



DISTRIBUTED GENERATION IN MASSACHUSETTS

Massachusetts Department of Public Utilities

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OVERVIEW

Outline

- Overview
- OSGF
- Net Metering
- RPS & APS
- Grants & Rebates
- Policies re: DG Participation in ISO-NE Markets

- This presentation focuses on recent developments in Distributed Generation (DG) policy
- Primary programs for DG discussed in this presentation:
 - Net metering and SMART
 - Renewable Portfolio Standards (RPS), specifically the solar carve-out
 - Grants & Rebates
 - Policies regarding DG participation in ISO-NE Markets



OVERVIEW (CONT.)

Program Name	Eligible Technologies	Eligible Nameplate Size(s)	Anticipated Capacity	End Date	Total Anticipated Funding (\$)	Limited to MA?	Agency
Net Metering General Program	Solar, Wind, Anaerobic Digestion, and Agricultural	2 MW _{AC} (private) 10 MW _{AC} (public)	1,667 MW _{AC}	None	TBD	Yes (IOUs)	DPU
<i>Small Hydro Program</i>	Hydro	2 MW _{AC}	60 MW _{AC}	None	TBD	Yes (IOUs)	DPU
RPS	Solar, Wind, Ocean, Fuel Cells, Landfill Gas, Hydro, Biomass, Hydrokinetic, and Geothermal	n/a (except for Hydro)	Variable	None	TBD	No	DOER
<i>Solar Carve-Out I and II</i>	Solar	6 MW _{DC} *	2,400 MW _{DC}	2018 (for new registrations)	TBD	Yes**	DOER
<i>Solar MA Renewable Target (SMART)</i>	Solar	5 MW _{AC} *	1,600 MW _{AC}	2022 (est.)	TBD	Yes (IOUs)	DOER



OSGF

Outline

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- Every year, the electric distribution companies file on-site generating facility (OSGF) reports to the DPU
- The DPU aggregates data on installed capacity and files a report with the MA Legislature
- The data gives a snapshot of installed DG
- Limitations of data:
 - Only filed once per year (~March)
 - Only includes investor-owned utility data
- Actual (i.e. measured) *production data* is not included in the OSGF for every facility
 - There is no requirement that *production* be measured
 - Many OSGFs offset on-site load

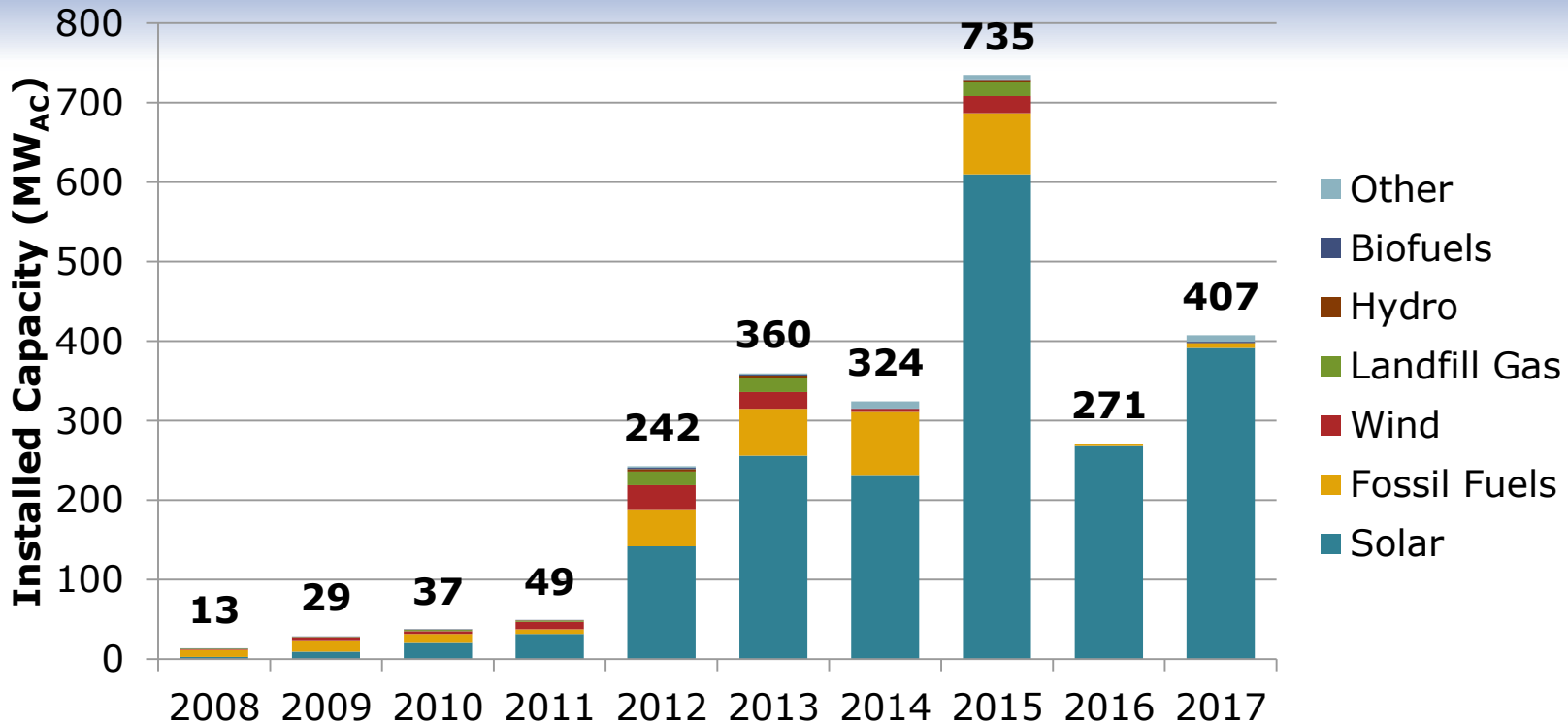


OSGF:

INSTALLED CAPACITY BY YEAR

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NET METERING: ELIGIBLE TECHNOLOGIES

- Eligible technologies:
 1. solar
 2. wind
 3. anaerobic digestion
 4. agricultural
 5. hydroelectric
- Other technologies are eligible for net metering as Class I facilities (up to 60 kW_{AC})

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NET METERING: CURRENT CAPS

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- General net metering caps for IOUs (based on the IOUs' highest historical peak load)
 - Private cap: 7%
 - Public cap: 8%
- Small hydro net metering cap is 60 MW_{AC} statewide
 - Capacity allocated to each IOU on a load share basis



NET METERING DATA

AS OF 12/4/18

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Private: Available, Interconnected, Reserved and Pending Capacity (Values in kW)

Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)
<u>NGrid</u>	359,170	345,917	12,147	1,106	1	10,873
<u>NStar</u>	348,460	227,874	20,309	869	99,408	0
<u>WMECO</u>	59,780	53,378	6,390	0	12	7,016
<u>Unitil</u>	7,140	7,001	139	0	0	312
<u>NGrid-Nantucket</u>	3,500	941	12	0	2,547	0
Total	778,050	635,111	38,997	1,974	101,967	18,201

Public: Available, Interconnected, Reserved and Pending Capacity (Values in kW)

Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)
<u>NGrid</u>	410,480	370,515	38,915	962	88	14,819
<u>NStar</u>	398,240	192,236	26,378	0	179,627	0
<u>WMECO</u>	68,320	41,348	16,393	112	10,467	0
<u>Unitil</u>	8,160	6,930	0	0	1,230	0
<u>NGrid-Nantucket</u>	4,000	100	0	0	3,900	0
Total	889,200	611,128	81,686	1,074	195,312	14,819

Data available at: www.massACA.org



NET METERING AND SMART: PRODUCTION DATA

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- Actual (i.e. measured) *production data* is not available for every facility
 - Net metering facilities $> 60 \text{ kW}_{AC}$ are required to have (monthly) production meters
 - SMART facilities $> 60 \text{ kW}_{AC}$ are required to have interval production meters



SMALL HYDRO DATA

AS OF 12/4/18

- In Summer 2018, the Small Hydro Program opened, allowing up to 60 MW_{AC} of small hydro statewide to participate

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Available, Interconnected, Reserved and Pending Capacity (Values in kW-AC)

Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)
<u>NGrid</u>	27,000	54	4,188	250	22,508	0
<u>Unitil</u>	600	0	0	0	600	0
<u>Eversource</u>	32,400	0	3,613	0	28,787	0
Total	60,000	54	7,801	250	51,895	0

Data available at: www.massACA.org



RPS & APS:

ELIGIBLE TECHNOLOGIES

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Class I

- Post 1997
- solar
- wind
- ocean thermal, wave, or tidal
- fuel cells w/renewable fuel
- landfill gas
- run-of-river hydro up to 30 MW_{AC}
- low-emission biomass
- marine or hydrokinetic energy
- geothermal

Class II

- same as Class I, except *pre* 1998 7.5 MW_{AC} hydro limit
- municipal solid waste *pre* 1998

APS

- CHP
- flywheel storage
- renewable thermal (i.e. heat pumps, solar thermal, biomass, etc.)
- fuel cells
- waste-to-energy thermal

SREC I and II

- PV that is interconnected to MA electric grid

SMART

- PV that is interconnected to MA electric grid in IOU service territories



RPS & APS DATA

- DOER has granted Statements of Qualification to the following number of MW under its RPS and APS programs:

Category	Date of Data	Qualified (MW _{AC})	Qualified & Operational (MW _{AC})	Under Review (MW _{AC})
RPS Class I	11/01/2018	4,274.45	4,236.19	0.00
<i>SREC I & SREC II</i>	11/01/2018	2,511.97	2,236.80	3.06
RPS Class II				
<i>Non MSW</i>	11/01/2018	262.23	262.23	0.00
<i>MSW</i>	11/01/2018	283.55	283.55	0.00
APS (CHP and Fuel Cell)	11/01/2018	441.25	441.25	0.00
Total		7,773.45	7,460.02	3.06

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RPS & APS: PRODUCTION DATA

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- Production data is available for every facility
 - Interval meters, however, are not required
- Monthly PV production is tracked by MassCEC's Production Tracking System (PTS), which serves as the independent verifier for SREC data
- Class I and Class II behind-the-meter production is tracked by DOER approved Independent Verifiers, and reported to NEPOOL GIS for REC minting
- SMART PV systems will have output tracked by the IOUs
- Spreadsheets summarizing all qualified units are available on [DOER's website](#) and are updated monthly



RPS & APS: OTHER FUNDING SOURCES

- RPS and APS qualified facilities are sometimes eligible for other programs, such as:
 - Net metering
 - Grants/rebates
 - State tax incentives
 - Energy efficiency programs (e.g., CHP and heat pumps)
- SREC-qualified facilities, however, are generally prohibited from receiving additional state rebates/grants

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RPS & APS: SREC II EXTENSION

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- Currently more than 2,240 MW_{DC} installed under SREC I and SREC II programs
 - An additional 275 MW_{DC} is qualified, but not operational, some of which will ultimately not be constructed or will not participate in SREC II
- DOER extended SREC program at reduced incentive levels in 2016 and again in 2017 while developing the SMART Program
 - Approximately 800 MW_{DC} of additional projects are expected beyond original 1,600 MW_{DC}
 - Extension remained in effect until SMART Program went into effect on November 26, 2018



SOLAR MASSACHUSETTS RENEWABLE TARGET (SMART) PROGRAM

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- SMART Program applications accepted as of November 26, 2018
- Establishes a tariff-based incentive program that will support an additional 1,600 MW_{AC} of new solar
- Provides incentives to all types of solar installations via a tariff based compensation mechanism
 - Encourages pairing of solar with energy storage and best use of land via incentive adders
 - Creates alternative to net metering with new on-bill credit
- Incentive rates are differentiated by project size and service territory and decline at a predictable rate as more MW are qualified in a service territory
- Participating projects are compensated over a 10 – 20 year period, depending on project size



SMART PROGRAM: INITIAL APPLICATION DATA

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Large Systems (>25 kW AC)					
EDC	# of Applications	Capacity of Apps Received (MW AC)	Total Capacity Available (MW AC)	Current Block	% of Total Capacity Available Received
Eversource East	109	40.991	585.688	1 of 8	7%
Eversource West	61	119.148	100.706	Waitlist	118%
Mass Electric	284	435.036	576.142	7 of 8	76%
Nantucket	1	1.000	4.833	1 of 2	21%
Unitil	8	17.797	12.631	Waitlist	141%
Totals	463	613.971	1280.000		

Small Systems (<=25 kW AC)					
EDC	# of Applications	Capacity of Apps Received (MW AC)	Total Capacity Available (MW AC)	Current Block	% of Block 1 Capacity Received
Eversource East	806	6.176	146.422	1 of 8	34%
Eversource West	272	2.117	25.176	1 of 8	67%
Mass Electric	921	6.989	144.036	1 of 8	39%
Nantucket	9	0.064	1.208	1 of 2	11%
Unitil	30	0.219	3.158	1 of 4	28%
Totals	2038	15.565	320.000		



APS RULEMAKING

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- DOER promulgated final regulations and amended its Alternative Portfolio Standard regulation in late 2017 to include new technologies
 - Renewable thermal, fuel cells, waste-to-energy thermal
- APS allows useful thermal energy and electricity generated by facilities to receive Alternative Energy Certificates (AECs)
- APS program has supported the development of over 400 MW of CHP since 2009
- New technologies present significant potential to reduce fossil fuel consumption in the heating sector and increase DG electric generation from fuel cells in MA
- 630 kW of fuel cells in operation with many more in the pipeline
 - Projects are often paired with energy storage systems



ENERGY STORAGE, RESILIENCE, AND ELECTRIC VEHICLES

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- Significant efforts underway to advance the deployment of energy storage in MA:
 - Statewide energy storage target of 1,000 MWh by 2025 established by the legislature in 2018
 - Allocation of ~\$25 million to energy storage demonstration projects to date
 - Inclusion of a compensation rate adder for solar projects that are co-located with energy storage under the SMART program
 - Awarding nearly \$40 million in clean energy resilience grants to municipalities and hospitals, which include CHP, microgrids, and energy storage paired with renewables
 - Clean Peak Energy Standard established in 2018, which will provide incentives to clean resources that can reduce peak demand (i.e. renewables, demand response, storage) through a new portfolio standard program
- Through its MOR-EV program, DOER has provided nearly \$22.5 million in rebates to over 11,000 electric vehicle owners, in support of the Commonwealth's goal of having 300,000 electric vehicles on the road by 2025



GRANTS & REBATES

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- Most grants & rebates, while important, are not the primary driver for development
- MA Clean Energy Center programs support DG deployment, such as:
 - Commonwealth Hydro
 - Commonwealth Organics-to-Energy
 - Mass Solar Connect
 - Solarize Mass
 - Mass Solar Loan
- DOER provides limited grant opportunities for certain types of DG facilities
 - Solar sited on buildings or parking lots at state facilities
 - Projects at agricultural facilities in partnership with the MA Department of Agricultural Resources
 - Projects at public drinking and wastewater treatment facilities in partnership with the MA Department of Environmental Protection



POLICIES GOVERNING DG PARTICIPATION IN ISO-NE MARKETS

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- MA electric distribution companies are required to register DG connected (e.g., net metering facilities) to their networks as Settlement Only Generators (D.P.U. 09-03-A)
 - Money earned by the IOUs in the energy market will help to shield IOUs' non-DG customers from impact of loss of revenue from net-metered customers
- On-going proceeding will provide permanent decision with regard to FCM treatment of net metering and SMART facilities (including facilities paired with storage)



www.mass.gov/dpu

Thank you

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Information on MA net metering:
www.mass.gov/dpu/netmetering