



COMMONWEALTH OF MASSACHUSETTS

Charles D. Baker, Governor

Karyn E. Polito, Lt. Governor

Matthew A. Beaton, Secretary

Judith Judson, Commissioner

Renewable Thermal Generation Units in the Massachusetts Alternative Portfolio Standard

Samantha Meserve

Renewable Thermal Program Coordinator

Renewable Energy Division

November 8, 2017

Renewable Thermal Technologies in APS

- An Act Relative to Credit for Thermal Energy Generated with Renewable Fuels (S1970) was signed into law in August 2014
- Added to the Alternative Portfolio Standard:
“any facility that generates useful thermal energy using sunlight, biomass, bio-gas, liquid bio-fuel or naturally occurring temperature differences in ground, air or water”
- 3,412,000 BTU = 1 MWh = 1 Credit (AEC)
- Since 2014, DOER has been working on designing rules and regulations for renewable thermal technologies in the APS

*****The APS regulations are currently in draft form,
and the following information is subject to
change*****

Program Logistics

- System must have come online after January 1st 2015
 - Systems meeting all eligibility criteria and operating since then will receive back credits once program launched
- Systems must deliver a thermal load to Massachusetts
- Incentive is only for the Useful Thermal Energy used for heating, not cooling
- Small systems (residential scale) are eligible to receive 10 years of AECs in 1st quarter
- Intermediate and large systems (commercial and industrial scale) will receive AECs quarterly with no end date on their qualification period

Program Logistics Cont.

- In a year where the compliance obligation from 2 years prior was met with 75% or more of certificates, small Generation Units will switch from pre-minting to forward minting
- Applicants will apply using an online portal hosted by the Massachusetts Clean Energy Center
- The Massachusetts Clean Energy Center will act as the Independent Verifier for all small and intermediate biomass Generation Units
- Biofuel systems must qualify as part of an aggregation

Size Classification

Classification	Small	Intermediate	Large
Solar hot water	Collector surface area ≤ 660 sq ft	Collector surface area 660 - 4,000 sq ft	Collector surface area ≥ 4,000 sq ft
Solar hot air	-	Collector surface area ≤ 10,000 sq ft	Collector surface area > 10,000 sq ft
Eligible Biomass Fuel	-	Capacity ≤ 1 MMBtu/hr	Capacity > 1MMBtu/hr
Air source heat pumps	Output capacity ≤ 0.134 MMBtu/hr	Output capacity 0.134 – 1 MMBtu/hr	Output capacity ≥ 1 MMBtu/hr
Ground source heat pumps	Output capacity ≤ 0.134 MMBtu/hr	Output capacity 0.134 – 1 MMBtu/hr	Output capacity ≥ 1 MMBtu/hr

Compost heat recovery, deep geothermal, and solar sludge dryers are exclusively classified as large.

Multipliers for Non Emitting Technologies

$$Q_{\text{AEC}} = E_{\text{net, out}} * (M + m)$$

Where:

Q_{AEC} = Number of certificates

$E_{\text{net, out}}$ = Useful Thermal Energy

M = Base multiplier

m = Additional multiplier for energy efficient, passive, or zero net energy buildings

Base Multiplier Values (M)

Technology	AEC Multiplier			
	System Size	Small	Intermediate	Large
Solar hot water (domestic hot water)		3	3	3
Solar hot water systems (domestic hot water, space heating, and/or process heating)		1	1	1
Solar hot air systems		-	5	5
Solar sludge dryer		-	-	1
Ground source heat pumps		5	5	5
Deep geothermal		-	-	1
Air source heat pumps– partial system		2	1	1
Air source heat pump– all other		3	3	3
Compost Heat Exchange System		-	-	1
Biomass, biofuels, biogas		N/A	N/A	N/A

Additional Provisions for Biomass, Biogas, and Biofuel Generation Units

- Must be protective of protective of public health and should limit particulate matter emissions
- Must reduce life cycle greenhouse gas emissions by 50%, compared to natural gas or the fuel being displaced
- Must include thermal storage, or some means to maintain efficiency and reduce cycling
- Must utilize high efficiency, best-in-class commercially feasible technologies
- Must utilize fuel created through sustainable forestry practices

APS Renewable Thermal Rulemaking

2016 Rulemaking Milestones

- May 20th: Regulations filed
- June 15th and 17th: Public hearings held
- June 30th: End of public comment period

2017 Rulemaking Milestones

- June 2nd: Regulations filed
- July 14th and August 7th: Public hearings held
- August 7th: End of public comment period
- October 13th: Regulations filed with the legislature

Comments from the Joint Committee on Telecommunications, Utilities, and Energy must be submitted to the Department no later than November 12th 2017, and final promulgation can occur no sooner than December 15th 2017.

Links to Program Documents

- [Alternative Portfolio Energy Standard Statute](#)
- [Alternative Portfolio Energy Standard Regulation \(draft\)](#)
- [Guideline on Metering and Calculations – Part 1
\(Formulas for Small and Intermediate Generation Units\)](#)
- [Guideline on Metering and Calculations – Part 2
\(Metering for Intermediate and Large Generation Units\)](#)
- [Guideline on Biomass, Biogas, and Biofuels](#)
- [Guideline on Multipliers for Non-Emitting Technologies](#)
- [Guideline on Reduction of Greenhouse Gases for Eligible
Renewable Thermal Generation Units Using Eligible
Woody Biomass](#)

Questions?