



DISTRIBUTED GENERATION IN MASSACHUSETTS

Massachusetts Department of Public Utilities

December 7, 2020



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
<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} *	3,200 MW _{AC}	2022 (est.)	TBD	Yes (IOUs)	DOER

*Limits per land parcel

**Connected to IOUs or munis



OSGF

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

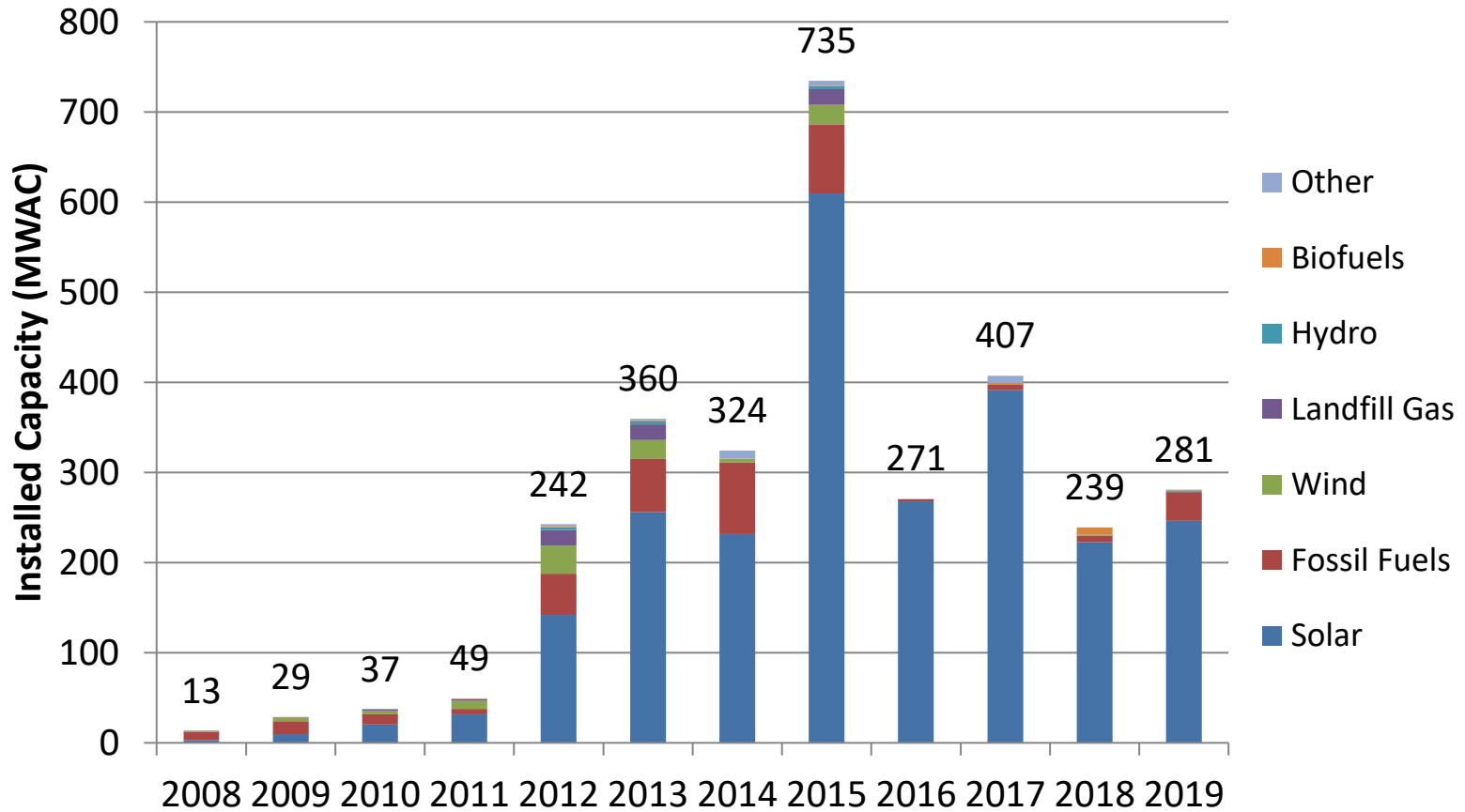
- Every year, the electric distribution companies file on-site generating facility (OSGF) reports to the DPU
- The DPU aggregates data on installed capacity and files a report with the MA Legislature
- The data gives a snapshot of installed DG
- Limitations of data:
 - Only filed once per year (~March)
 - 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

- Overview
- OSGF**
- Net Metering
- RPS & APS
- Grants & Rebates
- DG Policies & ISO-NE Markets



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



NET METERING

ELIGIBLE TECHNOLOGIES

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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 12/1/20

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>Eversource</u>	408,240	321,922	19,106	2,951	64,261	0
<u>National Grid</u>	359,191	355,459	2,017	0	1,716	15,451
<u>National Grid-Nantucket</u>	3,542	1,030	30	0	2,482	0
<u>Unitil</u>	7,140	6,998	139	0	3	1,594
Total	778,113	685,408	21,292	2,951	68,462	17,045

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>Eversource</u>	466,560	276,462	14,443	163	175,492	0
<u>National Grid</u>	410,504	400,652	8,117	0	1,736	0
<u>National Grid-Nantucket</u>	4,048	100	0	0	3,948	0
<u>Unitil</u>	8,160	8,139	0	0	21	0
Total	889,272	685,353	22,559	163	181,196	0

Data available at: www.massACA.org



SMALL HYDRO DATA

as of 12/1/20

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>Eversource</u>	32,400	3,613	1,400	0	27,387	0
<u>National Grid</u>	27,000	4,477	694	0	21,829	0
<u>Unitil</u>	600	0	0	0	600	0
Total	60,000	8,090	2,094	0	49,816	0

Data available at: www.massACA.org



NET METERING AND SMART PRODUCTION DATA

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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



RPS & APS

ELIGIBLE TECHNOLOGIES

Overview	Class I	Class II	SREC I and II
OSGF	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • same as Class I, except <i>pre</i> 1998 7.5 MW_{AC} hydro limit • municipal solid waste <i>pre</i> 1998 	<ul style="list-style-type: none"> • PV that is interconnected to MA electric grid
Net Metering		APS	SMART
RPS & APS		<ul style="list-style-type: none"> • CHP • flywheel storage • renewable thermal (i.e. heat pumps, solar thermal, biomass, etc.) • fuel cells • waste-to-energy thermal 	<ul style="list-style-type: none"> • PV that is interconnected to MA electric grid in IOU service territories
Grants & Rebates			
DG Policies & ISO-NE Markets			



RPS & APS DATA

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

- Overview
- OSGF
- Net Metering
- RPS & APS**
- Grants & Rebates
- DG Policies & ISO-NE Markets

Category	Date of Data	Qualified (MW _{AC})	Qualified & Operational (MW _{AC})	Under Review (MW _{AC})
RPS Class I	11/9/2020	5,756.622	5,062.121	TBD
<i>SREC I & SREC II</i>	10/8/2020	2,413.999	2,398.437	0
RPS Class II				
<i>Renewable</i>	10/16/2020	361.109	361.109	0
<i>MSW</i>	11/25/2019	283.545	283.545	0
APS CHP and Fuel Cell)	11/1/2019	515.832	468.531	0
Total		9,331.107	8,573.743	TBD



RPS & APS

PRODUCTION DATA

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- Production data is available for every facility
 - Interval meters, however, are not required
- SREC PV production is tracked by MassCEC's Production Tracking System (PTS), which serves as the independent verifier
- 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 production is tracked by the IOUs, and reported to NEPOOL GIS for REC minting
- Spreadsheets summarizing all qualified units are available on [DOER's website](#) and are updated monthly



RPS & APS

OTHER FUNDING SOURCES

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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)
 - Clean Peak Energy Standard (subject to eligibility criteria)



SMART PROGRAM

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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
- Revised Regulation and Guidelines recently published as part of the program's 400 MW review process:
 - Total eligible capacity expanded to 3,200 MW AC, pending final approval of the SMART Tariff by DPU
 - Additional changes specified in [Regulation and Guidelines](#)



SMART PROGRAM

DATA FOR FIRST 1,600 MW

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	645	310.261	585.688	5 of 8	53%
Eversource West	95	163.085	100.706	Waitlist	162%
Mass Electric	466	658.451	576.142	Waitlist	114%
Nantucket	3	4.713	4.833	Waitlist	98%
Unitil	11	21.966	12.631	Waitlist	174%
Totals	1,220	1,158.476	1,280		

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	9,997	73.774	146.422	5 of 8	50%
Eversource West	3,319	23.621	25.176	8 of 8	94%
Mass Electric	16,296	117.348	144.036	7 of 8	81%
Nantucket	73	0.647	1.208	2 of 2	54%
Unitil	389	2.862	3.158	4 of 4	91%
Totals	30,074	218.252	320		



APS RULEMAKING

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets

- 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

Overview

OSGF

Net Metering

RPS & APS

**Grants &
Rebates**

DG Policies &
ISO-NE Markets

- 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 provides incentives to clean resources that can reduce peak demand (i.e., renewables, demand response, storage) through a new portfolio standard program
 - Final Regulation published on August 7, 2020
- 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

Overview

OSGF

Net Metering

RPS & APS

**Grants &
Rebates**

DG Policies &
ISO-NE Markets

- 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
 - Municipal Light Plant Solar Rebate Program for residents in MLP towns
 - 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



DG POLICIES & ISO-NE MARKETS

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

Overview

OSGF

Net Metering

RPS & APS

Grants &
Rebates

DG Policies &
ISO-NE Markets



THANK YOU

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