August 20, 2020
Mr. David Rathbun, Chairman
Stonington Planning & Zoning Commission

Mr. Keith Brynes, Town Planner
Town of Stonington
52 Elm Street
Stonington, CT 06378

Greenskies Clean Energy LLC ("Greenskies") appreciates this opportunity to reply to the comments on its Elmridge Project made by the Town of Stonington's Planning and Zoning Commission as well as the comments Greenskies received from the Town's engineering consultant. For ease of review, each comment from the Town (in italics) will be responded to in order below.

It is our hope that these responses are satisfactory to the Town and address all of the Town's concerns. If that is not the case, please contact me at (203) 270-1398 to discuss any issues that remain.

Groundwater Concerns:

Perhaps the Commission's primary concern is the project's potential impact on the Town's groundwater resources. The site is partially located in the Town's Groundwater Protection Overlay District due to its location over the aquifer in the area of Anguilla Brook. This aquifer is the emergency supply for the Westerly Water Co. which provides drinking water for much of the eastern half of Stonington, as well as the Town of Westerly, RI.

The Commission's greatest concern is the emerging issue of the class of chemicals known as PFAS. PFAS are a class of chemicals with unique properties that impart oil and water repellency, temperature resistance and friction reduction to a wide range of products used by consumers and industry. We understand that certain solar panels may have protective coatings that could contain one or more PFAS. EPA has recognized this issue and is carefully reviewing it. According to Andy Gillespie, Associate Director for Ecology at EPA's National Exposure Research Laboratory, "There's literally so many thousands of these compounds, and we don't have methods to measure most of them. So, we are getting up on the research, and trying to figure out ways of identifying what's out there." (Source: EPA Confirms GenX-Related Compound Used in Solar Panels, Dan Way, Carolina Journal, 8/27/18). Connecticut DEEP and DPH are also conducting ongoing research regarding potential impacts from PFAS.

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

Area residents and the Town are concerned with the general lack of knowledge by the applicant, the CTDPH, the CTDEEP and the EPA as to how PFAS related chemicals could leach into the groundwater and potentially impact water quality in these wells. The domestic water source for several nearby abutting residential properties are private wells. These questions require further review and study before any additional Solar Generating Sites are approved over sensitive aquifers or in such close proximity to residences served by domestic wells.

Should the Siting Council decide to approve this Petition, we urge the Council to receive verification from the applicants that panels selected at this location are free of PFAS and/or other hazardous materials that could leach into the groundwater over the course of their use. Groundwater testing for related contamination should also be instituted to assure that this resource will not be harmed and that any discovered contamination can be mitigated as soon as possible.

Response:

The selected panel and comparable models are primarily comprised of glass, silicon and aluminum. The main components are: mono- or polycrystalline silicon solar photovoltaic (PV) cells; toughened, tempered glass with an anti-reflective, textured surface; aluminum frame and encapsulation layer used to hold the cells in position during fabrication. The proposed model panel is bifacial and, therefore, does not contain a back sheet. All layers of materials are contained and sealed within the glass panels. A junction box containing diodes and connectors is also part of the panel.

Greenskies contacted the manufacturer to inquire about materials and components of the selected panel/module and comparable models. As confirmed by Canadian Solar, the selected modules and/or comparable products DO NOT contain PFAS or any derivatives. Such chemicals are not used in the manufacture of any Canadian Solar modules or the selected module type. According to a company representative, PFAS are only used in plastics that might be contained in some flexible modules, which the proposed (and comparable) panels are not. Exhibit A contains correspondence reflecting the fact that PFAS are not used in this module type.

In addition, and according to Canadian Solar, selenium, cadmium, arsenic or heavy metals (other than lead) are not contained within the selected or comparable modules. Lead is present in soldering paste, typically used to connect cells together within the panel. Using the USEPA Toxicity Characteristics Leaching Procedure (TCLP) for sample preparation, Canadian Solar had solar panels analyzed for a full range of organic and inorganic compounds. TCLP is an extraction method for chemical analysis employed as a method to simulate leaching through a landfill from a module/panel that has

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

been crushed, compacted and/or pulverized, not from normal operating conditions or anticipated, potential accidents such as storm damage. Results showed one detection of Lead, below the Maximum Contaminant Level for drinking water. All other results were "non-detects." The toxicity report is provided as Exhibit B.

It is also important to note that the selected panels and comparable models are UL1703 certified. The UL 1703 Standard for Flat-Plate Photovoltaic Modules and Panels is the industry standard for safety and performance. It is not only the gold standard for safety in the U.S, it's the basis for the IEC 61730 document, which is the international safety standard. To receive this certification a comprehensive testing protocol is implemented for components and materials in everything from the frame and junction box to the connectors and wiring. Such testing includes temperature, corrosivity, degradation and breakdown during normal operating conditions, as well as testing for exposure to rain and water.

Other Environmental Concerns:

The Commission urges the Siting Council to assure that there will be no harm to any potential vernal pools on this site or on the adjacent Stonington land Trust properties to the south off North Anguilla Rd.

Response:

During the course of Project environmental consultant's wetland and watercourse delineation, two potential vernal pools were identified within the boundaries of Wetland 1 and Wetland 2. Identifying potential vernal pools is a routine component of a wetland functional assessment. Outside of a breeding period (March – June), potential habitat areas are identified based on morphologic indicators, such as depressional shape or evidence of water marks revealing persistent standing water.

To verify the presence of absence of vernal pool habitat, the two areas were studied multiple times during Spring of 2020. The direct observations revealed that neither area provided vernal pool habitat. Neither depression displayed the hydroperiod necessary to support amphibian development. Therefore, no vernal pools exist within or immediately adjacent to the Project Area and no potential to impairment to these areas will result from the project.

Given the large forest and variable hydrology within the Anguilla Brook floodplain, vernal pools may be present south of the western project area. These areas were not directly observed during the Spring 2020 evaluation, nor have specific locations of documented off-site vernal pools been provided to the

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

proponent. Nonetheless, the proposed solar project does not demonstrate the potential to affect potential offsite habitat areas either.

This determination is based on the avoidance of forest disturbance. Forested areas provide preferred terrestrial habitat for wetland obligate amphibians, while manicured turf, where the project is proposed, does not. Manicured turf lacks the structural complexity of a duff layer to provide necessary habitat requirements. Therefore, by concentrating the solar project within existing turf area, impacts to potential vernal pools are prevented.

The small area of forest disturbance associated with the project is east of North Anguilla Road, located at a significantly higher elevation than any adjacent wetlands and located a significant distance away from any potential off-site depressions. Therefore, this clearing does not demonstrate potential to affect off-site vernal pool habitat.

See the Vernal Pool Impact Assessment memo provided in Appendix I of Petition #1410.

The applicant shared a closure plan for the project in the event it is abandoned when the land lease expires in 20 years. The applicant, and any successors to the lease, should be required to provide the Town with a Performance Bond insuring the property and full completion of the closure plan. Bonding should include the cost of remediation for any required soil and water contamination issues caused by the project.

Response:

The land lease option and lease agreement executed with landowner provides that Petitioner shall provide landlord reasonable removal security (e.g. bond, cash deposit, other comparable form) in an amount that would cover removal/decommissioning of the proposed solar facility. Moreover, because the Project is being permitted by the Connecticut Siting Council, rather than by bodies of the Town, any additional bond that may be required should be required by the Siting Council, not the Town. Should the Siting Council deem it prudent to have a decommissioning bond, Greenskies will be happy to provide one. Greenskies would point out, however, that no such bond is required of the golf course that is currently on the site, despite the course's use of herbicides, pesticides, fungicides, fertilizers and other chemicals.

The proposed project is located within an aquifer protection area, and as such, construction, operation, and maintenance should follow written Best Management Practices for such areas.

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

According to the Town of Stonington Zoning Atlas, the West Project site is located within a mapped Groundwater Protection Overlay District (GPOD). Groundwater beneath the entire Project site is not designated through CTDEEP's ground water classifications for drinking water or as an Aquifer Protection Area. Petitioner will follow Best Management Practices during construction, operation and maintenance of the solar facility should approval be obtained.

Environmental items considered "chemicals" that might be used on the site would include PVC glue for use with electrical conduit installations and carbon-based fuels for vehicles and equipment. It is anticipated that there will be less than one gallon of PVC glues and less than 25 gallons of fuel stored on-site. All flammable liquids will be kept in code compliant cabinets and containers. Spill kits will be in all vehicles and equipment on-site and daily monitoring of chemical usage will be managed to ensure compliance to requirements. No risk of release to the environment is anticipated.

Petitioner will also comply with the Stormwater Construction Waste Management Plan provided in Section 7.0 of the Stormwater Report, which is included as Appendix L of the Petition. The plan includes protocols for spill prevention and control, good housekeeping, and product-specific practices, to name a few.

Plans should address the following issues related to stormwater management that were raised by the Town's engineering consultant, CLA Engineers (comments enclosed):

- *Additional detail should be provided in the Erosion and Sedimentation Control Narrative, Construction Sequence, and Schedule.*
- *There will be large areas of exposed soil. Disturbed areas should be stabilized weekly.*
- *Additional erosion and sedimentation control measures should be provided upgrade of the Stormwater Management Basins at intervals to prevent stormwater concentration.*
- *Erosion and Sedimentation supplies should be maintained onsite for emergency or repair use.*
- *Copies of the plans submitted to CTDEEP as part of the General Permit Registration for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities should be provided to the Town.*
- *The Town should be notified of construction start.*
- *Stormwater Management Basins have been proposed at the low points in the solar array areas. These basins will be the first items constructed as outlined in the construction sequence and will function as sediment traps/basins. Sizing calculations have not been provided to indicate that there is adequate storage*

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

volume in the basins for this use in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

- *Portions of the down grade sides of the basins will be berms constructed of fill materials of varying heights. There does not appear to be a berm cross section detail or material specified for berm construction. Fill berms have been prone to failure in these types of situations. Cross section details and material specifications should be provided.*

Response:

See responses to CLA Engineers, Inc. comments 1. through 11., below, at the end of this document.

Visibility Concerns:

The design, scope and siting of visual mitigation appears to have only considered a minimalist approach. Stonington residents deserve a more complete study before this application, and the considerable visual intrusion it causes to abutters, is considered for approval. The Commission requests enhances screening and landscaping from adjacent residential properties.

The applicant presented various visual renderings from several perspectives but did not include renderings or adequate visual screening for abutting properties on Fairway Court. This is a deficiency that requires further study and mitigation. Fairway Court residents deserve a response to their concerns before any action is contemplated on this project proposed site.

Response:

As noted in Section 6.12.2 of Petition #1410, as a good will gesture, Petitioner chose to assess private views from abutting properties, which are not part of the public view sheds within the proposed Project's surrounding area. The southern end of the East Project area will be most visible from the property lines at 5 and 6 Woodland Ct., which are approximately 190 ft. from the proposed fence line and 217 ft. from the nearest row of panels. Although these are private views, Petitioner selected these locations for visual simulations.

The northeastern property line at 5 Fairway Ct./northwestern property line of 6 Woodland Ct. is approximately 380 ft. from the southeast corner of the Project area fence line and 450 ft. from the nearest module, since there is a turnaround inside the fence. The northwestern property line at 5 Fairway Ct./northeastern property line of 6 Fairway Ct. is approximately 750 ft. from the southeast corner of the Project fence line and > 800 ft. to the nearest module. Due to the distance from the Fairway Ct. residences, Petitioner chose to not provide visual simulations.

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

Greenskies believes what was has been designed is more than sufficient to screen the solar array. Moreover, consistent with our development philosophy, as a goodwill gesture to our neighbors, Greenskies has tried to request specific input on screening from the neighbors of the Project. The petitioner has not received any specific requests for additional screening from neighbors but would consider such requests if they were provided. Moreover, Greenskies is willing to develop specific conceptual renderings and work with neighbors on plans for additional screening, either on the Project site or at their property lines.

The Commission requests that the applicants more fully explore alternative locations on the 245-acre Elm Ridge Golf Course property, including those closer to Rt. 95 with minimal visual impact to residences. There are several alternative areas on the golf course which could have been utilized for the proposed Solar Field installation. These alternate sites would allow for a far lesser visual and environmental impact on abutting properties. The applicant cited wetlands as a reason for not pursuing these sites. The mere existence of wetlands on the northern portion of the golf course is an insufficient reason to discount its potential value as an alternative to the proposed siting concept. Alternative locations on the golf course should be fully explored at the local level before this application is considered by the Siting Council.

Response:

The petitioner has conducted an extensive review of all alternative areas and the Project is designed in the only way possible to meet capacity requirements of the generation contracts, not adversely impact any environmental attributes, not impact public views, fit the needs of the golf course owner, and be as considerate as possible to the neighbors.

While the landowners/Rusticis continue to try to maintain the existing golf course use, economic realities threaten the vitality of the family's business. Maintaining the 27-hole golf course and driving range has become an increasingly challenging task. Greenskies intends to lease from the Rustici family available, developable land within which the Project site so that such land will remain with the Rusticis. The income generated by the Project lease will allow the Elmridge Golf Course to continuing operating in the near future with an 18-hole configuration and driving range, available as a public recreational facility.

The land north of Elm Ridge Road is not available to lease for the proposed Project from the landowner, who has determined the new design for the golf course.

The only alternative layout included 2 MWs (AC) on the West Project area off North Anguilla Road and 1 MW (AC) on the east side of North Anguilla Road. Due to delineated wetlands to the south and west on the West Project parcel, and

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

the associated 100-foot upland buffer/setback area, locating 2 MW in that area would have wetland impacts that the developer believes should be avoided. The layout was revised to locate 1 MW AC on the West Project parcel and 2 MWs AC on the East Project parcel.

CLA Engineers, Inc.- Comments and Responses from Greenskies:

1. *Additional detail should be provided in the Erosion and Sedimentation Control Narrative, Construction Sequence, and Schedule.*

   Given the scope of construction for this project, we believe the notes and details on Sheet SD-1 provides the necessary guidance and requirements for the preparation, installation and maintenance of sediment and erosion controls. In addition, the notes on Sheet SD-1 also provide requirements for grading, placement of topsoil and vegetative cover (both temporary and permanent) for stabilization. Lastly, the construction sequence and schedule is subject to change based on approvals for this Project and requirements of permit conditions. This information will be finalized prior to construction, and Greenskies is happy to provide the Town with the construction set designs, erosion and sedimentation control plan, and storm water permit for review once they are complete.

   Additionally, if there are specific questions at this time, we would be happy to address them.

2. *There will be large areas of exposed soil. Disturbed areas should be stabilized weekly*.

   Approximately 3.8 acres of the west site will be disturbed as a result of construction of the west facility. All other areas will remain undisturbed and will be over-seeded with a conservation seed mix. Likewise, for the east site where approximately 2.3 acres will be disturbed as a result of construction. As required by Appendix I of the CT DEEP Stormwater General Permit for construction, for sites with slopes greater than or equal to 8%, erosion control blankets or stump grindings or erosion control mix mulch or hydroseed with tackifier shall be applied within 72 hours of final grading, or when a rainfall of 0.5 inches or greater is predicted within 24 hours, whichever time period is less. Petitioner will comply with these requirements. The intent is to stabilize all disturbed slopes prior to PV racking installation as outlined in the construction sequence and schedule. All routine and compliance inspections under the CT DEEP General Permit will be performed, as required. Routine inspections occur weekly and site stabilization is one of the items reviewed regularly.

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

3. *Additional erosion and sedimentation control measures should be provided upgrade of the Stormwater Management Basins at intervals to prevent stormwater concentration.*

   Sections of compost filter tubes (CFT) will be added upgradient of the stormwater basins as necessary below areas to be graded.

4. *Erosion and Sedimentation supplies should be maintained onsite for emergency or repair use.*

   Erosion and sedimentation control materials will be readily accessible by the site contractor for necessary repairs or maintenance of controls until full stabilization of the site is achieved.

5. *Copies of the plans submitted to CTDEEP as part of the General Permit Registration for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities should be provided to the Town.*

   Copies of the final CT DEEP SWGP registration can be provided at the Town's request. Petitioner is willing to provide electronic files of all submission documents.

6. *The Town should be notified of construction start.*

   A pre-construction meeting will be held with Town officials prior to construction of this project.

   All Town officials have had the opportunity to review site plans, Petition #1410, and supporting documentation. As is standard practice in the development of solar energy facilities, Greenskies will coordinate with Town emergency response personnel prior to completion of construction, or as desired by the Town. Appropriate personnel will have the opportunity to review all civil and electrical plans and before bringing the project online. Greenskies will do a site walk with such staff to identify equipment, signage and system components, should the Town so desire.

7. *Stormwater Management Basins have been proposed at the low points in the solar array areas. These basins will be the first items constructed as outlined in the construction sequence and will function as sediment traps/basins. Sizing calculations have not been provided to indicate that there is adequate storage volume in the basins for this use in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.*

   A sediment storage analysis was prepared for the temporary condition during construction. The results of the analysis show that there is adequate storage

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

volume in both stormwater basins below the weir notch of the outlet weir walls for the temporary condition. A copy of the sediment storage analysis is attached.

8. *Portions of the down grade sides of the basins will be berms constructed of fill materials of varying heights. There does not appear to be a berm cross section detail or material specified for berm construction. Fill berms have been prone to failure in these types of situations. Cross section details and material specifications should be provided.*

   During the DEEP SWGP pre-application meeting, DEEP requested a review of the stormwater basin design including the proposed berms by the Dam Safety Division. As a result of this review, it was determined that proposed stormwater basins would be assigned a hazard classification of "AA", which classifies the structure as a negligible hazard potential dam. As such, Petitioner is not required to obtain a dam construction permit from the CTDEEP Dam Safety Program. Cross section details and material specifications will be provided in the construction plan set, as is typical in the development process. Such specifications are based on final grading, as approved in permit plans.

9. *It appears that Stormwater Management Basin #2 may require a CTDEEP Dam permit due to the height of the fill berm and the impounded volume.*

   See response to #8, above.

10. *Test pits were excavated in the vicinity of each Stormwater management Basin. The test pit logs include "water observed at depth" line items. It appears that these depths are water observed at the time of excavation and may not reflect the seasonal high groundwater depths. The drainage calculations assume that there is no standing water in the Stormwater Management Basins. It appears that there is potential for standing water in Stormwater Management Basin #2 based on the elevation proposed, this would impact available storage for the proposed peak flow mitigation.*

    Test pits were conducted in early April 2020 after a wet late winter and spring of 2020. We believe the groundwater depths as observed on the date of the test pits approximates seasonal high ground water. Additionally, no mottling was observed in the test pit walls above the observed groundwater depth that would otherwise indicate seasonal high ground water.

11. *The west site is entirely within the Town Groundwater Protection Overlay and a portion of the east site lies within the Overlay. During construction, equipment refueling should take place outside of this Overlay area or if refueling must take place within this Overlay area suitable portable spill containment measure be provided.*

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

Section 7.0 of the Stormwater Construction Waste Management Plan of the Stormwater Management Report, dated May 28, 2020 and provided in Appendix L of Petition #1410, outlines requirements with respect to waste management of hazardous products. Requirements for equipment refueling will be added to the waste management plan to ensure that refueling will not take place in the Overlay, or if it must take place within the Overlay, suitable spill containment measures will be present.

Sincerely,

Gina L. Wolfman

Gina L. Wolfman
Senior Project Developer/
Permitting Specialist

cc: L. Hoffman (Pullman & Comley)

127 Washington Ave., West Bldg., Lower Level
North Haven, CT 06473

Sediment Storage Analysis

Elmridge Golf Solar
Proj No. 6763-10
By: MRG
Date/Rev: 8/13/2020

Reference: 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, Chapter 5-11

WEST SITE - Stormwater Basin 1

1. Temporary Condition - Construction

DA	4.3	
a[1]	30	Fig SB-1
DR	0.4	Fig SB-12
TE	0.8	
y	90	Fig SB-2
V	0.0211	Ac-FT/Yr
	917	CF
	4,371	Total volume below weir notch (CF) SWB-1

OK-Min Sediment Storage Provided

Notes
1. Six month construction duration, 80% site disturbance, and assume 9 months for stabilized site 50x0.8x9/12=30 ton/ac

2. Permanent Condition Stabilized Site

DA	4.3	
a	1	
DR	0.4	
TE	0.8	
y	90	
V	0.0007	Ac-FT/Yr
	31	CF

EAST SITE - Stormwater Basin 2

1. Temporary Condition - Construction

DA	8.8	
a[1]	10	Fig SB-1
DR	0.4	Fig SB-12
TE	0.8	
y	90	Fig SB-2
V	0.0144	Ac-FT/Yr
	626	CF
	6,213	Total volume below weir notch (CF) SWB-2

OK-Min Sediment Storage Provided

Notes

1. Six month construction duration, 25% site disturbance, and assume 9 months for stabilized site 50x0.25x9/12=30 ton/ac

2. Permanent Condition Stabilized Site

DA	8.8	
a	1	
DR	0.4	
TE	0.8	
y	90	
V	0.0014	Ac-FT/Yr
	63	CF