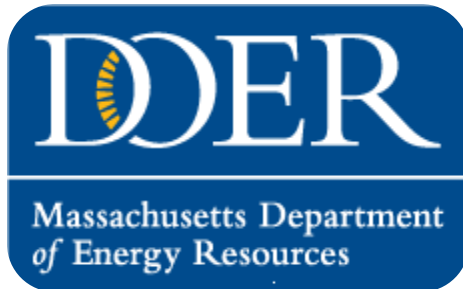


*Creating A Cleaner Energy Future For the Commonwealth*



**COMMONWEALTH OF MASSACHUSETTS**

*Charles D. Baker, Governor*

*Karyn E. Polito, Lt. Governor*

*Matthew A. Beaton, Secretary*

*Judith Judson, Commissioner*

# **Biofuels in the Massachusetts' Alternative Energy Portfolio Standard**

**March 6, 2018**

# New Technologies in APS

- An Act Relative to Credit for Thermal Energy Generated with Renewable Fuels (S1970) was signed into law in August 2014 and added to the Alternative Energy Portfolio Standard (APS):  
*“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”*
- An Act to Promote Energy Diversity was signed into law in August 2016 and added fuel cells and waste-to-energy thermal to the APS

# Rulemaking Process

- Stakeholder meetings were held in late 2014 and early 2015 to discuss implementation of statutory changes
- Draft regulation initially filed on May 19, 2016
- Second draft of the APS Regulations incorporating 2016 statutory changes and changes in response to the first public comment period was filed on June 2, 2017
- On October 16, 2017, DOER filed with the Joint Committee on Telecommunications, Utilities, who recommended no changes to the draft
- On December 15, 2017 the final version of the regulation was filed with the SOS
- The final regulations were promulgated on December 29, 2017
- Applications began being accepted on January 16, 2018

# New Eligible Fuel and Technology Types

- Renewable thermal technologies:
  - Heat pumps (air source and ground source)
  - Solar thermal
  - Liquid biofuels
  - Biomass
  - Biogas
  - Compost heat exchange systems
- Non-renewable fuel cells (i.e. natural gas)
- Waste-to-energy thermal

## Program Logistics

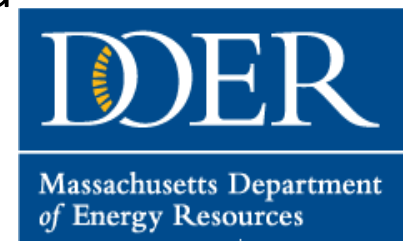
- System must have come online after January 1<sup>st</sup> 2015
- Systems (including biofuels) operating since January 1<sup>st</sup> 2015 are eligible to receive retroactive credits, but must apply and be qualified before the Q4 2017 minting on April 15<sup>th</sup> 2018
- All systems must deliver a useful thermal load to Massachusetts
- Systems which received 80% or more of total construction and installation costs from DOER or another state entity, prior to December 29<sup>th</sup> 2017 are not eligible

# Small, Intermediate, and Large Generators

- All renewable thermal generators are divided into three size categories as follows:

	Size Classification			
	Small	Intermediate		Large
AEC calculation basis	Calculated net renewable thermal output	Calculated net renewable thermal based on <u>indirect</u> metering	Calculated net renewable thermal output based on <u>direct</u> metering of fuel input	Metered net renewable thermal output
Solar thermal: evacuated tube and flat plate solar hot water	Collector surface area less than or equal to 660 sq ft	Collector surface area between 660 and 4,000 sq ft	-	Collector surface area greater than or equal to 4,000 sq ft
Solar thermal: solar hot air	-	Collector surface area less than or equal to 10,000 sq ft	-	Collector surface area greater than 10,000 sq ft
Solar sludge dryer	-	-	-	All
Eligible Biomass Fuel	-	-	Capacity less than or equal to 1,000,000 Btu per hour	Capacity greater than 1,000,000 Btu per hour
Compost heat exchange system	-	-	-	All
Air source heat pump: electric motor or engine driven	Output capacity less than or equal to 134,000 Btu per hour	-	Output capacity between 134,000 and 1,000,000 Btu per hour	Output capacity greater than or equal to 1,000,000 Btu per hour
Ground source heat pump	Output capacity less than or equal to 134,000 Btu per hour	-	Output capacity between 134,000 and 1,000,000 Btu per hour	Output capacity greater than or equal to 1,000,000 Btu per hour
Deep geothermal	-	-	-	All

- Classification determines how generators meter and report their thermal output
- Not all technologies have all three classifications



# Intermediate Generation Units

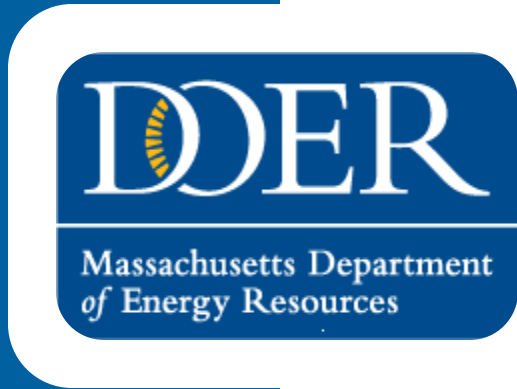
- Certificates are owned by the person/entity who provides the fuel onto the end use customer
  - Most likely the biofuel distributor
- AECs are calculated based on indirect metering of Useful Thermal Energy by directly metering the fuel input

# Large Generation Units

- Certificates are owned by the person/entity who owns the Generation Unit
- The Generation Unit must still be a part of an aggregation
- Must contract with the Independent Verifier
- AECs are calculated based on direct metering of Useful Thermal Energy
  - Electric meters
  - Btu meters



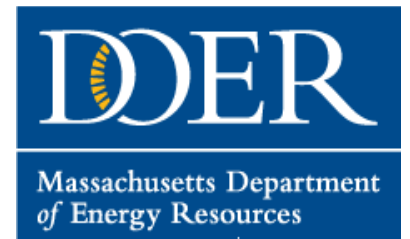
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# Eligibility

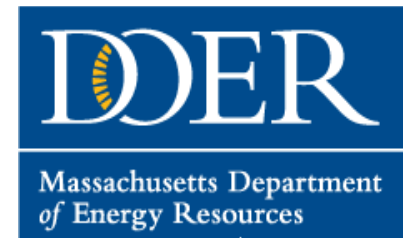
# General Requirements

- A liquid fuel that is derived from organic waste feedstocks
  - waste vegetable oils
  - waste animal fats
  - grease trap waste
  - Others as approved by DOER
- May not include petroleum-based waste or Hazardous Waste per 310 CMR 40.0006
- May blend with petroleum, but must have a minimum of 10% Eligible Liquid Biofuel



## General Requirements cont.

- All fuel must be registered as part of the EPA Renewable Fuel Standard as Advanced Biofuel
  - a D-code of 3, 4, or 5
- Must adhere to one of the following ASTM specifications:
  - ASTM Standard D6751 (Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels
  - ASTM D396 - 15C (Standard Specification for Fuel Oils)
- Must qualify as part of an aggregation





# **Application Process and Reporting Requirements**

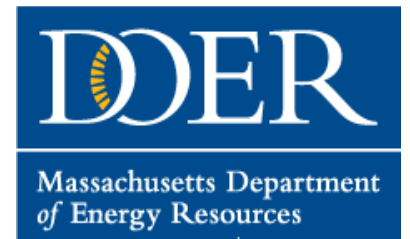
## Program Participants

- **Biofuel Supplier:** A person or entity who produces Eligible Liquid Biofuel from approved feedstocks
- **Biofuel Wholesaler:** A person or entity who purchases Eligible Liquid Biofuel from a Biofuel Supplier, but does not sell it to an end user
- **Biofuel Distributor:** A person or entity who purchases Eligible Liquid Biofuel from a Biofuel Supplier or Biofuel Wholesale and sells it to an end user

# Biofuels Supplier List

The Department shall establish and maintain a list of suppliers of Eligible Liquid Biofuel on its website.

A fuel supplier must complete and submit an application to the Department to be included on the Department's Eligible Liquid Biofuel suppliers list. Fuel suppliers must be registered in the Environmental Protection Agency's Renewable Fuel Standard (RFS2), and must verify that they produce biodiesel from organic waste feedstocks.



# Biofuels Supplier List Application

- Company information
- Contact information
- EPA Renewable Fuel Standard Attestation
- Third party engineering report, as submitted to the EPA RFS
- Feedstock supply plan
- Certifications

# Biofuel Supplier Quarterly Reporting

- Biofuel Feedstock Provider
- Type of Biofuel Feedstock
- Quantity of Feedstock Delivered (tons)
- Quantity of Eligible Liquid Biofuel Produced (gallons)

Suppliers must also submit a quarterly RFS2 EMTS RIN Generation Report



# Biofuels Wholesaler and Distributor Application

- Company information
- Contact information
- Fuel purchase plan
- Certifications

**Biofuel Wholesalers will also be included on the Department's Biofuel Suppliers List**

# Biofuel Wholesaler and Distributor Quarterly Reporting

- Eligible Liquid Biofuel Sales
  - Sale date
  - Volume of delivery
  - Blend level
- Eligible Liquid Biofuel Purchases
  - Biofuel supplier or wholesaler (from DOER's Biofuel Suppliers List)
  - Blend level
  - Total volume of purchase

# AEC Formula

$$\text{Useful Thermal Energy} = (\text{Fuel} * \text{Volume} * \text{EFC} * \text{Eff}) / 3,412,000$$

Where:

Fuel = Btu content of the fuel delivered to the RTGU, established as 127,000 Btu/gal for biofuel

Volume = The total volume of fuel delivered

EFC = Eligible fuel content (the blend of the fuel delivered to the Generation Unit)

Eff = The efficiency of the Generation Unit, established as 80%

## AEC Formula

*Example.*

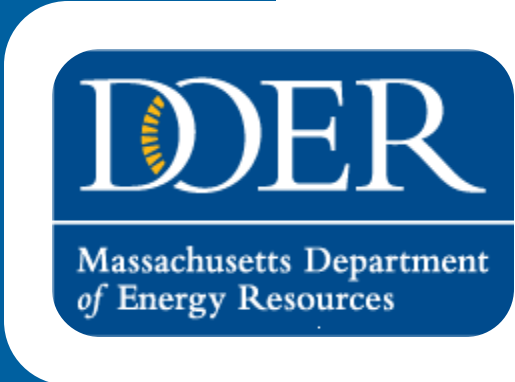
*1,000 gallons of a B20 blend delivered to a boiler*

Useful Thermal Energy = ( 127,000 (Btu/gal) \* 1,000 (gal) \* 0.2 \* 0.85) / 3,412,000

Useful Thermal Energy = 6 MWH equivalent or AECs

# Reporting Deadlines

Generation Period Start	Generation Period End	Reporting Deadline	AECs Minted
January 1 <sup>st</sup>	June 30 <sup>th</sup>	July 15 <sup>th</sup>	October 15 <sup>th</sup>
July 1 <sup>st</sup>	December 31 <sup>st</sup>	January 15 <sup>th</sup>	April 15 <sup>th</sup>



# **Cap on the Available Attributes for Biofuel Generation Units**

## Cap on the Available AECs for Biofuel Generation Units

- In each Compliance Year the total number of AECs minted to Generation Units using Eligible Liquid Biofuel may not exceed 20% of the total projected annual compliance obligation for the Compliance Year
  - No more than 10% of the Attributes generated prior to July 1st.
- If 100% of the Attributes available prior to July 1st are not allocated, the remaining number of available Attributes shall be rolled over and allocated during either of the remaining quarters in that calendar year
- If the number of Attributes reported by Generation Units exceeds the available Attributes, the number of available Attributes shall be allocated on a prorated basis

## Cap on the Available AECs for Biofuel Generation Units for 2018

2016 Aggregated APS Obligation	1,874,577
Total Attributes Available for Biofuel Generation Units (20% of 2016 Aggregated Obligation)	374,915
Total Attributes Available for Biofuel Generation Units in Q1 and Q2 2018	187,458
Attributes Minted for Biofuel Generation Units in Q1 and Q2 2018	-
Total Attributes Available for Biofuel Generation Units Q3 and Q4	No less than 187,458
Attributes Minted for Biofuel Generation Units in Q3 and Q4 2018	-



## Example: Cap is not exceeded

2016 Aggregated APS Obligation	1,874,577
Total Attributes Available for Biofuel Generation Units (20% of 2016 Aggregated Obligation)	374,915
Total Attributes Available for Biofuel Generation Units in Q1 and Q2/Q3 and Q4 (10% of 2016 Aggregated Obligation)	187,458

	Attributes Available	MWh equivalent reported	Attributes Minted	Remaining Under Cap
Q1	187,458	90,000	90,000	97,458
Q2	97,458	95,000	95,000	2,458
Q3	189,916	100,000	100,000	89,916
Q4	89,916	85,000	85,000	4,916

All aggregations get the full number of certificates reported



## Example: Cap is exceeded

2016 Aggregated APS Obligation	1,874,577
Total Attributes Available for Biofuel Generation Units (20% of 2016 Aggregated Obligation)	374,915
Total Attributes Available for Biofuel Generation Units in Q1 and Q2/Q3 and Q4 (10% of 2016 Aggregated Obligation)	187,458

	Attributes Available	MWh equivalent reported	Attributes Minted	Remaining Under Cap
Q1	187,458	90,000	90,000	97,458
Q2	97,458	95,000	95,000	2,458
Q3	189,916	100,000	100,000	89,916
Q4	89,916	140,000	89,916	-

All aggregations get 64% of the number of MWhs reported in Q4

# Helpful Links

[APS Webpage](#)

[Liquid Biofuels Webpage](#)

[APS Renewable Thermal Application Portal](#)

[APS Regulation](#)

[Metering Guideline – Part 1](#)

[Metering Guideline – Part 2](#)

[Guideline on Biomass, Biogas, and Biofuels](#)

Questions?