ASTGU ANNUAL REPORT - 2024

Swan Holt Dual Use Solar – 0 Rear Pond Street, Carver, MA

PURPOSE

This Annual Report form is required to be completed and submitted annually for all projects with the MA Department of Energy Resources (DOER) which received qualification as an Agricultural Solar Tariff Generation Unit (ASTGU) under the SMART program. The form is provided to demonstrate conformance with the general provisions required for ASTGUs in 225 CMR 20.00; in particular pertaining to Section 20.06(1)(d) therein as well as associated ASTGU Guidelines; and specifically pertaining to annual reporting requirements.

The completed form will be reviewed by DOER and the MA Department of Agricultural Resources (MDAR) to determine that the farm is in conformance with all ASTGU provisions in general under the SMART Program, although more specifically to the annual production requirements.

BASIC FARM INFORMATION

Farm Contact Person Name: Hank Ouimet ☒ Farm Owner
Bill Manganello ☒ Farm Operator
Farm Name: Swan Holt Farm c/o REDP Services, LLC
Legal Structure: ☐ Sole Proprietor ☒ LLC ☐ Corporation
☐ Partnership ☐ Other _____
Mailing Address: 99 Derby Street, Suite 200 Hingham, MA 02043
Street Address (if different): 0 Rear Pond Street, Carver, MA
Contact Phone: Bill 781-831-8496 Hank 603-770-5034
Contact E-mail: Bill Wjmang@hotmail.com Hank houimet@redpllc.com
Check all that apply: ☐Solar facility owner ☐Landowner ☒Applicant

Current Type of ASTGU Farm Operation (Check all that apply):
☒ Vegetables ☐ Fruit ☐ Livestock ☐ Poultry ☒ Hay
☐ Nursery ☐ Other _____

Total Acreage in ASTGU Farm Production: approximately 6 acres

Gross Annual Revenue for ASTGU Farm Production: Total $600 (first year)

Are any major modifications to the farm business expected in the next 5 years? ☒ Yes ☐ No
(Check all that apply.)
☐ Business Legal Structure ☐ Operation Type ☐ Expansion ☒ Diversification
☐ Retirement ☐ Sale ☐ Subdivision ☐ Other _____

BASIC SOLAR PROJECT INFORMATION

Solar System Company Owner: Standard Solar, Inc.

Solar System Company Address: 530 Gaither Road, Suite 900 Rockville, MD 20850
Solar Company Contact Person/email/tel#:
Jay Smith/jay.smith@standardsolar.com/301.944.5177

ASTGU Project Start-Up/History Information:

Date ASTGU Approved by DOER: 3/16/2022

Date Solar Portion of ASTGU Project Commenced Construction: 7/23/2022

Date Solar Portion of ASTGU Project was Completed & Operational: 1/12/2024

Date Original Agricultural Portion of the ASTGU Project Commenced: 3/27/2024

Date Original Agricultural ASTGU Portion of Project Harvested/Sowed Products:
Sowed 4/9/2024
First Harvest 7/20/24

How many complete years, that is both solar and agricultural production, has the ASTGU been in operation? Less than one

SOLAR ARRAY DESIGN – PLEASE PROVIDE AS-BUILT SYSTEM INFORMATION

Please provide the following information regarding the solar array design:

Nameplate capacity AC (in MW): 1.348 MWac *(Note: 1 MW=1000 kW)*
Expected annual generation AC (MWh): 2,100 MWh *(Note: 1 MWh=1000 kWh)*
Acreage of farmland over which array is to be installed: approximately 6 acres
System type: ☐ Fixed ☒ Tracking ☐ Other_____
Height of lowest panel edge (in feet): N/A
Height of lowest elevated horizontal mounting (in feet): 10’ above grade

Type of mounting (mono poles, racking, etc.):

Single axis tracking system supported by steel piles (see attached photos)

Description of materials and process to be used for ground penetration:

Galvanized steel piles (see attached photos)

Number of panels, capacity per panel, and panel spacing:

3,458 Hyundai Solar 390W PV modules
Module spacing along rows <2”; module spacing between rows ~17’

If you wish to provide additional descriptive information regarding the solar array design, including any system changes since original completion, you may include this information below, or in a typed attachment labeled "Solar Array Design."

The solar array was constructed as permitted by the Town of Carver and approved by DOER.

AGRICULUTRAL PLAN FOR DUAL-USE AREA

Planned agricultural use, Year 1. Check all that apply.
☐Vegetable, fruit, grains, for human consumption
☒ Hay
☐ Livestock production
☐ Poultry production
☐ Horticulture
☐ Floriculture
☐ Aquaculture
☒ Other, please describe: Pumpkins & squash beneath PV rows

Please fill the Crop Table results following this section for horticulture, flowers, vegetable, fruit, grain, and hay crops for your present year of operation. Fill out one Crop Narrative for each crop, detailing anticipated crop management (planting, irrigation, soil amendments, harvesting) and equipment to be used. **Crop Table – Current Season** follows this section. Also, please also fill out a **Crop Table – Next Season** and corresponding narrative at the end of this section with your best information available.

Please fill out the Grazing Table results following this section for livestock and poultry production for your present year of operation. Please also fill out the Grazing Narrative, detailing anticipated pasture and animal management and equipment to be used. **Grazing Table – Current Season** follows the Crop Table section. Also please fill out a **Grazing Table – Next Season** and corresponding narrative at the end of this section with your best information available.

Additional comments regarding agricultural production for Year 1:

How did the Agricultural Production perform versus expectations? Please explain why/why not if you can:

Agricultural production for our first season was below our expectations based on the first-year results from our similar dual use site Carver (Godfrey Farm). As explained below, the growth of our initial cover crop after we completed the sitework for the agricultural area and completed our initial soil amendment process exceeded our expectations; however, subsequent installation of the PV facility resulted in some soil compaction which we addressed with a light tilling and overseeding after the PV installation was complete. We suspect that the lower than optimal soil pH, dry summer conditions, and new growth limited the first season yields. In addition, as explained below, instead of leaving the first season's hay cut on the ground to build organic

matter (as was done at Godfrey Farm), we took a harvest in the first season, though we left the second cut in the field to build organic matter. We expect the yields to improve considerably next season as we continue to build soil health through soil amendments.

Did you plant the crops/graze the animals as you originally intended when your Pre-Determination Application was approved? If not please explain.

Yes. Our PDA contemplated a partnership with Brookside Farm in Plympton. Brookside Farm operates a local grass-fed beef operation, and needs hay and forage area in order to expand its operation. Accordingly, growing forage grasses along with a small area of pumpkins and squash was selected as the initial crop plan.

As stated in our PDA, the project has resulted in the creation of new, arable farmland in an area that had previously served as a partially-mined sandpit for the adjacent cranberry farm. The SMART dual use program allowed this low utility agricultural land to be converted into an actively cultivated area.

Were the products marketable anticipated? Please explain how the production values (weight/bushels etc.) were determined.

Initial planting of the permanent hay crop was conducted in May 2023 while construction of the PV system was still underway and consisted of a mixture of Timothy, Orchard Grass, Tall Fescue, Ryegrass and White Clover. Overseeding with Red Clover, Hairy Vetch and Alfalfa was done in April 2024 using a rotary spreader. The initial plan was to leave the mowed grasses from the first cut in 2024 in place in order to help build organic matter and foster germination of seedlings; instead, due to the need for hay for its livestock operation, Brookside Farm harvested the hay. The first and only cut of marketable hay was harvested on July 20th, 2024. Total yield was 60 bales of hay, at an average weight of 50 lbs/bale.

What occurred during the current season that wasn't anticipated? Positive & Negative.

Per our original plan, the organic planting material had been spread and graded prior to PV system installation; lime was applied; a layer of woodchips was spread over the organic planting layer; and a cover crop was planted to both enrich and stabilize the soil prior to construction. The results were highly successful as attested by the attached photo documentation. After PV system installation, portions of the planting area – especially between the PV rows where construction traffic was concentrated – showed signs of soil compaction. As a remedial measure, we planted the initial hay crop using a special machine (see photos) that lightly tilled the soil during the seeding process. Overall, we were satisfied with the initial hay crop despite the compaction to the organic planting material that occurred during the installation of the PV system, and fully expect our yields to significantly increase as a result of our continued soil amendment plan.

Pumpkins were seeded in the swales beneath the ASTGU drivelines in June and protected with hay mulch. Unfortunately, once the pumpkin plants had grown to having four true leaves, the deer devastated all of the plants.

What Changes/Modifications do you expect to make to improve on production if needed?

Our focus for the coming season will be to continue to build soil health with soil amendments and to foster increased seed germination and grass growth. Planned amendments include:

- additional lime application in early spring to raise and stabilize soil pH
- two light starter fertilizer applications in early spring
- fertilizer application after first cut of hay

As a result of these efforts, we expect our hay yields in season 2 will meet if not exceed our expected yields.

Do you expect to grow the same crops on the land in years 2 and 3? Briefly describe your crop rotation plan and what you expect to be growing on the land for the next 5 years. Will the same equipment be used? If not, is current array design compatible with future crop management needs and equipment?

In years 2 and 3, Brookside Farm expects to continue to grow mixed grasses for hay and forage as well as pumpkins and/or squash in the swales beneath the PV system driveshaft. The same equipment will continue to be used for cutting, teddering and baling the hay.

Table A: Crop Production – Current Season					
Crop	**Area planted** ***(Row length and width or acreage, as appropriate)***	**Planting date(s)** ***(approximate)***	**Harvest date(s)** ***(approximate)***	**Expected productivity, total pounds harvested with dual use**	**Actual productivity, pounds, with dual use**
Mixed Grasses*	**6 acres**	**April 9, 2024**	**July 20th, 2024**	**7,800 lbs****	**3,000 lbs**

*Mixed grasses include the following species: Climax Timothy, Orchard Grass VNS, Teton II Tall Fescue, TetraSween Perennial Ryegrass (Tetraploid), White Clover (Stamina Intermediate) – OMRI Nitro Coated.

**As noted in our application, Brookside Farm typically expects a hay yield of approximately 0.93 tons/acre from its existing 40 acres of managed hay fields. A reduction factor of 30% has been applied for the "with dual use" scenario to account for PV system impacts (beneath the columns, shading, etc.) as well as slower biomass accumulation for a new hay field.

CROP NARRATIVE – Current Season

*Please detail the crop management for this past season, including approximate **dates** and **equipment** used. The purpose of this form is to provide empirical data regarding compatible equipment usage and crop management needs. If you need additional space, please include a typed attachment labeled "Crop Narrative."*

Crop: Mixed grasses for hay

Planting Plan:

Prior to PV system installation, the area was graded and the soils were amended as described below. Upon completion of the soil amendment process, a cover crop consisting of 12 separate species including tillage radish, clover, and a mix of grasses and pollinators was planted to stabilize the organic soils and prevent erosion as well as to improve microbial soil health. The cover crop was cut and incorporated into the soil immediately prior to PV installation. Following the mechanical installation of the PV system, the area was seeded with the desired forage grass mix in May 2023. Due to some compaction of the soils during PV system installation, the forage grass mix was seeded using a specialized machine that lightly tilled the soil and allowed better seed-to-soil contact. Excessively wet weather in the spring of 2023 limited germination of the initial hay crop. After the PV system installation was complete and the PV system became operational in January 2024, the planting area was overseeded with the desired forage grass mix in April 2024.

Soil Amendment Plan:

As anticipated in the PDA for the project, REDP invested a considerable amount of effort and expense in the soil amendment plan for the site. Prior to the start of the project, a portion of the site had been mined for sand for use on the adjacent cranberry bogs, and the remaining footprint that was intended for the ASTGU was slated for continued mining by the landowner for on-site sand use. At the start of the project, we cleared the unmined area, stripped and stacked the organic overburden, and mined and stockpiled approximately 50,000 yards of sand for the bog owner's long-term use. We then graded the subgrade soils to achieve a uniform planting area, grading the site to minimize runoff and to encourage infiltration. We then spread the stockpiled native organic soils over the entire site. Upon completion of this work, we applied lime at the rate of 450 lbs/ac to the farming area to increase the soil pH level and to prepare the soils for planting. The lime was incorporated in to the soil with mechanical tilling, which also helped make the soils more uniform for planting. Next, we planted a mixed species cover crop as described above to stabilize the soils and to improve soil health prior to PV system construction and planting the first crop. Finally, we spread an approximately 2" thick layer of wood chips over the farming area (generated from the native trees cleared prior to site grading) to minimize soil compaction during PV system installation and to build long term soil health.

Once PV system installation was mechanically complete, we applied another application of lime in the late spring of 2023 just prior to when we planted our first hay crop. It should be noted that all of the soil amendment and planting activities described above were done prior to the project

becoming operational and receiving a single dollar of incentive payments from the SMART dual use program.

Cultivation Plan:

Cultivation activities consisted of overseeding in the spring of 2024 after the PV system became operational, followed immediately by mowing so that the new seedlings would germinate more quickly and that the nutrients from the decomposing grass would filter down into the soil. Overseeding consisted of the original Timothy, Orchard Grass, Tall Fescue, Ryegrass and White Clover mix applied in areas of weaker growth under the ASTGU.

Irrigation Plan:

No irrigation is planned for the ASTGU. Healthy grass growth early in the growing season as well as spot soil moisture checks indicated that irrigation was not necessary during normal growing conditions. We expect moisture retention to improve as the organic content of the soils continues to improve.

Pesticide/Herbicide Plan:

Given the healthy grass growth and the lack of substantial pest or disease damage, no pesticides or herbicides were applied during the first season.

Harvest Plan:

The hay crop was harvested by Brookside Farm using their existing equipment, including a tractor-pulled disc cutter, teddering rig, and baler. Brookside's equipment easily navigated the widely spaced rows of PV panels and traversed beneath the PV system driveshafts, and all grass up to within a foot or so of each column line was successfully harvested.

A photographic chronology of our site preparation, soil amendment, planting and harvesting process is attached as Exhibit A.

Table B: Grazing Production – Current Season							
Type(s) of animal grazed	**Area grazed *(acreage)***	**Grazing pressure # *animals per acre***	**Purpose (e.g. meat, dairy, eggs)**	**Grazing period(s)**	**Harvest date(s) *if applicable***	**Expected productivity with solar array**	**Actual productivity with solar array**
N/A							

GRAZING NARRATIVE – Current Season

*Please detail the past season animal and pasture management, including **dates** and **equipment** used. The purpose of this form is to provide empirical data regarding compatible equipment usage and production needs. If you need additional space, please include a typed attachment labeled "Grazing Narrative."*

Type(s) of Animals Grazed:

No grazing during past season

Pasture Management Plan: List any anticipated seeding, soil amendment, irrigation, pesticide, mowing, etc., including approximate dates and equipment used.

N/A

Animal Management Plan:
For each type of animal grazed, describe management regarding housing/shelter, water source, fencing, movement, disease treatment, harvest, etc. that was carried out within the solar array area. Describe equipment used in these activities.

N/A

Describe any modifications to the solar array design that were made in order to reduce the risk of animal damage to the solar array, or risk of electrocution to animals.

N/A

Table A: Crop Production – Next Season					
Crop	**Area planted** ***(Row length and width or acreage, as appropriate)***	**Planting date(s)** ***(approximate)***	**Harvest date(s)** ***(approximate)***	**Expected productivity, total pounds harvested without dual use****	**Expected productivity, total pounds, with dual use****
Mixed grasses*	**~ 6 acres**	**April**	**July and late-September**	**11,200 lbs**	**7,800 lbs**
Pumpkins	**~ 0.5 acre**	**July**	**October**	**600 lbs**	**400 lbs**

*****Mixed grasses include the following species: Climax Timothy, Orchard Grass VNS, Teton II Tall Fescue, TetraSween Perennial Ryegrass (Tetraploid), White Clover (Stamina Intermediate) – OMRI Nitro Coated.

******As noted in our application, Brookside Farm typically expects a hay yield of approximately 0.93 tons/acre from its existing 40 acres of managed hay fields. A reduction factor of 30% has been applied for the "with dual use" scenario to account for PV system impacts (beneath the columns, shading, etc.) as well as slower biomass accumulation for a new hay field.

CROP NARRATIVE – Next Season

*Please detail the crop management planned for next season, including approximate **dates** and **equipment** used. The purpose of this form is to provide planned data for the upcoming season regarding compatible equipment usage and crop management needs. If you need additional space, please include a typed attachment labeled "Crop Narrative."*

Crop: Mixed grasses for hay and fall pumpkins

Planting Plan:

For the hay crop, we plan to overseed with a broadcast spreader in April, after the application of lime and fertilizer as described below.

For the pumpkin crop, we plan to plant sugar pumpkins in the slopes of the drainage swale under each drive shaft of the area. We will seed about 90 plants at about 8' apart. To mitigate crop damage due to deer, Brookside intends to use deer soap and to spread human hair clippings around the perimeter of the swales.

Soil Amendment Plan:

To continue to improve soil pH and build soil health, we are planning an early season application of lime at the rate of 450 lbs/ac followed by an application of 19-19-19 fertilizer at the rate of 50 lbs/ac immediately before overseeding.

Cultivation Plan:

Depending on hay growth, we will consider a mid-season application of 18-24-12 slow-release N.

Straw will be applied around the pumpkin plants to suppress weed growth and provide additional organic matter. No other cultivation is anticipated.

Irrigation Plan:

No irrigation is anticipated to be needed for the coming season.

Pesticide/Herbicide Plan:

For the hay crop, no pesticide or herbicide application is anticipated.

For the pumpkin crop, no pesticide or herbicide application is anticipated.

Harvest Plan:

The hay crop will be harvested by Brookside Farm using their existing equipment, including a tractor-pulled disc cutter, teddering rig, and baler. It is anticipated that there will be 2 hay cuts. Brookside Farm will harvest the pumpkins using existing equipment and labor.
The pumpkins will be harvested when mature, around mid-September. They will be clipped by hand and loaded into a tractor bucket or truck.

Table B: Grazing Production – Next Season							
Type(s) of animal grazed	**Area grazed *(acreage)***	**Grazing pressure # *animals per acre***	**Purpose (e.g. meat, dairy, eggs)**	**Grazing period(s)**	**Harvest date(s) *if applicable***	**Expected productivity without solar array**	**Expected productivity with solar array**
N/A							

GRAZING NARRATIVE – Next Season

*Please detail the next season animal and pasture management, including **dates** and **equipment** used. The purpose of this form is to provide planned data for the upcoming season regarding compatible equipment usage and production needs. If you need additional space, please include a typed attachment labeled "Grazing Narrative."*

Type(s) of Animals Grazed:

No grazing is planned for next season

Pasture Management Plan: List any anticipated seeding, soil amendment, irrigation, pesticide, mowing, etc., including approximate dates and equipment used.

N/A

Animal Management Plan:
For each type of animal grazed, describe management regarding housing/shelter, water source, fencing, movement, disease treatment, harvest, etc. that was carried out within the solar array area. Describe equipment used in these activities.

N/A

Describe any modifications to the solar array design that were made in order to reduce the risk of animal damage to the solar array, or risk of electrocution to animals.

N/A

Waiver for Decreased Yield

i. Waiver for Decreased Yield
Due to unforeseen circumstances, such as but not limited to weather events, pests, or change in crops, the projected agricultural yield for any given year may be lower than stated in the agricultural plan or previous year's annual report. In these instances, an applicant can request a waiver to the Department for the decreased yields. The applicant must demonstrate to the satisfaction of the Department, and in consultation with MDAR, that a waiver is warranted for good cause. Waiver requests must be submitted by November 1st of the applicable calendar year and sent to DOER.SMART@mass.gov.

Response: With respect to the reporting obligations associated with qualification of this project as an Agricultural Solar Tariff Generation Unit (ASTGU) under the SMART program, we would note that a Pre-Determination Application was filed in February 2021 and a Pre-Determination Letter was issued by DOER in March 2022. The project is subject to the ASTGU guidelines in place at that time (Guideline effective date April 26, 2018). Accordingly, the Swan Holt ASTGU project is not subject to this provision.

ii. Failure to Report
If the ASTGU fails to submit an annual report, the Department may declare the project ineligible for the ASTGU adder for one year. If the annual report is not completed for a second year, then the Department may permanently disqualify the ASTGU from continuing to receive the ASTGU Adder for the remainder of the STGU's tariff term.

SIGNATURES AND ATTESTATIONS

Prior to submitting the Pre-Determination Form, please read and sign as directed below.

Farm Operator and Farm Owner

I/we hereby certify that the information submitted regarding the current farm conditions and practice and the Agricultural Plan for the Dual-Use Area is accurate and complete to the best of my/our knowledge and intentions, and that I/we have engaged with the University of Massachusetts Amherst Clean Energy Extension and thereby its agricultural extension service to review the Agricultural Plan and its compatibility with the solar array structures and shading. Further, I/we agree, conditional on being provided eligibility to the SMART program as an ASTGU, to submit a report, through a template provided by the University of Massachusetts Clean Energy Extension, annually throughout the duration of the SMART incentive with ASTGU adder, on the operations and productiveness of the solar array and agriculture along with any changes to the Agricultural Plan for the following year. I/we understand that failure to maintain productive agricultural activities and annual reporting may result in the disqualification of the facility as an ASTGU in the SMART program.

Hank Ouimet, Manager
REDP Services, LLC
Farm Owner

12/31/24
Date

Bill Manganello
Brookside Farm, LLC
Farm Operator

12/27/2024
Date

Solar Facility Owner

I hereby certify that the information submitted regarding the Solar Array Description and inputs and outputs of the Shading Analysis is accurate and complete to the best of my/our knowledge and intentions.

Jay Smith, Director of Asset Management
Standard Solar, Inc.
Solar Facility Owner

Date

SIGNATURES AND ATTESTATIONS

Prior to submitting the Pre-Determination Form, please read and sign as directed below.

Farm Operator and Farm Owner

I/we hereby certify that the information submitted regarding the current farm conditions and practice and the Agricultural Plan for the Dual-Use Area is accurate and complete to the best of my/our knowledge and intentions, and that I/we have engaged with the University of Massachusetts Amherst Clean Energy Extension and thereby its agricultural extension service to review the Agricultural Plan and its compatibility with the solar array structures and shading. Further, I/we agree, conditional on being provided eligibility to the SMART program as an ASTGU, to submit a report, through a template provided by the University of Massachusetts Clean Energy Extension, annually throughout the duration of the SMART incentive with ASTGU adder, on the operations and productiveness of the solar array and agriculture along with any changes to the Agricultural Plan for the following year. I/we understand that failure to maintain productive agricultural activities and annual reporting may result in the disqualification of the facility as an ASTGU in the SMART program.

_____ _____

Hank Ouimet, Manager — Date
REDP Services, LLC
Farm Owner

_____ _____

Bill Manganello — Date
Brookside Farm, LLC
Farm Operator

Solar Facility Owner

I hereby certify that the information submitted regarding the Solar Array Description and inputs and outputs of the Shading Analysis is accurate and complete to the best of my/our knowledge and intentions.

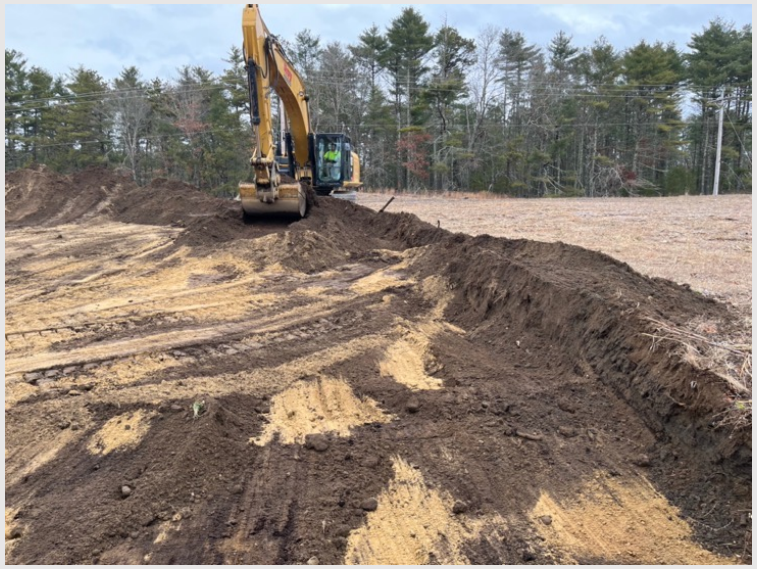
_____ 12/30/2024

Jay Smith, Director of Asset Management — Date
Standard Solar, Inc.
Solar Facility Owner

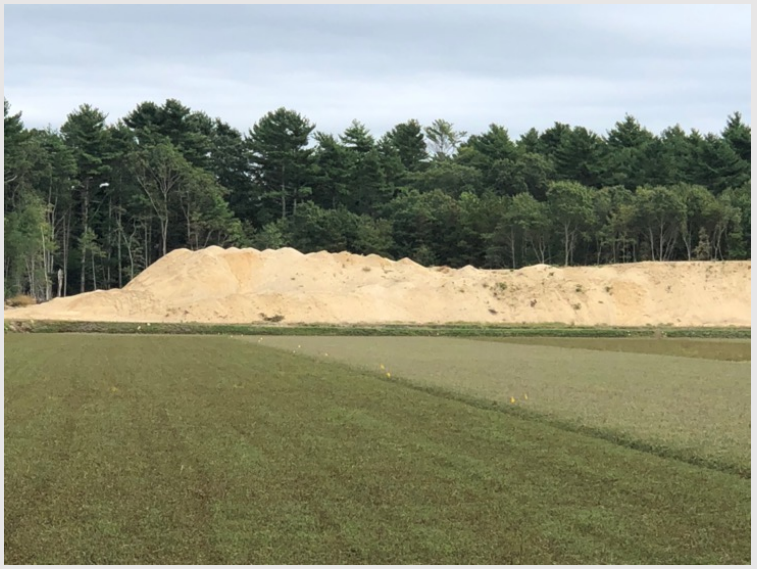
Exhibit A

Photo chronology of the Swan Holt ASTGU development

Swan Holt ASTGU



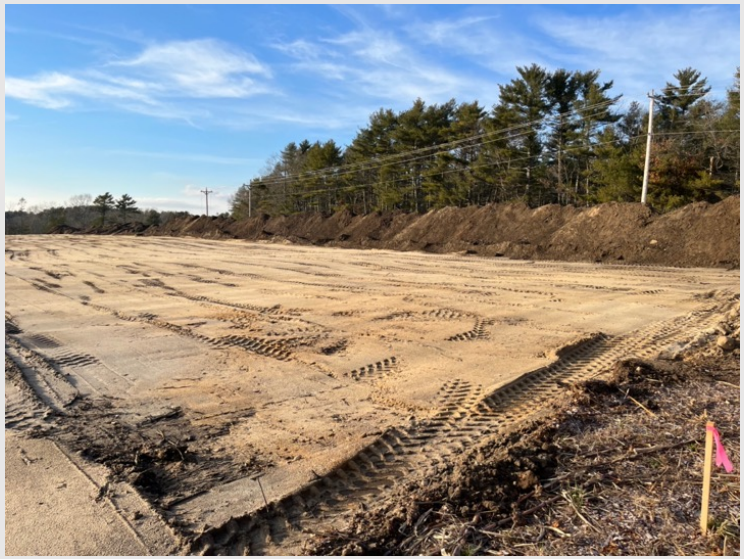
Stripping & stockpiling organic materials after clearing and prior to sand excavation



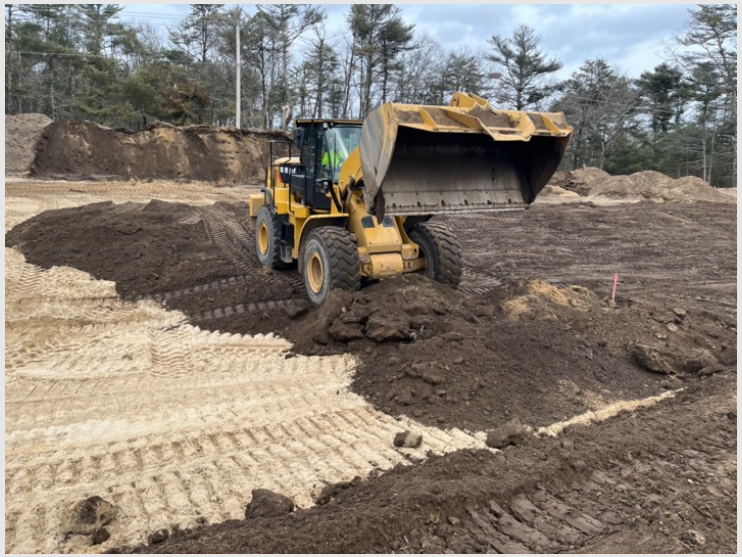
50,000 CY of sand stockpiled for bog use

Winter 2021/22

Swan Holt ASTGU



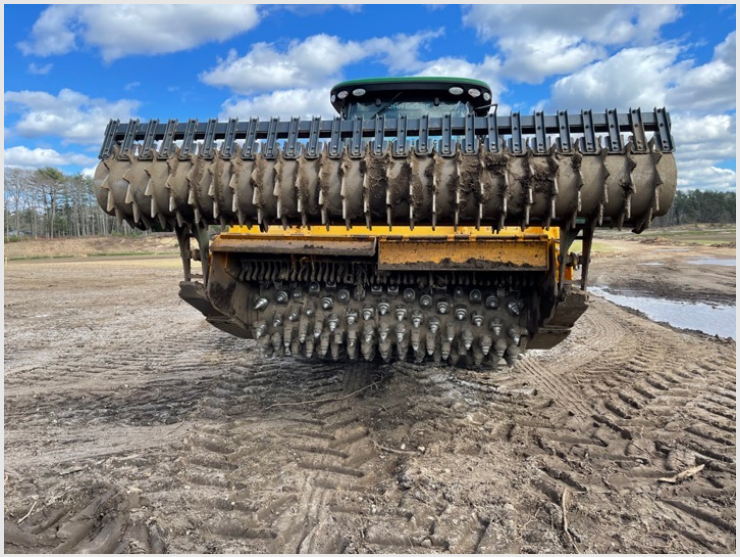
Subgrade materials graded, organics stockpiled and ready to be spread



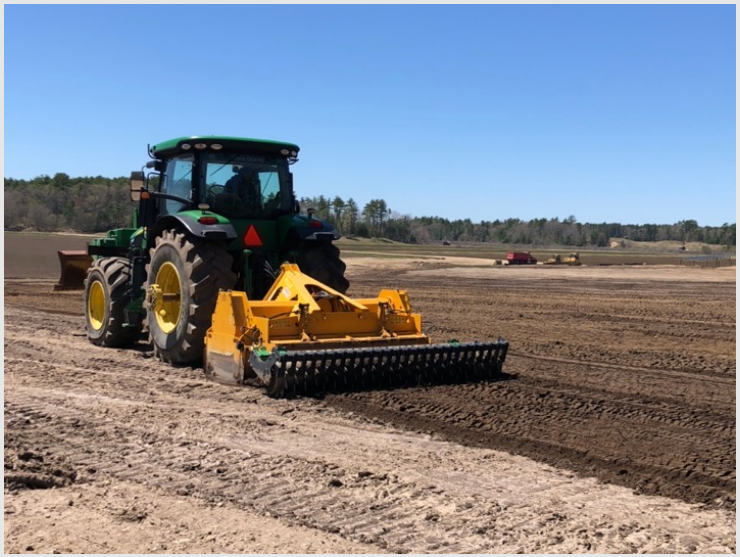
Re-spreading organics and after bog sand removal and subgrade prep

Winter 2021/22

Swan Holt ASTGU



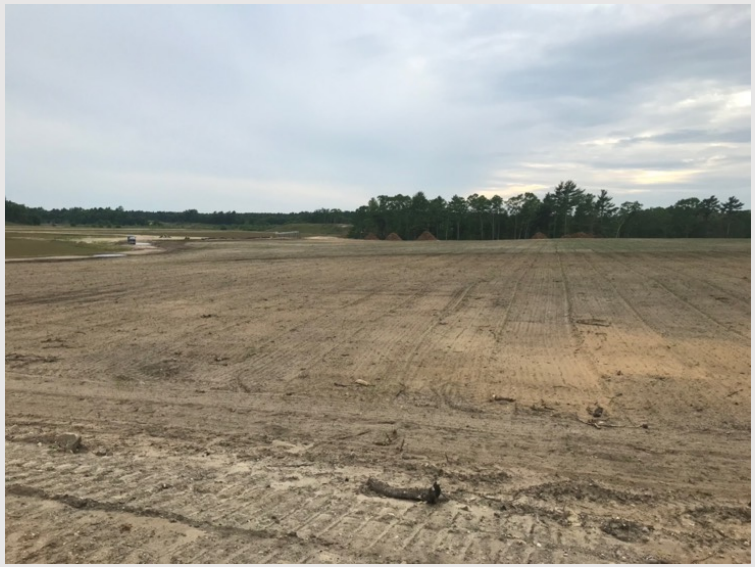
Tilling machine ready for action



Tilling underway after initial lime application

Spring 2022

Swan Holt ASTGU

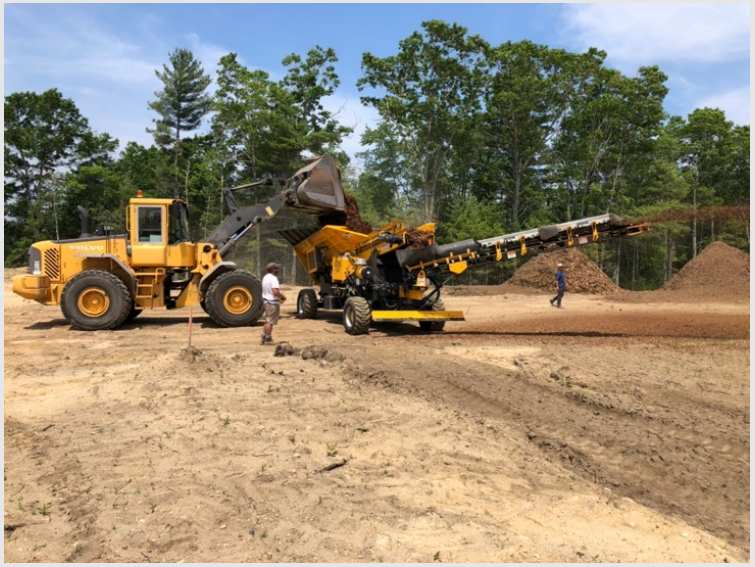


Tilling complete, cover crop planted

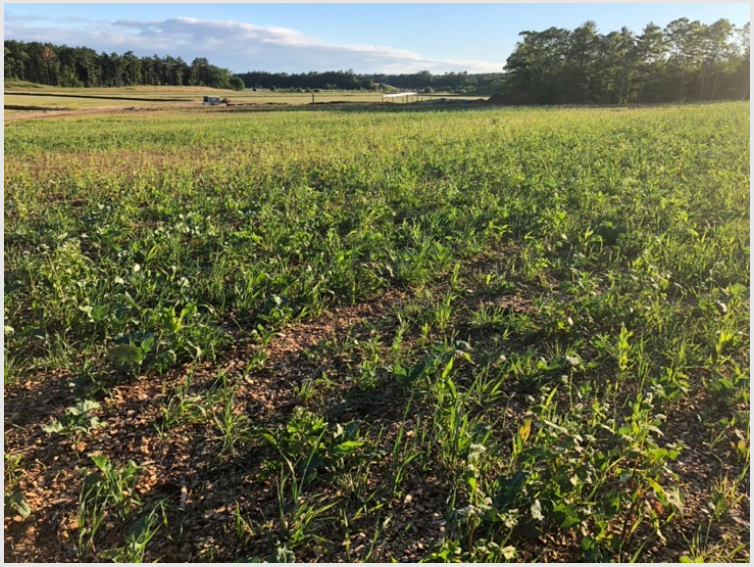
Cover crop 3 weeks after planting

Spring 2022

Swan Holt ASTGU



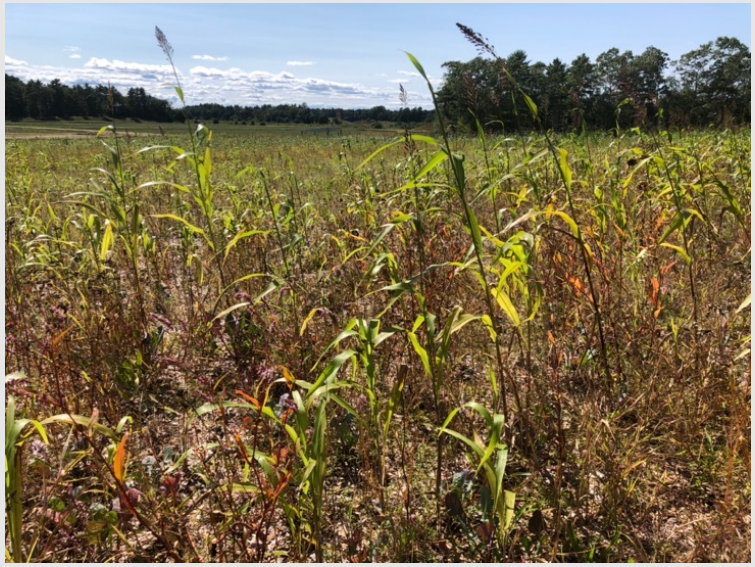
Spreading native wood chips after planting cover crop and prior to PV installation



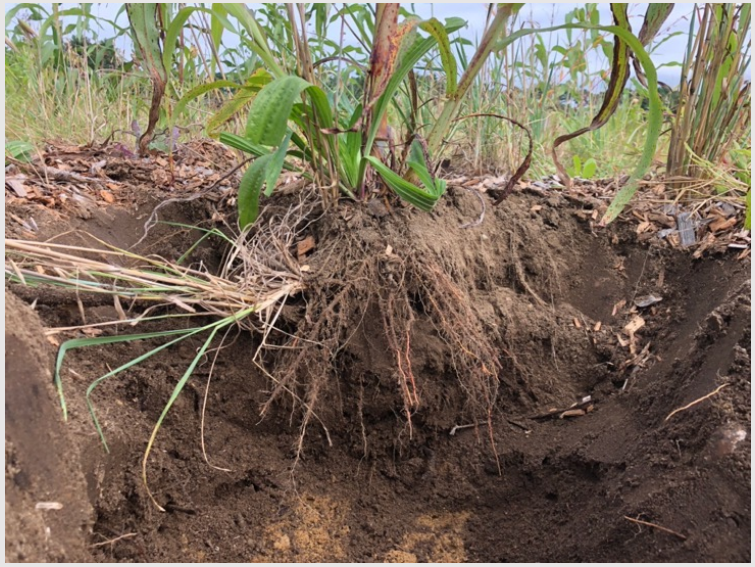
Cover crop 7 weeks after planting, 3 weeks after wood chips spread

Summer 2022

Swan Holt ASTGU



Mixed species cover crop after one season



Healthy root growth in cover crop

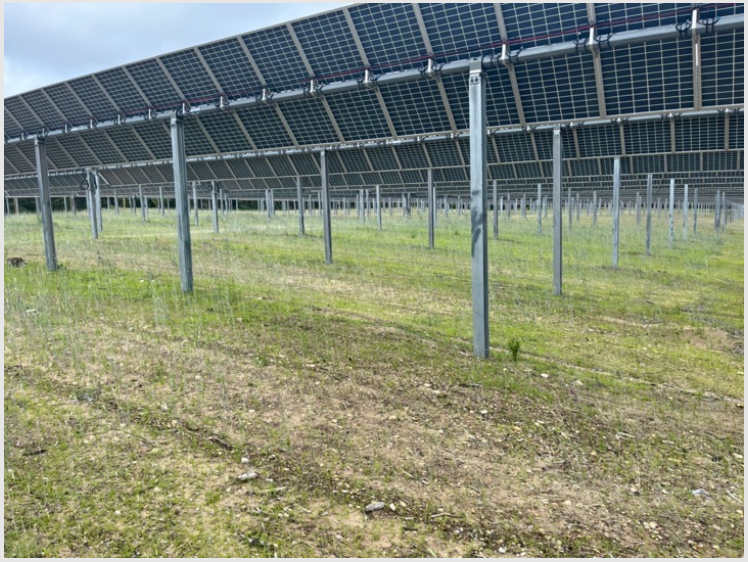
Summer/Fall 2022

Swan Holt ASTGU

Commencing PV system installation

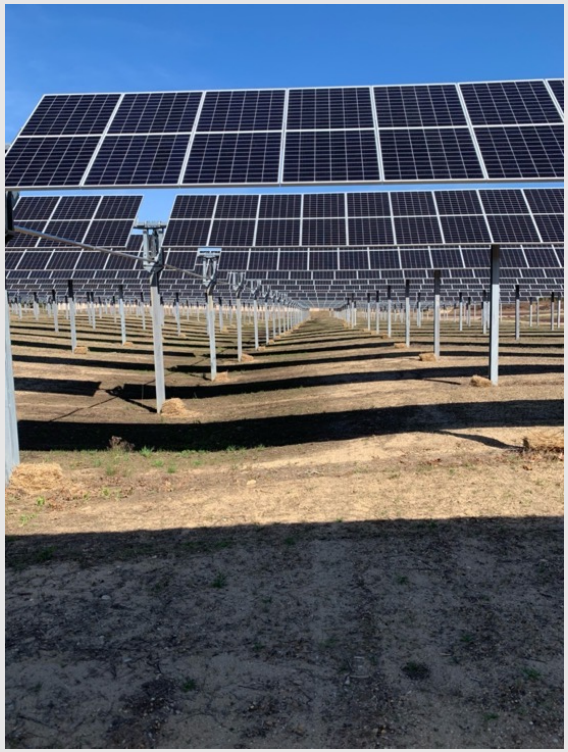
Winter 2022/23

Swan Holt ASTGU



Initial hay crop seeded after PV system installation complete

Summer/fall 2023

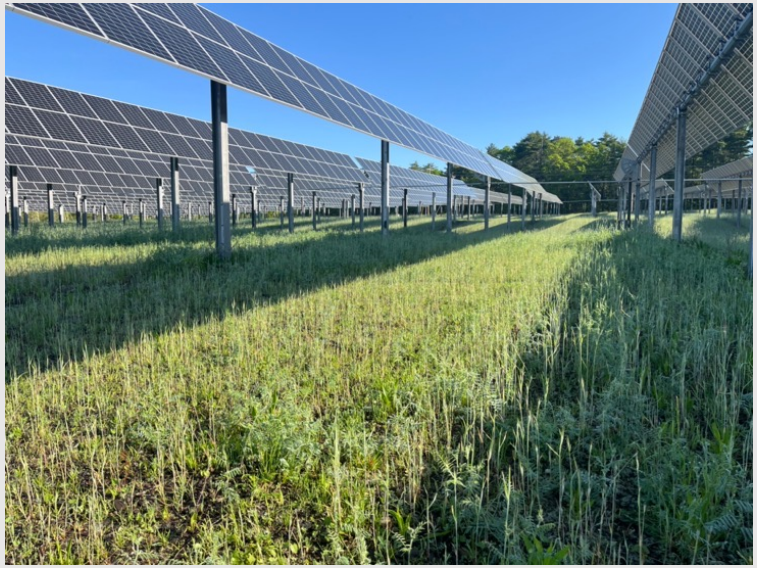


Swan Holt ASTGU

Over-seeding with hay crop after PV system operational; note hay mulch for pumpkins to be planted in the swales

Early spring 2024

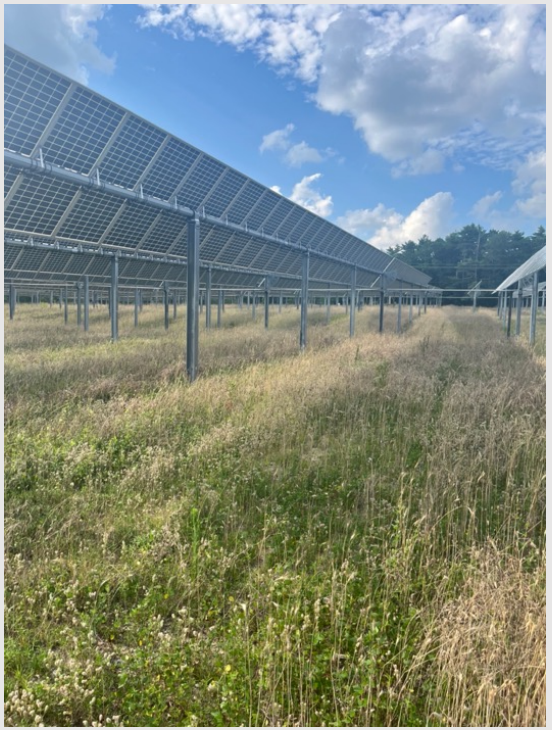
Swan Holt ASTGU



Initial hay crop after over-seeding

Late spring 2024

Swan Holt ASTGU



Ready for first harvest!

Summer 2024