meet state and federal drinking water requirements and customer expectations is generally less for a forested vs. a developed watershed."

pp. 4 & 5

"The solar array site proposed in this application is located on the watershed of Eaton Brook, which flows to the Mill River. From here, the river passes near the RWA's Mount Carmel wellfield before flowing downstream to the Lake Whitney reservoir, both of which are active drinking water sources for RWA customers. The applicant's petition proposes to clear-cut 12 acres of mature forest on land characterized by *steep slopes and highly erosive soil types.* The attached map shows where the various water resources are located."

p. 6: “Soil survey information available from the Natural Resources Conservation Service (NRCS) indicate that site soil types are mostly a mix of hydrologic Class B and C soils. According to the NRCS, infiltration rates generally range from 0.15-0.30 in/hr for Class B soils and 0.05-0.15 in/hr for Class C soils. Attenuation and infiltration of precipitation and runoff in forests are important water quality benefits, and part of the reason that the RWA has invested so heavily in watershed preservation.”

pp. 7 & 8

A. We are opposed to this petition for declaratory ruling based on the following reasons:
7 • The project will result in an irretrievable loss of forestland that protects the affected RWA sources of supply in the Mill River watershed. Even if the solar array is eventually dismantled and abandoned, it is likely that the invasive species presently documented within the adjacent power utility right of way will colonize the site and effectively prevent the regeneration of the forest cover that now exists;

• When considering drinking water source protection, the distinction of forest vs. core forest is immaterial. All forest is valuable in this regard;

• The “site selection process” contained in the petition appears to consider the various alternative sites in terms of real estate market cost, but does not adequately factor the value of the chosen site in terms of ecosystem services, such as the aforementioned benefits to water quality. A former industrial site within the Lake Whitney watershed, which has stood vacant and demolished for at least 12 years, was considered and rejected (100 Skiff Street, Hamden). We believe that a solar array at this alternate site could be designed to have net water quality and environmental benefits;

• We are concerned how the loss of forest cover will affect water quality, water temperatures, and peak flows in Eaton Brook. While

there are no direct water withdrawals from this stream, these impacts could add further stress to the Mill River ecosystem and disrupt the ongoing balancing of interests amongst current watershed development, public water supply needs, and cold-water fish habitat;

•Approval of the petition will set a detrimental precedent and potentially promote and incentivize the destruction of other forestlands now serving to protect drinking water sources used by the RWA and other Connecticut water providers.

P.9 "On September 3, 2019, Governor Ned Lamont issued Executive Order No. 3, which re-established and expanded the membership and responsibilities of the **Governor's Council on Climate Change**, also known as the **GC3**. According to the DEEP's website, the purpose of the [GC3's]Working and Natural Lands Working Group is to evaluate "the role of nature-based solutions (e.g., scaling up the preservation and restoration of forests and coastal wetlands, green and natural infrastructure, agricultural lands) in climate change mitigation and adaptation and how to best incorporate the economic, social, and environmental co-benefits of these solutions into Connecticut's climate change planning strategies."

"The report from the Forests subgroup was released in September for public comment, recommends a no-net loss policy for Connecticut forestlands and strongly discourages the conversion of such lands to solar installations."