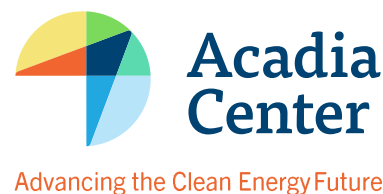


Massachusetts APS Review

Acadia Center Comments

December 4, 2020



Acadia Center is happy to offer the following comments on Massachusetts' Alternative Portfolio Standard (APS), a program **crucial to the Commonwealth's ability to meet its commitments under the Global Warming Solutions Act**. Buildings account for up to a third of the Commonwealth's annual greenhouse gas emissions, and the APS contributes substantially and concretely to a reduction in these emissions by providing a consistent funding stream for renewable thermal installations.

Acadia Center supports the APS program and looks forward to working with the Department of Energy Resources (DOER) as it strengthens and streamlines the program in the coming months.

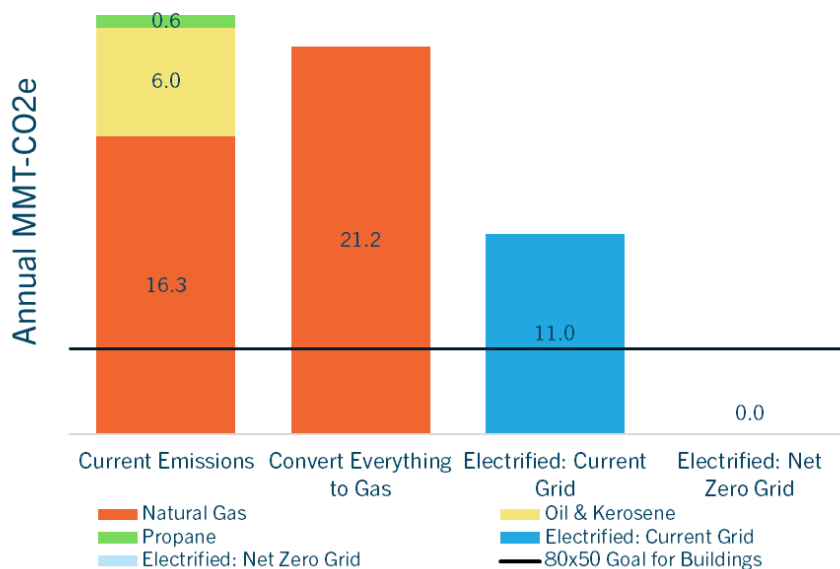
Electrification is the only way to meet our climate goals.

Buildings account for 32% of Massachusetts' emissions in a given year as of 2017. As in every sector, these emissions must be reduced to zero by 2050. Fortunately, emissions from buildings have declined by 21% relative to 1990 levels, as of 2017.

Unfortunately, they have **only declined by 4% in the years since the Global Warming Solutions Act** passed in 2008. By comparison, electric power emissions have declined by 45% during that time.

The slowdown is largely due to the still-low—though growing—market penetration of heat pump equipment relative to the pace of natural gas conversion. Converting from coal or petroleum to natural gas leads to a nominal reduction in emissions.¹ However, **in no sector can**

Emissions from Buildings in Massachusetts
Thermal End Uses



Source: EIA, ISO-NE, McKain et al.

¹ According to the [U.S. Energy Information Administration](#), coal produces about 210.2 pounds of CO₂ per MMBTU, home heating oil and diesel fuel produce about 161.3 pounds, propane produces 139.1 pounds, and natural gas produces 117.0 pounds through combustion. However, natural gas also leaks from distribution pipelines at a rate approaching 3% of the total volume that enters the pipes, according to [McKain et al.](#) This leaked methane, itself a potent greenhouse gas, adds another 34.3 pounds of CO₂-equivalent to each MMBTU of natural gas used in a building, for a total of 151.3 pounds of CO₂-e. The EPA's greenhouse gas inventory does not account for this level of leakage. As a result, its estimates of the real impact of switching to natural gas in both the electric power sector and in buildings are overstated.

natural gas conversion hope to even approach the greenhouse gas reduction potential of electrification.

Installing new natural gas equipment today will ensure that buildings in the Commonwealth are still burning the fuel in 2050.

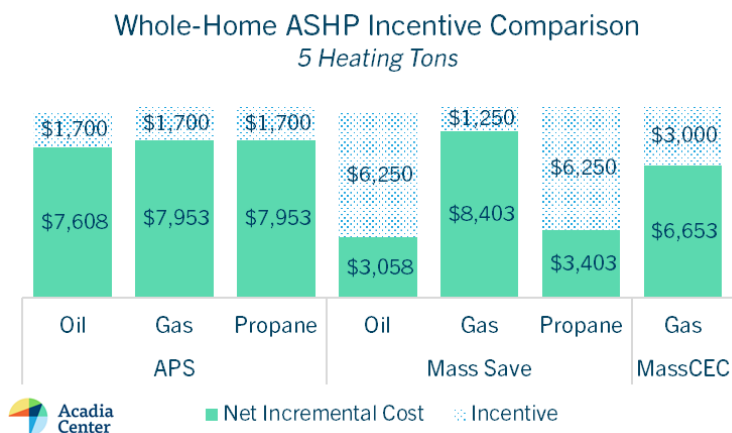
There are more than 2.5 million housing units and millions of square feet of commercial real estate in Massachusetts, and heating systems routinely last for 20 years or longer. As a result, the Commonwealth's greenhouse gas reduction policies pertaining to buildings must be **ambitious enough to make electrification into the path of least resistance for building owners by the earliest possible date.** Many of the systems installed today will still be functional in 2050, by which time the Commonwealth will have had to eliminate fossil fuel use entirely.

The APS is just one part of such a suite of policies, but its contribution is significant. As a regulatory floor on investment that generates a stable funding stream, it will be an **invaluable tool for the Commonwealth in the decisive years ahead.**

Incentives are not high enough to spur building owners to act.

Daymark's review of the program² found that "current incentive levels under the APS are not adequate to support the adoption of many renewable thermal technologies." **Acadia Center would like to highlight this finding** as an important consideration for DOER, particularly as it pertains to heat pump installations in the residential sector.

Mass Save incentives³ available to homes using oil, propane, or electric resistance heating equipment can reach up to \$1,250 per ton, or \$6,250 for a whole-home installation in an average-sized home (as defined by Daymark⁴).



For homes using natural gas—about half of the homes in the Commonwealth—the Mass Save incentive of \$1,250 is lower than the APS incentive. However, gas-heated homes are eligible for the MassCEC whole-home ASHP program, which currently offers a rebate up to \$3,000 for higher-income households and up to \$5,500 for lower-income households. In each instance, **the APS is a less appealing incentive by comparison.**

This shortfall is not necessarily a result of the program's design. For small systems, AEC prices would need to exceed \$100 to cover the current difference in cost between a heat pump and a business-as-usual fossil fuel

² Daymark Energy Advisors. "Alternative Energy Portfolio Standard Review." October 30, 2020. Prepared for the Massachusetts Department of Energy Resources. [Accessible here.](#)

³ Mass Save: Residential Electric Heating and Cooling Equipment. [Accessible here.](#)

⁴ Daymark's study assumes that a small air-source heat pump system, such as an average-sized home would require, would have 5 tons (60,000 BTU/h) of heating capacity. In truth, many homes—particularly those among the 32% of Massachusetts housing units that are located in multifamily buildings—require much less heating capacity than that.

system. Instead, DOER should **consider in its review the potential impact of supportive policies** that seek to reduce the naturally-occurring cost of heat pumps in the marketplace.

Ambitious policies preferential to heat pumps can help to reduce the up-front cost of installations by boosting the incidence of heat pumps in the marketplace and thereby promoting economies of scale. Current policies—including both the APS and energy efficiency programs—list heat pumps among a regimen of measures, but were not necessarily designed with electrification in mind and do not offer preferential treatment to heat pumps.

Orienting the APS more explicitly toward electrification, to the exclusion of other types of resources, would not just focus the program on the technologies with the greatest emissions reduction potential. It could also **create a virtuous cycle** where more investment reduces the up-front cost of electrification, making programs like the APS more impactful as time goes on.

The program's complexity is an important factor.

The complexity of the APS program's design can have outsized impacts on whether obligated entities choose to purchase and retire certificates instead of simply paying the ACP.

There is a cost of compliance associated with portfolio standard programs. Obligated entities will compare not just the price of a thermal resource relative to the ACP, but the price of the resource plus the cost of reporting, buying, and retiring certificates, and of conducting GIS work. A complex program will increase the cost of compliance for obligated entities, acting as a built-in barrier to investment in renewable thermal resources which will be more difficult to change than the amount of the ACP.

For this reason, **Acadia Center recommends that DOER explicitly prioritize simplicity** as it considers how to revise the APS program.

For more information:

Deborah Donovan; Massachusetts State Director; ddonovan@acadiacenter.org

Matt Rusteika; Director, Buildings Initiative; mrusteika@acadiacenter.org