

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES**

<u>The Berkshire Gas Company;</u>)	
Eversource Gas Company of Massachusetts,)	
d/b/a Eversource Energy;)	
Fitchburg Gas and Electric Light Company,)	D.P.U. 21-120 through 21-129
d/b/a Unitil (gas);)	
Liberty Utilities (New England Natural Gas)	
Company) Corp., d/b/a Liberty Utilities;)	
Boston Gas, d/b/a National Grid;)	
NSTAR Gas Company d/b/a Eversource Energy;)	
Cape Light Compact JPE;)	
Fitchburg Gas and Electric Light Company,)	
d/b/a Unitil (electric);)	
Massachusetts Electric Company and)	
Nantucket Electric Company,)	
each d/b/a National Grid; and)	
d/b/a Eversource Energy)	
<u>(2022-2024 Three-Year Energy Efficiency Plans)</u>)	

REPLY BRIEF OF THE MASSACHUSETTS ENERGY MARKETERS ASSOCIATION

I Introduction

The Massachusetts Energy Marketers Association ("MEMA") respectfully submits this Reply Brief to the Department of Public Utilities ("The Department") in the above-referenced proceedings regarding the 2022-2024 three-year energy efficiency plans filed by the energy efficiency Program Administrators (the "PAs").

The purpose of this Reply Brief is to rebut arguments raised by other parties that have relied upon incomplete, overly reductive, or otherwise questionable data.¹ MEMA recognizes that less efficient, older oil-fired heating systems using traditional petroleum do not contribute to the Commonwealth's greenhouse gas ("GHG") reduction goals. However, verifiable data

¹ Not commenting on a particular issue does not indicate MEMA's support or opposition to the issue as raised or proposed.

discussed in this Reply Brief demonstrates that modern high efficiency heating oil equipment upgrades utilizing renewable biofuel blends can play a vital role in GHG mitigation, significantly reducing fossil fuel use and producing energy cost savings for Massachusetts residents.

II Argument

A. Boiler Replacements Continue to Provide Substantial Savings for Massachusetts Residents

The PAs Initial Brief in this matter provides that “the PAs have also eliminated some incentives for heating equipment that no longer provide significant savings.”² The brief further states, “oil boilers were removed from the program entirely because there are no savings to claim or opportunities for program intervention.”³ MEMA maintains that this statement is inaccurate.

In his written testimony to The Department, MEMA witness Dr. Tom Butcher with the National Oilheat Research Alliance (“NORA”) reported on the results of an oil boiler replacement program supported by NORA in Massachusetts and other Northeast states.⁴ Butcher’s *Report on Equipment Upgrade Incentive Project* detailed the “analysis of the energy savings associated with the upgrade of 6,412 home heating boiler systems” and 2,101 warm air furnaces from the start of 2021 to present.⁵ For oil-fired boilers Butcher found:

*The average savings was found to be 20%. For the 6,412 boiler upgrades done as of the beginning of 2021, the total savings after one year was 1,090,040 gallons, \$3,488,128, and 15,833 tons of greenhouse gas emissions. These savings were extended to 5, 10, and 25 years. Simple payback on the NORA upgrade incentive was found to be about 1 year.*⁶

² PA Initial Brief at 35.

³ Id. at 36.

⁴ See Exhibit-MEMA-TB.

⁵ Id. at 4.

⁶ Id. at 2.

Contrary to the PAs position, data clearly shows that the existing heating equipment incentives in the Mass Save program would continue to provide substantial savings to Massachusetts residents.⁷ Given that, The Department should not eliminate these valuable incentives.

B. Heating Oil Equipment Paired with Currently Available Biofuel Blends Achieves Equal or Greater GHG Savings than Heat Pumps

In the Department of Energy Resources (“DOER”) Initial Brief, DOER states, “efficient electrification is an effective strategy to reduce overall energy usage and GHG emissions for all customers.”⁸ However, as detailed below, heating oil equipment efficiency measures achieve as much GHG savings (in the range of 20-plus-or minus percent) as cold-climate heat pumps if real-world heat pump performance data and full life-cycle analysis of natural gas used for power generation are considered.⁹

Analysis by electrification advocates typically only recognize onsite CO₂ emissions at power plants, when in fact, according to the Argonne National Lab GREET model and the UN Intergovernmental Panel on Climate Change, the CO₂ and methane emissions associated with natural gas production and transmission must be incorporated into the total CO₂ emissions for electricity.¹⁰

Using life-cycle values for electricity adds another 25 to 30 percent to the CO₂ emissions figures for heat pumps.¹¹ The bar graphs in MEMA testimony filed by Mr. Raymond Albrecht, PE and National Biodiesel Board (“NBB”) consultant, shows that much of the savings claimed

⁷ See Id.

⁸ DOER Initial Brief at 24.

⁹ Exhibit-MEMA-RJA at 6.

¹⁰ Id. at 4.

¹¹ Id. at 13.

from heat pumps will evaporate once the calculations use correct and realistic life cycle analysis methodology.¹² In his written testimony filed by MEMA in this matter, Matt Herman of the NBB stated:

“With respect to CO₂, the International Panel on Climate Change (IPCC), publishes guidelines which support the separate reporting of CO₂ resulting from the combustion of biofuels and CO₂ resulting from the combustion of fossil fuels. This key distinction arises from the different underlying source of the carbon, which forms the post-combustion carbon dioxide. In the absence of a full, life cycle assessment for bioenergy, it is critically important that the DPU align their reporting of biogenic CO₂ with international standard in order to recognize the benefits of displacing fossil fuels with biofuels.”¹³

Mr. Herman also testified that:

“The increased use of biodiesel in home heating oil applications not only has significant GHG benefits as noted by researchers across the nation but replacing diesel with biodiesel also results in a dramatic reduction in co-pollutants, sometimes called criteria pollution or tailpipe emissions. In particular, biodiesel can reduce diesel particulate matter emissions in home heating oil applications by 86%. These dramatic reductions can lead to significant health benefits in the form of reduced asthma attacks, avoided work loss days, and reduced cancer risk.”¹⁴

When evaluating GHG impacts associated with home heating oil, MEMA asks that The Department consider the “full picture” by considering these other important factors.

Further, MEMA witness Ray Albrecht noted that heat pump advocates in the Northeast mistakenly use average grid mix figures instead of the more sophisticated and accurate marginal emission rates.¹⁵ Average emissions calculations assume that energy policymaking affects all generation sources equally, but this is obviously not the case in reality. As The Department is aware, many sources of power send all the energy they can to the grid at all times, no matter the

¹² Id. at 6.

¹³ Exhibit-MEMA-MH at 3.

¹⁴ Id. at 4.

¹⁵ Exhibit-MEMA-RJA at 3.

level of energy demand. Consequently, an increase or decrease in demand primarily affects the power sources that can scale up or down in response to demand changes.¹⁶ Most often, these are emissions-generating power sources rather than renewable power sources. Unlike average grid mix, marginal grid mix calculations consider which particular power sources will generate more or less emissions if grid demand changes.¹⁷ As shown in Mr. Albrecht's testimony, the increase in heat pumps would primarily result in an increased use of natural gas, oil, and coal.¹⁸ Accordingly, the real emissions impact of increased heat pump use shown by marginal grid mix calculations will be far greater than the simplistic average grid mix figures favored by heat pump advocates.

Mr. Albrecht's testimony included a white paper from the Rocky Mountain Institute, a highly respected environmental organization, which explains in detail why the use of marginal emission rates is necessary when evaluating the impact of major energy policy changes.¹⁹ Recognizing its value, the California Air Resources Board (CARB) requires the use of marginal emission rates in regulatory proceedings. Similarly, when evaluating these emissions issues, MEMA urges The Department to quantify the problem using marginal grid mix figures instead of less accurate average grid mix figures.

Using marginal emissions rates, Mr. Albrecht's testimony shows that GHG emissions for new heat pumps are between 20% and 30% higher than the rudimentary average grid mix figures used by other parties in this matter.²⁰ As stated *supra*, this is because the increased generation

¹⁶ Id.

¹⁷ Id.

¹⁸ Id. at 11

¹⁹ Id. at 3

²⁰ Id. at 6

required for new heat pumps will predominantly come from natural gas, oil, and coal generation.²¹ An average grid mix calculation ignores this fact, but The Department must consider the sources of increased generation that will be required in order to accommodate new heat pumps in Massachusetts.

Considering the more accurate figures derived from a marginal grid mix analysis, it becomes clear that the remaining GHG savings for heat pumps are actually in the same range as the savings achieved through retrofit oil-fired boiler efficiency measures.²² The notable difference, however, between heat pumps and liquid fuel-fired boilers becomes that, based on correct marginal emission rate analysis, further GHG reductions from heat pumps will be impeded until renewable power generation reaches the margin. While MEMA commends the Commonwealth for its aggressive implementation of renewable power generation, it will take many years, and likely, multiple decades, for renewable electricity to expand beyond the existing grid load to serve the substantial added grid loads that will result from electrification. On January 6, 2022, for example, ISO New England reported its “fuel mix” contained only 11% “renewables.” This is another consideration that MEMA feels should be factored into the Department’s analysis of the proposed plan.

Briefs filed by the PAs, DOER, and the Conservation Law Foundation (“CLF”) disregard the fact that each of the described measures for oil-fired boilers, including the upgrading of older heating oil boilers and furnaces, and the utilization of renewable biofuel blends of B20 – a 20% blend of biofuel in heating oil – are individually comparable to heat pumps in achieving real-

²¹ Id. at 11.

²² Id. at 12.

world savings.²³ The combination of new heating oil equipment efficiency and biofuel, even at just B20, achieves immediate and superior GHG savings compared to heat pumps, and will continue to widen the lead in achieving real GHG savings as biofuel concentrations increase.²⁴ Biofuel and new high efficiency heating oil equipment are valuable tools that can help the Commonwealth achieve its energy efficiency goals and The Department should preserve any incentives that will encourage their use during the three -year plan.

C. Eliminating Existing Heating Oil Incentives will be Particularly Harmful to Low-Income Residents and Residents in Environmental Justice Communities

MEMA shares the concerns raised by the CLF in its Initial Brief, as well as other parties in this matter, regarding the particularly harsh impact of energy costs on low-income residents and residents in environmental justice (“EJ”) communities.²⁵ Eliminating the existing heating oil equipment incentives in the Mass Save program will only exacerbate the problem of high energy costs for particularly vulnerable residents. Therefore, MEMA urges The Department to retain these critically important incentives.

Providing Mass Save Rebates in the 2022-2024 Three-Year Energy Efficiency Plan for heating oil equipment that utilizes biofuels will help meet the needs of low-and-moderate income families whom CLF correctly asserts “experience a disproportionate share of the burden from energy use” and “experience higher exposure to pollution and higher rates of pollution-rated illnesses such as asthma.”²⁶ The existing Mass Save incentives for high efficiency oil heating equipment provide a pathway to mitigate these problems and, therefore, the incentives should remain in place.

²³ Id. at 14.

²⁴ Exhibit-MEMA-MF at 3.

²⁵ CLF Initial Brief at 18.

²⁶ Id.

Finally, CLF’s Initial Brief correctly points out that, “all Massachusetts households pay into Mass Save via a monthly charge per kilowatt or therm of energy used,” including “many low-to-moderate income families” many of whom reside in Environmental Justice (EJ) communities.²⁷ MEMA maintains that all heating oil customers who subsidize Mass Save should have access to any-and-all energy technologies that improve energy efficiency, reduce the use of traditional fossil fuels, and contribute to reducing GHG in Massachusetts. Removing access to “energy benefits” that are defined in EJ policy as “access to funding, training, renewable or alternative energy, energy efficiency, or other beneficial resources disbursed by EEA, its agencies and its offices” is a violation of this policy.²⁸

III Conclusion

The Department should preserve existing Mass Save rebates for heating oil equipment upgrades in the 2022-2024 3 Year Energy Efficiency Plan.

Respectfully submitted,

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By its attorney,

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²⁷ Id.

²⁸ Exhibit-MEMA-MF at 6.