

Commercial Ground Source Heat Pumps in the Massachusetts Alternative Portfolio Standard

The Alternative Energy Portfolio Standard (APS) incentivizes Massachusetts homeowners and businesses to install eligible alternative energy systems to lower greenhouse gas emissions and increasing energy efficiency across the Commonwealth. The APS is a market based program, which requires that a portion of the electric load in Massachusetts be met via eligible technologies. Generation Unit owners receive an incentive by selling Alternative Energy Certificates (AECs), which they receive based on their energy generation, to entities in Massachusetts with a compliance obligation.

Intermediate Ground Source Heat Pumps (GSHP) are classified as any system with an output capacity between 0.134-1.0 MMBtu/hr. Large GSHPs are classified as any system with an output capacity above 1.0 MMBtu/hr.

Ground-Source Heat Pumps in the Alternative Energy Portfolio Standard

GSHPs that meet all eligibility requirements determined by the Department of Energy Resources can become qualified to receive Alternative Energy Certificates based on the alternative energy their system generates. AECs are only generated when the system is in heating mode, however there is no restriction on the use of the system for cooling.

What are Alternative Energy Certificates (AEC)?

- AECs represent the environmental attributes of energy generated by a renewable or alternative Generation Unit
- Every AEC represents 3,412,000 British thermal units (or 1 MWh equivalent) of net useful thermal energy
- Typically through an aggregator, system owners can sell AECs generated by their system in the market to receive a monetary incentive
- AEC prices vary based on the market conditions. As of 2017, the estimated price of an AEC is \$20. Future price of AECs is subject to change. For a more in-depth assessment, please find our AEC calculator tool on the DOER APS website.

Multipliers for Commercial GSHP

- A “multiplier” increases the number of AECs generated and allows all renewable thermal technologies to have a meaningful incentive
- GSHPs receive a multiplier of 5
- GSHPs in a building that meets the qualifications to be designated an energy efficient building will receive an additional multiplier of 2 that is added to the base multiplier

Metering for Intermediate and Large GSHP Systems

Intermediate Systems: To avoid expensive metering costs, intermediate GSHP systems are able to installed simplified metering technology and, along with a COP look up table from the system’s manufacturer, calculate what the system’s estimated useful thermal output was during each calendar quarter. All that is required is an electric meter and a COP look up table.

Large Systems: All large systems are required to directly meter useful thermal energy. Systems require an electric meter for the heat pump’s electric consumption, Btu meters for the ground water supply and return temperature, and a flow meter for the ground water supply flow.

For more information, see the Guideline on Metering and Calculating the Useful Thermal Output for Renewable Thermal Generation Units – Part 2 (Metering for Intermediate and Large Generation Units) on the DOER APS website.



$$\text{AECs} = \text{Useful Thermal Energy (MWh equivalent)} \times \text{Multiplier}$$

How to Participate in the APS:

1. Have your system installed

2. Work with your installer and/or an aggregator to submit a Statement of Qualification to DOER*

3. Once approved, the AECs will be available to be sold into the market. An aggregator typically will sell the AECs for you and will send you a check based on the current market price for AECs

*Using an aggregator greatly simplifies the APS process and may help owners receive better prices for their AECs. Aggregators typically take a share of the AEC proceeds. Systems owners that opt to manage the APS process themselves should read the full regulations and guidelines.

What is an Independent Verifier?

An Independent Verifier or third party meter reader is required for all intermediate and large GSHP Generation Units. The Independent Verifier must have no financial investment in the project. Their primary role in the operation of the system is to verify reported energy production to ensure that the system is not over or under producing. The Independent Verifier is also responsible for uploading all production information to NEPOOL GIS on a quarterly basis to mint the AECs.

Key APS Program Details

- AECs are minted on a quarterly basis
- AECs can only be used for compliance in the year they were generated
- The NEPOOL GIS is an online platform where all AECs are minted and traded

Key APS Program Terms

- **Generation Unit Owner:** The person who owns a qualified heating and cooling system and receives an APS incentive
- **Statement of Qualification:** The document which officially qualifies a system as an APS eligible Generation Unit
- **Aggregator:** A person or company who handles the process of qualifying Generation Units and manages the buying/selling of certificates on behalf of Generation Unit Owners
- **Independent Verifier:** A person or company who reports and verifies production for the Generation Unit
- **Production Tracking System (PTS):** An application hosted by the Massachusetts Clean Energy Center that is used to track renewable energy across the Commonwealth
- **NEPOOL GIS:** An online tool where AECs are minted and traded



For more information on the process of installing and receiving certificates for renewable thermal generation units contact: Thermal.DOER@State.ma.us or visit

<https://www.mass.gov/guides/aps-renewable-thermal-statement-of-qualification-application>

