

# Renewable Team

## August 27, 2019

### Meeting Minutes

**MEETING LOGISTICS** – The meeting was held on Tuesday August 27, 2018 at 8:30 am in room 1C of the Legislative Office Building in Hartford. The meeting was held to discuss the development of strategies for the deployment of solar at State owned buildings.

#### **REVIEW OF TEAM GOAL**

The group reviewed the team goal which is:

*“Develop strategies for deploying solar project on state buildings. Refine state required paperwork such as emerging PPAs. Develop plan and written standard operating procedures (SOPs) for how to take the deployment process and make it part of business as usual (BAU) for a state agency.”*

There were no recommended changes to the Team’s goal.

#### **FINANCING**

- Power Purchasing Agreements (PPAs) will allow the installation of solar on State owned buildings, without the State having to expend funds to procure and install solar.
- The State would enter into a PPA agreement with a system owner; the system owner would install solar on a State owned property at the system owner’s expense. In return the State would enter into a long term agreement to purchase electricity at a fixed rate, which would typically be less than the rate the State would otherwise pay to the utility.
- The system owner would be responsible for all the costs of the solar system’s operation and maintenance of the solar system, insurance, repairs, etc.,
- These agreements allow for the installation of solar without the building owner having to outlay capital dollars for the acquisition and installation of the equipment, while still reaping the benefit of lower electrical bills.
- Connecticut State Colleges & Universities (CSCU) indicated that they have multiple solar installations operating under PPAs, and has thus far been able to retain the savings achieved for other uses.
- Roof vs. Ground Mount vs. Steel Frame Canopy - Ground mounted solar allows for larger collection fields, but is more expensive to install. Roof mounted installations are

expensive to install. Recommended that solar not be installed on roofs less than 7 years old, or have 20-25 years of remaining life. Solar can also be mounted on steel frame "carport" style structures. These installations tend to be the most expensive to install.

- A successful solar installation requires that the building's electrical system and corresponding utility grid be sufficiently able to accommodate the electricity provided via the solar installation.
- Additional logistics must also be considered, such as cutting trees to provide the solar panels as much light as possible, trenches may need to be dug to bury lines, etc.
- The larger the solar installation, the better the economics for all involved. A one-megawatt solar ground installation would require approximately five (5) acres of land.
- Virtual Net Metering (VNM) differs from a PPA in that VNM is a bill crediting system used when solar is not used on-site, but rather externally installed and shared among subscribers who receive credits on their electric bills for excess energy produced. The utility company measures & quantifies the production of electricity and provides the retail price credit.
- All manner of active solar promote the reduction of greenhouse gases (GHG), provide additional electrical supply to meet demand on electrical bills.
- The Department of Energy and Environmental Protection (DEEP) is in the process of a solar installation on a dam in Canton which will provide credits to DEEP and the Department of Administrative Services (DAS).
- While CSCU has authority to enter into PPAs, other agencies may not.
- DEEP is currently working on a PPA that would be usable by all agencies; DAS would act as the contracting authority and work directly with the Green Bank. Current issues DEEP is working out with the AG is the termination language, ability to assign the agreement, etc.
- The economics for the State to install solar itself are not there, as it is only the Government tax credits which make solar viable at this time. Third party vendors also have significantly more experience with solar installation, operation & maintenance.
- Solar maintenance issues include the 10 year estimated life span for inverters; the system tends to "work until it doesn't" so they can come off line without warning; repair and maintenance responsibility falls to the 3<sup>rd</sup> party PPA vendor.

## **PERFORMANCE METRICS**

- Energy Cap software – has many reporting capabilities currently, and DEEP can work with Energy Cap to add additional reports.
- Solar installation can possibly be tied to the Building Management System (BMS) which may be able to capture certain data elements to provide performance metrics.
- Suggestion that performance metrics be incorporated into a “dashboard” that is available to the general public as a way to illustrate efforts and results. The Department of Transportation (DOT) has solar installations at its rest areas which incorporate a dashboard similar to the one suggested. DEEP will investigate working with the “Data Team” on the dashboard suggestion.

## **POLICY CONCERNS**

- CSCU and UCONN have held auctions for 3<sup>rd</sup> party electric suppliers.
- Ability to invest a portion of savings to other projects would be beneficial. Need to determine way for agencies to identify and retain savings. This concept will be passed along to the Steering Committee as a potential goal.
- UMASS Dartmouth has solar installations that store energy in batteries until it is utilized. This is due to Massachusetts having a more aggressive system than Connecticut.

## **CASE STUDIES**

- Recommended that the Renewable Team review the metrics which can be provided by CSCU regarding their current installations.
- The Green Bank (GB) will also provide some metrics for the Renewable Team to review.

## **EDUCATION FOR AGENCIES**

- Recommended that standardized PPAs be developed for use by all agencies.
- Establish checklists to make consideration of solar a “business as usual” consideration.
- May work best to provide information in a “Q&A” format.

## **IDENTIFY PILOT PROJECT**

- The Department of Correction (DOC) has some solar installation in progress. CSCU shared their list of installed locations with the Team. DEEP discussed its solar project in Canton which will be located on a dam and a project at a fish hatchery.
- The GB will assist with site walks of potential locations.
- EverSource has a publicly available website that provides some information on the economics of solar installations based on a street address. CSCU said it would email the relevant webpage link to the Renewable Team.

## **PILOT TEST**

- DOC will share the metrics from its PILOT program for other agencies to review.
- CSCU provided information and metrics regarding its 13 installed solar locations.

## **SHARE PROCESS TO MAKE IT BUSINESS AS USUAL (BAU)**

- Recommended that agencies be provided with relevant information (metrics regarding economics, impacts to facilities, etc.) so that agencies can make informed decisions regarding potential solar installations.

## **OTHER**

- It was noted that Virginia-Tech has advanced beyond the PILOT stage in terms of solar installations and that they have removed at least some ground based solar due to issues with inclement weather.
- It was determined that future meetings would be held at the same location.

## **ATTACHMENTS**

- Meeting Sign-In Sheet
- Renewable Team Agenda For Discussion 8/27/19
- CT State Colleges Universities – on-site PPA PV Projects – Status Summary Report – 8/27/19

**STATE OF CONNECTICUT**  
**DEPARTMENT OF CORRECTION**  
**FACILITIES MANAGEMENT & ENGINEERING**

**MEETING SIGN-IN SHEET**

Project: RENEWABLES ON STATE BUILDINGS

Date & Time: August 27, 2019

Location: LOB- HEARING ROOM 1-C

Name	AGENCY	PRESENT
Stephen Link	DOC	LY
Eric Connery	CGA	EC
Mackey Dykes	CT Green Bank	MD
Chris Dupuis	State Colleges & Universities	CMD
Frank Calvi	State Library	FC
Loretta Eisler	Mental Health and Addiction Services	LE
Doug Moore	Administrative Services	DM
Steve Anderson	Agriculture	
Warren Schilling	Developmental Services	
Eric Ott	DEEP	EO
Kirsten Rigney	DEEP	KR
Brian Toal	Public Health	
Michael Gilbert	Social Services	MG
Elise Greenberg	DOT	EG
Patrick O'Brien	Judicial	PO
Michael Curley	Office of Early Childhood	MC
Paul Hinsch	OPM	PH
Rich Miller	UConn	RM

David Cyr

CGA

DC  
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## **RENEWABLE TEAM AGAENDA FOR DISCUSSION**

### **MEETING #1 August 27, 2019**

#### **Strategies for Deploying Solar:**

##### **Financing:**

- PPA's are they best avenue to acquiring solar?
- Other options?

##### **Performance Metrics:**

- Track number of installations
- Track watts produced (EnergyCap?)
- Track savings (EnergyCap?)

##### **Policy Concerns:**

- Discussion of solar power intermittency on state's ability to maintaining low-price aggregated power purchasing rates.
- Investment of a portion of energy savings into other EO 1 projects?

##### **Case Studies:**

- Look at existing installation metrics in College system?

##### **Education for agencies:**

- What PPA's (Power Purchase Agreements) are and why they are necessary for executive branch agencies
- Established a check-list or best practices for agencies. (State Colleges can share what they have learned?)

##### **Identify Pilot Project:**

- Use DOC's projects once executive branch PPA contract is approved
- Any current college system project?

##### **Pilot Test:**

- Utilize what was learned in DOC pilot to finalize education and best practice information to have another agency do a solar project
- How to select next project?

##### **Share Process to make it BAU:**

- Develop a set of SOPs for agencies to deploy solar

CT State Colleges Universities  
On-site PPA PV Projects  
Status Summary Report

Updated 08/27/19

Yr 1

Project	Type	Size (kW DC)	Size (kW AC)	# Panels	AEP (kWh)	Utility
Asnuntuck	Roof	721.44	640	2106	816,585	Eversource
Central	Roof	116.28	96.6	342	129,611	Eversource
Housatonic - Beacon	Carport	1,008.00	720	2520	1,215,300	UI
Housatonic - Lafayette	Roof	198.72	180	576	237,965	UI
Manchester East	Ground	1,310.40	1000	3640	1,641,200	Eversource
Manchester North	Ground	1,370.88	1000	3808	1,706,300	Eversource
Middlesex	Ground	120.40	100	344	137,521	Eversource
Quinebaug	Ground	862.92	730	2538	1,029,700	Eversource
Southern - East	Carport	1,008.00	720	2520	1,218,000	UI
Southern - East	Ground	306.00	240	900	380,430	UI
Southern - West	Carport	432.00	300	1080	532,233	UI
Southern - West	Ground	691.20	480	1728	802,988	UI
Southern - West	Roof	144.00	133.2	360	174,155	UI
Tunxis	Roof	298.08	240	864	345,286	Eversource
Western	Ground	317.40	250	920	407,161	Eversource
Asnuntuck	Carport	318.00	240	900	407,161	Eversource

Totals

9.22 MW DC      7.07 MW AC      25,146 Panels      11,181,596 AEP (kWh)      8.8%  
 (2018 elec auction data plus TRCC data)      2017 CSCU AEP \$ 126,411,775      Provided by On-Site PV

Projects Complete & Online UON  
Status for incomplete PV projects

Project in final commissioning stages, ready for COD  
**Project in active construction, COD in Fall 2019**  
 Project scheduled to begin construction Fall 2019

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