Distributed Generation in Massachusetts

Massachusetts Department of Public Utilities

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DISCLAIMER

Comments reflect my personal observations, and do not necessarily reflect the position of the Commonwealth of Massachusetts, the Department of Public Utilities (DPU), or the DPU Commissioners.

Overview

- Overview
- OSGF
- Net Metering
- RPS & APS
- Grants & Rebates
- DG Policies & 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
  - Clean Peak Energy Standard
  - Grants & Rebates
  - Policies regarding DG participation in ISO-NE Markets

Overview

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
Small Hydro Program	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
Solar Carve-Out I and II	Solar	6 MW_{DC}*	2,400 MW_{DC}	2018 (for new registrations)	TBD	Yes**	DOER
Solar MA Renewable Target (SMART)	Solar	5 MW_{AC}*	1,600 MW_{AC}	2022 (est.)	TBD	Yes (IOUs)	DOER

*Limits per land parcel **Connected to IOUs or munis

OSGF

- 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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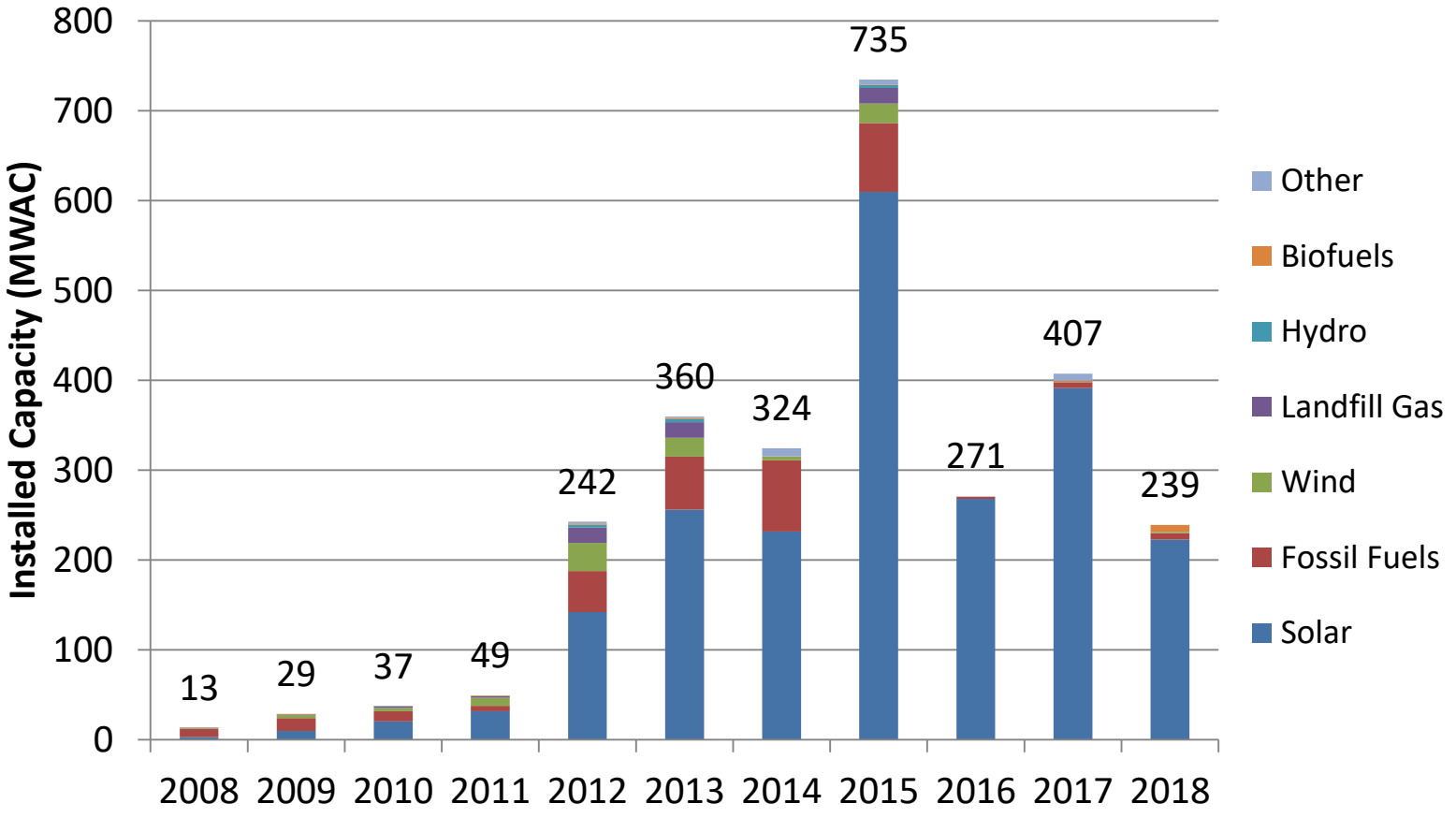

Source: DPU On-site Generating Facility Reports to MA Legislature

Net Metering
Eligible Technologies

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- 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})

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 12/02/19

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)
NGrid	359,170	352,348	6,807	0	15	15,935
NStar	348,460	241,833	24,672	1,077	80,878	0
WMECO	59,780	55,566	4,122	0	92	7,064
Unitil	7,140	7,001	139	0	0	1,580
NGrid-Nantucket	3,500	953	44	0	2,503	0
Total	**778,050**	**657,701**	**35,784**	**1,077**	**83,489**	**24,579**

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)
NGrid	410,480	388,911	21,423	0	146	17,190
NStar	398,240	214,226	11,733	710	171,571	0
WMECO	68,320	53,067	6,400	0	8,853	0
Unitil	8,160	6,930	1,210	0	21	0
NGrid-Nantucket	4,000	100	0	0	3,900	0
Total	**889,200**	**663,234**	**40,766**	**710**	**184,490**	**17,190**

Data available at: www.massACA.org

Small Hydro Data

as of 12/02/19

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)
NGrid	27,000	319	4,752	0	21,929	0
Unitil	600	0	0	0	600	0
Eversource	32,400	1,946	1,667	1,400	27,387	0
Total	**60,000**	**2,265**	**6,419**	**1,400**	**49,916**	**0**

Data available at: www.massACA.org

Net Metering and SMART Production Data

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

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:

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Category	Date of Data	Qualified (MW_{AC})	Qualified & Operational (MW_{AC})	Under Review (MW_{AC})
RPS Class I	11/1/2019	5,508.39	4,790.34	0
SREC I & SREC II	11/1/2019	2,412.50	2,287.76	1.3
RPS Class II				
Non MSW	11/1/2019	311.93	311.93	31.8
MSW	11/1/2019	283.55	283.55	0.00
APS CHP and Fuel Cell)	11/1/2019	449.87	457.82	0.413
Total		**8,966.24**	**8,131.40**	**33.51**

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

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- 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)
  - Proposed Clean Peak Standard

SMART Program

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- SMART program launched on November 26, 2018
- Declining block tariff based incentive program
- Offers 10 or 20 year tariffs depending on project size
- Differentiates incentives based on service territory, size, interconnection type (as a behind the meter or standalone system), and location
- DOER is in the process of making recommendations to the SMART Program through the 400 MW Review, as required by the SMART Regulation
  - DOER released proposed changes in September 2019
  - Changes will be implemented through a regulatory change, working towards filing those updated regulations soon

SMART Program
Initial Application Data

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	388	190.422	585.688	3 of 8	33%
Eversource West	89	161.256	100.706	Waitlist	160%
Mass Electric	461	655.943	576.142	Waitlist	114%
Nantucket	1	1	4.833	1 of 2	21%
Unitil	10	23.279	12.631	Waitlist	184%
Totals	**949**	**613.971**	**1280**		

Small 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	5,592	41.78	146.422	3 of 8	29%
Eversource West	2,097	15.343	25.176	5 of 8	61%
Mass Electric	8,933	35.308	144.036	4 of 8	25%
Nantucket	18	0.183	1.208	1 of 2	15%
Unitil	232	1.794	3.158	3 of 4	57%
Totals	**16,872**	**94.408**	**320**		

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:
  - 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, to provide incentives to clean resources that can reduce peak demand (i.e., renewables, demand response, storage) through a new portfolio standard program
  - DOER filed the Clean Peak Regulations in the proposed 225 CRM 21.00 on September 20, 2019, the rulemaking process is ongoing
- 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

- 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

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Energy and Capacity:

- For all Class II and Class III NM facilities and SMART alternative on bill credit ("AOBC") facilities greater than 60 kW, EDCs must:
  - Register facilities as settlement only generators in the energy market
  - Monetize capacity by (1) obtaining a CSO or (2) registering the facility to passively earn performance incentive payments under PFP
- Solar BTM facilities and solar standalone facilities paired with storage or retrofit may buyout title to capacity associated with their facility from the EDC
- For solar + storage, EDCs do not have rights to energy or capacity associated with the storage asset

Interconnection:

- Increased saturation of DG (primarily solar) is triggering transmission studies for small facilities (1 – 5 MW)
- MA working with EDCs, TOs, and ISO-NE to improve communication & efficiency of process

THANK YOU

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