



CITY OF SOMERVILLE, MASSACHUSETTS  
OFFICE OF SUSTAINABILITY AND ENVIRONMENT  
JOSEPH A. CURTATONE  
MAYOR

To: Samantha Meserve, Department of Energy Resources ("DOER")

From: Oliver Sellers-Garcia, Director of Sustainability and Environment, City of Somerville

Date: December 04, 2020

RE: 2020 APS Minimum Standard Review Comment (transmitted via email to [DOER.APS@mass.gov](mailto:DOER.APS@mass.gov))

Dear Ms. Meserve,

The City of Somerville Mayor's Office of Sustainability and Environment ("OSE") is taking proactive steps towards mitigating and adapting to climate change. Somerville is the most densely populated city in New England. About half of the greenhouse gas ("GHG") emissions come from heating and cooling buildings. To meet Somerville's goal of becoming carbon neutral, we must address the city's largest sources of greenhouse gas emissions.

During the initial roll out of the Alternative Portfolio Standards ("APS"), Somerville launched a campaign called HeatSmart CoolSmart Somerville ("HSCS"),<sup>1</sup> aimed at increasing awareness of air source heat pumps ("ASHP"). Permit data has shown an increase in ASHP installations, including dozens attributed directly to HSCS. In November 2019 the City released *Somerville Climate Forward*,<sup>2</sup> Somerville's first climate action plan. The plan details actionable, equitable solutions towards meeting carbon neutrality goals. Decarbonizing the heating supply with renewable thermal technologies, namely cold-climate ASHP, could reduce Somerville's GHG emissions by five percent in the year 2050.

In a letter signed by Mayor Curtatone, Somerville commented on the APS prior to its launch.<sup>3</sup> We were hopeful the regulation would help further accelerate the adoption of ASHP, as the Renewable Portfolio Standard ("RPS") has for solar PV. To our knowledge, many Somerville residents and property owners that have purchased ASHP have not taken advantage of APS incentives. Below, we have responded to request for comment to offer support for changes that could improve the financial outlook for installing ASHP in existing buildings and increase adoption rates.

**8. Has the APS incentive had an impact on the decision of system owners to invest in APS eligible technologies? Why or why not.**

We suspect the APS incentive may not have a positive impact on installations in existing Somerville properties. All ASHP systems installed through HSCS were all installed in existing buildings. Nearly all

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<sup>1</sup> HeatSmart CoolSmart Somerville, City of Somerville. Accessed through [www.somervillema.gov/hscs](http://www.somervillema.gov/hscs) (last accessed 12/03/2020).

<sup>2</sup> *Somerville Climate Forward*, Office of Sustainability and Environment, City of Somerville, pp. 39-42, November 2019. Accessed through <https://www.somervillema.gov/sites/default/files/somerville-climate-forward-plan.pdf#page=46> (last accessed 12/03/2020).

<sup>3</sup> See original comment, attached.

installations were not eligible to take advantage of Alternative Energy Credits (“AECs”). The systems did not meet the qualification standard to supply at least 90 percent of the building’s annual heat load from renewable thermal generation.

**9 & 10. How could the APS program be improved to better influence residential or commercial purchasing behaviors? Are there currently eligibility criteria in the APS program that you believe are a barrier to participation in the program? How would you address these barriers?**

About 80 percent of Somerville’s buildings were constructed before building codes were enacted. About 90 percent of properties are multi-unit dwellings. Most Somerville buildings are heated with gas. HSCS ran August 2017-February 2018. The average system installed through HSCS was 2.8 tons. The majority of ASHP were multizone systems installed as supplemental heating systems in homes with gas as a primary heating source.

Age of buildings, limited new construction, limited scale, retrofit difficulty, and operating costs all play a role in which type of heating system a property owner installs and how efficiently it will run. Generally, aging housing stock and multi-unit dwellings are more difficult to retrofit, thereby increasing the cost of ASHP installation.<sup>4</sup> Due to current gas and electricity pricing, it is also more expensive to operate an ASHP than gas heating system (oil system, according to the DOER).<sup>5</sup> For many, the initial cost of installing ASHP does not stop at the install. It may include electrical upgrades, weatherization, and ductwork.<sup>6</sup>

Current AEC incentives are not lucrative enough to combat these obstacles and “are not sufficient to support a typical small, renewable thermal system for most of the technology comparisons,” even through “(s)mall renewable thermal systems achieve emissions reductions for the lowest cost, particularly GSHP and ASHP when compared to oil, propane, and electric resistance.”<sup>7</sup> Despite these obstacles, awareness campaigns, professional training, incentives and financing, and warming summers have given way to a transitional period, discussed in our previous comment. Households without air conditioning are installing ASHP for relief during the summer and testing it out as a heating source on milder, winter days. However, current APS incentives do not reward these households.

DOER could modify APS multipliers and incentives to signal the value renewable thermal brings to the grid, and therefore incentivize its installation. Purportedly, the regulation strives to be a factor in the decision-making process when installing renewable thermal in both new and existing buildings. This plays out differently in practice. The qualifications for ASHP decidedly serves new construction homes over existing buildings transitioning away from fossil fuel heating sources, including gas, even though “the economics of whole-home heat pumps make the most sense on the new construction side, where the home can be designed for heat pumps from the start.”<sup>8</sup>

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4 Meg Howard, *September Whole-Home Heat Pump Pilot Update: Still Time to Apply!*, Massachusetts Clean Energy Center, masscec.com, September 29, 2020. Accessed through <https://www.masscec.com/blog/2020/09/29/september-whole-home-heat-pump-pilot-update-still-time-apply> (last accessed 12/02/2020); Meg Howard, *June Whole-Home Heat Pump Pilot Update: Pilot Extended through December 2020*, Massachusetts Clean Energy Center, masscec.com, June 16, 2020. Accessed through <https://www.masscec.com/blog/2020/06/16/june-whole-home-heat-pump-pilot-update-pilot-extended-through-december-2020> (last accessed 12/03/2020).

5 *Id.*; *Household Heating Costs*, Policy Planning & Analysis Division, Department of Energy Resources, mass.gov. Accessed through <https://www.mass.gov/info-details/household-heating-costs> (last accessed 12/02/2020).

6 Meg Howard, *October Whole-Home Heat Pump Pilot Update: Pilot Extended through June 2021!*, Massachusetts Clean Energy Center, masscec.com, October 30, 2020. Accessed through <https://www.masscec.com/blog/2020/10/30/october-whole-home-heat-pump-pilot-update-pilot-extended-through-june-2021> (last accessed 12/02/2020).

7 *Alternative Energy Portfolio Standard Review*, Daymark Energy Advisors, Department of Energy Resources, pp. 15-17, 20, October 30, 2020. Accessed through <https://www.mass.gov/doc/alternative-energy-portfolio-standard-review/download> (last accessed 12/03/2020). Internal citations omitted.

8 *Supra* note 4, *September Whole-Home Heat Pump Pilot Update: Still Time to Apply!*.

At this juncture, regulations like APS should take a page out of the RPS playbook and not only reward renewable thermal projects serving near 100% heat load, but those contributing any amount of renewable energy to the electric grid. This would more accurately represent the value of a property owner or resident transitioning away from fossil fuels for the first time. Making an initial shift from fossil fuels sets a precedent for future installations, eliminating barriers caused by deviating from the status quo.

The economics of installing ASHP and replacing any system except an electric resistance system are not competitive under the current incentive program.<sup>9</sup> This is a barrier to property owners and residents transitioning from fossil fuels for the first time. APS incentives should aim to make the cost of installing and operating ASHP and other renewable thermal technologies competitive with fossil fuels.

The “Alternative Energy Portfolio Review” proposed several policy levers the DOER could utilize to stabilize the market and further policy goals of the APS.

- Modifying “the necessary incentive level for renewable thermal technologies” by comparison technology to combat the effects of fuel cost.<sup>10</sup>
- Modifying the qualification standards for ASHP by “(e)xpanding the eligibility to incorporate small ASHP systems” to potentially “drive program participation by supplemental systems.”<sup>11</sup>
- Phasing out incentives for technologies that do not require an APS incentive to be economic, changing multiplier values to more accurately reflect value added to APS policy goals, and creating demand for technologies that require APS incentive and provide GHG reductions.<sup>12</sup>

OSE supports these changes in hopes they would more effectively and broadly hasten Massachusetts’ clean energy transition.

#### **11. What revisions to the existing APS eligibility criteria would you propose to improve and simplify the APS program, if any?**

As discussed in Somerville’s previous comment, the APS only considers the value heating operations provide to the grid. Somerville conducted a vulnerability assessment that revealed Somerville will face increased frequency and intensity of heat events in the summer.<sup>13</sup> This will certainly lead to increased air conditioning usage in the summer, increasing the pressure of on the electric grid absent high-efficiency cooling systems.

This need is more pronounced during the COVID-19 pandemic when residents were asked to socially distance by staying home. In 2012, over 100 Massachusetts residents were hospitalized for heat stress and more than half were over the age of 65.<sup>14</sup> Data from April 2020 shows U.S. residential electric bills increased after stay-at-home advisories were put in place.<sup>15</sup>

OSE continues to encourage the DOER to consider the value added by cooling with an ASHP. This would create an additional incentive to install heat pumps, which could then be used for both heating and cooling. In addition, ASHP can be more efficient than the window air conditioning units they may

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<sup>9</sup> *Supra* note 7 at 15.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.* at 22.

<sup>12</sup> *Id.* at 15-39.

<sup>13</sup> Climate Change Vulnerability Assessment, Office of Sustainability and Environment, City of Somerville, pp. 17-22, June 2017. Accessed through [https://www.somervillema.gov/sites/default/files/6-13-2017\\_Somerville%20CCVA%20Final%20Report.pdf](https://www.somervillema.gov/sites/default/files/6-13-2017_Somerville%20CCVA%20Final%20Report.pdf) (last accessed 12/03/2020).

<sup>14</sup> *Wellbeing of Somerville Report*, Health and Human Services Department, City of Somerville, pp. 148. Accessed through <https://www.somervillema.gov/sites/default/files/wellbeing-of-somerville-report-2017.pdf> (last accessed 12/02/2020).

<sup>15</sup> Riordan Frost, *New Strains on Home Utilities During the Pandemic*, Harvard Joint Center for Housing Studies, July 23, 2020. Accessed through <https://www.jchs.harvard.edu/blog/new-strains-on-home-utilities-during-the-pandemic/> (last accessed 12/02/2020).

replace. As climate change progresses, Massachusetts will see a decrease in heating degree days and an increase in cooling degree days, placing more importance on the efficiency of cooling systems.

Thank you for opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "O. Sellers-Garcia". The signature is fluid and cursive, with a large initial "O" and a distinct "G" at the end.

Oliver Sellers-Garcia  
Director