

Distributed and Grid Side Generation in Connecticut

December 16, 2016



Overview

- The focus of this presentation will be to provide an update on the status of existing and new programs in Connecticut which are administered by DEEP, EDCs, and/or Connecticut Green Bank.
- All capacity through 2015 is considered to be in commercial operation. All capacity 2016 and beyond is projected and identified with the anticipated commercial operation date, unless stated otherwise.*
- All capacity is shown in incremental figures, not cumulative. Capacity shown in one year is the total amount of capacity that has been or is expected to be installed in a given year.

** For VNM and Project 150, installed capacity thru 2016 is assumed to be in commercial operation.*



Connecticut Programs

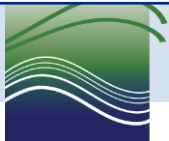


Behind the Meter (BTM)	Grid Side
Anaerobic Digestion (Green Bank)	Public Act 05-01: Project 150
CHP (Green Bank)	Public Act 13-303: Section 6
Virtual Net Metering	Public Act 11-80: Section 127
Net Metering	Public Act 15-107: Large Scale Procurement (≥ 20 MW)
RSIP/SHREC (Green Bank)	Public Act 15-107: Small Scale Procurement (<20 MW)
LREC/ZREC	
Shared Clean Energy Facility Pilot Program (SCEF)	



Connecticut Procurement Programs

Legislation	Program	Description
Public Act 11-80; Public Act 15-194	RSIP/SCHREC	PA 15-194 allows the CT Green Bank to install up to 300 MW of residential PV; RECs can now be sold as long term PPAs to CT EDCs.
Public Act 11-80; Public Act 12-2	Green Bank - Anaerobic Digestion	Allows a pilot program to be established to install AD projects; 5 AD facilities, up to 3 MW in size are allowed to be installed.
Public Act 11-80, Sec. 103	Green Bank – CHP	Pilot program
Public Act 05-01; Public Act 11-80	Project 150	Allows for Long Term PPAs (no additional solicitations will be issued)
Public Act 11-80, Sec. 127	Section 127 Procurement	Allows for 30 MW of Class 1 projects to be installed (no additional solicitations will be issued)
Public Act 11-80, Sec. 107/110	LREC / ZREC	Procurement of Renewable Energy Credits
Public Act 13-303, Sec. 6	Section 6 Procurement	Allows DEEP to procure clean energy for up to 4% of Electric Load
Public Act 15-107, Sec. B	Small Scale Procurement	Allows DEEP to procure clean energy for up to 5% of Electric Load; DEEP may procure up to 10% of the state's Electric load (combined with Sec C); Projects must be less than 20MW
Public Act 13-303, Sec 7; Public Act 15-107, Sec. C	Large Scale Procurement	Allows DEEP to Procure clean energy for up to 5% of Electric Load; Procure up to 10% of Electric load (combined with Sec B); Projects must be greater than or equal to 20MW
Public Act 15-113; Public Act 16-116	Shared Clean Energy Facility Pilot Program	Pilot Program to procure up to 6 MW of BTM Class 1 technologies



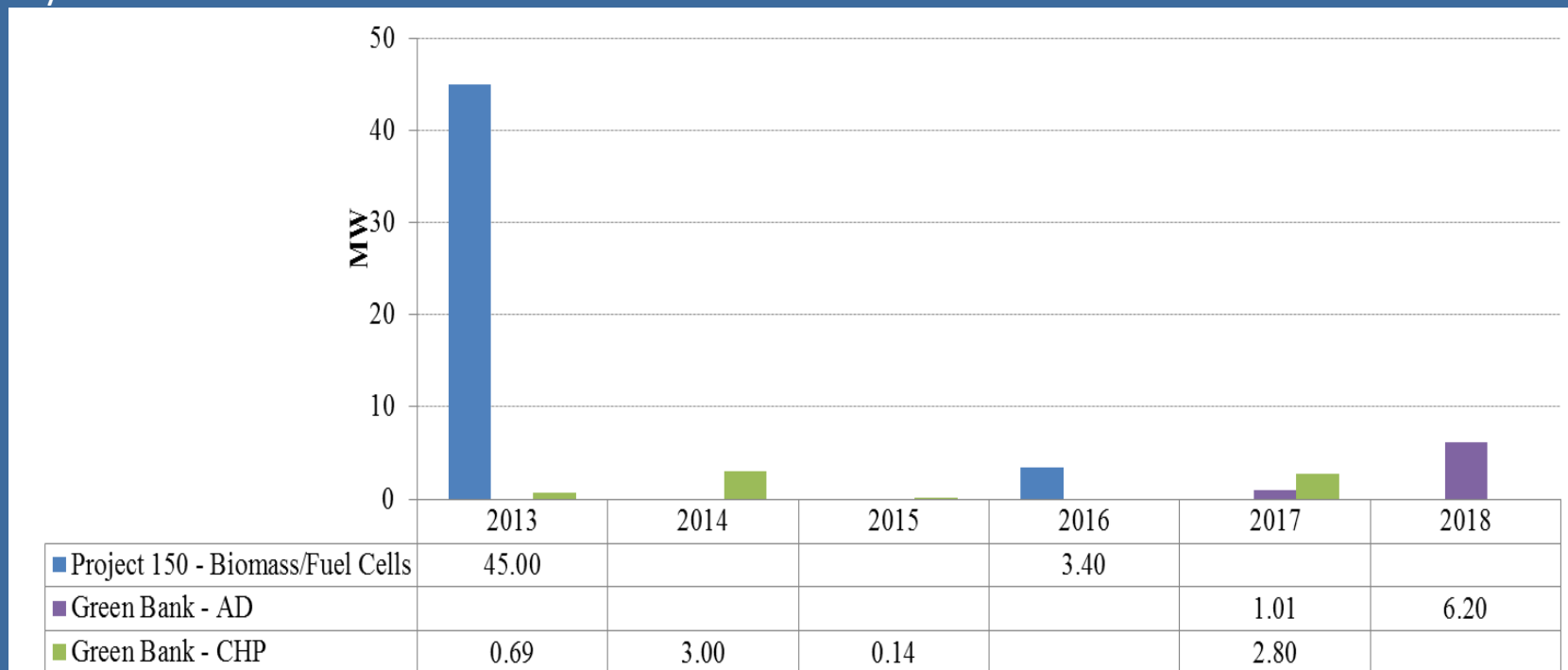
Connecticut Net Metering Programs

Legislation	Program	Funding Cap	Description
C.G.S. 16-243h	Net Metering	No Cap	For any customer with a DG Unit <2MW
Public Act 11-80; Public Act 16-216	Virtual Net Metering	\$10 million/year; however, an additional \$6 million was allowed for retroactive qualification of municipal VNM customers.	State, Municipal and Agricultural customers who operate behind-the-meter generation (Customer Host) can assign surplus production from their generator to other metered accounts that are not physically connected. Customers can use VNM for DG units less than 3MW.



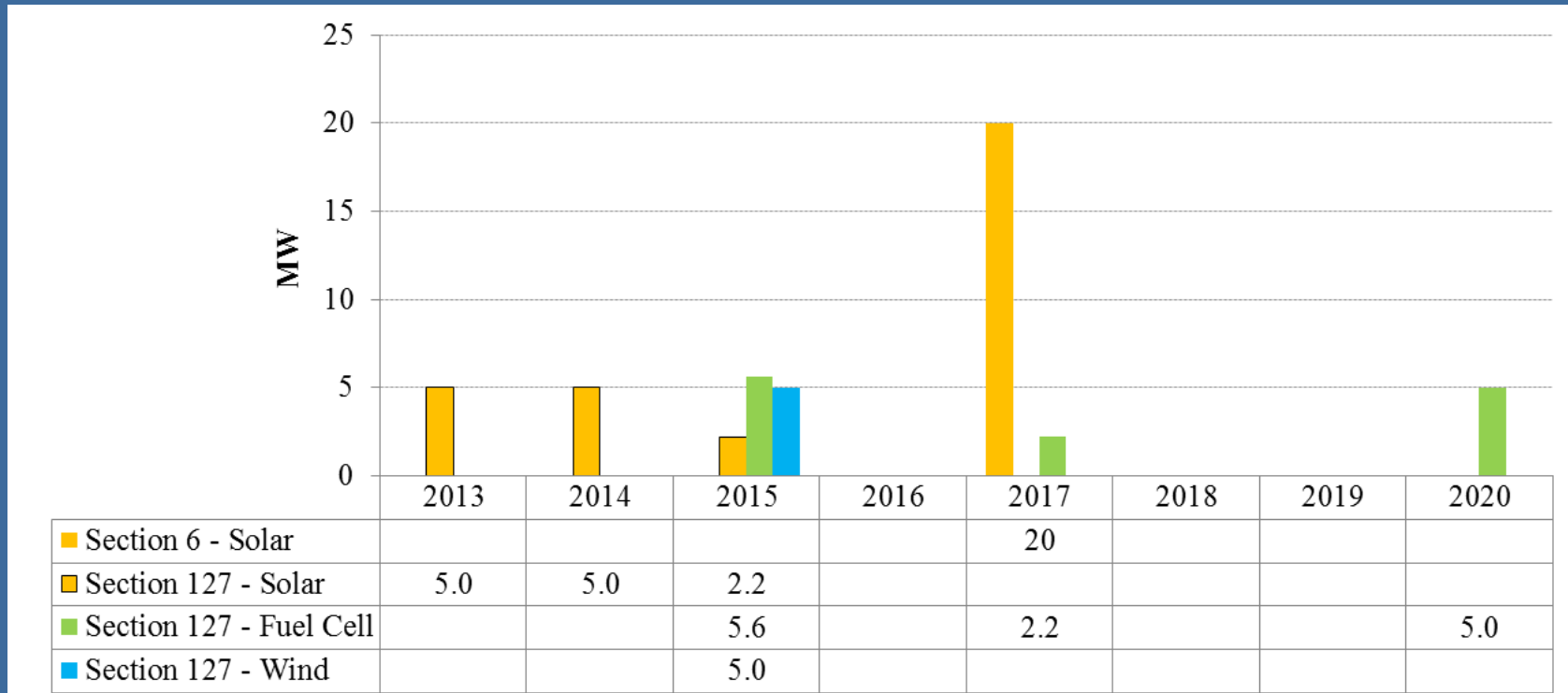
Existing Programs – Update – Part 1 of 5

- Project 150: Three projects are in commercial operation. One Fuel Cell project (3.4MW) came online in 2016.
- Green Bank Anaerobic Digestion (AD) Program: No Projects have yet come online; 7.2 MW of capacity expected to come online by 2018. The Green Bank has the authority to solicit one more project, which can be up to 3MW.
- Green Bank CHP Program: Approximately 3.82 MW online, and 2.8 MW expected to come online by 2017.



Existing Programs – Update – Part 2 of 5

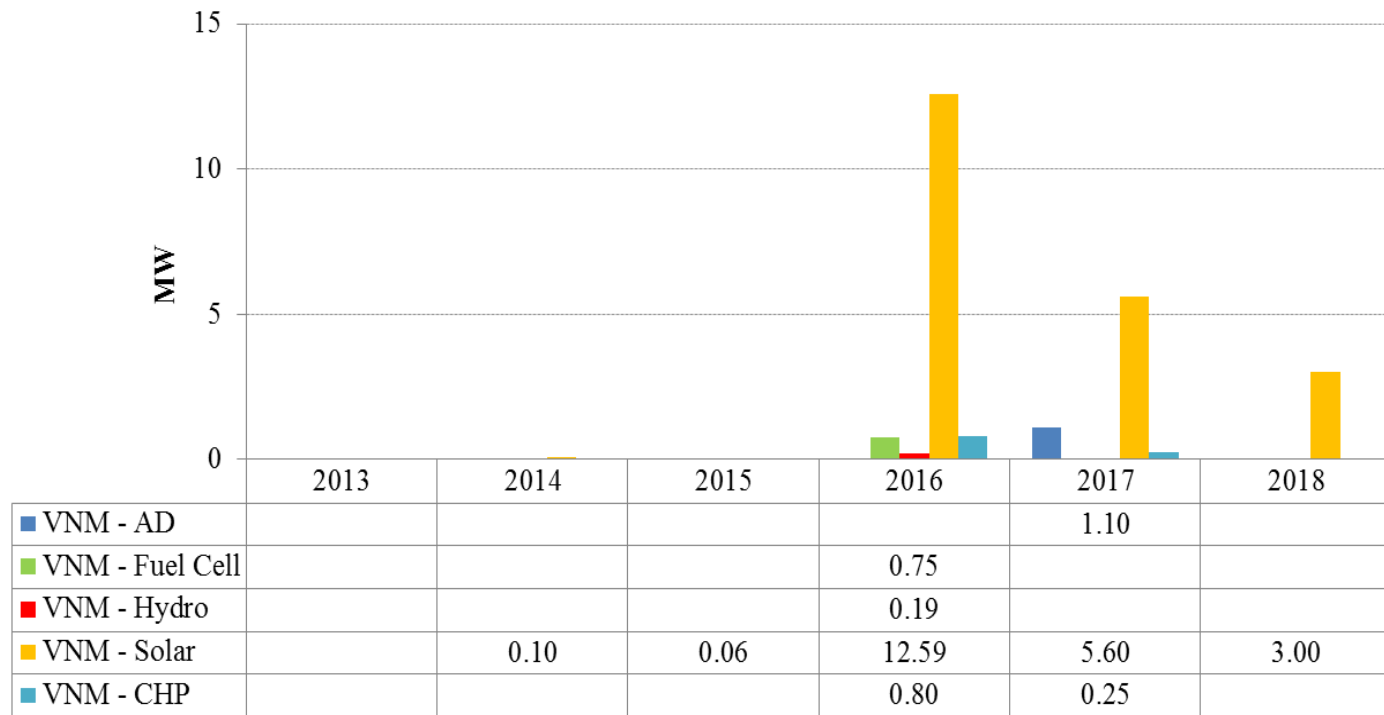
- Section 6: The Number Nine Wind Project had a proposed in-service date of 2016, but was officially cancelled this year. The Fusion Solar is (20MW) expected to come online in 2017.
- Section 127: Approximately 12.2 MW of Solar, 5 MW of Wind, 5.6 MW of Fuel Cells are in commercial operation. One 2.2 MW Fuel Cell (Woodbridge) project is expected to come online by the end of 2017. A 5 MW Fuel Cell project (South Windsor) is expected to come online by 2020, however transfer of PPA ownership is currently being evaluated.



Existing Programs – Update – Part 3 of 5

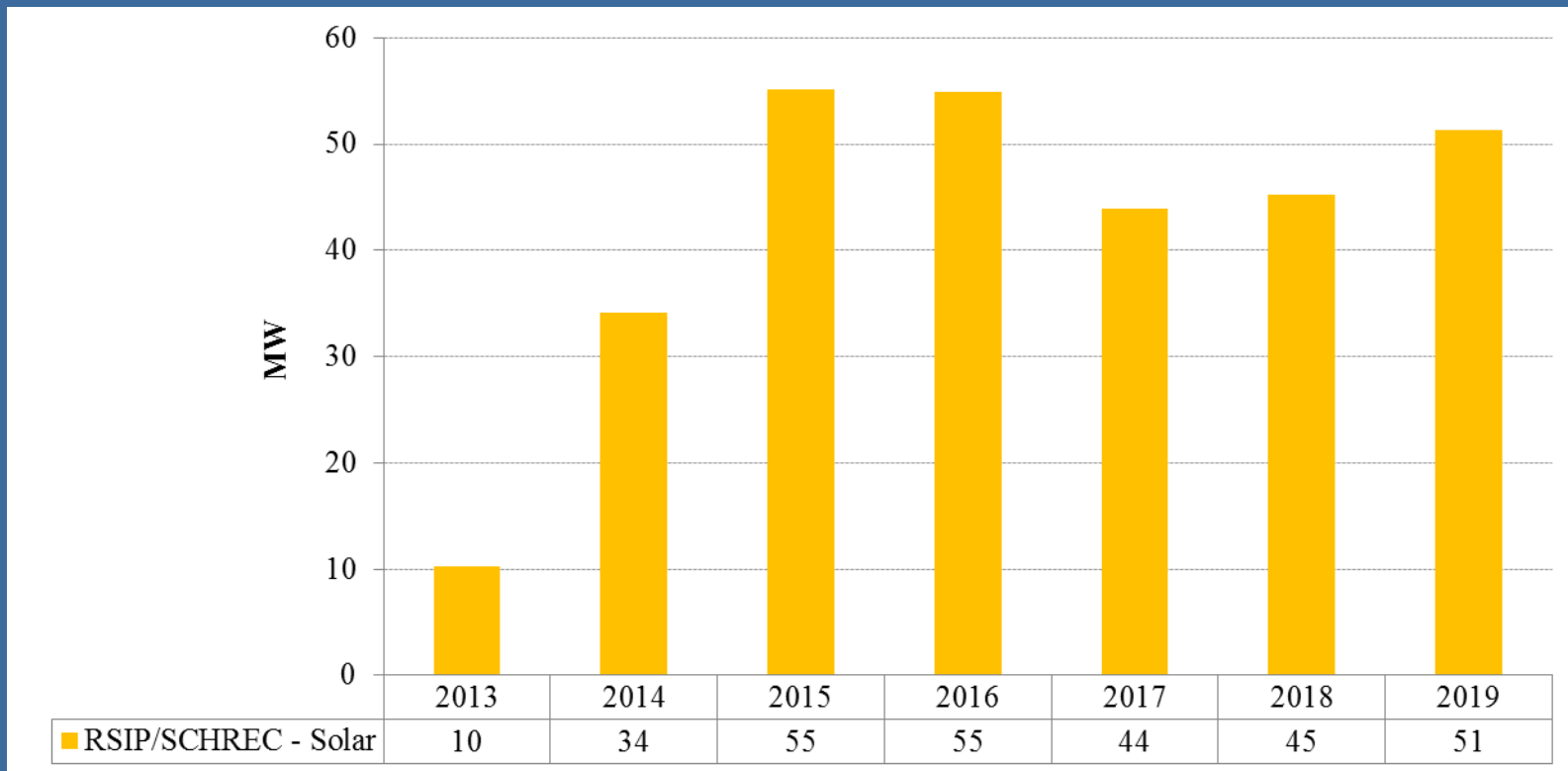
Virtual Net Metering

- Approximately 25 MW of projects have been approved. All VNM projects have an associated LREC/ZREC contract in place. Therefore, these numbers are only shown to provide the status of the VNM program and are not added onto the total MW installed for BTM or Grid Side projects.
- Public Act 16-216 increased the annual budget cap for municipal projects by \$6 million, essentially increasing the total budget to \$16 million per year.
- The municipal sector budget cap has been reached and no additional municipal projects can be accepted into the program. New agriculture sector projects can still be accepted. No utility has yet received or approved a State sector VNM project.



Existing Programs – Update – Part 4 of 5

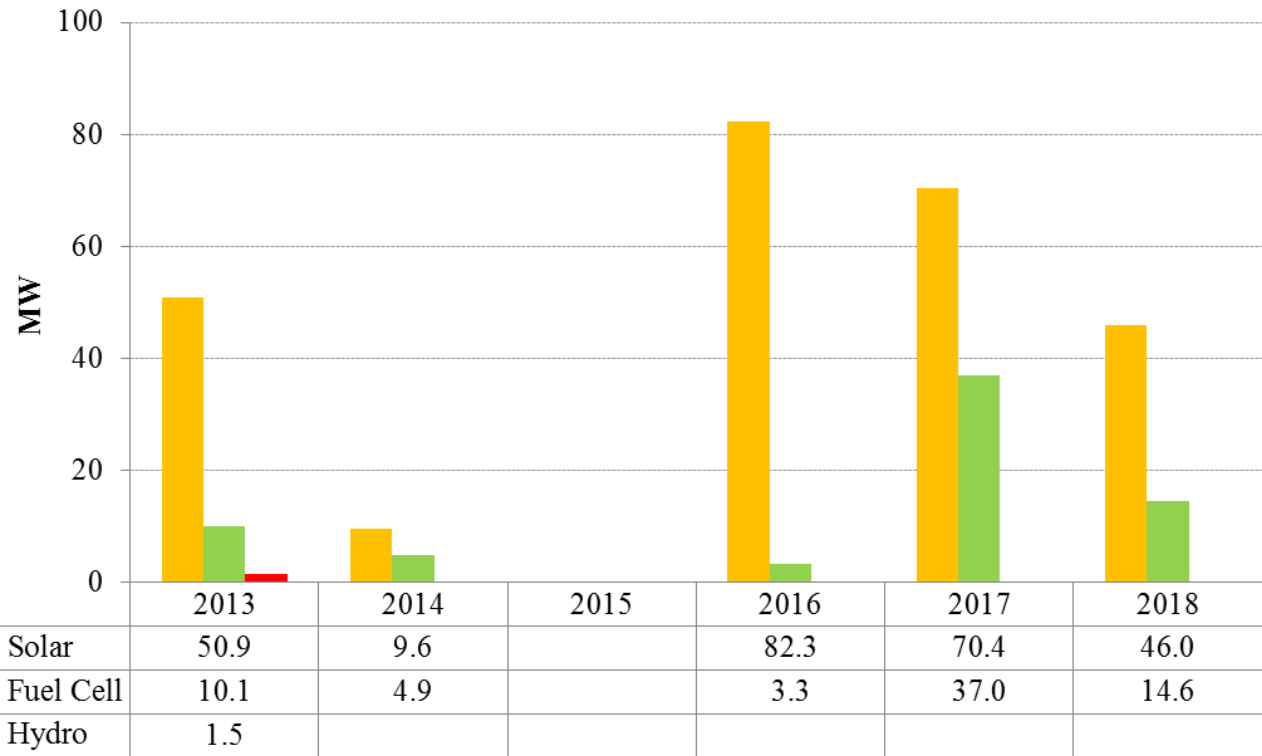
- RSIP/SHREC: Pursuant to Public Act 15-194, the Green Bank is authorized to enter into contracts with the EDCs to sell RECs under long term PPAs. Further the Green Bank is authorized to install up to 300 MW of Residential PV by 2022. The Green Bank anticipates that it will meet that goal by 2019.



Existing Programs – Update – Part 5 of 5

- LREC/ZREC: The EDCs have solicited RECs for the first 5 years of the LREC/ZREC program.
 - Approximately 77 MW is in commercial operation. An additional 253 MW (approximately) is expected to come online by 2018. The majority of approved capacity is Solar (259 MW) .
 - Year 6 is not yet under solicitation, but the RFP is expected to be released in 2017.
 - By the end of the of the program, the EDCs expect to procure in total 500 MW (est.) of installed capacity.

Status	Approximate Capacity (MW)
Approved (Years 1-5)	331
Remaining	169
Total	500



New Programs: 1 of 4

- Public Act 15-107/ Public Act 13-303: Authorized the DEEP Commissioner to direct the EDCs to enter into long term PPAs for clean energy to meet a total of 15% of Connecticut’s Electric Load.
 - DEEP Selected Grid Side Projects, approximately 5% of CT’s electric load, under 2 RFPs:
 - Large Scale Regional Procurement, jointly with Rhode Island and Massachusetts.
 - Projects selected were 20 MW or greater
 - Small Scale Procurement
 - Projects selected were less than 20 MW

Program/Technology	Individual Project Size	Total MW	CT	MA	ME	NH	NY	RI	VT
Large Scale - Solar	≥ 20 MW	256	89		98	49		20	
Large Scale - Wind	≥ 20 MW	147				21	126		
Small Scale - PDR	< 20 MW	34	34						
Small Scale - Solar	< 20 MW	325	133		39	15	40		98
Small Scale - Wind	< 20 MW	44	4	18					23
Total Large Scale		403	89		98	70	126	20	
Total Small Scale		402	170	18	39	15	40		120
Total MW *		806	259	18	137	85	166	20	120

** Total MW is for the total project size (i.e., with regard to the large scale projects, CT Share is smaller than the total project size.*

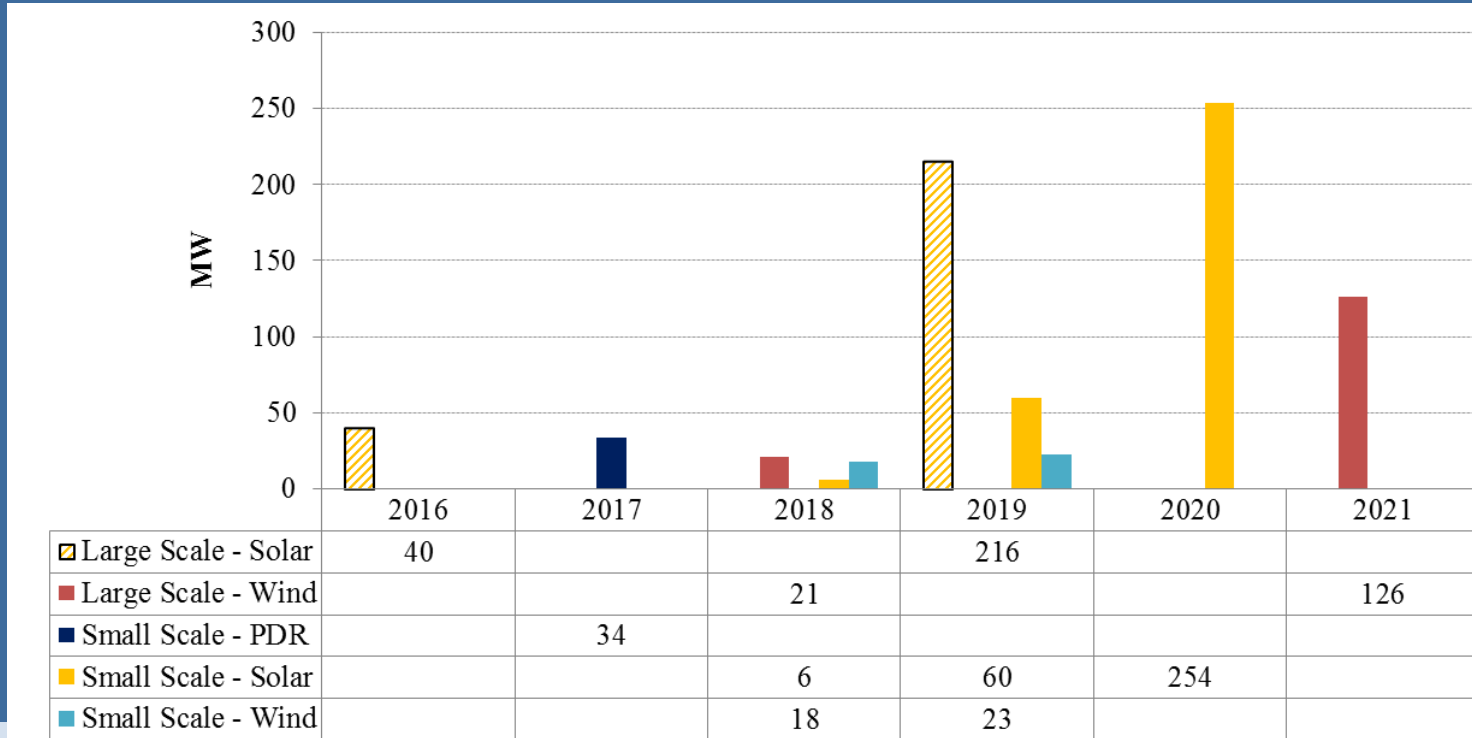
- Shared Clean Energy Facility Pilot Program (SCEF): DEEP has an ongoing bid evaluation for the Shared Clean Energy Facilities program. Under the current RFP terms, projects are expected to come online by 2021 . The program is capped at 6 MW.



New Programs: 2 of 4

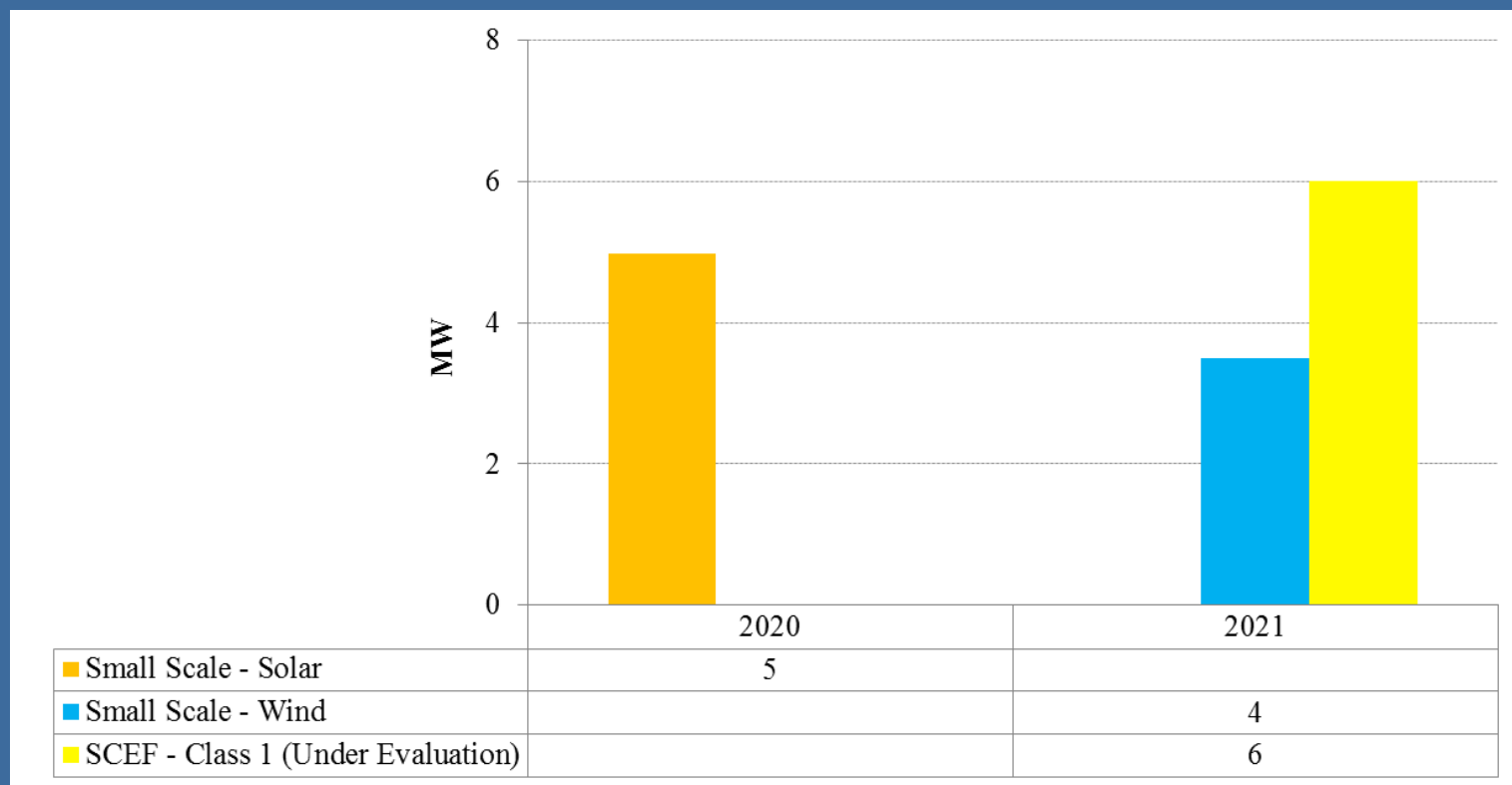
- The figure below shows the total MW for projects that have an individual size 5MW or greater.
- Large Scale Procurement: DEEP, jointly with RI and MA, selected approximately 403 MW of capacity. The negotiation process between the EDCs and the selected bidders is ongoing and the PURA approval of the projects will begin early next year.
- Small Scale Procurement (> 5MW): DEEP selected approximately 402 MW of Capacity with the majority coming from Solar bidders (395 MW). The negotiation/PURA-approval process is similar to the Large Scale Procurement.

** For the Large Scale procurement projects, total MW is for the total project size, the CT Share is smaller than the total project size.*



New Programs: 3 of 4

- The figure below show the total MW for projects that have an individual project size of less than 5 MW.
- Small Scale Procurement (< 5 MW): DEEP selected approximately 9 MW of Capacity of projects less than 5 MW and those projects are expected to come online by 2021.
- Shared Clean Energy Facilities Pilot Program: DEEP has not yet selected any projects, however the projects are expected to come online by 2021 under the current RFP terms.



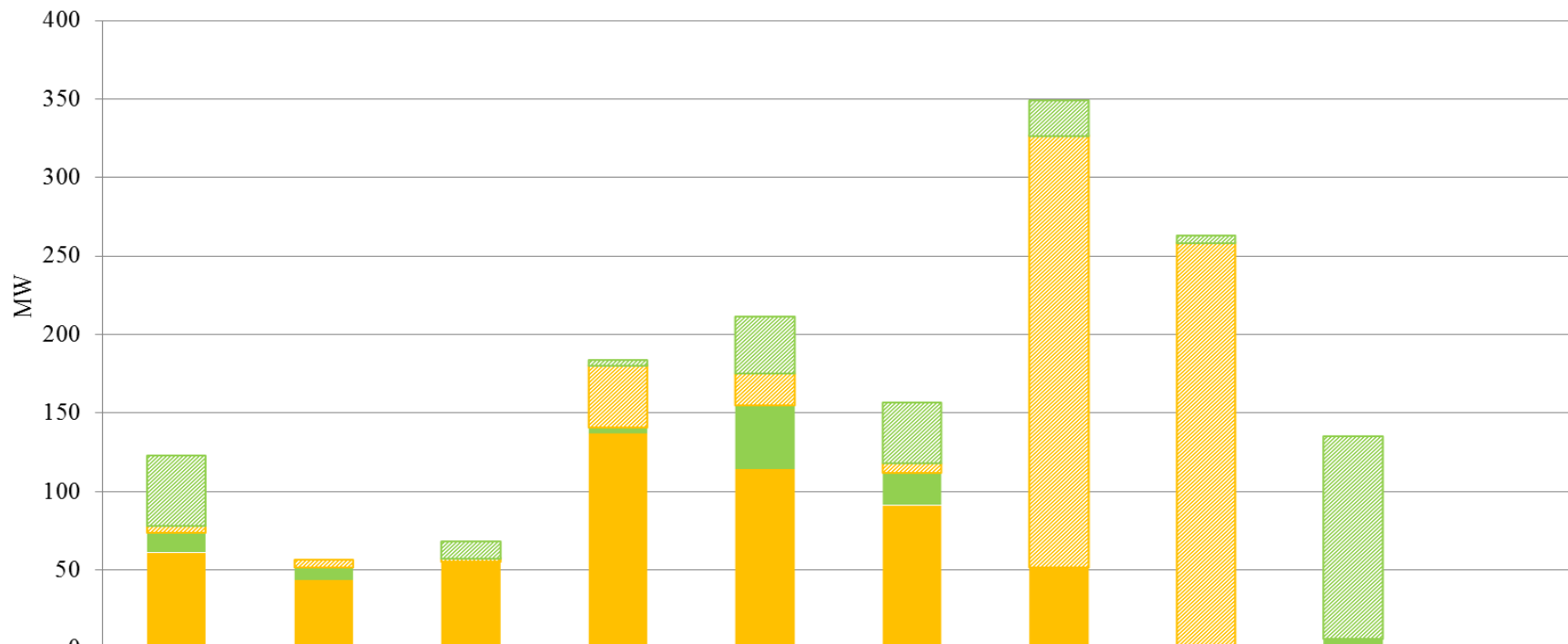
New Programs: Battery Storage 4 of 4

- Public Act 15-5, Section 103: Each EDC is required to submit a proposal or proposals for a pilot program to build, own or operate grid-side system enhancements for the purpose of demonstrating and investigating the reliable and cost effective integration of distributed energy resources (“DER”) into the electric distribution systems. At least one proposal must include an energy storage system(s).
 - Proposals were submitted November 2016 by Eversource and United Illuminating
 - No project has been evaluated or approved by DEEP/PURA
 - The MW for these projects have not been included in the projections of this presentation

EDC	Size	Location	In Service
Eversource	2 MW, 8 MWH	Stafford, CT	2018
UI	1.25 MW, 5MWH	Milford, CT	2019



BTM and Grid Side Installations, 2013-2021



	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total (2013-2021)
Total BTM	73.40	51.65	55.31	140.48	155.11	112.08	51.27		6.00	645
Total Grid Side	50.00	5.00	12.80	43.40	56.20	44.80	298.06	263.52	129.50	903
Grid Side - Other	45.00		10.60	3.40	36.20	38.80	22.50	5.00	129.50	291
Grid Side - PV	5.00	5.00	2.20	40.00	20.00	6.00	275.56	258.52		612
BTM - Other	12.29	7.90	0.14	3.30	40.81	20.80			6.00	91
BTM - PV	61.12	43.75	55.18	137.18	114.30	91.28	51.27			554



Questions?

Contact Information

Veronica Szczerkowski (Veronica.Szczerkowski@ct.gov)

Marcos Quispe (Marcos.Quispe@ct.gov)

CT Department of Energy and Environmental Protection

Bureau of Energy and Technology Policy

10 Franklin Square

New Britain, CT 06051

