

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
SOMERS SOLAR CENTER, LLC PETITION	:	PETITION NO. 1042
FOR A DECLARATORY RULING THAT NO	:	
CERTIFICATE OF ENVIRONMENTAL	:	
COMPATIBILITY AND PUBLIC NEED IS	:	
REQUIRED FOR THE CONSTRUCTION	:	
AND OPERATION OF A 5.0 MWAC SOLAR	:	
PHOTOVOLTAIC PROJECT LOCATED AT	:	
458 & 488 SOUTH ROAD, SOMERS,	:	
CONNECTICUT	:	MAY 8, 2014

**RESPONSES OF SOMERS SOLAR CENTER, LLC TO
CONNECTICUT SITING COUNCIL
INTERROGATORIES – D&M REVISION: TREE CUTTING**

On March 25, 2014, the Connecticut Siting Council (“Council”) issued Interrogatories – D&M Revision: Tree Cutting to Somers Solar Center, LLC (“SSC”) in connection with the above-captioned proceeding.

General Comment

As discussed in response to Question No 19 below, the proposed tree removal option was selected as the most complete and cost effective way to reduce the shading potential over the long term. It was also the selected method because initially, SSC did not anticipate that the tree clearing would have a significant adverse effect on the wetlands and watercourse on site. Based on the Council’s questions and its obvious concerns related to the tree clearing option presented in the revised D&M Plan, SSC has considered and is willing to move forward with an alternative approach.

As an alternative to tree clearing, SSC proposes to simply remove the tops of the white pines in Area #1 at a height equivalent to the surrounding deciduous trees. Leaving the live trees

in place allows SSC to maintain, intact, the existing tree canopy. All tree topping operations would be conducted from outside the wetlands and all debris, branches and tree tops would be removed from the site, thereby eliminating any potential for impacting on site wetlands and watercourses.

Notwithstanding SSC's willing to pursue this alternative approach, the following interrogatory responses are provided below.

Question No. 1

When was the "shading" study of the property on which SSC's project is located completed? To what extent were the results of the "shading" study used to determine the layout of the project's solar panels?

Response

SSC's consultant, Kleinfelder, performed a shade analysis on November 13, 2012, which was submitted to the Council in connection with SSC's January 4, 2013 interrogatory responses in this proceeding. *See* Responses of Somers Solar Center, LLC to Connecticut Siting Council Pre-Hearing Interrogatories (Jan. 4, 2013), Response to Question No. 14, Exhibit B ("November 2012 Analysis"). The November 2012 Analysis was a general analysis, approximating the solar potential on the site. Although the November 2012 Analysis was consulted during the design of the project, due to varying system requirements and material availability, the system layout could not avoid all shade.

A second shade analysis was done during the construction of the project and was completed on August 28, 2013 ("August 2013 Analysis"). Because the project array was largely in place at the time, the August 2013 Analysis could more accurately account for how the shade around the site would affect the output of the system. However, because the majority of the

project was installed at the time of the August 2013 Analysis, the array layout could not be modified.

Question No. 2

Provide a map showing how the shading patterns of the project property affect the solar panel arrays.

Response

Attached is the Shading Map from the August 2013 Analysis, which shows how the shading patterns of the project property affect the solar panel arrays.

Question No. 3

How many panels are affected by the shadowing? What percentage is this of the total number of panels? Has the position, number or type of panels been changed since the original D&M?

Response

The project layout is substantially the same as submitted in the original D&M Plan. However, the Area D layout was slightly modified to provide additional setback from an oak tree.

It is difficult to precisely state the number of individual panels that are affected specifically by shade. Solar panels are wired in strings of ten (10) at the project site so, if one module in that string is shaded, it affects the entire string. Compromised strings then affect the way the inverters pull power from the entire array as inverters deploy algorithms to pull as much energy from the solar panel modules as possible. Shaded strings, when paired with unshaded strings, skew the effectiveness of the inverters algorithm; thus, forcing the inverter to operate less efficiently. As a result, all of the 23,150 solar modules on the site are impacted by site shading

to some extent.

Question No. 4

What is the decrease in total potential energy output caused by the shadowing?

Response

The overall site production is decreased by approximately five percent (5%) due to shading. The forecasted energy output of the site is 10,226 megawatt hours (“MWhs”) per year, so a 5% loss to shading is equivalent to a loss in output of approximately 511.3 MWhs per year. The value of that energy is roughly \$112,486 per year, and, pursuant its contractual obligations for the project, the potential penalty to SSC as result of this reduction is approximately \$1,702,629.

Question No. 5

Have alternative mitigation measures such as relocation of the solar arrays been investigated?

Response

Other mitigation measures were explored. Unfortunately, the cost to implement those alternative measures exceeds the potential losses and penalties described in response to Question No. 4. Selectively removing trees was determined to be the most cost effective solution.

Question No. 6

The "Technical Memorandum" includes drawing CE-101 entitled "Proposed Tree Removal Areas", yet only one area is called out: a wetland entitled Area #1. Are other areas proposed for tree removal? (For instances, in the application and field review, and in Figures 2 and 4, other tall white pines can be seen in the vicinity of the four arrays.)

Response

Tree removal is only proposed to occur in Area #1. The distant white pines shown in Figures 2 and 4 are the subject pines to be removed in Area #1.

Question No. 7

What is the size of the area depicted as Area #1 on CE-101?

Response

The subject area depicted as Area #1 on sheet CE-101 is approximately 3 acres.

Question No. 8

Please provide a description of the vegetation currently growing in the wetland other than the trees to be removed. What is the extent of canopy associated with deciduous trees compared to that associated with the white pines?

Response

The vegetation community within the wetland consists of Red Maple/Northern Spicebush seasonally flooded cold-deciduous forest community (Metzler & Barrett, 2006).¹ This common community type is found, among other landscape positions, along small, perennial streams that are fed by groundwater sources. At this particular site, the wetland had formed in a valley between two-formerly active farm fields. The dominant species observed in this wetland include: red maple (*Acer rubrum*); white pine (*Pinus strobus*); northern spicebush (*Lindera bezoin*); Northern arrowwood (*Viburnum recognitum*); Japanese barberry (*Berberis thunbergii*); Spotted Jewelweed (*Impatiens capensis*); skunk cabbage (*Symplocarpus foetidus*); cinnamon fern (*Osmundastrum cinnamomeum*); creeping buttercup (*Ranunculus repens*); and poison ivy (*Toxicodendron radicans*).

¹ Metzler, K.J. and J.P. Barrett. 2006. The Vegetation of Connecticut: A Preliminary Classification. State Geological and Natural History Survey of Connecticut, Connecticut Department of Environmental Protection, Hartford, CT.

With regard to areal dimensions and the location of the white pines identified for removal:

- a. Total (wooded) area of Area #1 = 6.4 acres
- b. Area of wetlands within Area #1 = 1.9 acres
- c. Number of white pines within Area #1 identified for removal = 25
- d. Area of white pine canopy in Area #1 = 0.66 acres (10% of canopy)
- e. Number of white pines within wetlands of Area #1 = 14
- f. Area of white pine canopy in wetlands in Area #1 = 0.26 acres (14% of wetland canopy)

Question No. 9

Please describe in detail, per an accepted method, the functions and values of this wetland.

Response

In accordance with the U.S. Army Corps of Engineers (“ACOE”) New England Division’s Highway Methodology: Supplement – Wetland Functions and Values: A Descriptive Approach, the wetlands provide several functions and values, including: groundwater recharge/discharge; limited flood flow alteration; sediment/toxicant retention; nutrient removal/retention/transformation; production export; and wildlife habitat.

Question No. 10

What biological data have been collected in the headwater wetlands of Abbey Brook where the tree cutting will occur? What alterations in the thermal characteristics of the headwater wetland can reasonably be anticipated by this proposed tree cutting? What downstream impacts to Abbey Brook can reasonably be anticipated by this tree cutting?

Response

No detailed biological data has been collected in the headwater wetlands. The alterations in thermal characteristics of the wetland and associated unnamed stream were not quantified. Similarly, the alterations in thermal characteristics of Abbey Brook were not quantified. No downstream impacts to Abbey Brook are reasonably anticipated as a result of the tree cutting.

Question No. 11

If no site-specific biological data have been collected in this wetland, how can it be concluded that this proposed tree cutting will provide improved or important wildlife habitat?

Response

As explained in the February 25, 2014 Technical Memorandum that accompanied the request to revise the D&M Plan:

- a. “The dead wood will remain to provide habitat and cover for wildlife [also] standing dead wood [from topped trees] will provide sources of food as well as nesting and perching opportunities for wildlife.”
- b. “Practically speaking, removal of the trees will... open the canopy and allow for younger, deciduous species to flourish.”

The removal of trees will result in a localized (in contrast to landscape) shift in wildlife habitat. It is unlikely that this localized shift will have a significant effect on the wildlife populations.

Question No. 12

Given the proximity of State-listed amphibians, spadefoot toad and blue-spotted salamander, just to the north of the subject property, please discuss the potential impacts to these State-listed wetland dependent species by the cutting of trees within this forested wetland should they breed within this wetland.

Response

The nearest Natural Diversity Database (“NDDB”) area is located approximately 0.34 miles downstream of the site. A NDDB query was conducted in accordance with the procedures outlined by the Connecticut Department of Energy and Environmental Protection (“DEEP”). In response, DEEP stated: “Based on our current records, we do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from the proposed activity at the site.” *See* Petition for Declaratory Ruling (Oct. 31. 2012), Exhibit F. A detailed biological study was not, however, conducted at the site or in Area #1.

Question No. 13

What changes to the wetland values will occur as a result of the proposed tree cutting?

Response

The proposed tree cutting will not alter the majority of wetland functions and values of the wetland and associated stream. There will likely be a localized shift in wildlife habitat availability as the pines are removed and are, over time, replaced by other trees.

Question No. 14

What downstream impacts to Abbey Brook can reasonably be anticipated by this tree cutting?

Response

No downstream impacts to Abbey Brook are reasonably anticipated as a result of the tree cutting.

Question No. 15

Does Abbey Brook support biodiversity dependent on cool water (e.g., native brook trout, dusky salamanders)?

Response

According to Hagstrom, et. al (1990),² a fisheries survey was conducted for Abbey Brook at the 9th District Road Crossing in June 1989. The 9th District Road Crossing is approximately two (2) miles downstream of the site. At that time, the following species were identified: American eel (*Anguilla rostrata*); brook trout (*Salvelinus fontinalis*); tessellated darter (*Etheostoma olmstedi*); and white sucker (*Catostomus commersoni*). A detailed biological study was not conducted at the site, in Area #1, an Abbey Brook Tributary or in Abbey Brook itself. It is unknown whether other cool water-dependent species are supported.

Question No. 16

Is Abbey Brook and its headwaters wetlands considered jurisdictional wetlands administered by the ACOE under provisions (Section 404) of the Clean Water Act?

Response

Abbey Brook and its headwater wetlands are considered jurisdictional as administered by the ACOE. The wetlands delineated at the site also include federal jurisdictional limits. The limits of federal jurisdictional wetlands off site were not mapped as part of this project and will not be impacted by the tree cutting operations.

Question No. 17

As the D and M plan is now proposing wetlands impacts where there were none before, what additional consultations may now be required with the ACOE, DEEP and the Town of Somers?

² Hagstrom, N.T., M. Humphreys, W.A. Hyatt. 1990. A Survey of Connecticut Streams and Rivers – Connecticut River Tributaries, Scantic River, Mattebesset River, Salmon River, Coginchaug River and Eightmile River Drainages. Connecticut Department of Environmental Protection, Hartford, CT. F-66-E-2: Progress Report.

Response

Correspondence will be made with ACOE, DEEP and the Council to identify what permits, if any, are required for the proposed work. Courtesy notices will also be sent to the Town of Somers.

Question No. 18

What proportion of the wetland would be filled by the debris field (i.e., the trunks of 20 trees and the branches of 25)? Would the debris field block the watercourse? Please describe any methods proposed for distributing the debris field, if any.

Response

It is estimated that approximately 1,500 square feet of tree trunks and limbs will be left in the wetland once cut. The material will be left in place and will not be distributed within the wetland. Portions of the tree that fall outside of the wetland will be removed from the site. Tree trunks and limbs will not block the unnamed stream watercourse.

Question No. 19

Was avoidance (i.e. not cutting the trees or otherwise disturbing the wetland/watercourse) considered as mitigation? If so, what were the reasons avoidance was rejected?

Response

As discussed above, resolving the shading problem at the SSC site is critical to the overall success of the project. Based on the Council's reaction to the proposed D&M Plan revisions and the tone of these interrogatories it is clear that the Council has significant concerns with the tree clearing alternative. Upon further review, SSC determined that it may be able to meet its objective of eliminating the shading problem and, at the same time, avoid any impacts on the wetland and watercourse areas on site. As an alternative to tree clearing within the

wetlands, SSC proposes to simply remove the tops of the white pines in Area #1 at a height equivalent to the surrounding deciduous trees. Leaving the live trees in place allows SSC to maintain, intact, the existing tree canopy. All tree topping operations would be conducted from outside the wetlands and all debris, branches and tree tops would be removed from the site, thereby eliminating any potential for impacting on site wetlands and watercourses.

Question No. 20

Section 1.3.2 of Appendix A, the Invasive and Noxious Species Management Plan, lists several treatment strategies, by species, for controlling the invasives known or likely to occur in the wetland. Explain which particular method of control for each species, relevant to the conditions in this particular wetland, will be selected from among the options listed?

Response

Several treatment strategies were provided as part of the Invasive and Noxious Species Management plan so as not to limit or restrict what measure may be used to control invasive and noxious species. It is likely that treatment will rely primarily on a combination of mechanical measures (cutting) and targeted chemical (pesticides) applications.

Question No. 21

In the plans for monitoring and/or controlling the potential invasive species, was any consideration given to the changed conditions that would be created in the wetland by the proposed tree-cutting (e.g. the debris field)?

Response

Yes. As explained in the February 25, 2014 Technical Memorandum, "...removing the white pines and opening up the canopy may also make the wetland area more susceptible to invasive species. Therefore, we recommend that an invasive species management plan be

implemented over a five year period to control the establishment or spread of invasive species within the wetland.”

CERTIFICATION OF SERVICE

I hereby certify that on this 8th day of May 2014, a copy of the foregoing was sent first class mail, postage prepaid, to the following:

Somers Solar Center, LLC
c/o Gregg Crenshaw
Renewable Energy Manager
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Kenneth C. Baldwin

