

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

CANDLEWOOD SOLAR, LLC PETITION	:	PETITION NO. 1312
FOR DECLARATORY RULING THAT NO	:	
CERTIFICATE OF ENVIRONMENTAL	:	
COMPATIBILITY AND PUBLIC NEED	:	
IS REQUIRED FOR A 20 MEGAWATT	:	
AC SOLAR PHOTOVOLTAIC ELECTRIC	:	
GENERATING FACILITY IN NEW MILFORD	:	
CONNECTICUT	:	October 20, 2017

**DEPARTMENT OF AGRICULTURE'S RESPONSES TO  
CONNECTICUT SITING COUNCIL'S INTERROGATORIES, SET ONE**

**Petition No. 1312**

**Interrogatories to CT Department of Agriculture**

**Set One**

**September 29, 2017**

The State of Connecticut Department of Agriculture, a party to this proceeding, hereby responds to Interrogatories to CT Department of Agriculture, Set One, September 29, 2017, issued by the Connecticut Siting Council.

1. Referencing the Council's Hearing Program, Administrative Notice Item No. 91, "GOVERNOR'S COUNCIL FOR AGRICULTURAL DEVELOPMENT, *Grow Connecticut Farms: Developing, Diversifying, and Promoting Agriculture*, December 2012", on page 5, recommendations to the Connecticut Department of Agriculture (DOAg) include: "Create an agriculture-friendly energy policy that includes agricultural net metering for power production and transmission, and qualification of agricultural anaerobic digestion project for zero emissions renewable energy credits (ZRECs)." Please describe efforts DOAg has made toward implementation of these recommendations.

Response

DoAg acknowledges this recommendation as part of a comprehensive document of the Governor's Council for Agricultural Development (the Governor's Council is staffed by DoAg and chaired by the commissioner of agriculture.) The council made the recommendation as part of several recommendations meant to develop, diversify, and promote agriculture in CT. The recommendations support the viability and sustainability of Connecticut agriculture and by no means support replacing agriculture with nonagricultural development. As stated further in the publication under "Strategy for Implementation," the issue was cited to be "so large and complex that it warrants a task force." The Governor's Council goes on to state, "Implementation will require cooperation and coordination of several agencies, most notably DoAg and DEEP [Department of Energy and Environmental Protection]. . . ." DoAg's efforts in this area have been primarily through providing avenues for farmers to advocate for an effective energy policy, through the Governor's Council, through cooperation and coordination with DEEP on energy policy, working with advocacy groups such as CT Farm Bureau, and through the CT Farm Energy Program ("CFEP"). The commissioners of agriculture and energy and environmental protection have consulted extensively on making improvements to the state's comprehensive energy policy that support farming and agriculture in Connecticut.

2. Does Connecticut have a viable farm energy policy? Please describe.

Response

DoAg is uncertain as to what the Siting Council means by "viable," and by "farm energy policy." Connecticut does have a Comprehensive Energy Strategy, which, pursuant to Conn. Gen. Stat. § 16a-3d is prepared by DEEP. This interrogatory should be directed to DEEP. Again, as stated above, DoAg has little control over "farm energy policy" since the statutory authority lies with DEEP. Having said that, wherever possible we advocate for farmers through our participation in forums and working groups and through cooperation and coordination with DEEP on these issues. In our opinion, we have made great strides in the area of farm energy with a multi-pronged approach in our State – encouraging energy efficiency through various DoAg, USDA, EnergizeCT, and CFEP

efforts, the implementation of virtual net metering, and other statutory efforts around on-farm energy.

3. Would on-farm energy production reduce costs and supplement farm income? What types of on-farm energy production are supported by DOAg?

Response

On-farm energy production can reduce costs and supplement farm income, but it depends, of course, on the business plan, the economics of the project, and how efficiently the facility is managed. Petition No. 1312 is not an example of on-farm energy production, as no farming will be occurring on the land while the solar array is in place.

DoAg supports all types of on-farm energy production, provided they are consistent with actual on-going farming at the farm. DoAg supports these projects through education, grants, and legislative proposals. The homepage of DoAg's website, <http://www.ct.gov/doag>, has a link to state and federal agricultural energy assistance programs.

4. Please describe the provisions of Connecticut's Agricultural Virtual Net Metering Program. How many farms have expressed an interest in this program?

Response

Virtual Net Metering (VNM) allows for the sharing of "credits" (excess power from a renewable energy project) virtually with other designated metered accounts. Connecticut's VNM program is set forth in section 16-244u of the Connecticut General Statutes.

Agricultural VNM allows for an agricultural VNM facility which is defined as a Class I renewable energy source that is operated as part of a business for the purpose of agriculture, and meets the statutory requirements.

As far as the number of farms that have expressed interest in the program, DoAg does not keep track of this. We do understand at least anecdotally from our participation in the CT Farm Energy partners group that there are farms taking advantage the program.

5. What role could well managed agricultural lands play in climate change mitigation?

See response to interrogatory No. 6.

6. Do farms or farm activities contribute to greenhouse gas emissions? Are farms exempt from emissions reductions targets and other air regulations? What programs assist farmers with greenhouse gas emission reductions?

#### Response

As questions 5 and 6 are related, we are answering them together. First, while Connecticut does have a "right-to-farm" law, it does not necessarily give an exemption from "emissions reduction targets and other air regulations." Here is the law, which is contained in section 19a-341 of the Connecticut General Statutes:

Agricultural or farming operation not deemed a nuisance. Exceptions. (a) Notwithstanding any general statute or municipal ordinance or regulation pertaining to nuisances to the contrary, no agricultural or farming operation, place, establishment or facility, or any of its appurtenances, or the operation thereof, shall be deemed to constitute a nuisance, either public or private, due to alleged objectionable (1) odor from livestock, manure, fertilizer or feed, (2) noise from livestock or farm equipment used in normal, generally acceptable farming procedures, (3) dust created during plowing or cultivation operations, (4) use of chemicals, provided such chemicals and the method of their application conform to practices approved by the commissioner of environmental protection or, where

applicable, the commissioner of public health and addiction services, or (5) water pollution from livestock or crop production activities, except the pollution of public or private drinking water supplies, provided such activities conform to acceptable management practices for pollution control approved by the commissioner of environmental protection; provided such agricultural or farming operation, place, establishment or facility has been in operation for one year or more and has not been substantially changed, and such operation follows generally accepted agricultural practices. Inspection and approval of the agricultural or farming operation, place, establishment or facility by the commissioner of agriculture or his designee shall be prima facie evidence that such operation follows generally accepted agricultural practices.

(b) The provisions of this section shall not apply whenever a nuisance results from negligence or willful or reckless misconduct in the operation of any such agricultural or farming operation, place, establishment or facility, or any of its appurtenances.

Secondly, as evidenced by the documents cited below, well managed agricultural lands can certainly play a role in climate change mitigation and in reduction of greenhouse gases. In particular, soil health, nutrient management, forest management, and energy generation and efficiency practices all are important factors in climate change mitigation. Soils and plants store carbon. Connecticut farms play an important role in recycling organic waste materials from nearby communities. Local and regional food systems reduce food waste, storage, energy costs, and transportation of agricultural products, and they reduce the miles travelled between farm and plate, all efforts that benefit mitigation. With regard to assistance, the United States Department of Agriculture (USDA,) through its Natural Resources Conservation Service (NRCS) and DoAg (through its various grant programs) provide technical and financial assistance to farmers in these areas. While DoAg provides primarily financial assistance, DEEP works with NRCS and provides technical assistance on nutrient management. USDA and CT Farm Energy provide assistance to farmers (technical and financial) on energy projects, while DoAg provides primarily financial assistance in this area as well.

NRCS climate change site:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/climatechange/>

Conservation practice 590:

[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1046433.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046433.pdf)

USDA Building Blocks for Climate Smart Agriculture and Forestry:

[https://www.usda.gov/oce/climate\\_change/building\\_blocks/BuildingBlocksImplementationPlanProgressReport.pdf](https://www.usda.gov/oce/climate_change/building_blocks/BuildingBlocksImplementationPlanProgressReport.pdf)

7. Did DOAg have a role in developing Public Act 17-218? Is so, why was the Public Act limited to prime farmland?

Response

DOAg had a limited role in developing the language that became PA 17-218. We did advocate for the inclusion of statewide and locally important farmland soils within the scope of the proposed legislation. The bill that passed and was signed into law only covers prime farmland soils.

8. In Connecticut, does crop farming occur on soils that are not designated prime farmland or farmland of statewide significance? If so, describe measures that are used to ensure a sufficient crop yield.

Response

Agriculture is diverse in Connecticut, crops range from vegetables, to nursery stock, to oysters. They are grown on a variety of soil landscapes including those that are not prime and important farmland. If we are to focus on annual row crops, they are typically grown on prime and important farmland soils since these soils have the physical and chemical properties to produce economically viable yields with fewer inputs and less potential impact on the natural resources. Where annual row crops are grown on other soils, they typically require more careful management to control erosion, maintain adequate nutrients and water, or control wetness. Some crops are also grown in greenhouses and

are planted in a manufactured soil or hydroponically. There are many CT soils that are not suitable or practical for row crop production.

9. Can agricultural fields that are managed as grassland for 20-25 years be restored for crop production? If so, describe the methods a farmer can use to restore the fields for crop use.

Response

This question is outside the scope of this proceeding because what is proposed for the majority of this project is not grasslands. What is proposed is a large scale solar energy array production facility dominated by impervious surfaces that will use as a ground cover vegetation that may contain species of grasses.

10. Does the use of agricultural herbicides and pesticides provide better soil health for agricultural production and social, economic and ecosystem benefits?

Response

Soil health/soil quality is a function of: inherent soil properties, such as texture or depth to water table; dynamic soil properties such as organic matter content and nutrient levels; and the continued capacity to sustainably provide the ecosystem functions and goods and services desired. The question posed is not anchored in sufficient relevant facts to answer.

11. Could exposed agricultural soils during spring planting lead to stormwater runoff and sedimentation to adjacent streams and wetlands during heavy rain events? Is fertilizer runoff a detriment to water quality of nearby streams and wetlands?

Response

It does not benefit an agricultural operation to lose its soil; accordingly, agricultural best management practices, if properly employed, can prevent erosion and sedimentation resulting from storm events, even during spring planting.

As to water quality, these questions are more appropriate for DEEP.

12. Does the acreage of farmland soils include areas that are occupied by woodland, existing farm roads, and buildings?

Response

The acreage figures for prime, statewide important, and locally important farmland soils should include both open farmland as well as woodland acreage. The definition is often misunderstood; the soil map unit is assigned a farmland importance class regardless of the land use (except urban, built-up, or water). As long as it is available for agriculture, soils covered by trees can still be considered important farmland soils. The parcel has not been evaluated on site by the Dept. of Agriculture to determine the extent and location of any farm roads or buildings (although the applicant's report said there were no buildings present).

13. In general, why does the NRCS soil mapping for the surrounding area depict prime agricultural lands within forested and developed residential areas?

Response

Prime Farmland or Prime Farmland soils are defined by USDA NRCS. The criteria include soil physical and chemical properties and availability for agricultural use. The current land use can be cropland, pastureland, forestland or other land, but not urban, built-up or water. The published USDA NRCS Soil Survey maps can be interpreted for many uses, including areas of soil landscapes that are dominated by the different classes of Important Farmland soils which may consist of Prime, Statewide Important, Locally Important, or Unique. The published soil surveys are a snapshot in time, with some portions updated as needed and funding availability. According to the standards and procedures for making and updating soil surveys, some areas of low density residential development may include areas large enough to farm and contain important farmland soils, and thus displayed on the map as such. Other areas contain too high a percentage of developed and disturbed land, and if the area were to be remapped, not shown as Important farmland soils. This is also true where soils have been disturbed by



construction activities, or in contrast, when surface stones are removed on farm fields they could go from *Not Prime Farmland* to a Prime Farmland class. Thus a review and update of the mapping and any land use changes that will affect the soils is typically important to correctly update a parcel for interpreting the Important Farmland soils. When this is done by a qualified soil scientist it is done at the scale in which the soil survey was made. In CT that is 1:12,000, with a minimum size delineation of 3 acres.

14. Describe the steps necessary to convert a forested area with prime agricultural soils to a crop field.

#### Response

Not all forested areas are suitable for row crop production due to soil limitations. Where possible, the suitability and methodology that could be used for converting forest land to row crop production depends on a variety of factors. They include the suitability of the soils for the intended crops, age and species in the forest stand, management system used by the farmer (organic, conventional, other), equipment available, time of year, requirements imposed by deed language, lease terms, landowner needs, or desire to participate in USDA Programs. The plant community in the forest may also impact the process and potential, such as if the area is dominated by mature oaks there would be large root balls to remove which creates more soil disturbance, areas of evergreens tend to acidify the soil and may take a number of years to correct. A typical scenario for converting forest land to crop land might include:

1. Conduct an on-site soil investigation to determine suitability for the crop and cropping system. Design in any necessary conservation practices such as the need for grassed waterways, contour strip cropping, drainage, farm roads, habitat areas, etc. Develop a clearing plan.
2. Harvest and remove above ground portion of the trees. If the wood has value for saw logs and firewood remove accordingly. If of low value, they may be harvested as

biomass chips. Depending on the process, slash may need to be chipped, burned or moved outside of the field area.

3. Design and install any erosion and sediment control measures needed.

4. Depending on the size and species of tree, stumps may be dug up and ground, removed and /or composted. Stumps can also be ground in place, or left till feeder roots die for easier removal.

5. Large roots are removed with a root rake, and with other woody debris are removed, burned, or chipped and incorporated into the soil.

6. If large stones are present that will hinder the farm use, they may be removed from the field, buried, or pushed below the plow zone.

7. Conduct soil tests to check nutrient status. Apply nutrients accordingly.

8. Evaluate compaction from the use of heavy equipment on the field as well as haul roads and staging areas. Consider deep chisel tillage and use of a cover crop mix to reduce compaction and change soil biota.

9. Plow, disc, harrow, and plant crops. Or, if using a reduced or no tillage system, cover crop needs to be killed by herbicides or by rolling/crimping, covering with tarps, mulch, or plastic prior to planting.

10. Assess crop yields. Evaluate the presence of weeds, insects, and diseases and manage accordingly. Do foliar analysis of the crop if available.

11. Retest soils for nutrient status, compaction.

15. Provide data that indicates the use of machinery and vehicles causes soil compaction. Is there a correlation between construction (or agricultural) vehicle/machinery weight and depth of compaction?

Response

Yes, there is a correlation. The effects of soil compaction and the impacts on crop production are common knowledge, with numerous articles and research studies documenting it. As farm equipment has gotten larger, and areas have been in continuous production for a longer period, it has grown as a problem in American agriculture. Farmers are working with equipment manufacturers, soil scientists, engineers, and agronomists to develop solutions and conservation practices to prevent compaction and restore soils. A recent article by Penn State Extension nicely summarizes the effects of soil compaction on yield and soil health; <http://extension.psu.edu/effects-of-soil-compaction>. There would be a direct correlation to the use of heavy equipment in the development and maintenance of large solar arrays. There is a compaction correlation to vehicle/machinery weight as well as to soil texture, soil moisture, and organic matter levels. Vehicles with below 6 tons per axle weight do less damage. Working on or with soils that are too wet typically results in compaction. Not managing for and preventing compaction can result in deep compaction below the root zone that appears to be irreversible.

16. How does development of land for solar facilities damage soil resources? How is soil productivity compromised? What are the long-term impacts? Please provide directly related studies demonstrating such impacts.

Response

It does not appear that the specific effects on soil resources and specifically soil health have been studied in detail, especially long term impacts. Some studies and data have been done that relate to yields of specific crops where the design and installation were designed upfront with agriculture in mind. Each project is different, with different soils and site conditions, climatic conditions, previous land management, equipment, and

contractors. Ultimately it is a land development process, where the impacts of land grading and smoothing, trenching, stockpiling of soil, use of heavy equipment on wet soils, changes to surface and subsurface hydrology, and the potential for erosion and sedimentation are well understood. The **Connecticut Soil Erosion and Sediment Control Act (§§ 22a-325 through 22a-329 of the Connecticut General Statutes)** was enacted to control some of the impacts of development, which continues to be a problem. Impacts of trenching continue to be a problem for the energy development industry.

A white paper by Professor Emeritus Dr. Tom Fenton, Iowa State, summarizes similar issues associated with trenching for pipelines on farmland:

<http://nobakken.com/wpcontent/uploads/2015/10/Fenton-Soil-Issues.pdf>.

There will be negative impacts to the soil resource from an installation and decommissioning. It could result in a reclassification from Prime or Statewide Important soils which could impact the owner or farmers ability to protect it with a conservation easement due to Federal and State program requirements. Minimizing the short and long term impacts would require restoring soil health and landscape integrity for agriculture as the long term goal. This would require utilizing careful upfront planning, baseline data, scheduling, monitoring, use of best management practices, adaptive management, and funds and expertise available to assist in restoration upon decommissioning. Research is needed to better understand the impacts, and develop best management practices to attempt to restore soil health and productivity.

17. Page 3 of Candlewood Solar LLC's Environmental Assessment notes that, "[T]he Town of New Milford GIS Mapping indicates that the soil unit 85B – Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony, is a designated locally important farmland soil." (See Environmental Assessment, Attachment E, Soils Map.) What is a "locally important farmland soil?"

Response

USDA Natural Resources Conservation Service and the Farmland Policy Protection Act defines Locally Important Farmland Soils as: “additional farmland of local importance.”

In some local areas, there is concern for certain additional farmlands for the production of food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned. (ref.

<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=40349.wba>)

The list of soils identified in New Milford can be found at:

[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/soils/?cid=nrcs142p2\\_011157](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/soils/?cid=nrcs142p2_011157)

Locally Important Farmland soils are other soils that are commonly farmed, or have soil limitations that are often overcome, and are then farmed.

18. In its comments dated August 30, 2017, the Council on Environmental Quality notes that, “The soils...are not prime and important farmland soils under the United States Department of Agriculture (USDA) classifications. If, however, decades of agricultural activity have removed the stones, then it is possible that the soil could meet the criteria for prime or important farmland.” Does DoAg agree with this? Explain. Under what circumstances could rocky soils not initially classified as important or prime farmland (but used for agriculture) be re-classified as important or prime farmland?

#### Response

Yes, there are soil limitations that can be overcome through farm management that can change the Farmland Soils designation. It is quite common in the glaciated Northeast for enough surface stones to be removed by the farm operator so that it is no longer a limitation to farming practices, and could then be reinterpreted as Important Farmland Soils. Typically, when the land cover from recent imagery shows it to be an agricultural field, but the USDA NRCS Soil Survey map displays a very or extremely stony soil, a

field visit is warranted to evaluate if the surface stones have been removed since the mapping was completed.

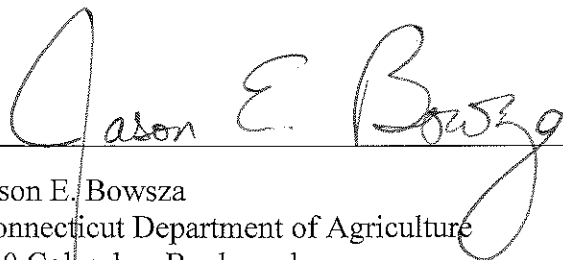
19. By letter dated September 18, 2017, the New Milford Farmland & Forest Preservation Committee notes that, “[A] solar farm is a better use of land than a built-out subdivision.” Does DoAg agree with this? Explain.

Response

Not necessarily, there are other planning options & scenarios that could be considered before a decision is made about a land use change of this scale. For example, another alternative may be a clustered low impact development (with roof top solar, passive solar, geothermal) on a portion of the property, with the remaining farmland, forestland and wetlands protected with a conservation easement.

STEVEN K. REVICZKY, COMMISSIONER  
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Certification of Service

I, Jason E. Bowsza hereby certify that a copy of the foregoing Department of Agriculture's Responses to Connecticut Siting Council's Interrogatories, Set One was sent on October 20, 2017, by e-mail and by first class mail, postage prepaid to the following parties on the Service List in this matter:

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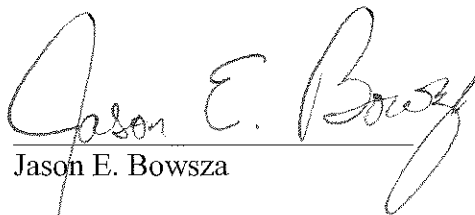
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