

**Commonwealth of Massachusetts**  
**Executive Office of Energy and Environmental Affairs**  
**DEPARTMENT OF ENERGY RESOURCES**  
**DEPARTMENT OF AGRICULTURAL RESOURCES**

**PRE-DETERMINATION FORM**

**DESIGN ELIGIBILITY AND FARM PLAN FOR AN AGRICULTURAL SOLAR TARIFF  
GENERATION UNIT UNDER THE SOLAR MASSACHUSETTS RENEWABLE  
TARGET (SMART) PROGRAM**

**Purpose**

This pre-determination form is required for all solar PV units in advance of submitting a Statement of Qualification Application to the MA Department of Energy Resources (“DOER”) for qualification of an Agricultural Solar Tariff Generation Unit (“ASTGU”) under the SMART program. The form is provided to demonstrate conformance with the provisions required for ASTGUs in 225 CMR 20.06(1)(d) and in the *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units*.

The UMass Amherst Clean Energy Extension is available to farmers and project developers to assist in the completion of this form and to provide the required collaboration with UMass Center for Agricultural, Food and the Environment, in advising the farm plan. In preparing your ASTGU pre-determination form, it is highly recommended that you review the information and fact sheets available on the UMass Clean Energy Extension (CEE) website (<https://ag.umass.edu/clean-energy/current-initiatives/solar-pv-agriculture>) and contact the Extension with any questions regarding this information. Before submitting your final pre-determination form to DOER, submit a draft version of the form to CEE, at [energyextension@umass.edu](mailto:energyextension@umass.edu). CEE will review the document with Agricultural Extension staff, and respond to the applicant with any recommendations or comments regarding the proposed within 10 days.

This form is used by DOER and the MA Department of Agricultural Resources (“MDAR”) to determine 1) that the farm site is eligible to host an ASTGU, 2) that the solar array and racking design conform with the requirements of an ASTGU, 3) that the farm plan is appropriately integrated with the shading profile determined by the required Shading Tool analysis, and demonstrates that an applicable range of productive agriculture can be maintained throughout the land covered by the array; and 4) that the farmer agrees to file annual reports on agricultural production and changes in the farm plan throughout the period of receiving the SMART tariff.

**Pre-Determination Request Type**

- Project meets the design criteria set forth for Agricultural Solar Tariff Generation Units in the *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units*, and the attached design materials demonstrate compliance.
  
- Project seeks a waiver to the design criteria set forth for Agricultural Solar Tariff Generation Units in the *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units*.



**BASIC FARM INFORMATION**

Farm Contact Person Name: \_\_\_\_\_  Farm Owner  Farm Operator

Farm Name: \_\_\_\_\_

Legal Structure:  Sole Proprietor  LLC  Corporation  
 Partnership  Other \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Street Address (if different): \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-mail: \_\_\_\_\_

Check all that apply:  Solar facility owner  Landowner  Applicant

Current Type of Operation (Check all that apply):

Vegetables  Fruit  Livestock  Poultry  
 Nursery  Other \_\_\_\_\_

Total Acreage in Production: \_\_\_\_\_

Estimated Annual Sales:  Less than \$5,000  \$5,000-\$24,999  \$25,000-\$249,999  
 \$250,000-\$499,999  \$500,000 or more

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 \_\_\_\_\_

**SOLAR FACILITY OWNER CONTACT INFORMATION  
(IF DIFFERENT FROM ABOVE)**

Name: \_\_\_\_\_ Business (if applicable): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Street Address (if different): \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-mail: \_\_\_\_\_

Check all that apply:  Landowner  Applicant

**LANDOWNER CONTACT INFORMATION  
(IF DIFFERENT FROM ABOVE)**

Name: \_\_\_\_\_ Business (if applicable): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Street Address (if different): \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-mail: \_\_\_\_\_

Check all that apply:  Applicant

**APPLICANT CONTACT INFORMATION  
(IF DIFFERENT FROM ABOVE)**

Name: \_\_\_\_\_ Business (if applicable): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Street Address (if different): \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact E-mail: \_\_\_\_\_

**SITE INFORMATION**

Street Address: \_\_\_\_\_ Approximate Latitude/Longitude: \_\_\_\_\_

Assessors Map/Plat Number: \_\_\_\_\_ Parcel/Lot Number \_\_\_\_\_

Total Acreage: \_\_\_\_\_

Land Status:  currently enrolled in Chapter 61A  
 enrolled in Chapter 61A in previous 5 years  
 Prime Agricultural Farmland: *Please attach MassGIS OLIVER map showing prime farmland soils*

Will the project be implemented on APR-restricted land?  Yes  No

If yes, please list: Name on APR restriction: \_\_\_\_\_ Year APR recorded: \_\_\_\_\_

Will the project be implemented on land restricted by an Agricultural Covenant under the Farm Viability Enhancement Program?  Yes  No

**ATTACHMENTS**

- Property map
- Soils map, if applicable
- Map of APR-restricted area, if applicable

## WAIVER REQUEST

Please check off the design criteria requirement(s) the Applicant is seeking a waiver from:

- Panel Height Requirements
- Maximum Direct Sunlight Reduction Requirements
- Growing Season/ Time of Day Considerations
- Other
- N/A

DOER recognizes the variety and, in some cases, the uniqueness of farming operations where some of the Additional Provisions for an ASTGU may not be required to achieve the objectives of the ASTGU. To address this issue, a landowner may request that DOER issue a waiver from any of the Additional Provisions for an ASTGU that is not contrary to the law or the intent of the regulations. All waiver requests should be submitted to [DOER.SMART@mass.gov](mailto:DOER.SMART@mass.gov). In order to request a waiver, the applicant must provide the Department with the following:

### 1. Plan Development

Develop a plan that:

- a. describes how the applicant will integrate the ASTGU into their farming operation;
- b. demonstrates that a waiver does not result in a diminishment in the agricultural production capacity of the land; and
- c. demonstrates that the primary use of the land is for agricultural or horticultural production, as defined under M.G.L. Chapter 61A.

### 2. Justification and Substantiation

An applicant must provide justification as to why an ASTGU design is necessary for the proposed agricultural operations on the relevant parcel of land. An applicant must provide documentation for each specific aspect of the design parameters from the *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units*, for which the ASTGU requires a waiver as follows:

- a. Panel Height Requirements: Provide documentation demonstrating how the proposed design will allow for the variety and flexibility of a variety of potential farming operations at the farm throughout the term of the SMART Tariff.

b. Maximum Direct Sunlight Reduction Requirements:

- i. Demonstrate how the proposed dual use design will provide equal or greater total agricultural yields than if both the agricultural crop and the solar array were grown and installed separately, utilizing the same amount of total land area for the comparison;
  - ii. Demonstrate how each square foot of land will be used for agriculture production;
  - iii. Demonstrate how the design will be able to accommodate a variety of potential agricultural products throughout the twenty year term of the SMART Tariff.
- c. Growing Season/Time of Day Considerations: Provide documentation on how the time of season and day data in Section A is not relevant to the farming practice and operation, currently, and for the term of the SMART Tariff.

**Other:** For all other requirements for which a waiver is being sought, please describe the waiver(s) requested, why the proposed alternatives require a waiver, and how these alternatives will meet the intention of the ASTGU regulations

## SOLAR ARRAY DESIGN

Please provide the following information regarding the solar array design:

Nameplate capacity AC (in MW): \_\_\_\_\_ (Note: 1 MW=1000 kW)

Expected annual generation (in MWh): \_\_\_\_\_ (Note: 1 MWh=1000 kWh)

Acreage of farmland over which array is to be installed: \_\_\_\_\_

System type:  Fixed  Tracking  Other \_\_\_\_\_

Height of lowest panel edge (in feet): \_\_\_\_\_

Height of lowest elevated horizontal mounting (in feet): \_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

*If you wish to provide additional descriptive information regarding the solar array design, you may include this information below, or in a typed attachment labeled "Solar Array Design."*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## ATTACHMENTS

Please attach the following system drawings:

- A site plan (as viewed from above) of the impacted farmland with clear depiction of the layout of all array modules, including dimensions of the overall array, each module, and all applicable spacing.
- A design drawing (from the side) of a representative module with dimensions showing panel tilt and elevations from ground.
- A design drawing of the mounting structure with details showing dimensions and all materials of the ground penetrations.

**SHADING ANALYSIS**

An ASTGU must demonstrate it is in compliance with the 50% maximum shading allowance through the use of the ASTGU Shading Analysis Tool provided by DOER. This shading analysis should be completed prior to the completion of this pre-determination form.

Provide all solar array design and layout information and input data used by the Shading Analysis Tool to conduct the shading analysis for the project.

Provide all output from the Shading Analysis Tool, including a site map to clearly demonstrate the simulated percent of shading over the simulated growing season of all farm land impacted by the array. The map should be discernable down to at least a per square foot scale.

**AGRICULTURAL 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: \_\_\_\_\_

Please fill out the Crop Table for horticulture, flowers, vegetable, fruit, grain, and hay crops. Complete one line for each crop to be grown under the solar array, including the area to be planted within the array, and expected productivity using specific units (e.g. lbs/acre, quarts per row). Fill out one Crop Narrative for each crop, detailing anticipated crop management (planting, irrigation, soil amendments, harvesting) and equipment to be used.

Please fill out the Grazing Table for livestock and poultry production. Complete one line for each type of livestock or poultry to be raised under the solar array, including the area to be grazed within the array, and expected productivity using specific units (e.g. lbs of milk per year). Please also fill out the Grazing Narrative, detailing anticipated pasture and animal management and equipment to be used.

For all agricultural uses, please fill out the Farm Equipment Table. Complete one line for each farm vehicle to be used within the solar array.

Additional comments regarding agricultural plan for Year 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ATTACHMENTS**

Please attach a *Crop or grazing diagram overlay on the shading analysis map.*



**CROP NARRATIVE**

*Please detail anticipated crop management, including approximate **dates** and **equipment** to be used. We recognize management is subject to weather, disease pressure, worker availability, etc. The purpose of this form is to demonstrate the solar array design is compatible with anticipated equipment usage and crop management needs. If you need additional space, please include a typed attachment labeled "Crop Narrative."*

Crop: \_\_\_\_\_

Planting Plan: \_\_\_\_\_

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Soil Amendment Plan: \_\_\_\_\_

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Cultivation Plan: \_\_\_\_\_

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Irrigation Plan: \_\_\_\_\_

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Pesticide/Herbicide Plan: \_\_\_\_\_

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Harvest Plan: \_\_\_\_\_

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**Compliance with Requirements of 225 CMR 20.00 and Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units.**

Please respond to each of the following relevant Regulatory and Guideline requirements to demonstrate compliance with all eligibility requirements for ASTGUs. You may refer to other sections within this document if you feel you have previously appropriately addressed a specific line item.

225 CMR 20.06(1)(d) contains the following special provisions pertaining specifically to the eligibility of ASTGUs:

(d) Special Provisions for Agricultural Solar Tariff Generation Units. In order to qualify as an Agricultural Solar Tariff Generation Unit, a Solar Tariff Generation Unit must submit documentation itemized in 225 CMR 20.06(1)(d) below. All final determinations regarding the eligibility of such facilities will be made by the Department, in consultation with MDAR. A Solar Tariff Generation Unit must also submit satisfactory documentation to the Department as detailed in the Department’s *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units*.

- 1. the Solar Tariff Generation Unit will not interfere with the continued use of the land beneath the canopy for agricultural purposes;

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- 2. the Solar Tariff Generation Unit is designed to optimize a balance between the generation of electricity and the agricultural productive capacity of the soils beneath;

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- 3. the Solar Tariff Generation Unit is a raised structure allowing for continuous growth of crops underneath the solar photovoltaic modules, with height enough for labor and/or machinery as it relates to tilling, cultivating, soil amendments, harvesting, *etc.* and grazing animals;

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- 4. crop(s) to be grown to be provided by the farmer or farm agronomist in conjunction with UMass Amherst agricultural extension services, including compatibility with the design of the agricultural solar system for such factors as crop selection, sunlight percentage, *etc.*;

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5. annual reporting to the Department and MDAR of the productivity of the crop(s) and herd, including pounds harvested and/or grazed, herd size growth, success of the crop, potential changes, *etc.*, shall be provided after project implementation and throughout the SMART incentive period;

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6. other system design information, which shall include, but not be limited to:

a. dual-use type, *e.g.*, ground mount racking, pole towers, tracking, *etc.*;

b. total gross acres of open farmland to be integrated with the project;

c. type of crop(s) to be grown, including grazing crops;

d. pounds of crop(s) projected to be grown and harvested, or grazed;

e. animals to be grazed with herd size(s); and

f. design drawing including mounting system type (fixed, tracking), panel tilt, panel row spacing, individual panel spacing, for pole towers tower spacing and mounting height, *etc.*

**Please attach.**

## **SIGNATURES AND ATTESTATIONS**

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

### Landowner

I hereby certify that I have personally examined and am familiar with the information submitted herein, and, based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

\_\_\_\_\_  
Signature of Landowner

\_\_\_\_\_  
Date

### Farm Operator and Landowner

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.

\_\_\_\_\_  
Signature of Farm Operator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Landowner

\_\_\_\_\_  
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.

\_\_\_\_\_  
Signature of Solar Facility Owner

\_\_\_\_\_  
Date