



CONNECTICUT DEPARTMENT OF AGRICULTURE

450 Columbus Blvd, Suite 701 | Hartford, Connecticut 06103 | 860.713.2500
Office of the Commissioner
An Equal Opportunity Employer



January 19, 2024

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Woodstock Solar One, LLC– 11 Castle Rock Road in Woodstock, Proposed 3-Megawatt AC Solar Generating Facility – NMA Letter from Agency

Dear Executive Director Bachman:

Pursuant to 16-50k(a) of the Connecticut General Statutes, we have reviewed the above cited project with respect to agricultural impacts, specifically, to determine whether "...such project will not materially affect the status of such land as prime farmland..."

This project will be located on Castle Rock Road in Woodstock, on land owned by John Chapman of Pinecroft Farm. The entire 38.3-acre parcel contains approximately 29.7 acres of prime farmland soils. The proposed solar facility would occupy approximately 16.9 acres, of which 16.9 are prime farmland soils.

In a letter to the Department of Agriculture, dated November 17, 2023, the Petitioner (Woodstock Solar One, LLC) has agreed to design and manage a pollinator habitat and the rotational grazing of sheep within the Project Site. Verogy has provided the Department with a site-specific grazing plan prepared in conjunction with Natalie Cohen of Hillview Farm.

Based on preliminary information provided to the Agency (enclosed), and the successful implementation of the co-uses described above, the Department of Agriculture concludes this project **will not** materially affect the status of project land as prime farmland.

This letter is conditioned upon all dual use plans being fully implemented and operational for the duration of the solar installation. If the Petitioner sells the solar project to another entity, dual use programming and decommissioning responsibilities must carry over to the new owner.

Should any project changes raise concerns to the Agency, we reserve the right to modify our position on this project, including opposing it, as detailed plans are provided by the Petitioner. Nothing in this letter relieves the Petitioner of other obligations under applicable federal, state, and local law that may be necessary as part of the proposed project design and implementation.

If you have any questions, please feel free to contact Eileen Underwood of my staff. Eileen can be reached at eileen.underwood@ct.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Bryan P. Hurlburt". The signature is fluid and cursive, with the first name being the most prominent.

Bryan P. Hurlburt
Commissioner

Enc.

Cc: Katie Dykes, Commissioner, Department of Energy and Environmental Protection
Brad Parsons, Verogy LLC
James Cerkanowicz, Verogy LLC



Woodstock Solar One, LLC
124 LaSalle Road, 2nd Floor
West Hartford, CT 06107
Verogy.com

November 17, 2023

VIA ELECTRONIC MAIL

Eileen Underwood
Agricultural Development & Resource Conservation
Connecticut Dept. of Agriculture
450 Columbus Blvd., Suite 701
Hartford, CT 06103

RE: Woodstock Solar One – Department of Agriculture Consultation

Dear Ms. Underwood:

Woodstock Solar One, LLC (“Woodstock Solar One”) is currently proposing a 3 megawatt (“MW”) solar-based electric generating facility (“Project” or; “Facility”) located at 11 Castle Roack Road in Woodstock, Connecticut (“Project Site”; or the “Site”). The Facility was selected by Eversource under the Shared Clean Energy Facilities (“SCEF”) program. Attached for your review you will find the proposed Facility site plan, farmland soils map for the parcel with and without current use areas identified, and a draft sheep grazing plan. The sheep grazing plan would be finalized and sent for your review as the project progresses through the permitting process.

Section 16-50k(a) of the Connecticut General Statutes requires, for any solar photovoltaic facility with a capacity of two (2) or more megawatts measured in alternating current (“AC”) that petitions for a declaratory ruling by the Connecticut Siting Council (“Council”), the Department of Agriculture represents, in writing, that the project will not materially affect the status of such land as prime farmland.

Woodstock Solar One would like to submit this project as a Petition for Declaratory Ruling with the Council and respectfully requests that the Department of Agriculture review the project and our proposal. Below you will find the detailed information on the parcel and our project.

1. Farm / Property Information

- a. Farm owner(s), farm name and locations
 - i. John D. Chapman
 - ii. Pinecroft Farm
 - iii. 11 Castle Rock Road, Woodstock, CT 06281

The existing residence is currently and will continue to be occupied.



- b. Total acreage, identification of prime, statewide and or/ locally important farmland soils and acreage
 - i. 38.3 acres total
 - ii. ~29.7 acres prime farmland soils
 - iii. ~1.1 acres statewide important farmland soils
 - iv. ~7.5 acres neither
- c. Current production agriculture on the farm and the approximate location of crops, farm buildings, etc. used to support the farming operation
 - i. Current production: Corn field on ~23.6 acres with existing house and garage

2. Energy Project Information

- a. Describe the energy project
 - i. The energy project is a 3.00 MWac (3.99 MWdc) solar photovoltaic array consisting of 7,384 solar modules. Additional infrastructure needed to support the project include 24 string level inverters, driven post racking, DC string wiring, AC wire runs, transformers, switchgear, and metering equipment.
- b. Describe what the energy will be used for and how it will benefit the farming operation
 - i. The project is currently configured as a Shared Clean Energy Facility which is designed to cost-effectively deploy clean energy projects in Connecticut and deliver the benefit of such projects to: (1) low-income utility customers (20% of total energy production); (2) low to moderate-income utility customers (40% of total energy production); (3) small business utility customers (20% of total energy production); (4) state or municipal utility customers (not more than 20% of total energy production); (5) commercial customers (not more than 20% of total energy production); and (6) non low to moderate-income residential utility customers that would otherwise be ineligible for onsite solar (not more than 20% of total energy production).
- c. Are there future plans to increase energy capacity beyond what is proposed? If so, please describe these future plans, and any impacts the increase may have on prime farmland or the overall farming operation
 - i. No, there are no future plans to increase energy capacity beyond what is proposed at this Site.



3. Agricultural Resource Impacts

- a. Describe any production agriculture currently being conducted within the footprint of the solar project;
 - i. There are currently ~16.0 acres being cultivated within the footprint of the solar project. Of the area being cultivated within the footprint of the solar project ~16.0 acres are prime farmland soils, ~0.0 acres are statewide important farmland soils.
- b. Describe overall how the project will impact production agriculture currently being conducted on the farm; and
 - i. The project will prohibit the growth of crops on ~16.0 of the ~23.6 acres as they are currently being farmed today. However, the project intends to have an agricultural use in conjunction with the solar array.
- c. Provide a description of any plans by the farm owner(s) to foster production agriculture within or as a result of the development (e.g., grazing animals in and around the solar project, providing pollinator habitat)
 - i. The project developer / operator intends to introduce a pollinator habitat and grazing of sheep within the Project area. The project developer / operator plans to contract with Natalie Cohen of Hillview Farm to manage the grazing program at the Site. Attached is a site-specific grazing plan that would be implemented as part of the Project.

4. Alternatives to Locating the Energy Project on Prime Farmland

- a. Provide a description of any alternatives considered by the farm owner(s) to developing the project on prime farmland soils (e.g., the option of selling agricultural development rights for the farm instead of developing for solar, or as a mitigation measure to reduce the size of the solar development);
 - i. The property is owned by John D. Chapman of Pinecroft Farm. They have historically grown corn on the land. The goal is to co-exist on the property as agricultural production and a solar energy generating facility.
- b. Describe any alternatives examined which might enable placement of some or all of the solar panels in locations other than on prime farmland (e.g., elsewhere on the property or on farm buildings); and
 - i. The house and garage building are not suitable to host a large rooftop solar energy facility.
 - ii. The other areas of the parcel were not able to be used for the solar facility because of slopes, tree coverage, and proximity to wetlands.



- c. Provide a description of any other form of mitigation considered by the farm owner(s) (e.g., farmland restoration, or a future commitment to preserve the farm)
 - i. The farm owners intend to retain ownership of the land and development rights, as opposed to selling the land for other development types. The solar lease will provide the landowners with revenue over the duration of the useful life of the solar farm.

5. Requirements to Comply with CT DEEP Construction Stormwater General Permit

- a. Provide a description of any basins, swales, sediment traps and/or basins, silt or soil excavation and associated map of the proposed work with the farmland soil classifications overlaid;
 - i. In order to comply with the CT DEEP Construction Stormwater General Permit the project requires the installation of four (4) temporary sediment traps. The traps require the excavation of approximately 2,750 cy of soil. The soil will be placed on the downstream sides of the temporary traps and stabilized to form a berm. Upon completion of construction the soil will be used to fill the traps back in and bring the grade back to existing conditions at which time it will be permanently stabilized. Additionally, there will be excavation for the electrical trenching, access road, and equipment pads. Any limited excess soil generated will be kept on site and spread and stabilized as required. See attached figure that shows the overlay of the proposed facility and sediment traps and the farmland soil classification.
- b. Provide a Fill Management Plan if required;
 - i. The Project does not require the importation of any fill to the site so a Fill Management Plan is not required.

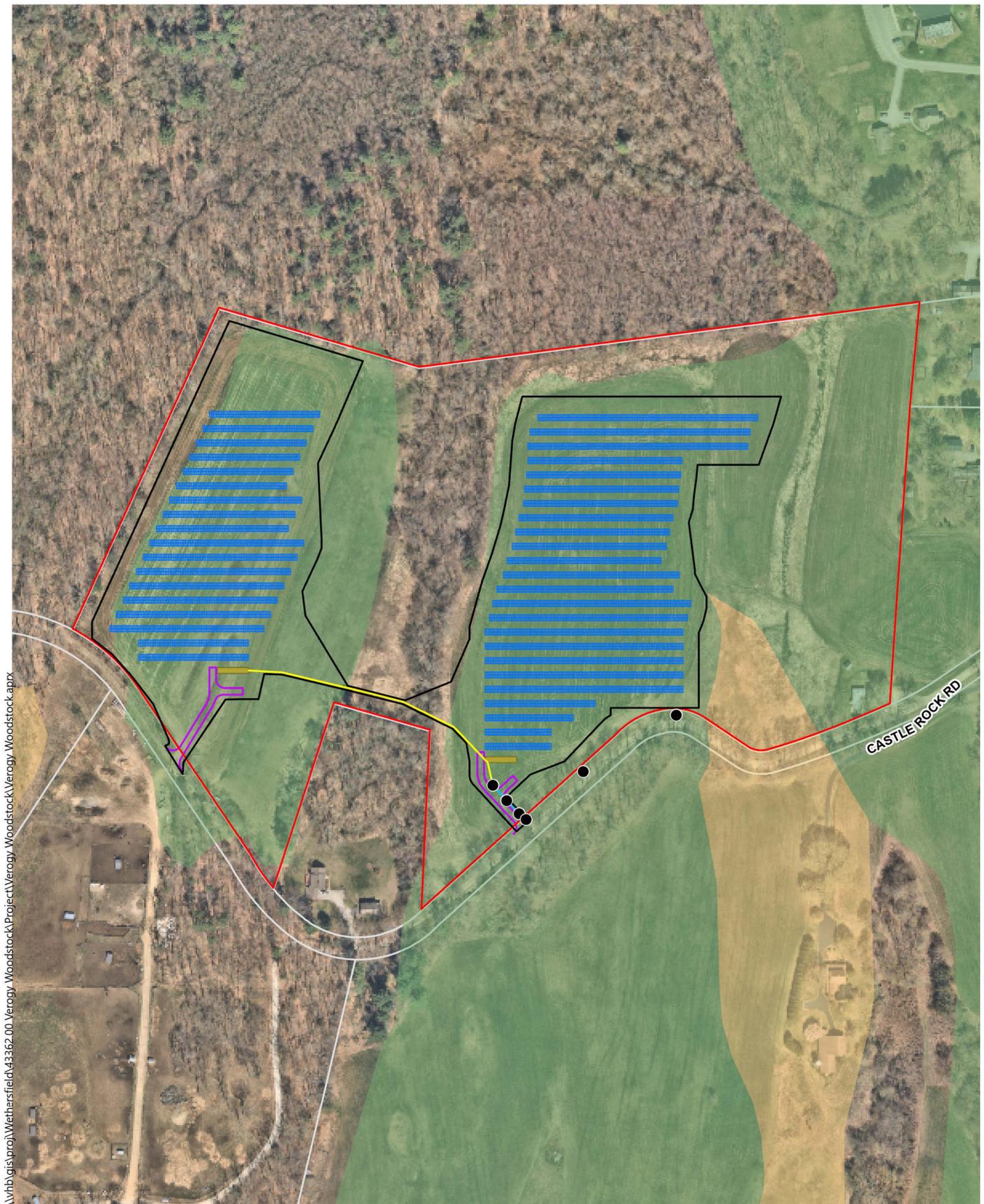
Thank you very much for your time and consideration should you have any questions or comments please feel free to contact me at bparsons@verogy.com or (860) 288-7215.

Sincerely,

A handwritten signature in blue ink, appearing to read "BJP", with a long horizontal flourish extending to the right.

Bradley J. Parsons,
Director of Design & Permitting

Cc: Bryan Fitzgerald (bfitzgerald@verogy.com)
James Cerkanowicz (jcerkanowicz@verogy.com)



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CASTLE ROCK RD

Woodstock Solar One | Woodstock, Connecticut

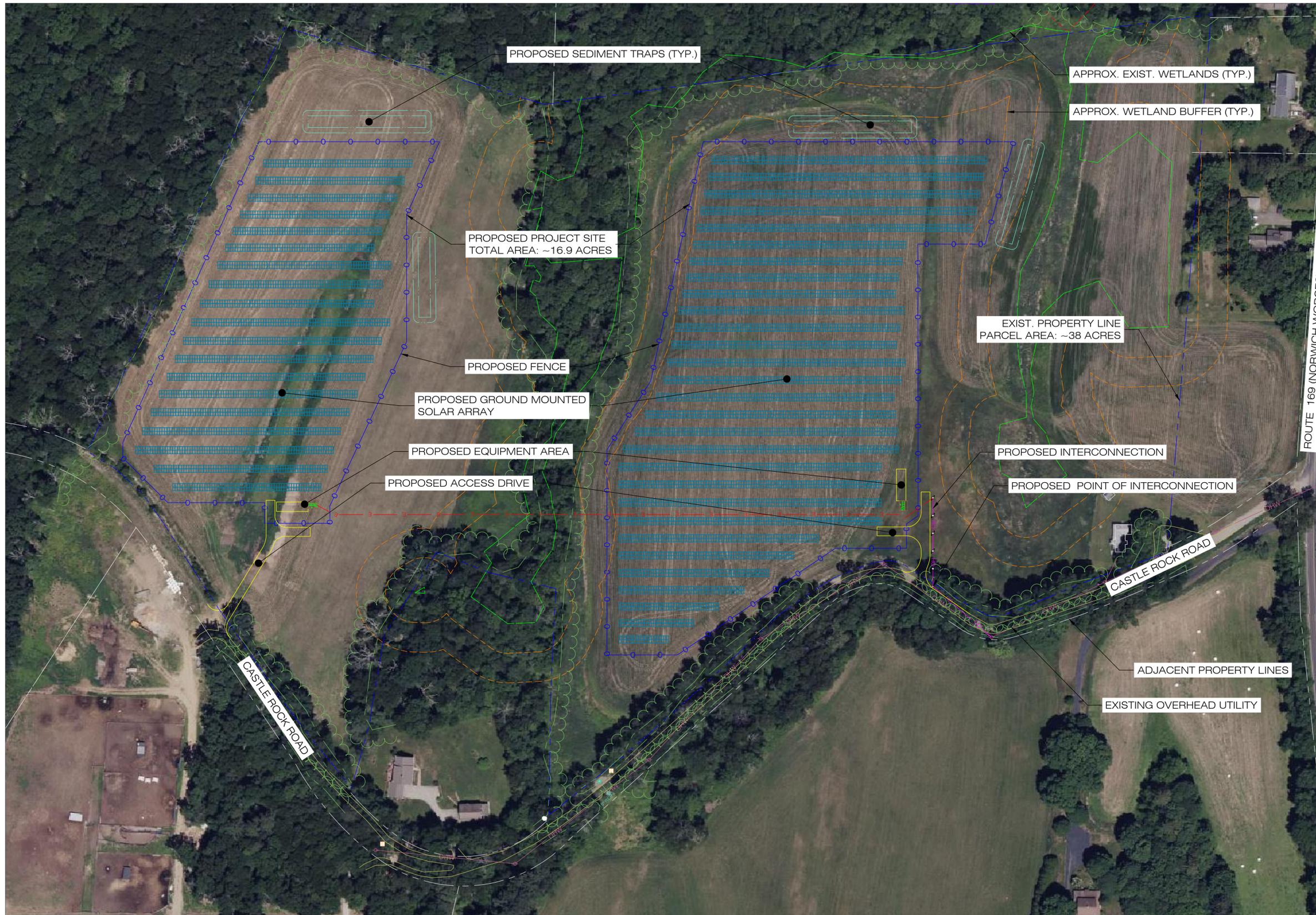


- Pole
- Parcel Boundary
- Limit of Disturbance
- Solar Panels
- Proposed Access Road
- Proposed Overhead Electric
- Proposed Overhead Electric

- Prime Farmland Soils
- Statewide Important Farmland Soils
- Equipment Pad
- Parcels

Prime Farmland Map

Source: VHB, CTDEEP, ESRI



General Notes	
SYSTEM SPECIFICATIONS	
DC SYSTEM SIZE	3,599.10 kW
AC SYSTEM SIZE	3,000.0 kW
MODULE QUANTITY	7740
MODULE POWER	465 W
TILT	25°
AZIMUTH	180°
NOTES	

No.	Revision/Issue	Date

Firm Name and Address		
 150 TRUMBULL STREET HARTFORD, CT 06103		

Project Name and Address		
WOODSTOCK SOLAR ONE 11 CASTLE ROCK ROAD WOODSTOCK, CT 41.923289, -71.960398		

Project		Sheet
WOODSTOCK SOLAR ONE		CP-1
Date	10/30/2023	
Drawn By	BJP	



CP-1

WOODSTOCK SOLAR ONE

SCALE: 1" = 80'



DRAFT

Woodstock Solar One

**Sheep Grazing Plan
Ground Mount PV Array**

Date:

November 2023

Prepared By:

Woodstock Solar One, LLC

in conjunction with Natalie Cohen of Hillview Farm



Introduction

Ground-mounted solar sites, by nature of their design, have ample fenced areas. The fencing at solar sites is uniquely suited to serve as grazing areas or be subdivided into grazing paddocks in a pasture rotation with sheep. The perimeter fencing also serves as predator deterrent, the solar panels provide shading and shelter for inhabitants, and the solar arrays provide palatable pasture species for ruminant nutrition. In turn, rotationally grazed sheep provide adequate and comparatively cheap vegetation management, optimal ground coverage and thus reduced erosion and run-off, as well as agricultural usage of lands that can add to the viability of farming communities.

Woodstock Solar One, located at 11 Castle Rock Road in Woodstock, CT, is planned for approximately 13.8 acres of fenced in solar array ("Facility"). Sheep grazing will be used to control vegetation within the fenced facility to:

- Prevent panel shading from vegetation,
- Control and remove invasive and unpalatable plant species,
- Avoid the growth of brush and woody species under the solar panels,
- Maintain a diverse forage population to support optimal sheep nutrition,
- Encourage flowering forb and plant species to maximize pollinator habitat,
- Optimize sequestered soil carbon through increasing top-soil amount and root matter,
- Control erosion.

To achieve these goals a rotational grazing system will be implemented. Rotational grazing is a technique where animals are moved as one group, from one pastured area ("paddock") to the next (Hodgson, 1979). Only one paddock is grazed at any given time throughout the rotation, while the other paddocks are given a rest period to achieve pasture regrowth. Compared to continuous or extensive grazing, rotational grazing inhibits weed growth, improves the health of pasture, sustains healthy vegetation, and improves sheep health.

Site Requirements

The perimeter fencing can be chain link or "ag type" woven wire and should be installed to the ground. It can be buried slightly below grade or have a maximum gap of 1-2". Gaps caused by uneven ground should be cleaned up with a small machine. If chain link fencing is used it should be installed with a bottom tensioning wire.

The perimeter gates should be installed to meet evenly and have an even spacing to the ground. The maximum gap between the gates and the ground should be 1-2". Care should be taken to add some gravel or grade the area to avoid large gaps.

The site should be building on an existing sod or hay-ground or planting an existing tilled field. The solar facility should be seeded with Ernst Conservation Seeds, Inc. Fuzz & Buzz mix or equivalent. The Fuzz & Buzz mix is the best way to blend grazing with solar and introducing pollinator friendly species. This seed mix was developed by Ernst and the Cornell Sheep Program in conjunction with the American Solar Grazing Association. For additional seedings, clover or legume mixes are a good option for vigor and grazing friendliness. For grass species fescue species should be avoided unless they are endophyte-free varieties.

Rotation planning

Woodstock Solar One was assessed for a planned grazing rotation based on the preliminary panel layout, and 13.8 acres fenced area under panels. The grazing plan requires division of the solar array into smaller grazing units, known as *paddocks*. The site layout can be subdivided into 4 different grazing paddocks with Electronet® fencing (Figure 1). The Electronet® is a portable fence that is a product familiar to farmers in the grazing community. It is a white, lightweight fence that is energized using a portable battery, battery/solar, or 110V power supply. This fencing is simple to power on/off and will only be located inside the fenced areas. Its use is to facilitate grazing inside the permanently fenced areas only. The Electronet® will be installed by the grazing manager according to the grazing plan.

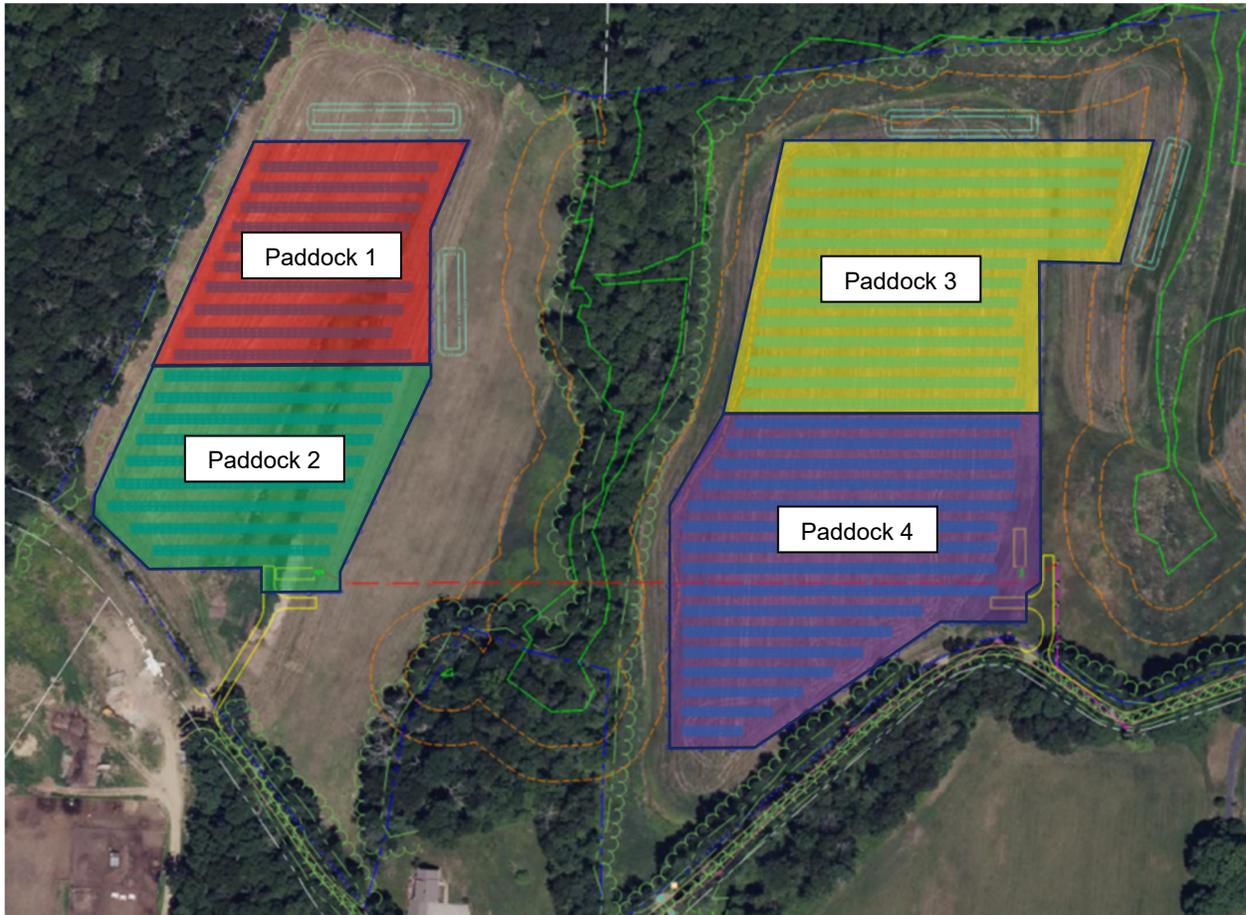


Figure 1. Woodstock Solar One Layout with distinctly colored sections. Please note that this is an approximation and subject to change.

- Paddock 1 (2.6 acres)
- Paddock 2 (2.6 acres)
- Paddock 3 (4.3 acres)
- Paddock 4 (4.3 acres)

The number of grazing paddocks in each array is dependent on a unique set of factors. The number depends on size and layout of the permanently fenced array, panel orientation, and space used for access roads, inverter pads, and other non-forage producing areas.

Manure management is a subset of the flock management and sheep management planned for the solar site. The primary purpose of the placement of sheep on the solar site is to achieve vegetation management goals. The planned movement of the sheep around the solar site has the underlying benefit of moving and distributing sheep manure at the same time. Sheep manure is typically small and pelletized. For the layperson, sheep manure may resemble the manure of rabbits or deer. Similarly, the manure is typically invisible within a short period of time and begins nutrient cycling in the soils.

The correct sheep stocking rate and density (sheep per acre per unit of time) will be calculated before the grazing season based on site size, and quantity and type of vegetation present. This metric also ensures that no over-grazing occurs, and that the amount of manure deposition does not outpace the rate of manure decomposition throughout the grazing rotation.

The flock will not overwinter within the fenced area of the solar array.

Acreage

The sheep flock is sized to cover the four grazing paddocks in a full rotation, i.e. the amount of sheep needed to graze Paddock 1, 2, 3 and 4 with 3.4, 3.4, 3.3 and 3.3 acres, respectively, in a +/- 45-day rotation. The precise number of days per paddock may be adjusted over the season by the flock manager, depending on weather and forage growth conditions. The number of sheep determined by the grazing plan can be found in Table 1 below:

Woodstock Solar One - Grazing Plan										
	Items	Paddock 1		Paddock 2		Paddock 3		Paddock 4		Site Totals
Paddock Info.	Total Paddock Area (ac)									13.8
	Number of Paddocks									4
	Paddock Rest Period (days)									45
	Paddock Use (days)									15
	Paddock Size (ac)	2.6		2.6		4.3		4.3		
Feed Anlysis	Vegetation Cover of Paddock (%),(ac)	80%	2.08	80%	2.08	80%	3.44	80%	3.44	80% 11.04
	Biomass (lbs/sy)	1.5		1.5		1.5		1.5		1.5
	Dry Matter (%), (lbs/sy)	20%	0.3	20%	0.3	20%	0.3	20%	0.3	20% 0.3
	Dry Matter per Acre (lbs)	1452		1452		1452		1452		1452
	Dry Matter per Paddock (lbs)	3020		3020		4995		4995		16030
	Refusals per Paddock (%), (lbs)	30%	906	30%	906	30%	1498	30%	1498	30% 4809
	Adjusted Dry Matter per Paddock (lbs)	2114		2114		3496		3496		11221
Feed Intake	Average sheep weight (lbs)									160.0
	Dry Matter Intake per Sheep (%),(lbs)									3.5% 5.6
Sheep Anlysis	Total Paddock Area (ac)									13.8
	Total Adjusted Dry Matter (lbs)									11221
	Number of Sheep for Site									33
	Sheep Stocking Rate									2.4

Table 1. Grazing Plan Woodstock Solar One Project

The rest time for a given grazed area is largely guided by management for the sheep flock's health. The rest time can be considered the window during which the sheep are not present in a given area and the space is given a rest. The pasture rest period (time between grazing periods) in the US Northeast should not be less than 40-days to minimize internal parasite pressure for sheep. Internal parasites are a health risk to the sheep but not to humans. Internal parasites of sheep are not zoonotic, but a threat only to the health of sheep. This health risk to sheep is minimized by following the following prescriptive grazing plan.

A common internal parasite specific to ruminates is the stomach nematode *H. contortus* or barber pole worm. It has a life cycle of 40 days; thus, a clean pasture can only be achieved with rest periods of 40+ days to avoid reinfection through ingestion of larvae. However, in effective grazing regimens with parasite-resistant sheep flocks, exceptions can be made by the flock manager if the vegetation pressure is too high to adhere to a 40-day rest period before re-grazing.

Sampling and analysis

In newly commissioned solar sites, full vegetation coverage cannot be expected in the first 1-2 years. Additionally, access roads, inverter pads and other site infrastructure will reduce the overall vegetation cover. The estimate for NY State solar sites lies between 65 and 85% vegetation coverage for new sites. This number should be estimated and considered separately for each individual paddock. This number will be adjusted over subsequent years and grazing seasons.

As previous management regimes for solar sites might consist of hay fields, crop fields, marginal pastures or brush areas, the vegetation coverage is expected to be heterogeneous. Therefore, vegetation sampling must be performed to determine sheep stocking rate and density, which is a requirement prior to establishing a grazing rotation. Tabular dry matter and nutrient values as they are published for uniform stands of established crops, hay field or other, are not adequate for evaluating solar array site vegetation for grazing. A detailed organic matter (OM) vegetation sampling protocol is published on the American Solar Grazing Association (ASGA) website. The grazing rotation will largely depend on the amount of forage dry matter (DM) growing within the individual areas. Manager may perform vegetation sampling at intervals to analyze the nutritional value of the forage.

Forage analysis laboratories such as Dairy One provide detailed analyses that can be used to calculate the available DM per grazing paddock from submitted OM samples. Dry matter is a percent of total percent plant weight minus water content. These DM values are necessary to establish the amount of available feed for sheep, and eventually the sheep stocking rate and density. Typically, pasture DM values in the Northeastern US for well-maintained pastures are between 18-25%, depending on the season.

Typically, well managed Northeast pastures can achieve yields above 2,500 lbs DM per acre. The yield in the grazing plan draft above is substantially lower; it is expected that the solar array pastures will take time after establishment to reach their potential. It is necessary to plan a grazing rotation prior to the grazing season, which would be used to guide a flock manager's rotation plan. The flock manager would then use his/her own experience and observation to decide daily if the rotation plan is reasonable and responsible, and to make necessary adjustments in rotation days and stocking rates.

Pasture utilization should be between 70 and 85% to ensure optimal regrowth and animal nutrition. Thus, pasture refusals (uneaten vegetation remaining after grazing) should be part of the calculation and should be between 15% and 35%.

Two examples of common adjustments to rotation plans include: First, in late spring after rain events and with the warming weather, stocking rates may have to be increased to be able to clear the vegetation growth. Secondly, in the summer, sheep may have to be moved from paddock to paddock faster than they were in spring or fall due to the slowed growth of dormant cool-season vegetation.

Feed Intake

It is recommended to graze uniform animal groups that are either dry (non-lactating) ewes, open (non-pregnant) ewes, ewes in their early stages of pregnancy, yearling ewes or growing lambs of at least 60 lb. (or alternatively, 50% of their mature body weight in case of small breeds). In the case of groups of growing lambs, the lambs should be of the same sex or the males should be castrated.

Breed	Stage of production	Body weight, lbs	Feed intake, DM %BW	Feed intake, lbs DM
Katahdin hair sheep	Growing lamb, 50% mature BW	65	2.5	1.6
	Yearling	110	3.0	3.3
	Open, dry ewe	130	3.5	4.6
Polypay composite	Growing lamb, 50% mature BW	80	2.5	2.0
	Yearling	130	3.0	3.9
	Open, dry ewe	160	3.5	5.6
Texel	Growing lamb, 50% mature BW	90	2.5	2.3
	Yearling	150	3.0	4.5
	Open, dry ewe	180	3.5	6.3

Depending on the breed and uniformity of the group of sheep, an average weight for the individual animals in the flock can be determined. Table 2. Body weight and feed intake, gives an overview of BW (body weight) and feed intake across popular Northeastern sheep breeds. According to NRC nutritional requirements for small ruminants (NRC, 2007), daily DM consumption per animal can be estimated as a percentage of bodyweight.

Totals

These calculations can be used to determine the optimal number of sheep per paddock according to body weight and stage of production. By using this with the chosen grazing rotation days (or rest period), the stocking rate (the necessary sheep number for the calculated grazing time within each paddock) can be calculated, and the optimal grazing flock size calculated.

On the 13.8 acre Woodstock Solar One project, the grazing plan allows for 33 mature ewes managed in four grazing paddocks, a stocking rate of 2.4 sheep per acre, and 15 grazing days per paddock with a 45-day rest period.

Animal welfare recommendations

Regardless of season, ad libitum clean and fresh water access is crucial for animal welfare (NRC, 2007). Site-specific amenities like well water or connection to municipal water lines are ideal, but transported water is typical of solar grazing operations. For sheep of the recommended production stages (non-lactating and > 60 lbs growing lambs), water requirements are very low in spring and fall. Typically, dry, non-gestating ewes will consume between 5 and 10 % of their BW water daily.

Granulated mineral feed must be available ad libitum and contain adequate concentrations. Mineral feed should be offered in troughs that can be moved with the flock according to the rotation and rotation days. Mineral feed is specially blended and commercially available for sheep producers (Cargill, 2019).

Sheep will be visually inspected on every rotation day by the flock manager. A closer inspection of each member of the flock is recommended at regular intervals (every 6 weeks on site), including parasite monitoring or treatment with a FAMACHA (FAffa MAlAn CHArt) protocol (Wyk and Bath, 2002), and 5-point checks (Bath and van Wyk, 2009). Each spring, before the flocks begin the grazing season, certain protocols are recommended to ensure they are in optimal health before their work at the solar site begins:

- Feet must be checked and trimmed,
- Ear tags replaced or added, in compliance with USDA regulations,
- Wool sheep must be shorn,
- Wool sheep should be tail-banded,
- Body-condition scores should be recorded to monitor nutritional and health status across the grazing season,
- ***Sheep should be kept in a dry lot on hay 24 hours prior to moving on site in Spring and de-wormed with a commercially available de-wormer to prevent parasite infections on site.***

Emergency Protocols

In the event of a site emergency, the following protocol is to be on hand to ensure safe site access for emergency personnel:

- Clear signage will be displayed at the main gate with emergency contact information of the sheep manager. The manager should be contacted immediately in the event emergency personnel have to enter the site in order to ascertain if there are animals present, and to provide notification to the sheep manager that the animals may need to be removed.
- If portable electric fence is installed crossing site roadways, the fence charger will be placed clearly by the side of the roadway. In the event of emergency, the charger will only need to be switched off and the fence pulled up by hand to allow passage.
- If possible, animals should remain inside the site during an emergency, until the sheep manager can safely remove them. They will likely move as a flock away from any commotion and pose little risk of being in the way. If they do escape during the site emergency, they should be monitored and pushed towards fields and away from roads if possible.

Literature

- Bath, G. F., and J. A. van Wyk. 2009. The Five Point Check© for targeted selective treatment of internal parasites in small ruminants. *Small Ruminant Research* 86(1):6-13.
doi: <https://doi.org/10.1016/j.smallrumres.2009.09.009>
- Cargill. 2019. Cargill Lamb & Sheep Mineral Premix, <http://blogs.cornell.edu/newsheep/management/feeding/aqway-sheep-mineral-mix/>.
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- NRC. 2007. *Nutrient Requirements of Small Ruminants: Sheep, Goats, Cervids, and New World Camelids*. The National Academies Press, Washington, DC.
- Wyk, J. A. V., and G. F. Bath. 2002. The FAMACHA system for managing haemonchosis in sheep and goats by clinically identifying individual animals for treatment. *Vet. Res.* 33(5):509-529.