



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

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### VIA ELECTRONIC MAIL

August 24, 2018

TO: Parties and Intervenors

FROM: Melanie Bachman, Executive Director *NAB*

RE: **PETITION NO. 1347** – GRE GACRUX 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 16.78-megawatt AC solar photovoltaic electric generating facility located at 117 Oil Mill Road and associated electrical interconnection to Eversource Energy's existing substation at 325 Waterford Parkway North in Waterford, Connecticut.

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Comments have been received from the Connecticut Department of Energy and Environmental Protection, dated August 20, 2018. A copy of the comments is attached for your review.

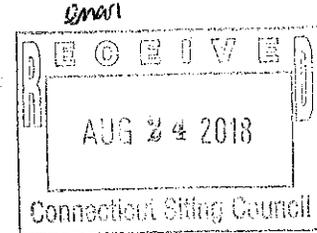
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c: Council Members



August 20, 2018

Robert Stein, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051



RE: 16.78 MW Solar Photovoltaic Electric Generation Facility  
GRE GACRUX LLC  
117 Oil Mill Rd, Waterford CT 06385  
Petition No. 1347

Dear Chairman Stein:

The Department of Energy & Environmental Protection (DEEP) has reviewed the above referenced *Petition for Declaratory Ruling* for the installation and operation of a 16.78 megawatt AC ground-mounted solar photovoltaic electric generating facility and offers the following comments for your consideration.

GRE GACRUX LLC submitted this 16.78 MW project into the Small Scale Clean Energy Request for Proposals (RFP) issued by DEEP. Connecticut solicited and selected renewable energy projects pursuant to Section 1(b) of Connecticut Public Act 15-107, *An Act Concerning Affordable and Reliable Energy* (P.A. 15-107) and Sections 6 and 7 of Connecticut Public Act 13-303, *An Act Concerning Connecticut's Clean Energy Goals* (P.A. 13-303). Bringing grid-scale renewable energy projects on line is an important step forward towards a cheaper, cleaner, and more reliable energy future for the ratepayers of Connecticut. In the most recent legislative session, Connecticut committed to procuring 40% of its electricity from Class I renewable sources by 2030. Connecticut also committed to a mid-point reduction of carbon emissions of 45% below 2001 levels by 2035 on the way to attaining the state's longer term goal of an emissions reduction of 80% below 2001 levels by 2050. Grid scale renewable energy projects are essential to maintaining compliance with these statutory commitments. After reviewing all the projects submitted through the RFP process, DEEP selected the GRE GACRUX LLC project as one of the projects authorized to negotiate a long-term power purchase agreement with the utilities, Eversource Energy and The United Illuminating Company.

#### Site Visit

Field reviews of the site were conducted on June 29, 2018 and July 25, 2018. The parcel is an interior lot accessed by a dirt/gravel road off of Oil Mill Road. The zone for this area is rural residential, RU-120. The property consists of one parcel totaling 152.23 acres. Approximately

90 acres will be utilized for the project. At the time of the site visit a forest harvest was being conducted by the landowner. A plan for the harvest was submitted to the Town of Waterford by a Forester or Supervising Forest Harvester in January 2018 and accepted by the municipality. The Town of Waterford is monitoring the site for wetland impacts and wetland crossings.

The parcels contains wetlands, large bedrock outcrops and steep slopes. During the site visits, DEEP noted the steep topography, which ranges from approximately 100 feet to 250 feet. Discussions with the consultant for the proposed project during the site visit revealed that only cursory soils and geotechnical surveys were conducted, and further borings would be needed to determine constructability of the proposed stormwater detention basins.

### **Stormwater Management**

Construction-related land disturbances of 0.5 acres or larger are regulated in Connecticut pursuant to the Connecticut Soil Erosion and Sediment Control Act under Sections 22a-325 to 22a-329, inclusive, of the Connecticut General Statutes (CGS). Construction-related land disturbances of one (1) acre or larger are also regulated under CGS Section 22a-430 and under Section 402(p) of the federal Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) program. Construction projects involving five (5) or more acres of land disturbance require an individual NPDES discharge permit from DEEP, or may be eligible to register for coverage under DEEP's NPDES General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (general permit). DEEP has issued guidance for construction of solar farms for stormwater management dated September 8, 2017 (attached).

Approximately 90 acres of the site will be cleared for development, which involves clear cutting, grubbing, grading, top soil removal and replacement. Construction is anticipated to take 12 months beginning in spring 2019. The site is proposed to be constructed in 13 phases. The application states that hydroseeding will be done to stabilize each phase, however it does not state what methods will be used during winter, frozen ground conditions or during spring thaw. Given the compressed construction schedule, and that the site is proposed to be constructed in 13 phases, the timeframe does not allow for sufficient site stabilization in between each phase. DEEP has experienced adverse water quality impacts with three recent solar projects due to this type of aggressive construction schedule not allowing for adequate site stabilization and non-compliance with stormwater pollution control plans and other NPDES stormwater permit requirements, which resulted in the issuance of Cease and Desist Orders to those entities. DEEP strongly advises planning for a longer construction schedule to appropriately address each phase with stormwater controls and stabilization methods, and provide time for prompt implementation of corrective actions if needed. Also, since a forest harvest was being conducted by the landowner prior to development, should significant soil disturbance occur as a result of the harvest, DEEP may require site stabilization to be established prior to authorizing the commencement of any construction activities at the site. Such soil disturbances can reasonably be expected to increase soil erosion and sedimentation on and off the site prior to construction. As a component of the permitting process, DEEP may require the applicant to hire an independent third party to oversee and verify compliance with stormwater management requirements during construction.

### **Stormwater Discharge and Infiltration**

In post-construction conditions, smooth surfaces are created through grading and vegetation that were not present in pre-construction conditions, in which there are rocks, depressions and a

variety of vegetation, roots and soils. Those types of pre-construction characteristics can trap, slow down and infiltrate runoff. On the contrary, in post-construction conditions, the smoothed surfaces can increase velocity on the sloped areas of this site. The petition should address potential measures to mimic pre-construction conditions in order to slow water down and allow for infiltration to control stormwater discharge peak flowrates and velocity and total stormwater volume. The petitioner needs to ensure the design factors smooth surfaces, compacted soils, soil types, slopes and bedrock into the calculations for pre-construction, during construction and post-construction design flows, velocities and volume. Also, a detailed geotechnical study of the site should be completed to verify constructability and size of the drainage basins and level spreaders indicated on the site plans.

In addition, removing topsoil from the site creates a loss in organic matter required for plant growth necessary for long term site stabilization. If the topsoil is not replaced or is mixed with subsoil, full vegetation may not occur in a year and could take a few years to stabilize. The applicant should address long term stabilization and site monitoring to fix bare patches by adding topsoil or re-seeding hard to grow areas.

Finally, a road network is proposed along the perimeter on rock outcrops, ledge and steep drop offs. Water runoff on this site will be changing from land overflow to point discharge. Detention basins are proposed along the perimeter to account for the runoff and allow sheet flow with the use of level spreaders. However, these level spreaders are on the property line. The site plans do not show the topography or location of the receiving waters for these level spreaders, and there are no notes indicating how these areas off site will be restored if erosion and sedimentation controls were to fail. Permission may be required from neighboring property owners to allow concentrated discharge onto their property.

### Watershed

The petition lacks recognition of the current hydrologic connections of this proposed development site to the shared watersheds of Stony Brook and Oil Mill Brook, or to their individual water quality assessments. This watershed contains a high water quality stream system as supported by over ten years of water quality data from DEEP, the U.S. Geological Survey, the local Niantic River Watershed Committee, as well as stream macroinvertebrate data, and recent cold and cool water fisheries population and habitat evaluations. The Petition documents do not appear to sufficiently evaluate the proposed stormwater management systems for potential thermal and sediment impacts to downstream aquatic resources or describe any measures to mitigate any such potential adverse water quality impacts.

A DEEP approved watershed-based plan was developed for the full Niantic River watershed in 2006 (Niantic River Watershed Plan), followed by a Guided Summary in 2009. Oil Mill Brook and Stony Brook each are currently assessed as Fully Supporting for Aquatic Life use designation, and a pending 2018 assessment should be available in early fall 2018. Stony Brook and Oil Mill Brook are two of the three main freshwater tributaries that feed into the Niantic River estuary and are classified as Class A waters which have the potential to meet the criteria for drinking water as well as provide fish and wildlife habitat. Stony Brook and Oil Mill Brook are estimated to provide one third of the annual nitrogen load from surface fresh waters entering the nutrient-over enriched estuary. The Niantic River estuary is a DEEP priority coastal embayment for watershed restoration action planning by 2022. A tremendous amount of research, data collection and synthesis into nutrient loading and cycling within the Niantic River

watershed and the estuary connections with Long Island Sound is well documented and is currently supporting the development of that DEEP action plan.

The Niantic River does not currently meet water quality standards because of high levels of indicator bacteria and observed degradation of aquatic life. The *List of Impaired Waters* states that the water quality of the Niantic River is not supporting the aquatic life known to inhabit the estuary. The ecological changes are thought to be caused by excessive nutrients entering the river. Stormwater runoff transports pollutants off land into the many tributaries feeding the Niantic River. Polluted runoff is the greatest water quality management challenge for the Niantic River watershed and it is the most manageable of all potential sources of pollution to the river. One of the key findings in this study was the number of storm sewer outfalls directly discharging untreated water into the Niantic River. Though the location of this project is upstream of the River, it is adjacent to the Stony Brook and Oil Mill Brook tributaries. The site plans provided do not show the topography or location of the receiving waters in the various discharge points along the site. In addition, there is not an opportunity for infiltration in the plans. Stormwater management should be designed so there is not an increase in total volume of water or pollutants leaving the site. Erosion and sedimentation controls should be a priority at this location. Effectively managing nonpoint sources relies on land use management and efficiency of stormwater practices.

#### **Wetlands**

In the Wetland and Biological Assessment Report submitted by the applicant, the soil scientists indicate that the wetlands identified as 1 and 2 are hillside groundwater slope wetlands. These wetlands develop on hillsides where groundwater discharges to the surface as springs and seeps. The soil scientists noted that the seeps are visible in the upland/wetland interface, and that a key feature for water quality is the pronounced bedrock and boulder outcrops where cold, well-oxygenated groundwater discharges from fractures in bedrock. Before upland activities take place such as breaking up the rock outcrops for grading and leveling for construction, the effect on wetland hydrology must be addressed.

#### **Wildlife**

This site does not fall in an existing Natural Diversity Database area, but it is likely this location has never been surveyed. The location of the special concern species, the Eastern ribbon snake, and the biological assessment have been furnished to DEEP's Wildlife Division. The wildlife assessment was generally based on habitat with a focus on vernal pools and not on detailed surveys which may have identified state listed plants, presence/absence of bats or other animals, and state listed insects in the area. Breeding bird surveys were not conducted, though avian species were observed when the biologists were at the site. Given the lack of available information, it is recommended that a comprehensive wildlife survey be conducted at the site.

#### **Core Forest**

State of Connecticut Public Act 17-218, requires DEEP and the Siting Council to consider the impact of certain proposed energy-related projects on the environment, prime farmland or forest land, or agriculture, before allowing them to proceed. The Act's requirements for solar facilities do not apply to facilities that DEEP selected in solicitations issued before July 1, 2017. While this project is exempt from requiring a letter from DEEP that the project will not materially affect the land's status as core forest, impacts to core forest should be addressed in the petition. Core forest is defined as unfragmented forest land that is at least 300 feet from the boundary between forest land and non-forest land, as determined by the DEEP commissioner.

This proposed project site is 150 acres of undeveloped land. The interior area of this parcel would be defined as core forest using the 300 feet from a non-forested area. Land surrounding this parcel is currently undeveloped forestland zoned as General Industrial and Rural Residential 120. As previously noted in the Site Visit section above, at the time of the site visit, a forest harvest was being conducted by the landowner. A harvested area creates valuable habitat and does not diminish the value of the greater core forest. By creating such early succession habitat, many species of Greatest Conservation Need will benefit for more than fifteen years.

**Errata:**

1. Several site plan sheets are missing from the application's grading and site utilities sections (G4, SU 4,7,8,9,11,12).
2. The Landscape notes on page LL-17 of site plans follow typical seeding and planting plans that may not apply to a solar application. For example several of the notes refer to the planting and staking of evergreen and deciduous trees. The applicant should clarify if trees are scheduled to be re-planted on the site without potentially shading panels.
3. The Site Work, General Notes section (GN-1) states the agent from the Town of Waterford is responsible for marking the clearing limits. The Town of Waterford does not have jurisdiction over this project. The applicant and contractors are the responsible parties. While these notes could apply to a variety of construction projects, they should be revised to the specific construction for solar projects. There is no mention of the use of a tackifier or erosion control blankets with site stabilization methods, and note #32 on how the wetlands are marked in the field is incomplete.
4. Cover page, Volume 1, states Watertown instead of Waterford
5. Cover page for Appendix E is the Stormwater System Operation and Maintenance Plan, but the plan is labeled as Appendix F.
6. Appendix F states water quality volume and release rates have been omitted from this report due to lack of impervious surfaces. This requires further explanation due to the rock/ledge on site, existing gravel roads and proposed improved gravel roads, as well as creating smooth surfaces in post-construction, and accounting for soil compaction during construction.

Thank you for the opportunity to review this project. If there are any questions regarding these comments, please contact me at 860-424-3739 or [Linda.Brunza@ct.gov](mailto:Linda.Brunza@ct.gov) if there are any questions.

Respectfully yours,

*Linda Brunza*

Linda Brunza  
Environmental Analyst

**Cc: Robert Klee, Commissioner**

## **Stormwater Management at Solar Farm Construction Projects September 8, 2017**

Solar farms are on-the-ground installations of arrays of photovoltaic cell panels, supporting structures and related equipment for the production of electricity. As with other types of construction projects, the construction of solar farms can involve land clearing, grading, excavation, trenching, dewatering and similar activities that create land disturbances which potentially result in soil erosion and sediment discharges polluting wetlands, streams and other surface waters. Construction-related land disturbances of 0.5 acres or larger are regulated in Connecticut pursuant to the Connecticut Soil Erosion and Sediment Control Act under Sections 22a-325 to 22a-329, inclusive, of the Connecticut General Statutes (“CGS”). Construction-related land disturbances of one (1) acre or larger are also regulated under CGS Section 22a-430 and under Section 402(p) of the federal Clean Water Act and the National Pollutant Discharge Elimination System (“NPDES”) program. Prior to the start of such regulated activities, authorization is required from local authorities and, for larger projects, the Connecticut Department of Energy and Environmental Protection (“Department”). Construction projects involving five (5) or more acres of land disturbance require an individual NPDES discharge permit from the Department, or may be eligible to register for coverage under the Department’s NPDES General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (general permit).

The Department has encountered repeated problems associated with solar farm construction projects covered under the general permit, from the registration process through construction activities. Although in no way an exhaustive list, the following are common problems associated with solar farm general permit registration applications and ways to address such problems:

- Applicants have been submitting registration applications that lack the requisite information or the requirements necessary for authorization under the general permit. The Department requires a complete and sufficient application when a registration application is filed, and may reject any registration application it deems to be incomplete or insufficient.
- Applicants are not adhering to the sixty (60) day/ninety (90) day time frame for Department review as required by Section 3(c) of the general permit. While the Department has on occasion shortened the review timeframe, Applicants are expected to allocate no less than the requisite time frame for the registration application review process and must plan accordingly.
- Registration applications for solar farm projects often fail to identify the project’s contractor and sub-contractors. Section 5(b)(1)(viii) of the general permit mandates that this information be included in the registration application.

- Applicants have been repackaging the Siting Council submittal, which is not acceptable. Section 3(c)(2)(D) of the general permit mandates that the application submittal include only materials required to support the Stormwater Pollution Control Plan (“SWPCP”). This information must be up-to-date and accurate. Any superfluous information delays the registration application review process.
- SWPCPs for solar farm projects are often lacking sufficient detail and information. An approvable SWPCP shall include, but not be limited to, the location of all erosion, sediment and stormwater control measures including detailed design cut sheets with supporting calculations, construction means and methods, project phasing (i.e., site planning, pre-construction, construction, and post-construction stabilization, etc.), construction sequencing and a construction schedule.
- The Applicant’s design professional must be well-versed in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (“E&S Guidelines”), specifically the techniques found in Chapter 4, Large Construction Sites, the 2004 Connecticut Stormwater Quality Manual, as well as *current* best management practices (BMPs) recognized by the International Erosion Control Association (IECA), provided such BMPs are equal to or better than the E&S Guidelines.
- From the Department’s perspective, an approvable SWPCP will include methods for avoiding compaction of soils, disconnection and reduction of runoff associated with solar panel arrays, avoidance of concentration of stormwater, and other measures necessary to maintain or improve pre-construction hydrologic conditions.
- Applicants need to follow the SWPCP review checklist when preparing the SWPCP, giving specific attention to post-construction stormwater controls and the development of a detailed long-term maintenance plan to ensure that the SWPCP meets the terms and conditions of the general permit.

Subsequent to authorization for coverage under the general permit, the Registrant is responsible for ensuring compliance with all terms and conditions of the general permit and the approved SWPCP once construction has been initiated. However, for solar farm projects, Registrants often fail to comply with the terms and conditions of the general permit, including the approved SWPCP. In particular, Department staff have observed the following issues that a routine inspection protocol and proper oversight, as required under the general permit, would have prevented, including but not limited to:

- pre-construction site planning and management deficiencies (e.g., existing vegetation, scheduling, training, phasing/sequencing, tree protection, etc.)
- ineffective placement, maintenance, and/or repair of administrative/procedural, vegetative, and structural BMPs (e.g., erosion, sediment and stormwater runoff controls, good housekeeping, materials management, and training)
- lack of thorough inspections
- ineffective or untimely corrective action
- ineffective stabilization practices
- ineffective permanent post-construction controls (i.e., store, treat and direct stormwater quality and quantity to pre-construction levels)

Such issues at solar farm construction projects raise concerns, since such projects often create areas of land disruption larger than the generally accepted BMPs of five (5) acres anticipated under the general permit. As a result, any applicant seeking coverage under the general permit

for a solar farm construction project should take care to address the issues noted above. While by no means exclusive, some recommendations that should be incorporated into a SWPCP to address these issues include:

- Ensuring that only a Professional Engineer and/or Landscape Architect, as defined in Section 2 of the general permit, who meets the qualifications described in Section 5(b)(4)(A)(ii) and who has been approved in writing by the Commissioner, serve as the Commissioner's agent to inspect the site and also serve as the qualified inspector for the purposes of Section 5(b)(4) of the general permit ("authorized professional"). Such authorized professional must remain in good standing with the Connecticut Department of Consumer Protection and be technically and ethically qualified to inspect the site and be retained for the duration of the construction project until the Notice of Termination acceptable to the Commissioner has been filed as described below.
- Ensuring that the authorized professional prepare a proposed inspection checklist to assure the construction project is being conducted in compliance with the terms and conditions of the general permit, and the approved SWPCP is implemented in accordance with the general permit. The inspection checklist shall comply with Section 5(b)(4)(B)(iii) of the general permit, and include a space for the authorized professional's signature and professional stamp.
- Ensuring that the credentials for the authorized professional proposed by the Applicant and the proposed inspection checklist prepared by such authorized professional be submitted for the review and approval of the Commissioner and be included with the registration application for the general permit. No other professional may serve as the authorized professional without the prior submittal of relevant credentials and inspection checklist for the Commissioner's review and written approval.
- Ensuring that the authorized professional personally perform all pre-construction, construction, and post-construction site inspections; perform inspections at the end of any storm event whether or not such storm generates a discharge; and prepare and submit all inspection reports including the supporting inspection checklists in compliance with Sections 5(b)(4)(A) and 5(b)(4)(B) of the general permit.
- Ensuring that the authorized professional report any violations of the terms and conditions of the general permit or the SWPCP to the Commissioner's designee within two (2) hours of becoming aware of such violation, or at the start of the next business day of becoming aware of such violation outside normal business hours and shall, within five (5) days, prepare and submit a signed and stamped written report, which documents the cause of the violation, duration including dates and times, and corrective action taken or planned to prevent future occurrences.
- Ensuring that if circumstances necessitate a revision to the SWPCP, the authorized professional works with the Permittee's design professional to ensure compliance with the terms and conditions of the general permit, and any such change to the SWPCP shall be submitted for the review and written approval of the Commissioner.
- Ensure that the authorized professional reviews all stormwater monitoring reports to evaluate the effectiveness of the SWPCP and to document any adverse impacts that any stormwater controls on the construction site or discharges from the construction site may have on wetlands, streams, any other receiving waterbodies. Such evaluation shall be documented in the inspection reports and inspection checklists performed pursuant to Section 5(b)(4) of the general permit.

- Ensuring that, in the event the authorized professional identifies a violation of the terms and conditions of the general permit, the SWPCP, or otherwise identifies adverse impacts on wetlands, streams or any other receiving waterbodies, that construction activity shall immediately cease and the site stabilized until such violation or adverse impacts have been corrected.
- Ensuring that reporting and record-keeping of all inspection checklists and inspection reports comply with the requirements of Section 5(d) of the general permit, except that a copy shall also be submitted electronically to the Department within ten (10) days from the date such inspection was performed.
- Ensuring that all inspection checklists and inspection reports comply with the requirements for Certification of Documents in Section 5(i) of the general permit, including the requirement that such checklists and reports shall also be prepared, stamped and signed by the authorized professional.
- After completion of a construction project, ensuring that a Notice of Termination is filed in compliance with Section 6 of the general permit, including the requirement that such Notice of Termination be stamped and signed by the authorized professional certifying that such authorized professional has personally inspected and verified that the site has been stabilized following the first full growing season (i.e., April through October) in the year following completion of the construction project.
- Ensuring that any transfer of the registration comply with the requirements of Section 5(m) of the general permit.

These recommendations are by no means intended to be exclusive. To help address the issues noted above, the Commissioner will also be considering the posting of a performance bond or other security, in accordance with Section 22a-6(a)(7) of the Connecticut General Statutes, to assure the solar farm construction project maintains compliance with the terms and conditions of the general permit and the SWPCP.