Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
DEPARTMENT OF ENERGY RESOURCES

ALTERNATIVE ENERGY PORTFOLIO STANDARD

GUIDELINE
ON AEC MULTIPLIERS FOR RENEWABLE THERMAL GENERATION UNITS

[Effective Date]

Pursuant to the Alternative Energy Portfolio Standard Regulations at 225 CMR 16.00

This Alternative Energy Portfolio Standard (APS) Guideline provides the factors by which the quantities of net thermal output of Renewable Thermal Generation Units (RTGUs) that do not emit criteria air pollutants on site shall be multiplied to calculate the quantities of megawatt hours (MWh) for which the NEPOOL Generation Information System (GIS) will create Alternative Energy Certificates (AECs) for such Generation Units.

Per the statute, the purpose of applying a multiplier is to stimulate the development of certain emerging renewable thermal technologies with no on-site emissions.

1. Provisions in the APS Statute and Regulations

The APS statute at M.G.L. Chapter 25A, Section 11F½(e)[1] mandates the following:

> (e) Notwithstanding the determination that 1 alternative energy credit is to be earned per 3,412,000 British thermal units in subsection (a), the department may provide that for certain non-emitting renewable thermal technologies, an alternative energy credit shall be earned for less than 3,412,000 British thermal units of net useful thermal energy so as to stimulate the development of new on-site renewable thermal energy generating sources.

Pursuant to this statute, the APS Regulations state the following at 225 CMR 16.05(1)(a)6.b.ii:[2]

> ii. Notwithstanding 225 CMR 16.05(1)(a)6.b.i., certain APS Renewable Thermal Generation Units that do not emit pollutants on-site may earn more than one APS Alternative Energy Attributes for each 3,412,000 British thermal units of net Useful Thermal Energy generated. An APS Renewable Thermal Generation Unit shall retain its multiplier provided at its time of qualification for its entire qualification period. Multipliers shall be assigned based on the APS Renewable Thermal Generation Unit technology type and system size. ~~(ii) Notwithstanding 225 CMR 16.05(1)(a)6.b.i, certain Renewable Thermal Units that do not emit pollutants on-site may be provided more than one APS Alternative Energy Attribute for each 3,412,000 British Thermal Units of net Useful Thermal Energy generated. The Department shall prescribe those non-emitting technologies and provide any such multipliers in the APS Guideline on AEC Multipliers~~

[1] The APS statute is available at https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25A/Section11F1~2

[2] The APS Regulations are available at http://www.mass.gov/eea/docs/doer/renewables/thermal/225-cmr-16-draft-renewable-thermal-regulation-052416.pdf

~~for Non-emitting Technologies. While such multipliers may be adjusted from time to time by the Department no less than three months prior to their effective date, a Unit shall retain its multiplier provided at its time of qualification for its lifetime.~~

2. Applicability

The multipliers apply to all types of renewable thermal technologies listed in 225 CMR 16.05(1)(a)6.a, with the exception of biomass, biofuels, and biogas.

3. Determination and Size of Multipliers

The Department of Energy Resources (Department) analyzed the costs of the different eligible renewable thermal technologies, and set the base multipliers such that value of the AECs generated by each technology type is similar relative to the costs of implementing the technology and various other factors. ~~The Department may re-evaluate the multipliers periodically, taking into account the observed market uptake of the different technologies, rebates and grants available from federal or state agencies, including the Massachusetts Clean Energy Center (MassCEC), federal or state tax credits, as well as other factors.~~

The base multipliers for each technology and size ~~type~~ classification can be found in 225 CMR 16.05(1)(b)(ii) and are listed in the following table:

Technology	**APS Renewable Thermal Generation Unit multiplier**		
System size	**Small**	**Intermediate**	**Large**
Active solar hot water systems ~~thermal~~ used for domestic hot water	3	3	3
Active solar hot water systems ~~thermal used space heating or combined systems~~ used for domestic hot water and/or space heating	1	1	1
Active solar hot air systems	-	5	5
Solar sludge dryer	-	-	1
Ground source heat pumps	5	5	5
Deep geothermal	~~1~~ -	~~1~~ -	1
Air source heat pumps (electric or engine driven) – partial system[2]	~~3~~2	~~3~~2	~~3~~2
Air source heat pump (electric or engine driven) – all other	3	3	3
Biomass, biofuels, biogas	N/A	N/A	N/A

[1]Definitions of size classifications~~types~~ can be found in 225 CMR 16.05(4)(a) and Section 2 of the Department's *Guideline on Metering and Calculating the Useful Thermal Output of Eligible Renewable Thermal Generation Units*.
[2]Partial systems are defined in the Department's *Guideline on Metering and Calculating the Useful Thermal Output of Eligible Renewable Thermal Generation Units – Part 1*

4. Additional Multipliers for Efficient Buildings Utilizing Heat Pumps

Per CMR 16.05(1)(b)(ii), ~~Any~~ any small ground source heat pump or air source heat pump installed in a residential building will be given an additional multiplier of 2 (added to the base multiplier) if the home achieves a Home Energy Rating System (HERS) Index rating of 50 or less as defined by the Residential Energy Services Network (RESNET) system, and as documented by a Certified RESNET Professional. Additionally, a

~~A~~ny eligible ground source heat pump or air source heat pump installed in a non-residential building will be given an additional multiplier of 2 (added to the base multiplier) if the building meets the definition of "Zero Energy" as defined by the United States Department of Energy DOE) publication "A Common Definition for Zero Energy Buildings," dated 15 September 2015, and as documented for the application by a Massachusetts licensed Professional Engineer.

5. ~~Application of Multiplier to Calculate~~Calculation of AEC Output

The multiplier is applied as follows to calculate the quantity of AECs per MWh of net thermal energy generation:

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

Where:

Q_{AEC} = Number of AECs

$E_{net,\ out}$ = Net thermal energy output

M = Base multiplier

m = Additional multiplier for energy efficient homes or zero energy buildings installing heat pumps

6. Miscellaneous

The Department may permit an exception from any provision of this Guideline for good cause.