

Comments Received: Clean Heat Standard
May 10, 2023 – September 1, 2023

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VIA ELECTRONIC DELIVERY

climate.strategies@mass.gov

September 1, 2023

Bonnie Heiple, Commissioner
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: Massachusetts Clean Heat Standard Stakeholder Input

Dear Commissioner Heiple,

We appreciate the opportunity to provide an additional set of comments to inform the development of a proposed Clean Heat Standard (“CHS”) regulation and related heating fuel supplier reporting requirements. The undersigned 31 organizations and 34 individuals represent stakeholders with a strong interest in equitably cutting building sector emissions to ensure that we meet our greenhouse gas reduction requirements. Many of these individuals also signed on to coalition comments for the previous comment opportunity, dated May 1, 2023.¹

I. Introduction

A part of those recommendations was a request to hold a series of technical sessions on key design questions for technical stakeholders including the undersigned clean energy experts and advocates. We appreciate that DEP has acted upon this recommendation and held a series of stakeholder and technical sessions over the past few months. Unfortunately, we believe the process chosen for these technical sessions resulted in sessions that were not particularly helpful at delving into these complicated topics in an overly productive manner that has raised many additional thoughts or insights. For example, despite our previous set of comments having around fifty organizations and individuals signed on, support for the concepts outlined in those

¹ <https://www.mass.gov/doc/clean-heat-standard-comments/download>, at 82

comments was identified in the stakeholder sessions as “few.” However, when fewer organizations submitted multiple comments that were nearly identical their support was listed as “many.”

Therefore, the below represents a reiteration of many of the recommendations from our previous comments. **Our top priorities for a CHS for Massachusetts are ensuring adequate equity protections and an electrification-only compliance program, particularly for gas utilities.** Additionally, we address what we believe to be several flawed claims that have been made during the stakeholder process. Finally, we outline steps that could be taken to improve the overall process. Thank you again for the opportunity to comment and we look forward to continuing to work with you as this process unfolds.

II. The Principles and Concepts Set Forth in Our Original Comments on a Clean Heat Standard Remain Valid

Our previously submitted comments detailed, at length, the overarching views of the undersigned on a CHS. Nothing so far in this stakeholder process has shifted our opinions on the major concepts. We have not seen any data from DEP or the fossil fuel heating industries that cause us to rethink our key points about the design of a CHS. However, we do wish to highlight key elements from said comments and reiterate our support.

As stated above, our top priorities for a CHS for Massachusetts are ensuring adequate equity protections and an energy efficiency and electrification-only compliance program, particularly for gas utilities. Equity and energy justice must be centered in this process, and program design should focus direct and indirect benefits on customers with the highest energy bill burden. DEP should also coordinate closely with DOER and DPU on key complementary strategies for equity, including examining rate design, the alternative portfolio standard, and a

managed transition away from the gas distribution system.

DEP should also prioritize the most cost-effective long-term emissions reduction pathway, non-combustion technologies, rather than biofuel blending, particularly for gas. That includes utilizing the “High Electrification” scenario outlined in the state’s 2025 and 2030 Clean Energy and Climate Plan, not the “Phased” scenario, for the reasons articulated in detail in our May 1 comments. Further, DEP should define “Heat” broadly across electrification technologies with value for equipment being based upon projected avoidance of carbon emissions over its lifetime.

III. Certain Claims Made During the Stakeholder Process Require Additional Review and Evaluation

Development of a Clean Heat Standard requires the application of sound scientific principles, which includes how we label and categorize different sources of energy. It is critical that when dealing with the public, including policymakers, legislators, and state officials, industry members are prevented from “greenwashing” their products, such as biofuels like biomethane (sometimes called “renewable natural gas”), as well as so-called “bioheat fuel” and biodiesel. It has come to our attention that delivered fuels and biofuels industry members are distributing materials which falsely claim that such sources are “clean” and would help the Commonwealth to achieve its climate mandates. Accordingly, DEP must remain vigilant of such claims and take care to carefully review the claims and their proponents.

a. Hybrid Fuels/Credits

The terminology used to describe different types of fuels is critical not only to the development of a Clean Heat Standard, but also to the public’s understanding of energy and climate issues. It is important to bear in mind during the stakeholder process the purpose of

developing a Clean Heat Standard; that is, to aid the Commonwealth in its achievement of net-zero greenhouse gas emissions by 2050 as mandated by the 2021 Roadmap Law. Accordingly, it is appropriate to recognize fuels that emit greenhouse gases during their lifecycles and name them accordingly, even if they are blended or used in a hybrid manner with other fuels. We must also consider other types of emissions such as particulate matter and air pollutants; thus, thermal energy derived from solar power would be considered a clean resource, while heat generated from burning wood or biomass would not.

b. Biodiesels

We have suggested to DEP that a technical session be held regarding liquid biofuels. We would like to hear from DEP now, before regulations are drafted, what the scientific rationale would be for making biodiesel eligible for Clean Heat Credits. Furthermore, we would like information on the available supply of biodiesel, the provenance of feedstocks, and the projected cost thereof.

IV. *Development of a Clean Heat Standard Will Benefit from Enhanced Procedure*

The technical sessions to date have clearly taken a “listening first” approach to engagement. While we see value in this approach, it supplements but does not eliminate the need for more in-depth technical sessions that get into the nuts and bolts of CHS policy design. The CHS is a highly complex policy that would greatly benefit from real-time interaction among technically oriented stakeholders and, to date, the technical sessions have not fostered this type of discussion. Based on prior experience participating in numerous technical stakeholder forums across various states and energy policy topics, we offer the following suggestions for improving future technical stakeholder meetings:

1. *Solicit consultant support:* Future meetings would greatly benefit from the support of a

consultant with significant experience in the design of clean heating standard design (or design of similar policies) and experience facilitating discussion among technical stakeholders on specific, technically oriented topics that are key to policy design and outcomes. Expecting DEP to cover the breadth and depth of technical topics relevant to CHS policy design given staffing limitations and limited bandwidth may not be a reasonable expectation.

2. *Present detailed information to respond to:* Technical stakeholder meetings to date have been light on detailed information regarding policy design. Future technical stakeholder meetings that take the approach of presenting detailed information on potential paths forward related to specific elements of CHS policy design would likely prove to be more successful in facilitating engagement among stakeholders. This could take the form of information presented by 1) DEP 2) DEP's consultant or 3) Outside speakers with demonstrated expertise in a specific area. DEP has presented valuable written materials on the CHS, including the Synapse memos on Heating Technology Cost and Emissions, Obligated Entities and Existing Crediting Schemes, but presenting similar information in the form of focused technical sessions would foster productive discussion in a live forum among experts with differing opinions. This would add value to the entire stakeholder process. Part of this is a timing issue – while listening sessions early in the stakeholder engagement process have value, technical sessions would likely have more value later in the process once DEP has developed a straw proposal and/or provided specifics on potential policy design pathways.
3. *Form a Technical Working Group:* While broad stakeholder engagement provides one type of distinct value, smaller and more focused stakeholder engagement provides an

entirely different type of value. In the case of stakeholder processes that involve the design of a highly complex energy policy, like the CHS, the formation of a Technical Working Group (TWG) has been demonstrated to provide immense value through the facilitation of discussion among a small group of individuals with demonstrated technical expertise on relevant topics. The TWG application process can be designed in such way to ensure that selected technical experts represent a wide range of stakeholder interests (e.g., emissions and environment experts, government bodies, large commercial or industrial users, residential users, electric system experts, gas system experts, energy efficiency experts, electrification experts, etc.). The type of back-and-forth dialogue that can be generated in TWG meetings is extremely challenging to replicate in larger stakeholder sessions. We would recommend the TWG be comprised of 8-12 members.

V. *Conclusion*

Thank you for this additional opportunity to comment. We look forward to continuing to work with DEP throughout this stakeholder process on this important topic.

Signed,

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September 1, 2023

Department of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

The Alliance for Green Heat appreciates the opportunity to share comments regarding the Clean Heat Standard. We are a nonprofit that advocates for low-carbon heating strategies across the nation. We have a strong expertise in modern wood heating, heat pumps, and energy audits and weatherization, with a focus on low-to-middle-income households.

We believe that Massachusetts must keep [advanced wood heating](#) (AWH) technology in the Clean Heat Standard. AWH typically refers to pellet stoves and boilers at the residential level and can also include wood chips in larger systems. Residential wood stoves are not included in the definition of AWH because they do not have the automation to reduce particulate matter (PM) effectively and consistently. A similar term “automated wood heat” is often used and specifically excludes cordwood.

Advanced wood heating has a significant potential to be a complementary decarbonization technology that can increase electrification adoption for middle-income households and serves as an effective alternative heating source for energy providers to offer to customers.

Pellets for advanced wood heating are available locally in New England and are from sustainable sources, a mix of mostly sawdust from sawmills and wood chips from low grade wood. Many studies have investigated the use of woody biomass for local heating and have largely dismissed concerns that forest resources are being degraded to provide wood pellets. (See list of studies and peer reviewed scientific articles at the end of the comment.)

At the residential level, any state Clean Heat Standard should primarily focus on air source heat pumps – and weatherization services. In states with higher percentages of renewable electricity on their grids, heat pumps offer an excellent low carbon solution. However, there are still many drawbacks with heat pumps, many of which can be alleviated with back-up pellet stoves. High purchase and installation cost is of course one of the biggest issues with heat pumps. Pellet stoves can be installed for under \$5,000 and can heat a home up to 2,000 square feet. Back-up wood stoves also provide an excellent source of heat when the grid

goes down and gives rural consumers the confidence to switch to heat pumps (but we still do not advocate for including wood stoves as an eligible measure for obligated parties).

Because advanced wood heating systems use a fraction of the electricity that air source heat pumps require, its use in a house can reduce electric grid stress during the winter or reduce use of a back-up home battery. Wood pellet fuel has the added advantage of experiencing more price stability than both fossil fuels and electricity. For middle-income families trying to balance monthly costs, automated wood heating could provide a more consistent and affordable heating bill. Pellet boilers and stoves also have major disadvantages, including requiring far more maintenance and repair than heat pumps and repair technicians are not always easy to find.

Equity concerns are significant for states designing Clean Heat Standards, and primary or back-up pellet heating is one measure that benefits rural low and middle income families. Giving those households the possibility of buying a more price stable fuel and one with an annual cost lower than air-source heat pumps is important. ([Massachusetts Clean Energy Center](#)). Another important measure is to ensure that energy auditors in Massachusetts include full [inspections of wood and pellet stoves](#) in energy audits. Old, unsafe polluting wood stoves should be eligible for removal but unless energy auditors are trained to do a safety inspection on them, this rarely happens.

Pellet heating has a documented track record of delivering fewer CO2 emissions compared to electric baseboard heating, oil, propane, natural gas, and even air-source heat pumps with the current electricity grid ([Massachusetts Clean Energy Center](#)). (It is sometimes confused with carbon footprint studies on using pellets to make electricity in Europe, a far high carbon emitting application.) Removing a heating technology from the Clean Heat Standard that consistently performs just as well as other renewable energy and has the added benefits of greater price stability and local sourcing, would be misguided and not science based. In comparison, Vermont's Clean Heat Standard includes automated wood heating. Vermont enthusiastically included this technology as their experience with the benefits of wood heating and ease of technology adoption has long been understood.

Again, we thank the Department of Environmental Protection for this public comment opportunity. We hope that the Clean Heat Standard remains open to all viable low-carbon solutions to present the best possible outcome for Massachusetts to meet its clean energy and climate goals.



John Ackerly,
President



Darian Dyer,
Policy Analyst

Further Resources:

Biomass Energy Resource Center. 2019. 2018 Vermont Wood Fuel Supply Study.

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Buchholz, Thomas, John S. Gunn, David S. Saah. 2017. Greenhouse gas emissions of local wood pellet heat from northeastern US forests.

<https://www.sciencedirect.com/science/article/abs/pii/S0360544217315451>.

Biomass Energy Resource Center at VEIC. 2016. Wood Heating in Vermont.

https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/AWH%20Baseline%20Report%20FINAL.pdf.

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Olechnowicz, Casey, et al. 2021. Industry Leaders' Perceptions of Residential Wood Pellet Technology Diffusion in the Northeastern U.S. <https://www.mdpi.com/2071-1050/13/8/4178>.

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Renewable Energy Vermont and Biomass Energy Resource Center. 2018. Expanded Use of Advanced Wood Heating in Vermont. <http://www.revermont.org/wp-content/uploads/FINAL-2030-Wood-Heat-Road-Map.pdf>.

Lamb, Emily (DEP)

From: Bruce Barrett <bruce9610@yahoo.com>
Sent: Wednesday, July 19, 2023 1:27 PM
To: Strategies, Climate (DEP)
Subject: Mass Clean Heat Standard

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I have participated in the past three community forums. One question I had did not correlate with any of the topics discussed.

How is the state going to handle heating the buildings in the State Park Campgrounds or other State Park/Forest? My family has enjoyed camping at a number of gray parks over the past few years and we have noticed giant Propane tanks outside of every bathroom and most of the office buildings that are open year round.

I realize many of the buildings are not used in the winter so their thermal needs are not important to the overall picture, but it seems strange the state would want every household electrified when many building owned and operated by the state are not. Just a question that I had that i realized did not fit into any of the previous sessions I participated in.

Thanks you for your hard work. I certainly don't envy the job you all have chosen to undertake. I do feel that some of the decisions in this standard will undoubtedly hurt many homeowners who cannot afford to make some of the changes being proposed, but do not fall into a marginal class.

Thanks

Bruce Barrett
South Hadley

[Sent from Yahoo Mail for iPhone](#)



Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

September 1, 2023

Our Association, a national organization which includes as members numerous business firms, government entities, and organizations supporting utilization of biomass energy, supports the Clean Heat Standard proposed for Massachusetts provided that modern wood heating is included.

While our Association has been primarily focused upon national programs replacing fossil fuels with biomass, particularly the Inflation Reduction Act of 2022, we applaud the initiatives undertaken by individual states, beginning with New Hampshire's groundbreaking Thermal Renewable Energy Certificate Program more than ten years ago. The Massachusetts APS Renewable Thermal Program and Maine's Thermal Renewable Energy Credits have built upon this approach.

We are now especially encouraged by the recent enactment of Vermont's "Affordable Heat Act" which establishes Clean Heat Standards and a credit system with which the entities providing fossil fuel heating must comply. **We note that this Vermont law expressly includes "advanced wood heating" as meeting Clean Heat Standards.**

As New England states assert national leadership in the critically important conversion to heating with renewable fuels, it is important that modern wood heating is consistently recognized in these Clean Heat Standards, and we appreciate this opportunity to support such inclusion.

Jeremy Mortl, President
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September 1, 2023

Commissioner Bonnie Heiple
Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900, Boston, MA 02114

William Space
Environmental Analyst
Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900, Boston, MA 02114

Dear MassDEP Team:

The Boston Housing Authority (BHA) greatly appreciates the Commonwealth's efforts to advance a Clean Heat standard. As a large owner of publicly-assisted property serving extremely low-income units, the BHA urges the Commonwealth to allow for one or more streamlined pathways for clean heat credits or associated financing to support large scale, heating decarbonization efforts in public and low-income housing.

Specifically, we request the MassDEP designate public housing decarbonization as an "Early Action" strategy, and establish a grant or credit assignment process to support:

- (1) Actual heating systems electrification and resolution of barriers to electrification, through direct grants;
- (2) Financing for deep energy retrofits that include heating system electrification and are procured via with MGL c.25A energy management services, or energy measures that include heating system electrification procured via MGL c. 164 §137, which would include services available to PowerOptions members today; and/or
- (3) Financing for geothermal networks serving public or low-income housing.

In terms of how this would work in an **Early Action** phase, BHA suggests the Commonwealth could frontload assignment of credits, or create a list of eligible recipient public housing authorities or projects to which private entities could direct credits, based on information already available on state-assisted housing to the Executive Office of Housing and Livable Communities. Federally-assisted housing operators could submit relevant information to MassDEP and other state agencies as

applicable for inclusion. This effort could have the additional benefit of building out a mechanism that would later become open to private multifamily housing.

In Boston, buildings are the largest emissions sector, and the BHA has approximately 10,000 units in its portfolio. Statewide, there are more than 70,000 public housing units, with approximately 43,000 benefitting from state subsidy. Directing clean heat associated financing toward public housing will promote center emissions reductions in communities disproportionately impacted by the climate crisis.

Notably, the CHS listening sessions have also resulted many comments “Inclusion of protections for renters in the CHS because landlords may increase rent after building improvements”. Public housing has these protections built in, and early action to finance heating decarbonization in this sector would have tremendous benefits to low-income residents and environmental justice communities.

Thank you for accepting these comments, and please accept my regards.

A handwritten signature in dark ink, appearing to read "Joel Wool".

Joel Wool
Deputy Administrator for Sustainability and Capital Transformation
Boston Housing Authority

To: Whom it Concerns
From: Charlie Cary
Date: 8/31/23
Re: Clean Heat Standard Comments

In setting the Clean Heat Standard I sure hope someone is focused on wood which is cut and will not be made into a carbon sequestering product, but cannot or should not be left in place. Millions of tons of this resource are produced every year, chipped, and loaded on trucks to low value markets. This wood waste is generated by utilities, municipalities, arborists, land clearing for development, forest management and the forest products industry. Currently these low value markets pay less than the cost of delivering the resource so wood waste represents a drag on our local economies.

More importantly, most of this wood's carbon is annually returning to the atmosphere when it biodegrades without any beneficial use. The Clean Heat Standard's goal is to reduce fossil fuel's carbon emissions. The carbon emissions from wood burning are not new or "fossil" based. Wood's carbon has previously circulated in our atmosphere and will go back to the atmosphere once a tree is cut. Since burning wood keeps fossil carbon in the ground while creating a beneficial use for the wood's carbon it deserves a special place in the Clean Heat Standard. An upstream decision has been made to cut this wood and, once cut, the question needs to be asked: "What is the highest and best use of this carbon-based resource?"

Wood is a decentralized resource that is appropriately used in small scale, decentralized wood fuel markets. The chipping and handling infrastructure exists locally, it simply needs to be modified to deliver a higher quality chip. Market forces will support local wood fuel market development with government encouragement: A ton of green wood will produce the same amount of heat as \$180 worth of \$3.00 a gallon oil. Local schools and hospitals currently heating with oil would gladly pay say \$120 a ton for wood residue to cut their heating costs. Current market value for wood chips, after trucking to remote markets, is less than \$40. Developing this higher value market for wood waste would also help finance forest management to maximize forest's health and carbon sequestration.

The current public image of wood heat does not reflect the generation of emission improvements which have been made over the last 50 years. Good public policy is formed by weighing the costs and benefits of different scenarios. The environmental cost of burning wood for heat has gone down significantly through efficiency improvements and emission controls. Yet these improvements have not led to a recalibration of public policy around wood heat. A preliminary conclusion of a study conducted by Professor Peltier at U-Mass states: "The use of pellets has a measurable effect on air quality, but it is of a smaller magnitude than other commonly-used heating appliances such as distillate" (see slide 20 of attached presentation). The fact that this research was not extended to burning chips reflects the need to focus more attention on the opportunity offered by burning wood waste which is loaded on trucks in search of markets, with carbon which will be released to the atmosphere in the short run.

The Clean Heat Standard should include incentives for connecting available wood residue with local thermal heating demand. We all want zero emission energy production, but so long as trees are being cut we will have resulting carbon emissions. Please put these carbon emissions to good use reducing fossil fuel carbon emissions

Parnay, Angela L (DEP)

Subject: RE: Comment on Proposed Clean Heat Standard

From: James Cooke <captcmusic@gmail.com>
Sent: Friday, August 4, 2023 10:17 AM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Subject: Comment on Proposed Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The proposed Clean Heat Standard for Massachusetts does not solve the problem of carbon emissions and only drives up the cost for consumers to heat their homes. Why is that? Because as the smoke from wild fires in Canada have shown, carbon dioxide generated in other part of the continent - even from other places in the world like China and India - will eventually make their way in the air to Massachusetts. Unless you build a dome around the state, you can't prevent the entry of CO2 into the state's airspace. The end result is that Massachusetts residents pay more to heat their homes in the winter while residents in other states do not.

But there is a solution and it's not heat pumps. The state needs to plant "Living Carbon" trees to extract Co2 from the air. Normal trees take in carbon dioxide and release oxygen, but they are not efficient at doing so. Living CARbon has genetically modified trees that are more efficient at respiration, thus eliminating CO2 from the atmosphere.

So, instead of forcing consumers to switch to more expensive heat pumps and electric heat and eliminate the use of diesel, propane or wood to heat their homes, do something that actually fights climate change. California is planting Living Carbon Trees, and if all the national and states forests had these type of trees planted in them, you wouldn't need most of the measures being proposed to address the surfeit of carbon dioxide. Moreover, if CO2 comes from other parts of the world, these tree would remove it. Instead of forcing residents to bear the costs of a faulty political agenda that only benefits electric utilities, the legislature should appropriate money to plant Living Carbon Trees throughout the state.

Smarten up!

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September 1, 2023

Department of Environmental Protection
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Boston, MA 02114

RE: Comments on Proposed Clean Heat Standard

Good Morning:

Thank you for the opportunity to comment on the proposed Clean Heat Standard. I am a long-time resident of western Franklin County who owns 140 acres of woodlands and serves as the fire chief for the town of Hawley. Our home is heated primarily with wood from our land with oil as a backup system. We have invested in a ground mounted solar array that theoretically is rated at 5kW and over the course of the year produces more electricity than we currently use.

Our climate is in crisis due to burning of fossil fuels such as coal, natural gas, propane and oil. We need to eliminate as much as possible the use of these fuels and as soon as possible, particularly in the provision of thermal energy (heat and hot water) in buildings.

According to a recent Harvard study, fossil fuel emissions in the Commonwealth are estimated to kill 7,600 people each year, so focusing on cutting fossil fuel use is critical to reducing both our greenhouse emissions and air quality issues.

From what I have read, some people are proposing a Clean Heat standard that would only allow electric heating systems (heat pumps primarily) to qualify as clean heat. They also say that the emissions of heating systems should be judged without considering how their energy is produced, which of course makes electric heating systems appear very clean, as long as you don't live next to a generating plant.

If we eventually get to the point of having large amounts of renewable energy produced by solar or wind with large battery storage facilities, it may be possible to say this electricity is truly clean energy. But right now, much

of our electricity during the heating season comes from burning fossil fuels, and any claim that electricity is clean energy is simply an illusion.

If we are to try to quickly reduce greenhouse gas emissions as much as possible, we need to have as many tools as possible to reduce fossil fuel use in the different areas of the Commonwealth. Aldo Leopold said that “the first law of intelligent tinkering is to save all the parts.” We are in the tinkering part of climate change where we don’t know what mix of solutions is most appropriate. The solutions for rural communities and small towns will likely be very different than those for people living in the metro Boston area.

Highly efficient modern wood heat systems are a key element to achieving that goal in the near term in the less densely populated parts of the Commonwealth.

As someone who has used wood heat for 30 years and would like to use it in the future, I support the inclusion of modern, low emission wood heating systems and pellet stoves in the Clean Heat standard.

About 10 years ago, I worked with the Mohawk Regional School District to consider how to reduce the heating costs at two elementary schools in the district: Hawlemont School in Charlemont and Sanderson Academy in Ashfield. Using state grants, the district converted those schools’ heating systems from oil to wood pellets and, as a consequence, cut oil usage by 50,000 gallons of oil per year while reducing the heating costs. The automatically fired wood pellet systems have significantly less emissions than the oil systems they replaced, as was documented in a subsequent UMass study.

While modern wood heating systems do produce carbon emissions from combusting wood, they also eliminate such emissions from the fossil fuel systems they replace. In addition, because the wood chips or wood pellets that fuel those systems are derived from sawmill or forest residues that release their carbon quickly anyways, they result in an immediate 70 percent reduction in carbon emissions, according to a national study. As a result, the net carbon emissions for modern wood heat systems are LOWER than those of heat pumps which use grid electricity generated using fossil fuels.

While installing modern wood heating systems can provide greater net carbon emissions reductions than heat pumps, they can also help cost conscious homeowners and businesses control their heating costs. Adoption of electric heat pumps has been much slower than many advocates want because electricity costs in Massachusetts are exorbitant. Our electric rates

were the highest in the nation in 2020 and then the utilities jumped prices another 50 to 100 percent due to higher costs for natural gas. It should be little wonder why homeowners have been reluctant to invest in new heat pump systems given such high electricity prices.

Prices for wood pellets or chips, on the other hand, have been very stable because there are abundant supplies locally. In general, when users switch to modern wood heat systems, their cost to heat their homes or businesses drop.

While electric powered heating systems may give the illusion of being completely clean energy, a major source of annual carbon emissions involved in the transmission of electricity throughout the Commonwealth generally is completely unnoticed. The state's utilities spend \$40 million each annually to conduct tree trimming along electric lines to try to limit power loss from storm events. This is essential to keep the grid operating but it results in thousands of tons of chipwood. Overall chipwood residues from power line maintenance, landscaping, tree removals, etc. are estimated to total 1 to 2 million tons each year. Given that wood is about 50 percent carbon, this results in 500,000 to 1 million tons of carbon being released to the atmosphere from chipwood every year. Much of this chipwood ends up being landfilled because there aren't sufficient other uses for it, and is released to the atmosphere as methane.

We should also be realistic about the ability of renewable systems such as solar energy to produce power during the heating season. While our ground array produces a surplus of energy during the March to October period when days are long, it is a vastly different story during the heating season. Because days are short and often cloudy, wet or snowy, average solar production for our array drops from 25 kwh during summer to just 7 kwh during the dark months November through February, and our array is on the ground where we can clear snow off. Those mounted on roofs produce even less because you can't clean them off.

Modern wood heating systems are an important option for residents and businesses in more rural parts of the Commonwealth to allow them to heat their buildings at a reasonable cost while reducing net emissions. The Clean Heat standard should allow use of modern wood heat systems in areas where solely electric systems don't make sense.

Sincerely,

Gregory Cox

Evan B. Dell'Olio
162 Lawton Street
Ludlow, MA 01056

August 30, 2023

Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Thank you for the opportunity to submit comments on the Clean Heat Standard. As a private citizen with a deep concern for our climate, I am offering a unique approach as to how the Massachusetts DEP should view the role of modern wood heating in the Clean Heat Standard.

I am a strong advocate for modern wood heating (sometimes called advanced or automated wood heating). I notice that DEP included references to “advanced wood heating” as part of the introductory materials for the Clean Heat Standard (CHS). In the past, the Massachusetts Department of Energy Resources (DOER) referred to this type of technology as modern wood heating so I use the earlier terminology.

DEP has reported that there have been two schools of thought from commenters on which technologies should qualify for the CHS. One group sees the urgency of climate change and the immense difficulty with achieving the state’s ambitious climate goals. They believe that we should approve any technology for the CHS that has been proven to reduce carbon emissions. The other believes that in the long-term, only electrification is suitable as clean heat, and so we should only allow electric heat into the CHS now – apparently even if this means we miss climate change mitigation targets for the thermal sector. I am firmly in the first camp. I believe that missing our climate targets is unacceptable.

It makes little sense to discard the useful decarbonization strategies that are not zero-combustion. We are already well behind replacing/converting heating systems to meet our 2030 goals, so why should we rule out technologies that can help us get there and delay progress further? This would practically guarantee missing goals outlined in the Clean Energy and Climate Plans and result in millions of tons more net CO2 emissions for the thermal sector over time.

Earlier this year, the Vermont Legislature passed a Clean Heat Standard of their own which was signed into law by Governor Phil Scott. Vermont’s Clean Heat Standard includes both modern wood heating and pellet stoves in their legislation (regulations are still being developed to effectuate the law). We believe that it would be wise for DEP to thoroughly review Vermont’s CHS law and take a similar, broad-based approach enlisting an assortment of thermal technologies to help meet climate goals for the heating sector.

DEP similarly found two schools of thought about whether to assess the emissions to make electricity in the Clean Heat Standard. Emissions from the electricity sector are counted separately from the emissions from the thermal sector, and there is no reason to double-count them if examining overall carbon emissions. However, I firmly believe that it makes sense to consider those

emissions when comparing carbon intensity of heating systems and using that information to drive policy decisions in the CHS. If a hydrocarbon is burned, it should not matter where it occurred. **The net carbon emissions of modern wood heating are lower than air-source heat pumps using grid electricity.** This is particularly true in cold weather when air-source heat pumps begin to lose efficiency advantages.

As more and more Massachusetts residents switch to electric heat, our grid will become a winter peaking system. That peak demand – which will occur on the coldest days, as air-sourced heat pumps become significantly less efficient and will consume much more electricity – is met by “peaker plants” that are typically fueled by oil or even fossil coal, and which charge vastly higher prices than normal electric generators. Even on an average day, over 50% of grid power in the ISO-New England region is natural gas-based and of the roughly 12% of power generation that is classified as renewables (including hydroelectric), over 40% is typically sourced from municipal solid waste and woody biomass combustion.

Research in Vermont and France demonstrates that wood heat can help smooth these aforementioned peaks on cold days, avoiding costly grid upgrades and very expensive power supplies. With modern wood heat in rural areas, where the grid is already stressed, these advantages are multiplied. DOER is beginning to recognize this benefit of modern wood heat and has administratively supported the Commonwealth’s mandate to include modern wood heat in the Alternative Portfolio Standard for thermal generation resources for the past 8 years.

I understand that DEP has little experience to consider impacts on the electric grid and how to deal with these concerns, perhaps better left to the Department of Public Utilities or DOER. We encourage you to consult with these other Departments to make sure that the full breadth of electric challenges are considered.

Some oppose modern wood heat because of air pollution concerns. Science says that concern is incorrect. In fact, the University of Massachusetts - Amherst did a thorough air-sampling of schools in western Massachusetts that installed pellet boilers. The research found that the air quality of those schools did **not** get worse when replacing their oil boilers with modern wood heating systems. Instead, the air quality actually improved! The new modern wood systems were less toxic to human health. All this was done while saving schools substantial money on heating costs. Rural jobs are also supported because 100% of the heating dollars remain in the local economy. Significant decarbonization also occurs compared to the previous fossil heating use.

Thank you for your time. I hope that my comments will be helpful as you draft final regulations for the new CHS.

Sincerely,

Evan B. Dell’Olio

Parnay, Angela L (DEP)

Subject: RE: Heating oil

From: Lester dennis <lesterdennis@comcast.net>
Sent: Wednesday, August 23, 2023 11:02 AM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Subject: Heating oil

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

You can make all the claims you want, it comes down to what can a person afford to do, as a person who lives on a fixed income at age 72 you cannot expect me to have dollars to spend on a new heating system, if you want to pay for it 100% ok, but other than that you are crazy to think that I can come up with the money to upgrade my system.

As a Massachusetts homeowner, I'm asking that you address my concerns regarding the Clean Heat Standard being proposed by the Department of Environmental Protection.

Like many across the Commonwealth, I have long depended upon heating oil provided by a local business – also from MA – to keep my family warm from October to April each year. Not only has this been a reliable and affordable option that supports our local economy, but I also believe it is the right choice from an environmental perspective.

With clean, renewable Bioheat fuel, our heating oil provider is helping us to decarbonize our home right now - more affordably and more quickly than if we were to convert our home to electric heat pumps and wait on decarbonization of the power grid. Rather than mandating that a percentage of heating oil customers convert to heat pumps each year, the Clean Heat Standard would do better to mandate that a percentage of customers transition to Bioheat – which is commercially available today at increasingly clean blends and requires no modifications to heating systems such as mine.

Across our region and country, headline after headline addresses the enormous obstacles that continue to slow our progress towards achieving a 100% renewable power grid. So why push millions of more homes onto the grid when there is a more affordable, cleaner option that offers immediate decarbonization without the cost of conversion?

Rather than steering us towards a singular point of failure, we should be encouraging growth, technology, and advancement in areas that make the most sense. In a state where the liquid fuels infrastructure, distribution network, and workforce is already in place, renewable biofuels should absolutely be part of the equation. Any comprehensive clean energy policy should be diverse and include low-carbon biofuels, as well as other renewable liquids and gases.

Lester Dennis



August 31, 2023

VIA EMAIL

Massachusetts Department of Environmental Protection
ATTN: Commissioner Bonnie Heiple
100 Cambridge St, Suite 900
Boston, MA

Re: Clean Heat Standard Design

Dear Commissioner Heiple:

Eversource Energy (“Eversource”) is appreciative of the important efforts of the Massachusetts Department of Environmental Protection (“MassDEP”) to examine the future of clean heat in the Commonwealth of Massachusetts. MassDEP solicited comments on the Clean Heat Standard material presented at the July technical sessions and Virtual Community Meetings 1-3 by September 1, 2023. Eversource welcomes the opportunity to comment and values efforts by MassDEP to inform the public and engage stakeholders on the development of this important standard.

Eversource operates two gas local distribution companies (“LDCs”) within the Commonwealth. Eversource serves customers who use natural gas for both heating and non-heating purposes. The Company’s customer composition is made up of a higher proportion of commercial and industrial (“C&I”) customers, in terms of load, than other Commonwealth LDC gas companies. Eversource’s C&I class also includes customers with process-related thermal needs, some of which may be technically infeasible to transition to electrification.¹

Eversource serves customers with a complex supply portfolio structure. The structure includes a bundled approach (*i.e.*, supply transportation bundled with distribution), as well as distribution only. For customers opting for a bundled service, Eversource takes full responsibility for securing gas supply and safely transporting it to and within the distribution system. Alternatively, distribution only customers maintain supply contracts with third party suppliers that purchase and transport gas to the distribution system on their behalf. As a result of this complex operating environment, Eversource is focused on a reliable and safe distribution system but does not have control over the full volume of gas supply delivered to its system. The total throughput or volume of gas delivered through the Company’s distribution system does not equal purchased gas for sales to retail customers. Given that Eversource does not have control over the total throughput, the Clean Heat Standard must be more nuanced than simply limiting throughput.

¹ The nature of these facilities and loads, however, may provide focused opportunities for alternative decarbonized fuels.

Accordingly, the structure under which regulated LDCs operate, and their ability to control outcomes, must be considered when determining an LDC's obligation.

An important feature of the Eversource gas distribution system is its physical relationship to upstream supplies. The system is designed to provide reliability and meet loads under all weather and operating conditions, considering present demands, the availability of liquified natural gas ("LNG") resources, and physical and market delivery capabilities. As the system requires less gas to be distributed due to ongoing decarbonization efforts, attention will be needed on implications this has to gas system reliability, resiliency, safety, and cost which is (in part) a function of how the system is configured and interconnected to the upstream gas supply system. Managing potential gas asset changes requires careful system planning to understand how the gas system performs under changing, locationally distinct, and fluctuating volume and flow conditions. Safety outcomes are also related to system reliability – both gas and electric. Drawing down the use of the gas system and expanding the electricity transmission and distribution system may drive more outage risk on either system. When they occur, large-scale outages (due to a variety of different causes, such as storms) can contribute to broad economic losses, direct customer damages, and concerns for safety. Given the interplay between decarbonization and increased electrification, Eversource recommends more robust integrated gas-electric (energy) planning to achieve the decarbonization goals and mandates of the Commonwealth while providing gas and electric customers with safe, reliable, and affordable service during the transition.

Safety and customer service are critical elements of responsibility for Eversource and therefore, policy changes that impact gas loads on the distribution system will need to be carefully considered and coordinated to ensure impacts on primary infrastructure are well understood and appropriate maintenance is executed for a decreasing customer load.

Foundational Information Is Still Needed

Eversource appreciates MassDEP efforts to develop and promulgate the Clean Heat Standard with the input of stakeholders through several rounds of comments and virtual meetings. While there has been information shared on possible Clean Heat Standard pathways, there are still many foundational items requiring clarity, such as: timeline, obligated parties, obligated fuels, methodology for calculating greenhouse gas ("GHG") emission reductions, etc.

As the Clean Heat Standard continues to be defined, prior to rollout, several elements must be given significant consideration. Examples of essential concepts for consideration include, but are not limited to:

- The implementation timeline must allow for inclusion of a robust stakeholder process with ample opportunity for obligated parties to react to a detailed, specific proposal.
- Obligated parties must be clearly defined, with compliance obligations accounting for their unique operating characteristics.
- Any obligated and exempted load must be clearly defined, such as heating loads, process loads, etc.
- Clearly defining and publishing the portion of the Clean Energy and Climate Plan ("CECP") goal that is attributed to the Clean Heat Standard is imperative to provide transparency in goal setting for obligated parties, as well as other stakeholders.

- The methodology used to calculate GHG emission reductions must be clear and produce a framework allowing for verification of associated emissions through proven measurement and verification practices.
- Any measurement or establishment of baselines must account for the obligation of regulated utilities to serve existing customers.
- Obligation levels must be set in a manner that is transparent, timely and provides the obligated party with an opportunity to comply through means within its control.
- Strong consideration should be given to utilizing a phased implementation approach where MassDEP establishes parameters, evaluates effectiveness and adjusts appropriately.

Eversource recommends MassDEP design the Clean Heat Standard methodically by developing foundational components (e.g., obligated parties, obligated fuels, reporting structure) of the standard first before addressing the more nuanced and complex components of the standard (e.g., measure verification, credit accounting). The foundational components are necessary for stakeholders to understand before they can provide meaningful feedback on the more complex components. Moreover, once some of the foundational components are designed, the more complex components will naturally be answered or narrowed.

Importance of Providing Customer Choice and Remaining Technology Agnostic

As discussed in Eversource's May 2023 comments, the Commonwealth should ensure that any standard or program established as the Clean Heat Standard be squarely focused on emissions reductions, while remaining technology agnostic. By remaining technology agnostic, the Commonwealth can promote innovation in an ever-evolving market. Moreover, it allows for customers to maintain a level of customer choice while pursuing decarbonization, thereby increasing the likelihood of customer conversion.

Further, significant electric infrastructure is required to reliably and safely enable the clean energy objectives of the Commonwealth. In the greater Boston area, due to the pace of economic growth surpassing the pace of construction of large new distribution infrastructure upgrades, the available distribution capacity headroom has rapidly diminished. The southeastern and western regions of the Eversource service territory have seen increased distributed generation also requiring significant electric infrastructure upgrades. Therefore, the inclusion of options such as decarbonized fuels and bioenergy provides a bridging solution while the Commonwealth constructs the electric infrastructure necessary to meet the Commonwealth's climate goals through increased electrification. Additionally, by allowing varied options to qualify within the Clean Heat Standard, reducing emissions through otherwise hard-to-electrify processes can still be achieved. If the Commonwealth is going to achieve its ambitious climate goals, all GHG emission-reducing options must remain viable.

By allowing all options to be eligible, the Commonwealth is positioned to reduce its GHG emissions more quickly than through an all-electrification pathway. A metric ton of carbon reduced today is better than one in the future. Currently, the Commonwealth's electric infrastructure is unable to sustain a fully electrified load. Rapid increase in the electrification of gas customers not coupled with the necessary electric infrastructure improvements will result in

an unreliable grid. Moreover, in locations where electrification adoption is exceeding the electrification hosting capacity, hybrid gas/electric heating solutions will be needed in the short term to maintain system reliability. Accordingly, by remaining technology agnostic, Eversource will be able to offer customers a broader array of choices to reduce their emissions. Providing customer options will also allow individual customers or customer segments to reduce emissions more efficiently and quickly.

One very real technology example includes the Company's ongoing utility-scale networked geothermal pilot project that has significant promise in reshaping the heating (and cooling) sector going forward. Customer segments vary widely from residential to large industrial and have unique requirements that must be served through customer-specific approaches. Having a portfolio of options provides the required flexibility to offer critical individualized options chosen by the customer to meet their needs, while providing flexibility for adoption of future technological advancements.

Eversource encourages MassDEP to capitalize on lessons available through the review and consideration of Clean Heat Standards being enacted in various jurisdictions. For example, Colorado recently required Clean Heat Plans for gas distribution utilities. Colorado considers energy efficiency, recovered methane, green hydrogen, and beneficial electrification to all be considered "clean heat resources."² Eversource encourages MassDEP to similarly allow for a portfolio of resources to qualify as clean heat resources. Importantly, Colorado acknowledged the gas distribution companies clean heat plans needed to continue to manage reliability and safety. Similarly, Vermont has instituted a Clean Heat Standard. Although Vermont does not have a large gas distribution system like Massachusetts and is primarily delivered fuels, they maintain options for potential decarbonized gas solutions.

Energy Efficiency and Mass Save®

As a Mass Save Program Administrator, Eversource has over a decade of extensive experience participating in the energy efficiency market. Mass Save is consistently one of the most successful energy efficiency programs in the country³ and is a significant contributor to the Commonwealth's GHG reduction goals.⁴

Eversource encourages MassDEP to ensure any incentives employed by the Clean Heat Standard be clear to customers and contractors to avoid creating market confusion that may slow down the progress made in the adoption of clean heat technology. Further, Eversource encourages MassDEP to consider how the Clean Heat Standard can work in conjunction with the incentives

² Colorado Public Utilities Commission, What Are Clean Heat Plans available at: <https://puc.colorado.gov/cleanheatplans#:~:text=What%20are%20Clean%20Heat%20Plans,2030%2C%20from%20a%202015%20baseline>. (last visited Aug. 17, 2023).

³ ACEEE, *The State Energy Efficiency Scoreboard*, available at: <https://www.aceee.org/state-policy/scorecard> (last visited Aug. 17, 2023).

⁴ MassSave, *The Sponsors of Mass Save Release 2022 Mass Save: Path to Carbon Neutral Report* (Feb. 28, 2023) <https://www.masssave.com/about/news-and-events/news/path-to-carbon-neutral-report> (last visited Aug. 17, 2023).

offered by the sponsors of Mass Save. The Mass Save Program Administrators are in the midst of designing the 2025-2027 Three-Year Energy Efficiency Plan with the Energy Efficiency Advisory Council. Eversource urges MassDEP to ensure the Clean Heat Standard works in coordination with the Mass Save programs to ensure they are complementary.

Through Eversource's extensive experience as an energy efficiency leader, Eversource recommends the Clean Heat Standard be designed to ensure any Clean Heat Credits generated as a result of a heat pump be based on actual measured operation.

Customer Considerations

Eversource fully supports the Commonwealth's pursuit of its important climate goals and the creation of the Clean Heat Standard. However, the Clean Heat Standard should not adversely affect gas customers that choose to be served by natural gas. In addition to preserving a customer's choice by remaining technologically agnostic, Eversource recommends the alternative compliance payment level be set thoughtfully and in consideration of the significant financial burden it could have on customers. Careful consideration is needed regarding how the rate model for a decreasing customer load will be addressed if various decarbonized technology choices do not remain available.

Additionally, Eversource is unclear how the Clean Heat Standard will interplay with the Company's statutory obligation to serve existing customers and customers wishing to interconnect to the gas system. As noted previously, segments of the existing customer base served by Eversource rely on natural gas in a non-heating capacity. Any Clean Heat Standard compliance obligation must consider gas being used by Massachusetts-based commercial and industrial customers for non-heating purposes and the potentially significant impact it will have on local economies. Costs to customers must be considered, especially those impacting low-income customers.

Eversource appreciates the opportunity to comment on this important standard and partner with the Commonwealth in the achievement of its critical climate goals. Eversource looks forward to continuing to work collaboratively with stakeholders and MassDEP on the development of the Clean Heat Standard.

Sincerely,

A handwritten signature in black ink, appearing to read "Nikki Bruno". The signature is fluid and cursive, with the first name "Nikki" and last name "Bruno" clearly distinguishable.

Nikki Bruno
Vice President, Clean Technologies

August 25, 2023

via email: climate.strategies@mass.gov

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

Re: Comments to MassDEP Clean Heat Standard Program Design

The undersigned are Commissioners named to the Commission on Clean Heat (“the Commission”). The Commission was established by Executive Order No. 596 in late 2021 to advise the Administration on a framework for long-term greenhouse gas emission reductions from heating fuels.

As Commissioners, we were involved throughout 2022 in the development of the Final Report of the Clean Heat Commission dated November 30, 2022 (“the Commission Report”). The Commission Report, along with the 2025/2030 Clean Energy and Climate Plan (“CECP”) forms the basis for the Clean Heat Standard (“CHS”) that is the subject of these comments. Each of us believes that transitioning to low or zero carbon energy sources is critical in the face of our climate crisis. In addition, we believe a properly designed program that embraces multiple pathways to net zero represents an important opportunity for the Commonwealth.

Prior to presenting our comments, we would like to acknowledge the stakeholder process throughout the Commission’s deliberation and during the writing of the Commission Report. The Secretary of Energy and Environmental Affairs and her agencies, the Interagency Building Decarbonization Task Force, and the facilitators allowed for all viewpoints to be shared. In addition, MassDEP held numerous stakeholder sessions over the last few months in order to encourage participation in the development of the CHS.

The CHS would be applied to suppliers of heating energy in Massachusetts, notably gas utilities and providers of heating oil and propane, and possibly electricity suppliers. These parties would be obligated to serve their customers with gradually increasing percentages of zero-emissions heat sources, so that sales of fossil fuels are phased down over time.

As a result of our participation on the Commission, we believe we have unique insight into the intent of the recommendations contained in both the CECP and the Commission Report. We would like to highlight several consistent policies and principles that were articulated in both the CECP and the Commission Report. These themes are extremely important to the businesses community and should help guide MassDEP during development of the CHS.

The CHS must minimize costs. The Commission Report makes this point abundantly clear:

To resource the transition appropriately, efficiently, and equitably, it will be critical to implement a Clean Heat Standard to establish overall incentives at the appropriate level to meet required sublimits without adding to electric ratepayer costs [underline emphasis

added] (Commission Report, Cross-Cutting Recommendations, Resourcing the Transition, Page v).

Electricity costs in Massachusetts are already among the highest in the nation. These costs, along with other increasing costs unique to Massachusetts, are hurting our economy. Businesses simply cannot afford any additional costs of doing business that competitors in other states do not face.

Many industries, especially commercial real estate, still have not recovered from the impacts of the COVID-19 pandemic – and some never will. Vacancy rates are still high and many building owners are trying to reassess their investments or contemplating building conversions to other uses. This could delay investments in infrastructure like HVAC until plans are finalized. Additionally, with remote work now available to many, there is already a steady - and likely permanent - shift to employees working from lower cost areas.

It's not simply electricity costs that MassDEP needs to be aware of as they develop the CHS. If the cost of fossil fuels rise because suppliers need to purchase clean heat credits or make alternative compliance payments (ACPs) when clean energy credits are not available, those costs will be passed to consumers and raise prices. Not all businesses can transition easily or quickly - some may not be able to transition for the foreseeable future due to financial or technological constraints. Therefore, they will be stuck in an endless loop of higher fuel costs with little or no option to avoid them.

The Commission wisely contemplated this issue when they addressed the potential ACP level:

MassDEP should carefully assess the appropriate ACP price to ensure creation of credits is preferable, while also ensuring the cost-burden of ACPs does not unduly burden businesses and ratepayers (Commission Report, Appendix C: Additional Context and Program Design Considerations, Clean Heat Standard, Page 46).

The CHS must use existing financial and other resources. The CHS must leverage available federal grants, loans, and tax incentives from federal, state and even private sources in order to minimize costs on consumers. This may require changes in how the energy efficiency program - Mass Save - is funded and how incentives are determined.

The CHS must work well with other policies. There are dozens of other state, federal and municipal programs designed to reduce greenhouse gases. As these programs are implemented it is becoming more challenging to introduce new programs without duplicating or contradicting others. The CHS should not contribute to confusion. Both the CECP and the Commission Report address this issue:

*A successful set of policies will: **Work well with other policies** - work well with, and be mutually reinforcing with, Massachusetts' weatherization programs, utility efficiency and fossil fuel reduction programs and other greenhouse gas reduction initiatives. It should work with existing Massachusetts policies and institutions to boost progress, ensure consistency across policies and avoid re-creating the wheel* [bold emphasis in original] (CECP, Appendix B-1: A Clean Heat Standard for Massachusetts, Pathways for the Necessary Transformation, page 41).

The CHS must be viewed as part of an integrated portfolio of policies driving all feasible electrification and energy efficiency, and not as a stand-alone solution. The CHS must work harmoniously with existing programs (e.g., Clean Energy Standard, Renewable Portfolio Standard, Solar programs), as well the Building Decarbonization Clearinghouse, Climate Bank, and Building Benchmarking programs (Commission Report, Recommendation: Massachusetts Clean Heat Standard, Key Program Elements, Page 20).

The CHS must be a performance standard and technology neutral. The CHS must provide supplier and customer flexibility. The CHS should incorporate a range of low-emission heating options and customers should not be required to make huge infrastructure investments that may be financially unwise based on business considerations.

In simple terms, if a technology reduces emissions, it should be allowed under the CHS. And that means technologies that use the existing natural gas and other infrastructure, like renewable natural gas, hydrogen, and biodiesel should be considered. All can be part of a balanced and diverse portfolio of solutions that can reduce volatility in the energy markets and reduce emissions in the building sector.

The CECP makes this clear:

The fundamental purpose of the Clean Heat Standard is to reduce emissions, not to promote certain technologies for extrinsic reasons (CECP, What Actions or Fuels Should Earn Clean Heat Credits? The Program Is a Performance Standard, Not a Technology Mandate, Appendix B-3, page 61).

The Commission, which was made up of a diverse group of stakeholders, spent an enormous amount of time establishing the themes and principles articulated above. The Commission Report was approved almost unanimously (with only one dissent), indicating broad agreement. As Commissioners, we have an interest in seeing that the CHS is consistent with the Commission Report - and for it to succeed by significantly reducing emissions while supporting our economy and communities.

Thank you for allowing us to make these comments. We look forward to commenting further as MassDEP continues its stakeholder process.

Sincerely,

Commissioners:

Tamara C. Small, CEO, NAIOP Massachusetts

Richard Sullivan, Jr., President & CEO, Economic Development Council (EDC) of Western Massachusetts

Charles Uglietto, President, Cubby Oil and Energy

Emerson Clauss III, Landmark Associates General Contracting

Robert A. Rio, Esq., RAR Strategies, LLC



Jonathan Parrott, Ph.D.
Flat Rock Farm
15 Goose Lane, Chesterfield MA. 01012

August 30, 2023

Dept. of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

Re: Clean Heat Standard Testimony

Dear Reviewer,

Thank you for the opportunity to submit comments on the Clean Heat Standard. I am concerned about climate change, and as such am grateful to both EEA and the MassDEP for working to establish a program targeting fossil fuel heating within our Commonwealth.

As a farmer, forester and former employee of DOER I am intimately familiar with both the carbon accounting for modern wood heating (sometimes called advanced or automated wood heating) as well as the programmatic vigor espoused within the APS (225 CMR 16.00, Alternative Portfolio Standard) where wood pellet and chip systems have been sustainably earning AECs since 2015. I am therefore advocating for the inclusion of modern wood heating in the Clean Heat Standard; this technology deserves eligibility for both its sustainability and decarbonization values.

That said, I can personally attest that there will be stakeholders in opposition to including wood fuel within the Clean Heat Standard. While these individuals are without a doubt impassioned, they simply do not understand the technology and how it is fundamentally different from both conventional woodstoves and biomass power. Nevertheless, some will point to the Manomet Study (2009) suggesting that this report rejected solid fuels. However, more-informed readers will find that the study clearly and unequivocally supports wood fuel for heating purposes (vs power production). I support the distinction between wood use and do not care for biomass power which are typically utility scale and less than 20% efficient; a stark contrast to the APS which requires pellet boilers to be +85% efficient. The Manomet study also assumed that wood fuel had originated from the forest (thinnings and residues). Curiously DOER data has shown that less than 5% of wood fuel within the APS comes from timber harvesting. Instead, this material is generated from the urban landscape, utility management. Umass Amherst has estimated that the Commonwealth annually produces more than 3,000,000 tons of wood chips, very little of which is attributed to silvicultural land management. This is an important recognition as culturally-derived materials such as arboricultural wood chips no longer fit the GHG modeling tools built by the DOER in conjunction with the Manomet study.

Trees, like all green plants are considered autotrophs, organisms able to self-form from simple inorganic substances such as carbon dioxide. For plants this remarkable process is called photosynthesis where photonic energy (sunlight) is used to disassociate carbon and oxygen atoms from CO₂ molecules. Plants retain the carbon as cellulosic building blocks and release the

oxygen back into the atmosphere. Through the lens of climate change this process is referred to as carbon sequestration. These carbonic polymers (cellulose) are deemed biogenic (live, or previously alive within the carbon cycle) and as such destined for oxidative decomposition (where the oxygen molecules recover their carbon partners). While it may be hard to grasp, this decomposition will release EXACTLY the same amount of CO₂ (same carbon) and heat (same covalent bond severance) regardless of process (thermal-burning, or biological-rotting).

In plain language,

1. Wood will unavoidably release its carbon. Chips do so in less than 1 year.
2. Arboricultural & mill waste wood is abundant within the Commonwealth.
3. Burning does not release more carbon dioxide than rotting wood.
4. Responsible combustion of this 100% renewable fuel allows us to utilize the subsequent heat to reduce our reliance on fossil fuels.

I am grateful to both the EEA and MassDEP for their efforts to establish this novel positive policy driver to facilitate the Commonwealth's transition to renewable heating technologies. In recognition of the considerable challenges that this initiative presents, I propose that MassDEP model the CHS after the APS thermal program and allow (fossil fuel company) obligations to be satisfied with thermal AECs. This approach would significantly expedite programmatic deployment (the APS thermal rules were rigorously crafted with public engagement) as well as add significant demand for AECs, a change that will increase their intrinsic value and as such the value of ASHP pre-minting. Increasing this value will reduce the cost of ASHPs and drive their installation. Taking this inclusive approach will also mirror Vermont's recently unveiled Clean Heat Standard, establishing the regional parity that we can expect from both New Hampshire as Maine.

Thank you for the opportunity to provide testimony,

Jonathan Parrott, Ph.D.
Flat Rock Farm, Chesterfield MA

35 Braintree Hill Office Park, #108
Braintree, MA 02184
P: 978-777-6764
info@greaterbostonpca.com
www.greaterbostonpca.com



August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The Greater Boston Plumbing Contractors Association appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

As the Association that represents all 65 Unionized Plumbing and Gasfitting Contractors in Eastern Mass., we are highly concerned that this process not be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive and negative impacts associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

Our Association, like many Unionized Contractor groups in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave

Paul Dionne
President

Ken Reagan
Vice-President

Jim Bent
Clerk-Treasurer

Tom Hannon, Jr.
Assistant Clerk-Treasurer

John Marani
Immediate Past President

Andrew DeAngelo
Executive Director

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and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,



Andrew DeAngelo
Executive Director
Greater Boston Plumbing Contractors Association

Paul Dionne
President

Ken Reagan
Vice-President

Jim Bent
Clerk-Treasurer

Tom Hannon, Jr.
Assistant Clerk-Treasurer

John Marani
Immediate Past President

Andrew DeAngelo
Executive Director



BIODIESEL & THE CLEAN HEAT STANDARD

Larry Chretien | August 29, 2023

In previous blogs, we have expressed strong support for a Clean Heat Standard (CHS) as a policy to decarbonize the building sector. We have also expressed vehement opposition to the notion put forth by gas utilities of allowing renewable natural gas and hydrogen to be considered clean heat. This blog covers the question of whether biodiesel ought to be given credit as clean heat when blended with regular heating oil. Biodiesel is a renewable, biodegradable fuel manufactured from vegetable oils, animal fats, or recycled restaurant grease.

Background on the Debate

Perhaps recently you have seen messages from the Massachusetts oil heat industry putting pressure on the Department of Environmental Protection (DEP) to modify or drop its attempt to create a Clean Heat Standard (CHS). And perhaps you have seen other ads touting the benefits of "Bioheat." The rhetoric is remarkably like that of the gas industry regarding renewable natural gas and hydrogen.

The oil industry complains that DEP would be limiting consumer choice by forcing people to switch from heating oil to heat pumps. This is a total mischaracterization of what a CHS would do. A Clean Heat Standard is a policy by which fossil fuel heating sellers (i.e. gas utilities, propane, and fuel oil sellers) would need to earn a certain number of "clean heat credits" every year. These credits are generated by actions that reduce building emissions. A CHS is not a mandate for consumers.

A CHS would help homeowners and other building owners to get energy efficiency or electrification projects at a reduced cost. For instance, a homeowner installing a heat pump would earn clean heat credits and could, with the help of their contractor, sell those clean heat credits to a fossil fuel heating company to help cover the cost. Alternatively, an oil dealer could help their customers get their homes insulated to earn clean heat credits. There is nothing stopping oil dealers from installing heat pumps themselves.

The oil industry says that if a CHS is put in place, then biodiesel, and blends of biodiesel and regular diesel such as Bioheat, should be eligible for credit. Although there is no official estimate on how much biodiesel is in the Massachusetts heating oil market (or Rhode Island for that matter), it is

generally assumed by industry and government sources that B5 is prevailing as the base (B5 means a blend of 5% biodiesel with 95% low-sulfur heating oil). The industry claims that it can ramp up the percentage of biodiesel over time.

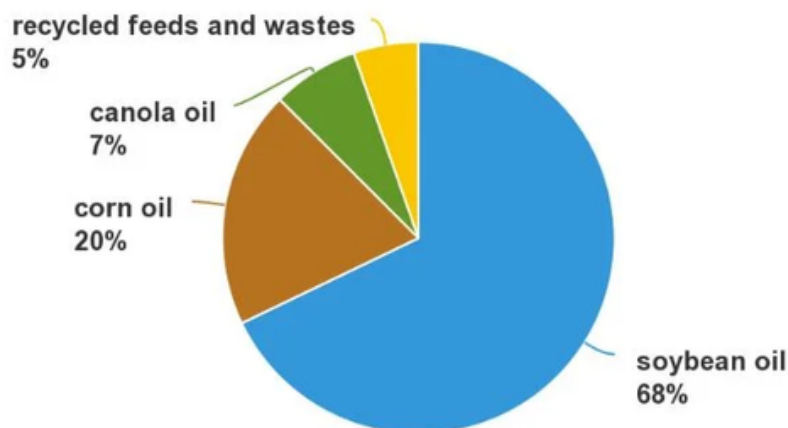
It is worth noting that there was an earlier attempt to set up a biofuel content mandate for home heating oil and diesel transportation fuel which was permanently suspended by the Massachusetts Department of Energy Resources in 2010 on the basis it was “not feasible on the basis of unreasonable cost.”

What we are seeing from the oil industry is a gross exaggeration about the value of Bioheat in terms of greenhouse gas (GHG) emissions. At Green Energy Consumers Alliance, our response is that DEP should decide how much credit should be applied to biodiesel based on sound scientific evidence. The burden is on DEP to show its work on how it would value biodiesel in terms of GHG emission reduction on a complete life-cycle basis. According to the National Renewable Energy Lab, B20 reduces carbon dioxide emissions by 15% compared to regular heating oil and according to a memo written for DEP by Synapse Energy Economics, B20 offers an emission reduction of 6-10% compared to B5. The question now is, how will DEP score various blends of Bioheat in its CHS regulation? While we wait for DEP to answer that fundamental question, we would also like to see DEP address these concerns:

- **Supply:** Is there an adequate supply of biodiesel to make a significant difference statewide? In 2020, according to the federal Energy Information Administration, 512.4 million gallons of residential heating oil were sold in Massachusetts to 649,000 households, 23% of all households in the Commonwealth.
- **Sources:** What feedstocks would be included? Would it be from yellow grease (fats, oils, and grease residues), soybean oil from the Midwest, or some other sources? This pie chart shows the current supply of feedstocks for U.S. biodiesel and related products nationwide.

Feedstock inputs to U.S. biodiesel, renewable diesel, and other biofuels production, 2021

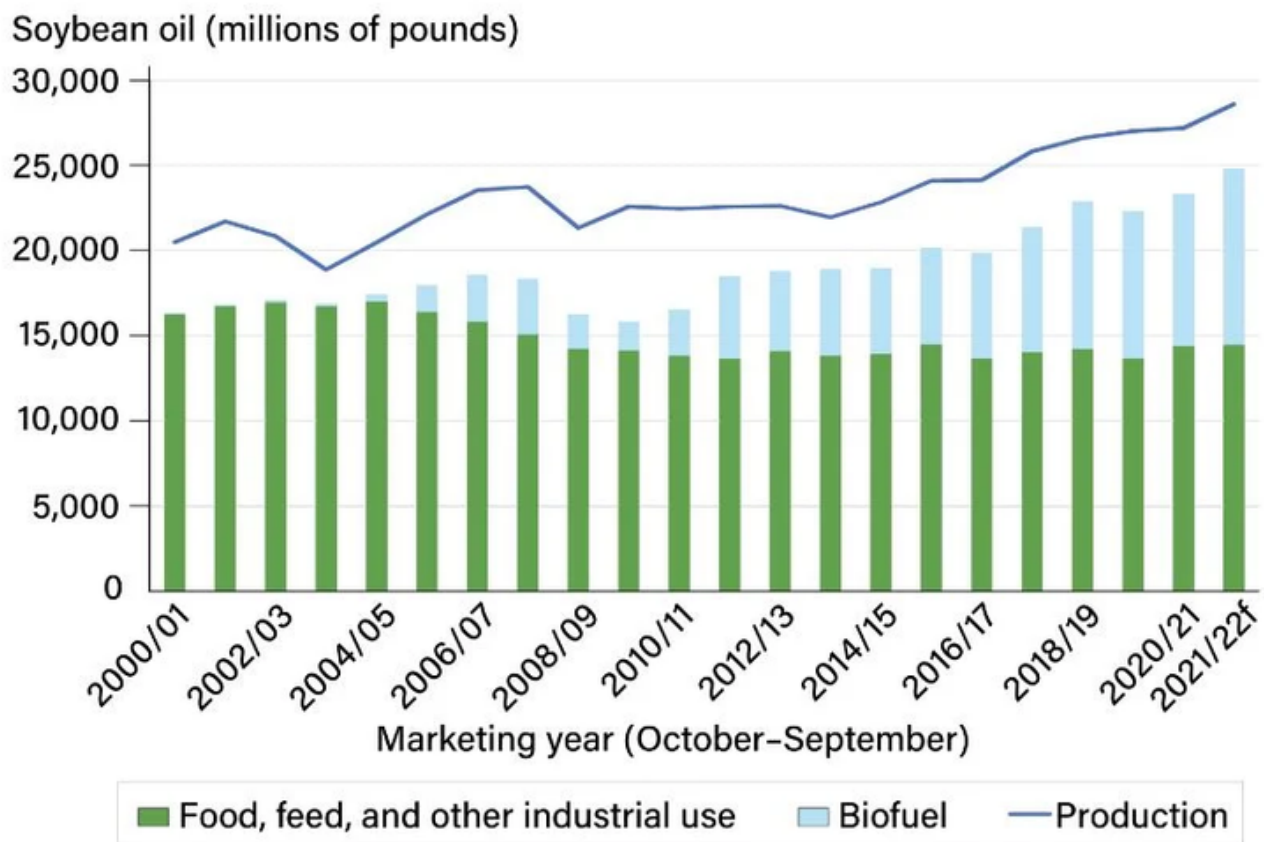
Total = 23.82 billion pounds



Feedstocks matter a great deal because, according to the federal Environmental Protection Agency, B100 (100%) biodiesel reduces emissions 86% if the feedstock is yellow grease, 57% if it's soybean oil, and just 17% if it's palm oil. But B100 is not going to become the norm, suddenly or in ten years. And we know that there is a very small amount of the preferred feedstock, yellow grease.

Furthermore, at B20 or less, Bioheat is cost-competitive with regular heating oil. But as the percentage increases, so does the cost premium. If the biodiesel supply is constrained and would come at a premium in any significant quantity, DEP must consider that when writing the regulation. Consumers in Massachusetts will also be interested in knowing the land use impacts of the various feedstocks. This graph shows how biofuels have increased the national demand for soybean oil greatly in recent years.

U.S. soybean oil production rises to meet growing domestic demand



Notes: **f** = forecast. **Biofuel** includes biodiesel and renewable diesel.

Source: USDA, Economic Research Service using data from World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, November 2022.

Currently, the program in Massachusetts that does the most to support the use of biofuels, the Alternative Portfolio Standard, only supports the use of biofuels that are derived from organic waste. Biofuel derived from waste products, like yellow grease, does not require large amounts of land for growing crops and as mentioned above, produces much lower emissions than biofuels made from soy.

Measurement & Verification

How would DEP measure and verify how much biodiesel would be delivered if Bioheat is determined to be eligible for credit under the CHS? There are hundreds of heating oil dealers in the Commonwealth delivering fuel to 649,000 households. Would it make sense to randomly test heating oil deliveries to calculate an average percentage of biodiesel content and to determine which feedstocks are in the mix? Or does DEP have another plan in mind?

Our Take

For any state to reach net zero GHG emissions by 2050 or a 50% reduction by 2030, buildings must pivot to electrification for heating. Heat pumps (air-source and geothermal) and heat pump water heaters can get us to those numbers. Fossil fuels blended with biofuels do not. If Mass. DEP finds that biodiesel is worthy of earning clean heat credits at all because it reduces emissions in a verifiable manner, then we simply want to see the evidence and protocol before the regulatory process gets too far along.

We also hope that MassDEP follows the precedent set by the Alternative Portfolio Standard and focuses on supporting cleaner, and less land-intensive, waste-derived biofuels.

Parnay, Angela L (DEP)

From: Brown, Jason R (DEP)
Sent: Friday, August 4, 2023 9:37 AM
To: Parnay, Angela L (DEP)
Subject: FW: Oppose MA Clean Heat Standard

From: Space, William (DEP) <william.space@mass.gov>
Sent: Thursday, August 3, 2023 3:55 PM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Subject: FW: Oppose MA Clean Heat Standard

From: itsallaboutme22@charter.net <itsallaboutme22@charter.net>
Sent: Thursday, August 3, 2023 3:51 PM
To: Space, William (DEP) <william.space@mass.gov>
Subject: Oppose MA Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I am writing to express my VEHEMENT opposition to this proposal. My husband and I just spend a small fortune remodeling our kitchen and we installed a new gas cooktop as we both love to cook and you can regulate the temperature so much better than electric. My electric bill is already outrageous. We also heat with oil as Natural Gas is not an option in our town,

Where does MASS DEP get off instituting something like this.

This should NOT be left up to you alone. This should be put to a vote. Who are you to tell me how to heat MY home!!!!

I cannot express my opposition strongly enough!!!

And it would be nice if you set up your voicemail as I tried to call as well.

DO NOT IMPLEMENT THIS RIDICULOUS LAW!!!

Laura Hamel

22 Summit Street

Belchertown MA 01007

413-896-6349

Lamb, Emily (DEP)

From: Rainey, Courtney (DEP)
Sent: Wednesday, May 24, 2023 10:39 AM
To: Strategies, Climate (DEP)
Subject: FW: Oppose DEP's Clean Heat Standard

Courtney Rainey
MassDEP
(617) 894-3703
courtney.rainey@mass.gov

From: Howitt, Steven - Rep. (HOU) <Steven.Howitt@mahouse.gov>
Sent: Wednesday, May 24, 2023 10:13 AM
To: Rainey, Courtney (DEP) <Courtney.Rainey@mass.gov>
Cc: Cahill, Alexa (HOU) <Alexa.Cahill@mahouse.gov>
Subject: Fw: Oppose DEP's Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good morning, Courtney:

I hope you are well. Please see below from one of my constituents. The DEP's review of his concerns would be greatly appreciated. Thank you.

Sincerely,
Steven Howitt

State Representative Steven S. Howitt
4th Bristol District
State House, Room #237
Boston, MA 02133
617-722-2305
steven.howitt@mahouse.gov

From: Timothy Johnson <Timothy.Johnson.535929782@foradvocacy.com>
Sent: Tuesday, May 23, 2023 1:41 PM
To: Howitt, Steven - Rep. (HOU) <Steven.Howitt@mahouse.gov>
Subject: Oppose DEP's Clean Heat Standard

You don't often get email from timothy.johnson.535929782@foradvocacy.com. [Learn why this is important](#)

Dear Representative Howitt,

As a propane provider in Massachusetts, I want to ensure you're aware of activities being considered by the Department of Environmental Protection (DEP) that will fundamentally alter the marketplace in which I do business. DEP's Clean Heat Standard (CHS) is a flawed framework to reduce greenhouse gas (GHG) emissions and will needlessly increase the price of traditional thermal fuels, including propane, and unfairly raise energy prices on your constituents. Bay Staters are already combating historic inflation and price increases across the board. The CHS would only exacerbate these issues.

While I support efforts to reduce emissions and safeguard the environment, the Clean Heat Standard would artificially distort the thermal sector to the advantage of electricity and disadvantage of propane. Efforts by the government to remove reliable and cost-effective energy options from the marketplace are misguided and harm energy consumers, who are best served by choice and competition.

It is important to realize that propane has a carbon intensity score of only 77, compared to 100 for grid electricity that is generated in Massachusetts. In fact, 77% of bulk power in our state comes from burning fossil fuels, such as natural gas and petroleum. Thus, propane is already at work every day reducing GHG emissions from residential and commercial buildings who use propane instead of electricity for heating, cooking and appliances. And it is doing so in an affordable manner. Nationally, electricity is more than 58% more expensive per million Btu (British thermal unit) than propane. This disparity is even more pronounced in the commonwealth, as our electricity rates are much higher than national averages.

Propane actually nicely complements electricity. For example, propane backup generators help keep the state running during power outages by creating electricity onsite and providing essential energy to critical infrastructure, including hospitals, cell phone towers, water treatment plants, and even electric vehicle charging stations. Of course, these propane systems also allow residential homes to operate as energy islands when the grid is down.

Vermont recently passed a law to create a clean heat standard with a similar framework to what is being proposed by DEP in Boston. And in Vermont, state officials estimated that their standard would raise the cost of delivered fuels by 70 cents per gallon! Instead of following Vermont down this road, we should instead position ourselves to become a more favorable destination for jobs, investment and businesses seeking reasonable energy prices and reliable service. Consumers, naturally, look for these things as well.

Massachusetts' propane industry provides good-paying jobs and generates more than \$615 million in economic activity annually. On behalf of my employees, my business and the community in which I am invested, I respectfully request that you contact the Department of Environmental Protection and engage them on their proposed Clean Heat Standard, as the current version needs to be scrapped.

The legislature can promote sustainability and decarbonization in a manner that is inclusive of clean energy molecule, like propane, and ensures Massachusetts remains an attractive market for investment, jobs and people.

Thank you.

Regards,
Timothy Johnson
2 Old Anawan Rd
Rehoboth, MA 02769



LABORERS' NEW ENGLAND REGION ORGANIZING FUND

August 17, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

DELEGATES

VINCENT R. MASINO
CHAIRMAN

MICHAEL F. SABITONI
TREASURER

JOSEPH C. BONFIGLIO

KEITH R. BROTHERS

DIRECTOR

SCOTT GUSTAFSON

410 SOUTH MAIN STREET,
2ND FLOOR
PROVIDENCE, RI 02903

T. 401-521-3457

F. 401-521-0061

The New England Region of the Laborers' International Union of North America (LIUNA) appreciates the opportunity to file these comments, on behalf of the over 22,000 skilled and hardworking members we represent in the Commonwealth, relative to the development and implementation of a clean heat standard.

We are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.

LIUNA, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. We have seen, firsthand, in the construction industry, confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building and investment stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns.

Sincerely,

SCOTT GUSTAFSON
Director of Organizing



August 30, 2023

Dept. of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

Re: Clean Heat Standard Testimony

To whom it may concern,

Thank you for the chance to deliver testimony on the Clean Heat Standard as it relates to climate change, a source of great concern for all of us. We're grateful for EEA and the MassDEP working to create a program to reduce the use of fossil fuel heating within Massachusetts.

Maine Energy Systems is the premier manufacturer of modern wood pellet heating technologies for homes, businesses, municipal buildings (several DCR installations) and schools (Hampshire & Franklin Counties) across the Commonwealth and North America. Our technology delivers greater than 85% efficient central heating solutions thereby dramatically reducing the carbon footprints of buildings switching from fossil fuels. These combustion systems are incredibly clean and efficient, particularly when compared with fossil and blended biofuel alternatives.

We believe that the APS is outstanding, mindfully identifying best in class renewable technologies. As such this regulation has been exhaustively deliberated providing numerous platforms for public stakeholder engagement. Within this regulation modern wood heating is one tool of many that collectively work to meet the Commonwealth's goals in addressing climate change via decarbonization. Accordingly, we recognize the importance of inclusive lifecycle carbon analysis when comparing heating technologies. Wood as a fuel proves its merit in lifecycle carbon analysis as it will unavoidably release the same amount of carbon whether it rots or is burned. Adding merit to the fuel is its renewability and local abundance; UMass Amherst has estimated that the Commonwealth produces more than 3 million tons of wood chips per year. Regrettably most of this potential fuel is allowed to rot, squandering its fossil fuel offset potential.

We propose that MassDEP model the CHS after the APS thermal program (including all the existing thermal technologies) and for practicality, allow CHS obligations to be satisfied with thermal AECs. This approach would add significant demand for AECs positively impacting their value thereby increasing the pre-minted rebate for air-source heat pumps; a change that will result in more installation. Further, Massachusetts will be supporting regional efforts mirrored by Vermont's most current CHS and setting the example for Maine, New Hampshire, and others. Thank you for your review and consideration.

Leslie B. Otten
Owner & Chief Executive Officer
Maine Energy Systems



97A Exchange Street, Suite 305 • Portland Maine 04101
Phone: 207-752-1392 • Fax: 888-612-0941
www.maineplettheat.com • feedalliance@gwi.net

September 1, 2023

Department of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

Our Association is a standard 501 c (6) trade association comprised of Maine's four wood pellet manufacturing firms, a major pellet heating equipment firm, heating system engineers and installers, wood pellet retailers, and three nonprofit organizations. We appreciate the opportunity to comment in support of the proposed Massachusetts Clean Heat Standard, provided that "modern (or "advanced") wood heating is included.

Inasmuch as the carbon emissions affecting the world's climate are distributed through the atmosphere regardless of state boundaries, we believe it appropriate to address the obvious question of: Where Does the Heating Fuel Come From?

Almost all of the wood heating pellets consumed in Massachusetts originate from "The Northern Forest", mostly Maine and New Hampshire. Accordingly, the pellets are composed primarily of densified sawdust, a wood industry byproduct that has limited market alternatives and will decompose (releasing its CO₂) within the year. Wood pellets are a relatively low-cost but heavy product; the marketplace is therefore ruled by trucking costs. There is no wood pellet production in Massachusetts or Rhode Island and only a small production facility in Connecticut. The only exception to the above "proximity rule" is the much more expensive bright-burning Douglas Fir wood pellets from the Pacific Northwest, preferred by a small number of pellet stove owners because of their bright flame.

Why is this question of wood pellet origin important in considering the Massachusetts Clean Heat Standard? Because the only peer-reviewed assessment of greenhouse gas emissions from heating with wood pellets from The Northern Forest shows that replacing fossil fuel heating with these wood pellets



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immediately cuts GHG emissions by more than 50%. The co-author of this study, Dr. John Gunn, is also co-author of the 2010 Manomet Study, d by Massachusetts DOER, which was extremely critical of generating electricity from biomass fuel.

A summary of Dr. Gunn's 2016 Wood Pellets from the Northern Forest and GHG Emissions is included with this submission. Other studies set forth evidence that GHG emissions from modern wood heat are substantially less than Dr. Gunn's *de minimus* estimate. We cite Dr. Gunn's study because of his known skepticism about wood fuel, and because it begs the question "How Can We Be Opposed to an Immediate 50% cut in GHG Emissions?"

We realize that some "total electrification" advocates believe that imperfect pathways should be excluded from any Clean Heat Standard. Such a standard would exclude electricity from the New England Power Pool, which at this writing is supplied by burning natural gas.

We commend the Commonwealth for setting forth this Clean Heat Standard and note that the example set by Massachusetts Alternative Portfolio Standard was very useful in our Maine Legislature's enactment of Thermal Renewable Energy Credits.

Sincerely,

William Bell
Executive Director



August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The Massachusetts Coalition for Sustainable Energy (MCSE) is pleased to submit these comments relative to Massachusetts Department of Environmental Protection's (MassDEP) stakeholder process for the Clean Heat Standard Program Design ("the Standard" or "CHS"). The MCSE represents nearly two dozen of the Commonwealth's largest business, employer, housing, labor, Chamber, and trade associations.

The Clean Heat Standard is one of several mechanisms under development to help the Commonwealth achieve its greenhouse gas reduction goals in the commercial and residential building sectors. The CHS concept was included in the state's 2025/2030 Clean Energy and Climate Plan (CECP), followed by a further recommendation in the November 30, 2022, Final Report of the Clean Heat Commission.

In simple terms, the CHS will require heating energy suppliers (oil, propane, natural gas, and electricity) to reduce their GHG emissions over time by gradually increasing the percentage of "clean heat services" they supply to customers. Suppliers would demonstrate emissions reductions through "clean heat credits," created either by the suppliers themselves or through purchase of credits from third parties, such as heat pump installers. An alternative compliance payment (ACP) may also be an option if clean heat credits are not available - which we believe will be a very likely outcome, particularly in the early years of the program.

MCSE believes reaching net zero for carbon emissions is a critically important goal and that a thoughtfully designed CHS program may help achieve that goal. However, any new program must be consistent with the growing numbers of GHG reduction programs already in place or expected soon. It is also imperative that it be affordable and allow the use of all technological options. Finally, due to its impact on the business community, MassDEP must perform significant outreach to impacted parties so they can review and comment on the proposal as the process continues. Achieving this balance is not easy, but MassDEP should make it a priority to maintain a reliable and affordable supply of energy that businesses need to thrive and residents at all income levels require to afford to live in the Commonwealth.

The CHS must enhance, not duplicate or contradict, other GHG reduction efforts.

Currently there are several GHG reduction programs already implemented or in various stages of program design. Some are being developed by municipalities while others are under the purview of the Department of Energy Resources (DOER) or the legislature. The CHS should only be developed and implemented if it fills a need not currently being addressed by these other programs.

For instance, in the building sector, Boston Mayor Michelle Wu recently directed all new or remodeled municipal buildings be fossil fuel free. At the state level, the ten-community fossil fuel free pilot program is nearing implementation. At the *same time* there is a steadily increasing renewable portfolio standard for electric providers coupled with an increasing availability of optional carbon free electricity. And a new municipal opt-in specialized energy code has been adopted by eighteen towns, with more expected to adopt it in the coming months. These programs will ALL reduce building sector emissions as customers switch to heat pumps and other electric heating sources to displace fossil fuels, without any further regulations. Indeed, the Legislature has been clear that the collection of actual and annual data pertaining to costs, impacts, emissions reductions, housing and commercial building production all be tracked and evaluated so as to gauge the efficacy of these programs. In its rulemaking, we strongly urge MassDEP to in no way modify the reach and extent of these programs.

The CHS must be affordable for consumers.

As all these initiatives are implemented, the Commonwealth must also focus on affordability. The MCSE believes a comprehensive cost-effectiveness study of all these emissions reductions efforts must be conducted before a program of this significance is implemented. Given that this program involves suppliers with direct billing to the customer, any compliance costs - for clean heat credits, ACPs or other administrative costs - will be passed on to consumers.

Particularly in the commercial sector, additional costs come at an inopportune time. Much has changed with regard to vacancy rates and the value of commercial buildings since COVID began three-and-a-half years ago - and the impact is continuing longer than anyone expected. In fact, it may be permanent. A recent *Boston Globe* article [reported](#) that commercial vacancy rates are at an all-time high for the region, with many buildings having lost 20 to 40 percent of their value and property tax abatements increasing.

Finally, the state's energy efficiency program, as part of its three-year review, is discussing changes to the heat pump and other incentive programs, increasing its emphasis on overall greenhouse gas reductions as part of the program beginning in 2025. This program is already subsidized by business and residential ratepayers in the amount of nearly \$1.5 billion per year, even though not all customers can use the program equally due to process requirements, building age or type or technological barriers. Allowing some participants (for instance those able to install heat pumps) to receive additional incentives in the form of "clean heat credits" is essentially giving two incentives to some, at the expense of others, in the form of higher energy costs.

As such, we urge MassDEP to be very mindful of the broader impact of additional costs on individuals and businesses.

The CHS must be inclusive of all technologies and solutions that reduce emissions.

The MCSE believes that MassDEP must incorporate flexibility into any program as it will be difficult to predict technologies in the future. Reaching our ambitious emissions reductions goals will require multiple technologies - the so-called “silver buckshot” approach - and MassDEP should not discount any technology that can result in lower GHG emissions. As such, we urge the Department to consider that “clean energy credits” include technologies like hydrogen, renewable natural gas, biodiesel, and other clean fuels, as long as they can be shown to reduce GHG emissions.

The CHS should also be based on life-cycle greenhouse gas accounting, including all upstream and downstream greenhouse gas flows. Additionally, the CHS should not be a proxy for elimination of all the infrastructure currently in the ground or in people’s homes - most of which is fully paid for. Utilizing existing infrastructure should be a priority, as that may lead to quicker, more cost-effective GHG reductions.

Robust, widespread review throughout impacted communities of any Final Draft Rules is imperative.

Finally, the MCSE is concerned that there is already considerable confusion within the building, retail and restaurant industries pertaining to the Stretch Energy Code, the Municipal Opt-in Specialized Energy Code, the Ten Community Fossil Free Demonstration Program and now rules proposed by MassDEP relative to Clean Heat. We appreciate that multiple agencies of the Commonwealth are involved in this effort and that this is not an easy task. That said, the impacts of these changes are very significant.

For example, as of this writing, we are aware that there are several municipalities in the Commonwealth misinterpreting the Stretch Energy Code as a ban on natural gas hookups. This confusion is already slowing the construction of new housing and business activities, something we know is inconsistent with the Commonwealth’s overall economic development objectives. Given that there is quite a bit of activity in the decarbonization space we strongly urge MassDEP to call significant attention to any proposed draft clean heat final rules so that all parties impacted by them understand the changes that might be coming so they are able to relay concerns. The MCSE is happy to assist with robust outreach in this regard as MassDEP sees fit.

Thank you for allowing us to make these comments. While we have made important progress, much work remains to ensure we balance the demand for clean energy with the challenge of supporting every community. We thank you again for this opportunity and look forward to our continued partnership in the months ahead.

Sincerely,







August 30, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

Re: Comments on the Development of a Clean Heat Standard
Sent via email: climate.strategies@mass.gov

The undersigned are members of the Board of Directors of the Massachusetts Energy Marketers Association (MEMA), the trade association representing retail heating oil, renewable liquid biodiesel and propane marketers in the Commonwealth; along with wholesale suppliers of heating oil and biodiesel to New England and the Northeast; producers and distributors of renewable liquid fuels; and companies providing various goods and services to the industry.

Our association has been fully engaged in the stakeholder process (virtual community meetings) initiated by the Massachusetts Department of Environmental Protection (MassDEP) regarding the development of a Clean Heat Standard (CHS) regulation. Prior to MassDEP's activities on a CHS, MEMA Board member Charles Uglietto, served on former Governor Baker's Commission on Clean Heat, and chaired the Commission's work group on a CHS. The work group's recommendations were included in the **Final Report: Commission on Clean Heat, November 30, 2022.**

The Board of Directors of MEMA believes it is important to provide the following comments to MassDEP on a CHS since the Department has indicated that a draft, or "straw" proposal for the regulation is forthcoming. And where noted, we cite sections of the Commission's final report, and the **Comprehensive Energy & Climate Plan** (CECP) to corroborate our comments.

- **Broad Biodiesel Feedstock Acceptance**

The Commonwealth's objectives to transform the electric grid – ISO New England (ISO NE) – to a system using only renewable fuels for power generation are laudable but this transformation will take many years to accomplish.

In the meantime, the Commonwealth should be utilizing every available pathway to reduce greenhouse gas emissions (GHG) now. Renewable liquid biodiesel, or biofuel, provides such a pathway. Hence, when developing a CHS regulation MassDEP should support the use of all advanced biofuel feedstocks that are recognized by the U.S. Environmental Protection Agency and allowed under biofuel blending mandates in New York, Connecticut, Pennsylvania, and Rhode Island.

The state's Alternative Energy Portfolio Standard (APS) program is proof that biofuel blended with traditional low-sulfur heating is an immediate and cost-effective method of reducing GHG emissions in homes and businesses using heating oil. However, unlike the APS program, MassDEP should not handcuff the heating oil industry at-large by limiting biofuel feedstock credit eligibility under a CHS to only used cooking oil, or so-called "waste" feedstock.

According to a recent study by economic consulting firm Bates White, incorporating higher biofuel blends in the Northeast could provide net emissions reductions of approximately seven million metric tons of CO₂ per year.

The study found that, "Decarbonization of fuels currently used to heat homes and businesses can offer a cost-effective means to meet interim GHG reduction goals," thus, "easing the challenges of rapid electrification and the required buildout of renewable generation, transmission, and distribution infrastructure."

- **Scoring the Carbon Intensity of the Electric Grid**

The fuel mix for power generation at ISO NE is consistently dominated by natural gas, with only a small percentage allotted to renewable fuels. On August 30, 2023, natural gas was 53% of the grid's fuel mix, while renewables comprised only 5%. Like other fuels impacted by a CHS and given the state's focus on seeking millions of conversions from fossil fuel systems to air and ground source electric heat pumps, MassDEP must evaluate the carbon intensity of the electric grid.

The Commission on Clean Heat supports this evaluation. The Commission's final report states:

"MassDEP should evaluate how to address life cycle assessment for electricity, as well as the methodology for doing so, given the required decarbonization of the electric grid under existing standards such as RPS and the Clean Energy Standard (CES), as well as how the Massachusetts' GHG inventory methodology and the building sector sublimit methodology account for building and electric emissions." (Final Report: Commission on Clean Heat, Appendix C, p. 45)

“Massachusetts’ GHG inventory counts GHG emissions for electricity in the power sector. Given this, it will be important for MassDEP to determine the appropriate way to evaluate and consider the GHG impacts in the power sector of additional electricity demanded by electric heating technologies, including with regard to seasonal variation and the impact of heating demand on the electric grid during winter months.” (Final Report: Commission on Clean Heat, Appendix C, p. 45)

The final report also stated: “The accounting methodology for heat pumps should consider refrigerant leakage, and program design within the Clean Heat Standard and elsewhere should consider approaches for tracking, analyzing, and remediating refrigerant leakage.” (Final Report: Commission on Clean Heat, Appendix C, p. 46)

The good news is the MassDEP does not need to guess the emission calculations in the scoring of the grid. ISO NE has already published in-depth analysis of the annual average emissions profile for our region. ISO NE utilizes the EPA’s eGrid methodology in these calculations (see below). Although we would argue the Global Warming Potential (GWP) of Massachusetts electricity use is higher given the overwhelming reliance on natural gas in the state, especially during peak winter demand, the eGrid calculations remain extremely useful. However, it is important to recognize, that until such time that ISO NE operates on a 100% renewable fuel mix, the carbon intensity of the grid will only increase during cold weather months due to the anticipated acceleration of conversions from fossil fuels to electric heat pumps in the thermal sector, resulting in higher winter grid loads and higher winter peak loads.

Still, absent of any emissions calculations presented by MassDEP we maintain that ISO NE calculations, utilizing the EPA eGrid methodology, of the emission rates are a suitable scientific baseline. Given that the state of Massachusetts is an active member in ISO NE, it is logical that Massachusetts would utilize the calculation of an organization they are part of and is supported by Massachusetts rate payer’s fund.

Table 1-1
2020 and 2021 ISO New England Average Emissions (ktons)
and Emission Rates (lbs/MWh)

Annual Average Emissions and Emission Rates						
	2020 Emissions (ktons)	2021 Emissions (ktons)	Total Emissions % Change	2020 Emission Rate (lbs/MWh)	2021 Emission Rate (lbs/MWh)	Emission Rate % Change
Native Generation						
NO_x	12.09	12.44	2.9	0.25	0.24	-4.0
SO₂	1.88	2.11	12.2	0.04	0.04	0.0
CO₂	31,028	33,439	7.8	654	658	0.6
Native Generation Plus Imports						
CO₂	33,168	34,555	4.2	560	574	2.4

<https://www.iso-ne.com/static-assets/documents/2023/04/2021-air-emissions-report.pdf>

- **Embracing the GREET Model**

MassDEP has indicated they may not use the globally accepted, highly regarded, and regularly updated Argonne National Laboratory GREET Model for Life Cycle Analysis (LCA) under a Massachusetts CHS. The idea that MassDEP would develop its own unique-to-Massachusetts LCA is inexplicable.

GREET has an impressive team of full-time scientists and engineers. GREET has over 50,000 users globally. GREET is used by the U.S. Department of Agriculture, the U.S. Department of Transportation, the National Aeronautics & Space Administration, the National Renewable Energy Laboratories, and in Massachusetts, GREET is embraced by the Massachusetts Institute of Technology. Additionally, the states of California, Washington and Oregon use GREET for their Low Carbon Fuel Standard programs.

GREET's LCA covers petroleum, natural gas, renewable energy fuels, electric systems, and hydrogen. There is simply no logical reason why MassDEP would not embrace the GREET model to guide a CHS.

- **The CHS Must Be Performance Based and Technology Neutral**

MassDEP must follow the CECP's guidance regarding a performance based and technology neutral CHS. The CECP states: "The fundamental purpose of the Clean Heat Standard is to reduce emissions, not to promote certain technologies for extrinsic reasons." (CECP, Appendix B-3, page 61)

The CHS must incorporate an array of heating options for homeowners and businesses such as renewable liquid biofuels that reduce emissions immediately, but do not require tens of thousands of dollars in equipment conversion costs. If MassDEP favors only electrification as a potential pathway to reduce GHG emissions under a CHS, then the regulation is simply an electrification rule and not one that is aimed at helping the state meet its ambitious decarbonization goals.

- **Oppose a "Yardstick" Approach for Credit Value**

It is unclear the effectiveness of a yard stick approach. Credit programs such as federal Renewable Fuels Standard, California's Low Carbon Fuel Standard, and the European Renewable Energy Directive (RED) are successful by providing exact credit values. The clarity given in the mechanics of the credit system, developed by years of study and refinement, are what make the successful framework that a credit system can thrive in. Our concern is that an ambiguous "yardstick" approach does not follow the scientific rigor in matching emissions reduction and economic incentive, but rather favors a political preference approach to emission reduction.

- **The Economic Impact of a CHS Needs to Be Determined**

The impact of a CHS on the prices for all heating fuels is going to be significant and despite MassDEP efforts to avoid labeling a CHS a tax, it is just that, and MassDEP must move swiftly to provide additional guidance on the impact the rule will have on heating oil, propane, and natural gas prices. This guidance must include the social cost of carbon figure that MassDEP intends to use in assessing all heating fuels, and the resulting impact on the Alternative Compliance Payment (ACP) for the CHS.

As MassDEP has noted, the Commission report states: “MassDEP should carefully assess the appropriate ACP price to ensure creation of credits is preferable, while also ensuring the cost-burden of ACPs does not unduly burden businesses and ratepayers.” (Commission Report, Page 46).

- **Consumers Have a Right to Choose Their Energy Source**

In MassDEP’s “discussion document” the Department cites a potential requirement under a CHS that heating oil, propane and natural gas utilities would need to reduce their existing customer base by 3% annually via the replacement of existing fossil-fueled heating equipment with air and ground source electric heat pumps. This requirement was not part of the Commission on Clean Heat’s final report, nor is it cited in the CECP.

Any such requirement removes a customers’ ability to choose the energy source they want for their home or business, and it would be an unprecedented action against established businesses across the Commonwealth. If MassDEP moves ahead with this requirement, our association will vigorously oppose a mandate that is designed to put our member companies out of business. Our association, and its counsel, believe that this action is in violation of the Dormant Commerce Clause and this constitutional protection takes precedent over state emissions goals.

Respectfully submitted,

Jim Blake, Eastern Oil & Propane, Danvers, MA
Will Beck, Sprague Energy, Portsmouth, NH
Mark Brideau, Brideau Energy, Fitchburg, MA
Scott Bouvier, Global Partners LP, Waltham, MA
Laura Carbone, Alvin Hollis, South Weymouth
Art Chaves, Coan Heating & Cooling, Natick, MA
Leslie Cernak, Heating Oil Partners, Easthampton, MA
Andrew Davison, Cape Cod Biofuels, Sandwich, MA
Bob Duffy, Devaney Energy, Newton, MA
Ben Fawcett, Fawcett Energy Partners, Kingston, MA
Michael Ferrante, Massachusetts Energy Marketers, Wilmington, MA
Erik Geckler, Mirabito Energy Products, Binghamton, NY

Doug Goodman, Dead River Company, ME
Kevin Horgan, Energy North/Haffner's, Lawrence, MA
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Patrick Melia, Melia Fuel, Marshfield, MA
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September 1, 2023

Department of Environmental Protection
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Christopher Egan
Executive Director

Thank you for the opportunity to submit comments on the Clean Heat Standard. We represent forest landowners, foresters, timber harvesters, and forest products companies in Massachusetts.

As such, we are strong advocates for modern wood heating (sometimes called advanced or automated wood heating). DEP included references to “advanced wood heating” as part of the introductory materials for the Clean Heat Standard (CHS).

You have reported that there have been two schools of thought from commenters on which technologies should qualify for the CHS. One group sees the urgency of climate change and the immense difficulty of achieving the state’s ambitious goals and believes we should approve any technology for the CHS that reduces carbon emissions. The other believes that in the long-term only electrification is suitable as clean heat, and so we should only allow electric heat into the CHS now – apparently even if this means we miss our climate change mitigation targets for the thermal sector. You can count us firmly in the first camp.

It makes little sense in an emergency situation to discard useful decarbonization strategies because they are not zero-combustion. We’re already well behind in replacing/converting heating systems to meet our 2030 goals, so why would we rule out technologies that can help us get there and delay progress further? This would practically guarantee missing goals outlined in the Clean Energy and Climate Plans and result in millions of tons more net CO2 emissions for the thermal sector over time.

The Vermont legislature recently passed a Clean Heat Standard of their own, and sensibly took a broad approach, including both modern wood heating and pellet stoves in their legislation (regulations are still being developed there). We believe it would be wise for DEP to take a similar, broad-based approach enlisting an assortment of thermal technologies to help meet climate change goals for the sector.

You similarly found two schools of thought about whether to assess the emissions to make electricity in the Clean Heat Standard. Emissions from the electricity sector are counted separately from the emissions from the thermal sector, and there’s no reason to double-count them if examining overall societal carbon emissions. However, we believe it makes sense to consider those emissions when comparing carbon intensity of heating systems and using that information to drive policy decisions in the CHS. The net carbon emissions of modern wood heating [are](#)

Advocating for a Strong, Sustainable Forest Economy

[lower than air-source heat pumps using grid electricity](#) – particularly in cold weather when air-source heat pumps begin to lose their efficiency advantage. It will likely take decades to fully decarbonize our electric grid, so considering carbon emissions in the meantime makes sense to capture the full picture of thermal sector emissions.

As more and more people switch to electric heat, our grid will become a winter peaking system. That peak demand – which will occur on the coldest days, as air-source heat pumps become significantly less efficient and consume much more electricity – is often met by “peaker plants” that are typically fueled with oil or even coal, and which charge vastly higher prices than normal electric generation.

[Research in Vermont](#) and [in France](#) demonstrates that wood heat can help smooth these peaks on cold days, avoiding costly grid upgrades and very expensive peak power supplies. With modern wood heat in rural areas, where the grid is already stressed, these advantages are multiplied. DOER is beginning to recognize this benefit of modern wood heat.

Besides easing pressure on the electric grid, modern wood heating is also resilient to power outages. A traditional wood stove uses no electricity at all, and pellet stoves are comparable to a small appliance such as a television. Even a modern wood heating pellet boiler in a residential basement can easily be powered by a portable generator set up in your driveway. A whole-house air-source heat pump system, on the other hand, is vulnerable to power outages, as even a whole-house generator (typically powered by natural gas) can’t power them on colder days, and solar panels and batteries cannot run them for very long. This is why many heat pump advocates recommend using a wood heating system such as a wood or pellet stove as a backup.

We realize DEP isn’t charged to consider impacts on the electric grid and how to deal with power outages in the CHS. But we think ignoring these real-world knock-on effects would be a serious error. We encourage you to consult with DOER as you develop the CHS to make sure that the full breadth of electric challenges are considered.

In fact, we would suggest that thermal Alternative Energy Credits (AECs) from the Alternative Portfolio Standard (APS) be eligible to fulfill the credit obligations from the Clean Heat Standard. This would speed adoption of clean heating systems while not permitting the combined-heat-and-power AECs from the APS to be eligible, making sure that fossil fuel systems cannot be included. It would also relieve a regulatory burden on DEP, take advantage of DOER’s wealth of staff experience and knowledge running a credit-making system, and smooth and simplify the regulatory process, since the APS rulemaking has already taken place.

Beyond just the electric grid benefits discussed above, the reasons for including modern wood heat in the CHS are clear. The carbon reductions of modern wood heat are proven beyond all doubt. The Commonwealth’s commissioned [Manomet study](#) and [follow-on peer-reviewed research](#) published in prestigious journals show a significant net carbon emission reduction when switching from oil to wood. This is echoed in the Massachusetts Clean Energy Center’s [GoClean website](#) as well – scroll down to see the net carbon emissions from different heating technologies – they use the term “automated wood heat.” This is why leading environmental organizations backed its inclusion in the Alternative Portfolio Standard (APS), and why

legislators deleted language removing it from the APS in last year's climate bill – the supporting science is simply too strong.

Some oppose modern wood heat because of air pollution concerns. Science says that concern is incorrect. [UMass Amherst did a thorough air-sampling study](#) of schools in western Massachusetts that installed pellet boilers. The research found that the air quality of those schools did not get worse when replacing their oil boilers with modern wood heating systems. Instead, air quality improved – and the new wood system emissions were almost certainly less toxic to human health. All this while saving schools substantial money on heating costs, supporting rural jobs because 100% of heating dollars remained in the local economy, and significantly decarbonizing compared to their previous fossil fuel heat.

The preliminary conclusions of the UMass study (linked above) state, “Concentrations of [pellet] PM were generally low, and at smaller magnitudes to other sources of pollution” and that the pellet systems’ effect on air quality was “of a smaller magnitude than other commonly-used heating appliances such as distillate (oil).” Professor Peltier has publicly and clearly stated that the measured particulate emissions from pellet boilers were lower than the oil systems they replaced.

Modern wood heat has mostly been replacing oil boilers in rural areas where electrification may be a challenge with outdated infrastructure that cannot handle the additional load. Our perception of legislative and regulatory action in Massachusetts is that it is typically developed through an urban and wealthy suburban lens. There is little knowledge of, or policies tailored to, rural areas in the Commonwealth, which tend to largely be ignored and their special concerns and considerations overlooked. This important rural perspective must be considered as you create the CHS, and we hope it's plain to see that modern wood heat should have a place in the CHS.

Should you have any follow-up questions or would like to meet with us to explore these issues in greater depth, please let me know. I can be reached at (617) 645-1191 or cegan@massforestalliance.org.

Thank you again for the opportunity to share our perspective.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chris Egan', with a stylized, cursive script.

Christopher Egan
Executive Director



6 Beacon Street
Suite 625
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NFIB.com

August 16, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900
Boston, MA 02114

Re: Clean Heat Standard Program

My name is Christopher Carlozzi. I am the Massachusetts Director of the National Federation of Independent Business (NFIB). A non-profit, non-partisan organization, NFIB is the nation's and our state's largest small business advocacy group. In Massachusetts, NFIB represents thousands of small and independent business owners involved in all types of industry, including manufacturing, retail, wholesale, service, and agriculture. The average NFIB member has five employees and annual gross revenues of about \$450,000. In short, NFIB represents the small Main Street business owners from across our state.

Small businesses in Massachusetts not only compete with businesses across state lines but also nationally and internationally. Having access to affordable energy plays a large part in being able to produce goods and offer services to consumers. Massachusetts small businesses already face some of the highest energy expenses in the nation. Because the state lacks capacity for clean, affordable natural gas, many small businesses are struggling with the high price tag of energy.

Energy is crucial to the operation of a small business in Massachusetts. With our brutally cold winters and excessively warm summers, the price of energy is something small business owners carefully monitor as it significantly impacts their business' bottom line. A substantial portion of small business energy use is cooling or heating the business. Both customers patronizing a business and workers performing daily duties within the building must be comfortable and safe. Heating and cooling become especially costly in larger facilities like warehouses and factories. Finally, many small manufacturers require heavy energy use operating their equipment to create products. Massachusetts is home to many precision manufacturing businesses that rely on affordable energy to remain competitive.

The Department of Environmental Protection must not use this process as an opportunity to further ban the use or development of natural gas in Massachusetts. The Department must not proceed beyond the current pilot program outlined in law and stay within that focused set of communities during the rulemaking process. In no way should these bans be expanded upon to

become a broader policy change or include measures that will increase costs. The state of Vermont recently passed a statewide clean heat standard policy in their legislature this past session and raised a myriad of cost concerns from both residents and small businesses.

During their legislative process, the Vermont Secretary of Natural Resources estimated the expense of implementing this program to cost roughly \$2 billion, or \$1.2 billion after federal money is used for a portion. That \$1.2 billion would be passed along to every resident and small business in that state and translated to an estimated 70 cents per gallon for heating oil kerosene, propane, and natural gas.

The average Massachusetts resident is projected to use, on average, 800 gallons of heating fuel per year during the cooler weather season. **If the Vermont numbers are accurate, an additional 70 cents per gallon would result in Massachusetts residents paying nearly \$560 a year more to heat their homes.** What is even more troubling, the Vermont Secretary of Natural Resources also claimed in her testimony that the 70-cent projection was a “low ball” number. She noted the expense per gallon may be even higher based on the types of categories that required action and because they made the assumption fuel dealers would absorb 25% of the cost. Fuel dealers provided supplemental testimony clarifying 100% of the cost would indeed be passed along to consumers.

On behalf of Massachusetts small businesses already struggling with highest in the nation energy prices, we urge the Department to stay within its scope and avoid expanding the pilot program from the current ten communities while preventing any additional costs be passed along to small businesses. Thank you.

Bonnie Heiple, Commissioner
Department of Environmental Protection
100 Cambridge St Suite 900
Boston, MA 02114

August 31, 2023

Massachusetts Clean Heat Standard: *Program Design Considerations for Maximizing Emissions Abatement Potential of Alternative Fuels*

Dear Commissioner Heiple,

On behalf of National Grid, thank you for the opportunity to provide additional comments on the Clean Heat Standard. These comments are specific to the role of alternative low-carbon fuels such as Renewable Natural Gas (RNG) and clean hydrogen within the Clean Heat Standard (CHS), including specific recommendations drawn from quantitative analysis and best practices from other jurisdictions.

Our comments below address the following key issues:

- Alternative fuels like RNG and hydrogen are valuable decarbonization resources and should be included in the CHS as eligible credit-generating technologies alongside electric and demand-side resources.
- A technology-neutral standard which includes RNG and clean hydrogen is consistent with Massachusetts energy policy, with the recommendations of experts, and with best practices for similar programs in other jurisdictions.
- The CHS should be rooted in a full life-cycle analysis of greenhouse gas (GHG) emissions to ensure all GHG flows across the energy value chain are accounted for, mitigating against the risk that the CHS could perversely increase emissions outside of Massachusetts.
- Entities generating CHS credits from alternative fuels should be required to file comprehensive documentation to verify emissions reductions.
- Indirect book-and-claim mechanisms should be allowed to account for environmental attributes associated with alternative fuels.

Through the Roadmap Act and Global Warming Solutions Act (GWSA), the Commonwealth has enacted ambitious climate and emissions reductions goals. In pursuit of these goals, the Massachusetts Department of Environmental Protection (MassDEP) is now developing a CHS to target the reduction of GHG emissions reductions from the residential, commercial, and industrial building sectors. The Clean Energy and Climate Plan (CECP) and Clean Heat Commission report make clear that electrification is the preferred technology to achieve emissions reductions from the building sector, and as such, electrification and energy efficiency measures will be prioritized within the CHS program design. National Grid is supportive of targeted electrification efforts and stands ready to assist MassDEP in the development and implementation of a CHS program.

Alongside targeted electrification, we see the deployment of alternative fuels, like RNG and hydrogen, as complementary to emissions reductions efforts through their capability to utilize existing infrastructure to significantly reduce conventional gas load and enable decarbonization of difficult-to-electrify end-uses. Including

alternative fuels as eligible credit-generating technologies is supported by the best available policy guidance for the establishment of a CHS for Massachusetts:

- The 2050 Clean Energy and Climate Plan (2050 CECP) forecasts Massachusetts buildings will use 40.6 trillion British thermal units (TBTU) of fuel combustion in 2050 compared to 312.2 TBTU in 2020 and calls for developing “approaches to qualify alternative fuels” for use in building sector decarbonization under the CHS.
- The report on CHS program design prepared for EEA by the Regulatory Assistance Project (RAP) says¹:
 - “The standard should permit a range of technologies and fuels to compete for the ability to earn clean heat credits. The standard could be met in multiple ways, combining different numbers of weatherization jobs, heat pumps, district heating...and or/or different blends of renewable pipeline gas, perhaps green hydrogen, and approved biofuels.”
 - “The fundamental purpose of the Clean Heat Standard is to reduce emissions, not to promote certain technologies for extrinsic reasons.”
 - “A performance standard creates competitive pressure across technologies and fuels, which will lower the total costs of the heating transition and help to drive innovation, both in technology and in service delivery systems.”
 - “Ultimately, end-use customers need to install their own heating equipment and choose their energy suppliers. Buildings differ, consumer preferences differ, and even the same consumers will choose different heating systems as their budgets and preferences change over time.”

Best practices can also be drawn from the successful implementation of the transportation sector Low Carbon Fuels Standard (LCFS) in California, Washington, and Oregon and from Clean Heat Standard policies established in Colorado and Vermont, all of which include alternative fuels as eligible credit-generating technologies.

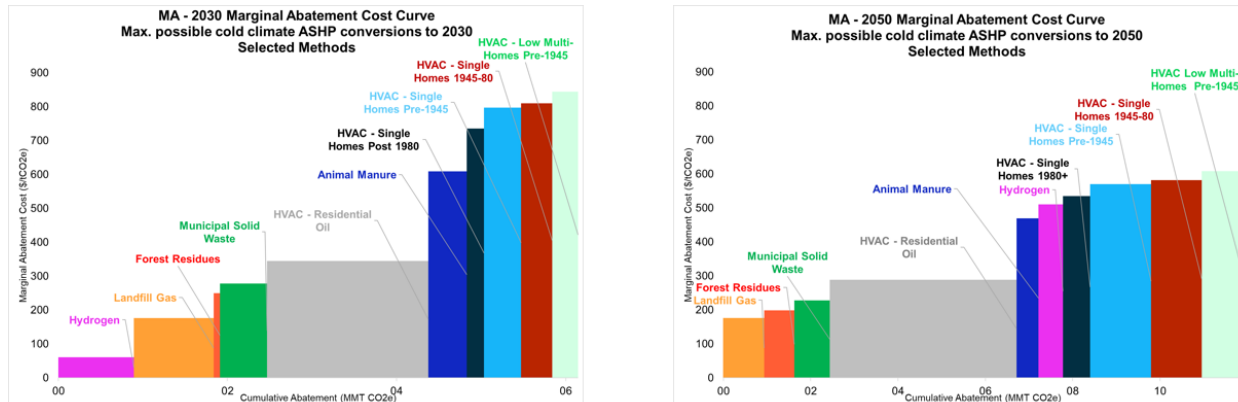
Including alternative fuels as an eligible measure in the CHS is essential for maximizing emissions reductions efforts and ensuring affordability for all customers, while also advancing electrification and efficiency measures. The Commonwealth cannot afford to exclude viable options for building sector GHG reductions from the CHS. RAP’s analysis finds that “the relevant sectors ultimately covered, in whole or in part, by the CHS” will have to reduce emissions by 40% below 2020 levels by 2030 to achieve the building sector emissions sublimits. Achieving these sublimits within this timeframe will be a major challenge. Excluding alternative fuels from the CHS would eliminate a promising measure that can serve as a complement to other eligible measures, including energy efficiency and electrification. As previously stated, National Grid is supportive of increasing the deployment of energy efficiency and electrification efforts, but sees the deployment of alternative fuels, like RNG and hydrogen, as a means to maintain customer choice, put downward pressure on the cost of the decarbonization transition, and reduce the amount of necessary upgrades to the electric grid to accommodate broader electrification efforts. Including alternative fuels as eligible credit generating technologies will increase the supply of credits, lowering the overall cost of compliance. Including demand-side measures as eligible credit-generating technologies will similarly expand the supply of credits and lower customer compliance costs.

National Grid’s analysis of the marginal emissions abatement cost curve for a range of potential building decarbonization technologies (see Fig. 1) shows that the marginal cost of abating one metric ton of CO₂-equivalent GHG emissions through the installation of a cold climate air source heat pump HVAC system is over \$700 in 2030 and over \$530 in 2050. A range of alternative fuel resources, including RNG and hydrogen, offer marginal abatement

¹ Regulatory Assistance Project, “A Clean Heat Standard for Massachusetts,” July 2022. P. 33-34

costs between less than \$100 per ton to around \$300 per ton. Inclusion of these resources will lower the overall cost of compliance under the CHS program.

Fig. 1 - Marginal GHG Abatement Cost Curve for Massachusetts Building Decarbonization Technologies²



Overall, we encourage MassDEP to ensure the overall program design addresses affordability, equity, and impact to LMI customers to ensure the cost of complying with the program is not unduly burdensome on any customer group, and to consider how a diverse portfolio of eligible technologies can contribute to a more equitable and affordable program.

Further program design considerations deserve MassDEP's attention to ensure the program has no harmful unintended consequences. MassDEP should consider how to address the impact customer switching will have on an obligated parties' reduction mandate. For example, if an obligated party acquires a number of customers from another obligated party, will they be penalized while the other company is credited for emissions reductions even though no clean heat measure was deployed? How will the program account for this movement of customers and obligation from one entity to another? Similarly, as MassDEP contemplated in the initial discussion document for the CHS, proper consideration needs to be given to how weather variations will be addressed in the program design, particularly as it pertains to compliance obligations. Without protections, periods of extremely cold weather could drive up the cost of compliance due to insufficient availability of credits. An alternative may be to use the average seasonal weather conditions over the past three years as a benchmark for compliance during the winter months. MassDEP may also consider an overall program cost cap to protect customers from burdensome compliance costs.

Beyond this, we urge MassDEP to consider the recommendations below for optimizing the role of alternative fuels in the CHS:

1. The CHS should be based on a declining cap on GHG emissions from residential, commercial and industrial heating and cooling sufficient to achieve the established sector sublimits.
2. Clean heat credits should represent the abatement of a quantity, such as one metric ton (MT) of greenhouse gases measured on a life cycle carbon dioxide equivalent (CO₂e) basis, relative to the emissions that would have occurred if the credit-generating clean heat solution were not deployed.

² "Marginal abatement cost" is the cost to abate one metric ton of GHG emissions through a particular building heat technology. "Cumulative abatement" is the total annual amount of GHG abatement potential of each technology by 2030 and by 2050. Note that the marginal abatement cost of hydrogen is lower in the 2030 timeframe because of the availability of federal tax incentives enacted by the Inflation Reduction Act.

3. A scientifically rigorous and accurate methodology should be established for determining the carbon intensity of all eligible credit-generating clean heat solutions and calculating credits generated by clean heat solutions relative to emissions that would have otherwise occurred. The methodology for calculating emission intensity of any source of energy should encompass the entire life cycle and should not be limited by the sector or geographic region where the energy source is generated. For example, Argonne National Laboratory's GREET model could serve as a potential model for Massachusetts. Similarly, the JEC collaboration used in Europe can be applied to heating fuels and provide an analysis of GHG emissions, energy efficiency implications, and other information regarding various fuel sources. Using GREET or a model of comparative analytical rigor will ensure all GHG flows across the energy value chain are accounted for, mitigating against unintended consequences like emission "leakage," and making it less likely Massachusetts' policies perversely drive up GHG emissions in other jurisdictions. Climate change is a global challenge, and GHG emissions respect no borders. While reducing Massachusetts' own GHG inventory must be a priority, those emission reductions must not be counteracted by increased emissions elsewhere. Life cycle emissions accounting is an essential tool for developing climate action policies that won't simply push emissions outside of Massachusetts' borders but will actually lower the global concentration of GHGs in the atmosphere.
4. Benchmark carbon intensities should be established and updated as necessary for existing heat energy sources, including various electric heating systems, conventional pipeline gas, and delivered fuels, for the calculation of avoided emissions to determine the number of credits generated by a clean heat solution.
5. The carbon intensity of electricity for the purposes of determining the benchmark carbon intensity of existing electric heating systems and that of electric clean heat solutions should be based on a seasonal average of the carbon intensity of the Independent System Operator New England (ISO-NE) grid to reflect seasonal variation in the carbon intensity of the grid.
6. To become eligible to generate clean heat credits, a clean heat solution provider should be required to receive a clean heat solution carbon intensity certification from the MassDEP based on an evaluation of life cycle GHG emissions per unit of energy for each distinct clean heat solution and should be required to provide and certify as accurate any information MassDEP finds necessary for such evaluation.
7. Clean heat credit generators should be allowed to use indirect book-and-claim accounting mechanisms for low-carbon intensity electricity used for clean heat without regard for physical traceability if the low-carbon intensity electricity is supplied to the ISO New England grid, provided that no other environmental attribute, such as renewable energy certificates associated with the electricity, are claimed under any other program. Matching may be required on an annual or other basis as determined by MassDEP.
8. Alternative fuels eligible to generate clean heat credits should include renewable natural gas (RNG) and clean hydrogen.
 - Renewable natural gas should be defined as "pipeline quality gas derived from any combination of biogas, biomass, the methanation of hydrogen and waste carbon dioxide, or the thermal gasification of sustainable feedstocks, where the use of the fuel results in lower life cycle CO₂e greenhouse gas emissions than geologic natural gas."
 - Clean hydrogen should be defined according to federal law to ensure eligibility under federal programs. Aligning with federal standards ensures a harmonized approach to measuring and reporting emissions,

making it easier to demonstrate compliance and eligibility for federal grants, incentives, and other financial support. Consistency with federal standards facilitates coordination and collaboration across government, leading to more efficient use of resources and more effective climate action programs.

9. In order to be eligible for a reduced carbon intensity that reflects the lower emissions associated with the use of waste or similar material as feedstock, providers of clean heat solutions that include RNG should be required to maintain delivery records that show shipments of feedstock type and quantity directly from the point of origin to the fuel production facility, or other chain of custody information as determined by MassDEP, and should be required to provide such information to MassDEP upon MassDEP's request. Biogas or biomethane must be physically supplied directly to the production facility.
10. Indirect book-and-claim accounting mechanisms should be allowed for eligible pipeline injected RNG or clean hydrogen used as heating fuel, provided the RNG or clean hydrogen is injected into the common carrier pipeline in North America and can be reported as dispensed as heating fuel through a certified clean heat solution. To substantiate quantities injected into the pipeline for dispensing as heating fuel, the pathway application and any subsequent required reports should include documentation linking the environmental attributes of the RNG or clean hydrogen with corresponding quantities of natural gas delivered to customers in MA, such as monthly invoices showing quantities of RNG or clean hydrogen sourced and the contracted price per unit, the contract by which the clean heat solution pathway holder obtained the environmental attributes, or other documentation as determined by MassDEP. This approach is optimal for several reasons. First, it enhances flexibility and market efficiency by allowing producers to focus on energy production while specialized entities manage and trade environmental attributes, optimizing the allocation of resources. Second, it encourages the greatest development of eligible resources because areas with abundant resources can produce energy more efficiently, while those with policy targets but limited resources such as Massachusetts can acquire the environmental attributes needed to reach their goals. This is optimal from a climate action perspective because GHG emissions respect no borders, and the overarching purpose of the Commonwealth's climate policies is to take action to reduce the harmful effects of climate change. Emissions reductions and other environmental attributes associated with resources eligible to generate credits in the Massachusetts CHS are equally valuable for climate action wherever they occur, provided sufficient verification can be performed.
11. Any entity generating clean heat credits from RNG should be required to obtain and keep attestations from each upstream party collectively demonstrating that the entity claiming the environmental attributes has the exclusive right to claim environmental attributes associated with the sale or use of the biogas or biomethane, and that the environmental attributes have not been used or claimed in any other program, and should be required to certify annually that they own exclusive rights to the environmental attributes. Matching may be required on an annual or other basis as determined by MassDEP.

Thank you for this opportunity to provide comments. National Grid stands ready to support the Healey-Driscoll Administration and the Department in your efforts to develop and implement a Clean Heat Standard that will achieve meaningful emissions reductions across the building sector while ensuring protections for the most vulnerable members of our communities and ensuring a just and equitable transition to a clean energy future.

Respectfully Submitted,

/s/ Huck Montgomery

Huck Montgomery
Director, US Policy and Strategy
National Grid
170 Data Drive
Waltham, MA 02451
Howell.Montgomery@nationalgrid.com



NEW ENGLAND GAS WORKERS ALLIANCE

9 INDUSTRIAL ROAD #104, MILFORD, MASSACHUSETTS 01757

August 15, 2023

Massachusetts Department of Environmental Protection

100 Cambridge Street

Suite 900

Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The New England Gas Workers Alliance (NEGWA) appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all-natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production, and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost-sensitive strategy that matches existing and new demand with actual new, and not wished-for, supply.

Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction

and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built, and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

John Buonopane

John Buonopane

Recording Secretary

New England Gas Workers Alliance



September 1, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900
Boston, Massachusetts 02114

RE: Comments on the Massachusetts Clean Heat Standard Program (CHS)

The Northeast Chapter of the Combined Heat and Power Alliance (“NE Chapter”) submits these comments in response to the Massachusetts Department of Environmental Protection’s (“Mass DEP”) March 2023 Stakeholder Discussion Document for the Clean Heat Standard Program Design and the July 2023 Technical Sessions.

The NE Chapter is a group of manufacturers, system developers, engineers, and end-user representatives united in pursuit of reducing energy costs and carbon emissions using the highly efficient technology of Combined Heat and Power (“CHP”). The NE Chapter and its member organizations fully support the innovative, extensive goals and objectives that are the foundation of the Massachusetts Clean Energy and Climate Plan for 2050 (“2050 CECP”). The NE Chapter believes that CHP technology will play a critical role in facilitating the state’s mission, specifically as it relates here to the proposed Clean Heat Standard (“CHS”).

The NE Chapter recommends the following for the design of the MA CHS program.

- 1. MassDEP should adopt a standard that is expressed in greenhouse gas (“GHG”) reductions, regardless of the technology employed to effectuate such reductions.**

The expressed purpose of the CHS is to reduce climate pollution¹, and as such, all credits given to solutions and technologies should be tied intrinsically to the life cycle reduction in GHG emissions, which these methods provide. Under this protocol, all technologies, including non-electrification solutions, must be included within the CHS, and measured accordingly.

- 2. Renewable natural gas (“RNG”), certain biofuels, and hydrogen should be credited within the CHS program design.**

All clean fuels should be eligible within any proposed CHS, provided that their use reduces lifecycle GHG emissions, relative to traditional fossil fuels. RNG has a lower carbon intensity

¹ Regulatory Assistance Project (RAP). A Clean Heat Standard for Massachusetts. June 2022.
<https://www.mass.gov/doc/clean-heat-standard-2-page-summary/download>.



than fossil fuels or electricity.² Likewise, clean hydrogen produced from renewable energy (“green hydrogen”) has zero carbon emissions once combusted.³

Seven northeastern states, including Massachusetts, recently submitted a proposal to U.S. Department of Energy (“DOE”) for \$1.25 billion in federal funding for a Northeast Regional Clean Hydrogen Hub. The goal of these hubs, for which Congress has appropriated up to \$8 billion under the Bipartisan Infrastructure Law, is to “create networks of hydrogen producers, consumers, and local connective infrastructure to accelerate the use of hydrogen as a clean energy carrier that can deliver or store tremendous amounts of energy.”⁴ The Commonwealth’s interest in these clean sources of hydrogen provides clear support for the inclusion of such clean fuels in any CHS decarbonization plan.

3. The MA CHS should be technology neutral and include non-electrification solutions, provided they deliver GHG reductions, relative to fossil fuels.

The NE Chapter and its members heartily endorse the inclusion of CHP within the Commonwealth’s toolkit of emissions reducing technologies for the following reasons:

- a. CHP is an established, high-efficiency technology recognized by the U.S. Environmental Protection Agency and DOE as a carbon reducing technology as shown in the diagram below.⁵

² Argonne National Laboratory. Renewable Natural Gas (RNG) for Transportation: Frequently Asked Questions. March 2021. <https://www.anl.gov/esia/reference/renewable-natural-gas-rng-for-transportation-frequently-asked-questions>.

³ US DOE. Alternative Fuels Data Center. Hydrogen Basics. https://afdc.energy.gov/fuels/hydrogen_basics.html

⁴ New York State Energy Research and Development Authority (NYSERDA). Seven States in NE Regional Clean Hydrogen Hub Announce DOE Proposal for Funding and Designation as a National Hub. April 7, 2023. <https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-4-7-Seven-States-in-Northeast-Regional-Clean-Hydrogen-Hub>

⁵ Entropy Research, LLC. CHP’s High Efficiency Saves CO2 Emissions Today. July 28, 2022.



CHP's High Efficiency Saves CO₂ Emissions Today

- **CHP is a low carbon resource**, not a zero-carbon resource like PV & Wind, but it reduces grid carbon by displacing higher marginal emission sources
- **CHP's high operating efficiency and high capacity factor** enables it to displace more marginal grid generation and reduce more CO₂ than the same capacity of zero carbon wind or PV

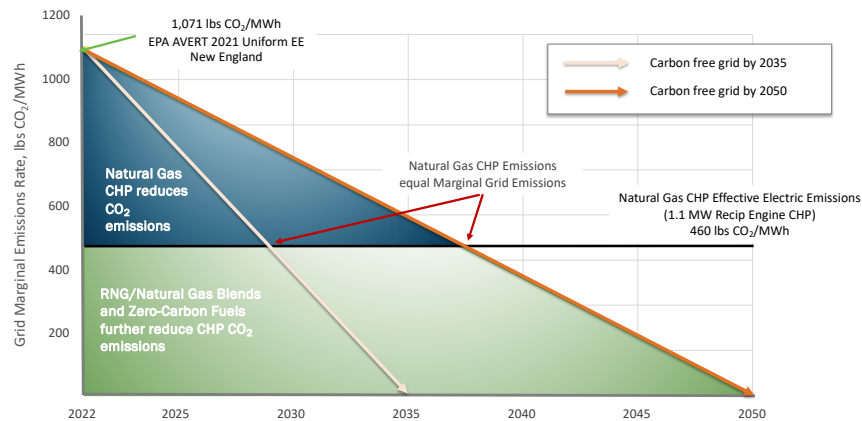
Category	Natural Gas CHP	Utility Solar PV	Utility Wind	Biogas CHP
Capacity, MW	20.0	20.0	20.0	20.0
Annual Capacity Factor	90%	24.3%	34.3%	90%
Annual Electricity, MWh	157,680	42,574	60,094	157,680
Annual Thermal Provided, MWh _{th}	169,466	None	None	169,466
Annual Energy Savings, MMBtu	628,000	382,992	540,002	628,300
Annual CO ₂ Savings, Tons	70,114	32,654	46,092	163,187
Annual NOx Savings, Tons	53.5	16.4	23.1	53.5

Savings based on EPA AVERT Uniform EE Emissions Factors as a first level estimate of displaced marginal generation
<https://www.epa.gov/avert>
 Prepared by: Entropy Research, LLC, 7/28/2022

- b. Today, CHP is reducing marginal grid emissions in the New England power generation zone by displacing dirtier grid resource CO₂ emissions, as demonstrated in the diagram below.⁶

Renewable and Net-Zero Carbon Fuels Maintain CHP's Advantage

Avoided Grid Emissions vs CHP Electric Emissions



Prepared by Entropy Research, LLC, 9/26/2022

- c. CHP is not a “technology lock in,” but is fuel-flexible and capable of using low-carbon

⁶ Entropy Research, LLC. Renewable and Net-Zero Carbon Fuels Maintain CHP's Advantage. September 28, 2022.



and zero-carbon fuels, such as RNG, biofuels, and green hydrogen.

- d. Carbon reductions today have more value than those in the future. The time value of carbon is the concept that greenhouse gas emissions cuts today are more valuable than promised future cuts due to the escalating risks associated with the pace and extent of climate action. “Because emissions are cumulative and because we have a limited amount of time to reduce them, carbon reductions now have more value than carbon reductions in the future. The next couple of decades are critical.”⁷
- e. Low carbon and zero carbon fuels will be initially costly and valuable, and thus best employed in the high efficiency technology of CHP (85%+ efficiency value).
- f. CHP is dispatchable to electric system operators and, as such, helps remedy the intermittency issues faced by renewables, thereby hardening the grid.
- g. CHP can provide resiliency in the instance of central power grid failures for critical infrastructure.
- h. Regarding energy equity concerns, CHP has been employed across many public housing sites, both in Massachusetts and elsewhere. The energy cost savings enjoyed by these sites has been used, and can be used in the future, to finance electrification and other decarbonization projects moving forward, which helps solve some of the financing conundrums LMI are facing today.

The NE Chapter of CHPA strongly supports reducing GHG emissions through a Clean Heat Standard. Such a program should be technology neutral and should allow credits for RNG and other clean fuels based on their lifecycle emissions. CHP must be included with these creditable technologies if the Commonwealth is earnestly seeking to reduce GHG emissions both now and in the future.

Our sincere thank you to MA DEP for consideration of our comments.

Respectfully,

Diane Molokotos

Diane Molokotos
President, NE Chapter of CHP Alliance

⁷ “Time Value of Carbon,” Larry Strain. Carbon Leadership Forum. April 2020.



Northeast Hearth, Patio, and Barbecue Association

PO Box 28, Sudbury, MA 01776 . 978-440-0344 . nehpba.org

September 1, 2023

Department of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

Dear Department of Environmental Protection members,

My name is Karen Arpino, Executive Director of The Northeast Hearth, Patio & Barbecue Association. The Northeast Hearth, Patio & Barbecue Association (NEHPBA) is a trade association representing more than 300 individual member hearth and fireplace retail and related companies throughout the Northeast. Specifically, in the Commonwealth of Massachusetts, we have over 60 member companies supporting 450 families, on behalf of whom I am writing. Most of our members are independent “mom and pop” small businesses that play a large role in the communities and markets they serve across the Commonwealth.

Thank you for the opportunity to submit comments on the Department of Environmental Protection (DEP) Clean Heat Standard (CHS).

Implementation of the Clean Heat Standard being drafted by the Massachusetts Department of Environmental Protection will dramatically affect homeowners and business owners in Massachusetts who are currently using natural gas, propane, heating oil and its renewable blends like Bioheat. Requiring heating energy suppliers to replace fossil heating fuels with electricity over time by implementing what the DEP considers clean heat or by purchasing credits would put many small business owners out of business and exacerbate the already high utility bills for residents across the Commonwealth. This policy aims to encourage widespread electrification which will result in the steady decrease of the availability of and support for liquid fuels, reducing safety and security when the power goes out.

MassDEP must evaluate the carbon intensity of the electric grid. There are various downsides to relying on electricity and heat pumps as a the only source of heat:

- The Massachusetts electric grid relies heavily on fossil fuels with close to 70% coming from natural gas, coal, and fuel oil. This means the grid is not ready to shoulder the burden of powering the entire state’s energy demand on its own.
- According to New England ISO, renewables are 7-9% and Imports are 17-22%. Presently we do not have the technology to implement the CHS. (<https://www.iso-ne.com/>)
- additionally, the grid is at capacity, we cannot expand it. It serves all of New England, increasing demand in MA will harm our neighboring states. (<https://www.iso-ne.com/>)



Hearth, Patio & Barbecue Association Affiliate



Northeast Hearth, Patio, and Barbecue Association

PO Box 28, Sudbury, MA 01776 . 978-440-0344 . nehpba.org

- The grid regularly faces challenges in extremely cold temperatures. This means that all-electric homes with no form of backup heating may be unsafe or not perform well when temperatures dip below freezing.
- Currently, heat pump manufacturers do not support these systems with readily available parts, causing further delays in heat restoration. Additionally, our housing stock in the Northeast does not support all-electric heat.
- Implementation of the CHS would remove access to liquid fossil fuels as a backup power source, meaning many will be left in the cold when electric equipment fails.
- Many small businesses that provide local jobs rely on the sales of backup space heaters that run on fossil fuels, such as gas fireplaces, inserts, and stoves. Implementation of this CHS will force them to go out of business or extensively lay off employees.

A switch to total electrification would be harmful to Massachusetts residents and more harmful to the environment. Again, the MassDEP must evaluate the carbon intensity of the electric grid. Many people enjoy the use of natural gas, propane, and bioheat fuel for the following reasons:

- Most current heating equipment runs on liquid fuel and would need to be converted to electricity, costing homeowners and landlords tens of thousands of dollars in both conversion and home weatherization.
- Natural gas, propane, and bioheat are resilient and reliable ensuring that homeowners are warm and safe when the power goes out.
- Propane and Bioheat fuel are delivered and stored on-site and do not rely on the electrical grid.
- Propane and Bioheat fuel are clean and renewable energies, which are helping to decarbonize homes right now – more affordably and more quickly than if you were to convert your home to heat pumps and wait for decarbonization of the power grid.

Currently, the way the CHS is being implemented can be put in place without a vote if supported by the Governor. Without any legislative oversight, this plan can be enacted. MassDEP should not be making decisions on the type of energy we use in our homes without the input of legislators and without the residents of the Commonwealth of Massachusetts being afforded their right to vote.

Thank you for your consideration of our comments. Please do not hesitate to contact me at (978) 440-0344 or via email at Karen@NEHPBA.org with any questions.

Sincerely,

Karen Arpino
Executive Director
Northeast HPBA



Hearth, Patio & Barbecue Association Affiliate



18 N. MAIN STREET
SUITE 204
CONCORD, NH 03301

603-229-0679
northernforest.org

September 1, 2023

Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Thank you for the opportunity to submit comments on the Clean Heat Standard for Massachusetts. The Northern Forest Center is a regional non-profit that promotes forest-based economic and community development across northern New Hampshire, Maine, Vermont, and New York.

In 2011, the Center began promoting the use of advanced wood heat through our Model Neighborhood Project which facilitated pellet boiler installations in pilot communities across the region. Since 2020, we have worked to build consumer awareness and demand for advanced wood heat as an alternative to fuel oil and propane through our [Feel Good Heat](#) marketing campaign.

As you consider which technologies should qualify for the Clean Heat Standard, we strongly believe that the State should be utilizing all renewables possible to achieve its climate goals. Advanced wood heat deserves a place in the mix as a technology that reduces carbon emissions and supports forest-based businesses and rural economies in Massachusetts and the broader Northern Forest.

Cost Savings. For customers looking to shift away from fossil fuels, advanced wood heat is both [cost effective and stable](#). From January 2020 through December 2022, the cost of wood pellets only increased 20% compared to 50% for natural gas and 83% for oil. Moreover, from month-to-month, the cost of wood pellets fluctuates less than all other heating sources, including electricity.

Climate Benefits. When accounting for all greenhouse gas emissions from sourcing, processing, and transporting, high-efficiency advanced wood heat systems reduce emissions by [54% compared to oil and 59% to natural gas](#) upon installation, according to an independent, peer-reviewed analysis.

A Complement to Electrification. As the State electrifies, advanced wood heat will ease pressure on the electric grid during peak load hours and cold snaps. Many older buildings are simply not well-suited to heating with air-source heat pumps. Heat pumps are widely recognized for running at high efficiencies. However, even with the latest advances, their efficiency drops the colder the outside air, requiring two to three times more electricity — often from carbon-generating sources like coal and gas — to heat the same space. These downsides can be mitigated by pairing with a secondary heating system such as a wood pellet stove.

Thank you for the opportunity to share a few of the benefits that advanced wood heat provides. We hope you will take them into consideration.

Sincerely,
Joe Short | Vice President

Parnay, Angela L (DEP)

Subject: RE: MA Clean Heat Standard

-----Original Message-----

From: Jeremy Paine <jeremypaine@gmail.com>

Sent: Thursday, July 13, 2023 8:14 PM

To: Strategies, Climate (DEP) <climate.strategies@mass.gov>

Subject: MA Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good evening,

Looking at the Clean Heat Standard proposal and wondering - how are you going to lower electricity costs for all the homes that will be forced to switch to heat pumps? It seems like the big push to switch is to reduce costs for heating your home while helping to reduce fossil fuel emissions, but I see a giant increase in costs to the consumers like myself and making no major adjustments to the pollution from fossil fuels.

As we increase electric demands on a power grid that is already stressed, we will be forced to run large fossil fuel plants to produce the energy. Renewable electric production accounts for maybe 15% of the total power produced currently. So I may not be pumping out emissions from my house with a heat pump but the factory to produce the energy to run it will put out just as much or more. And now i'll be paying more for heating costs because heat pumps are very inefficient in low-temps like New England. So running my heat pump will require huge amounts of electricity which is already the largest cost in utility we have.

Please reconsider forcing Mass residents to switch to a new, unreliable and expensive heating solution.

Thanks,

Jeremy Paine
Monson, MA
413-297-1638



August 31, 2023

Bonnie Heiple, Commissioner
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Submitted via email to climate.strategies@mass.gov

Re: Massachusetts Clean Heat Standard Stakeholder Input

Dear Commissioner Heiple,

The Partnership for Policy Integrity (PFPI) appreciates the opportunity to comment at this juncture in the Clean Heat Standard (CHS) stakeholder process. We write to submit information supplemental to our May submission,¹ related to several of PFPI's concerns:

Limit program eligibility to non-combustion technologies & measures. A strong CHS will only incentivize technologies and measures that do not inherently require combustion. This includes efficient electric heat (powered by clean energy), solar thermal, geothermal, and weatherization measures. Stand-alone weatherization measures should be eligible for credits under the CHS. While we are very critical of certain aspects of Vermont's new Affordable Heat Act (and actively opposed the subsidization of any wood-derived energy therein), we strongly support Vermont's inclusion of thermal energy efficiency improvements and weatherization as eligible clean heat measures.²

Do not use the Alternative Energy Portfolio Standard (APS) regulations as a reference point. PFPI urges DEP not to incorporate the APS regulations for biomass in the CHS program.³ As stated in our initial comments, there is no place in a clean heat standard for energy derived from burning wood. We have specific concerns regarding the treatment of woody biomass in the APS, as outlined in the attached summary. Fundamentally, the APS regulations as promulgated

¹ Comments by Partnership for Policy Integrity, May 1, 2023 (available at <https://www.mass.gov/doc/clean-heat-standard-comments/download>).

² Vermont Act 18 (S.5) of 2023-24 (available at <https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>).

³ Cowart, et al., "A Clean Heat Standard for Massachusetts" (Appendix B of the MA 2025/2030 CECP), suggest that forest-derived biomass fuels that meet the criteria for the APS should be considered clean; however current regulations fail to meet the statutory requirements for protecting air quality, reducing emissions, and protecting forests.

do not meet the protective standards – for greenhouse gas (GHG) emissions, forest protection, or public health – required in the enabling statute.

Include GHG emissions from electricity in measuring program *impact*. PFPI supports the rapid electrification of the heating sector and recognizes the pitfalls of attempting an accurate accounting of GHG emissions from electricity in the design of a CHS credit system. However, electricity-based heat is only “clean” to the extent that the sources of electricity are clean, from a GHG perspective and public health perspective. So, while counting electricity as a zero-emissions energy supply for crediting purposes may be necessary to create incentives for electrification, DEP must (1) adopt robust energy efficiency criteria for electrical technologies to qualify under the CHS program, and (2) evaluate the program’s impacts with reference to the actual GHG impacts arising from electric generation. For electrification measures taken in all grid-tied buildings, GHG emissions from the ISO-NE fuel mix averaged monthly could reasonably be accounted for in annual program evaluation so that GHG emissions are not undercounted.

To be clear, PFPI rejects proposals advanced by the biofuels industry to factor GHG emissions from electricity generation into credit calculations. Their claims of providing “clean” energy are generally based on false GHG accounting that treats combustion of biogenic fuels, such as biomass and biodiesel, as having zero CO₂ emissions.

Thank you for your consideration.

Sincerely,



Kathryn Eiseman
Policy Advisor
Partnership for Policy Integrity
keiseman@pfpi.net

Attachment:

PFPI Summary of Major Changes in Final APS Biomass Regulations, Dec. 11, 2017

Summary of Major Changes in Final APS Biomass Regulations

Updated December 11, 2017

The following is a list of major changes that the MA Department of Energy Resources (DOER) made in the final draft APS biomass regulation and guidelines posted October 13 – with no opportunity for public review – that we believe will (1) increase subsidies (2) increase greenhouse gas emissions and (3) allow more air pollution and forest destruction. Further substantial changes were made in mid-November. These deficits stand in addition to the flaws in the draft regulations that we identified in our comments of August 7, 2017 and previously. The regulations are fairly complicated, with many cross-references to related guidelines. As DOER has not held a public hearing on these changes, it is possible our interpretations do not match those of DOER.

CHANGES THAT WILL INCREASE SUBSIDIES

- Eligible biomass systems can now receive grants for up to 80% of construction and installation costs (previous versions of the regulations allowed first 0%, and then up to 50%) – and still receive subsidies for energy generated.
- Provisions requiring emissions calculations for combined heat and power (CHP) biomass plants to include lifecycle emissions of fuel processing and transport have been eliminated.

CHANGES THAT WILL INCREASE GREENHOUSE GAS EMISSIONS

- Whole trees cut down for agricultural land clearing are now defined as low-carbon “residues” in the final regulations. However, biomass from such land-clearing is prohibited under international carbon accounting protocols from being treated as “carbon neutral” or “low carbon.”
- Similarly, the final regulations expand eligible forest-derived “residues” to include trees that are “collaterally damaged,” creating a loophole for unlimited amounts of whole trees to be treated as “residues,” in carbon accounting. Classifying trees as residues “games” carbon accounting by reclassifying high net-carbon fuel sources as low-carbon.
- Although the statute requires that eligible biomass technologies must result in a 50% reduction in lifecycle greenhouse gas (GHG) emissions compared to a high efficiency unit burning natural gas or whatever fuel is being displaced, the final regulation delete language from previous versions that required net CO₂ emissions from eligible biomass units to not exceed the average emissions rate of natural gas plants in MA
- CHP biomass plants are not required to meet a minimum efficiency standard, which is an essential requirement for reducing net GHG emissions. This will allow CHP plants to reap generous alternative energy credits (AECs) under APS that would not meet the criteria for the RPS, which has a minimum 50% efficiency standard

CHANGES THAT WILL INCREASE POLLUTION EMISSIONS AND FOREST IMPACTS

- The “sustainability” provisions gut the forest protections added under the biomass harvesting regulations of 2012. Changes were made to the definition of “sustainable forestry management,” but they are meaningless and unenforceable.
- DOER is now allowing green wood chips as eligible fuel – thus increasing pollution. Previously DOER emphasized that burning green chips was inefficient and polluting and would not be included in the regulation.

OTHER CHANGES

- The elimination of language requiring eligible biomass units to use 100% eligible woody biomass fuel and the addition of a new provision requiring units to use a minimum percentage of certain eligible woody biomass fuel (set at 30% in the guideline) is confusing and subject to misinterpretation.
- DOER introduced a whole new technology – compost heat exchange systems - with no opportunity for public review.
- In mid-November, DOER published a previously unseen guidance document for biomass sourcing. This is integral to the enforcement of the regulations.
- The many last-minute changes made to the regulations have introduced a number of errors and inconsistencies in the text.

MAJOR FLAWS PREVIOUSLY IDENTIFIED THAT HAVE NOT BEEN CORRECTED

- DOER undercounts greenhouse gas emissions by not counting fossil fuels burned for biomass manufacture and transport, and deleted lifecycle emissions calculations from the GHG calculations spreadsheet.
- DOER specifications on emissions, emission testing, and thermal storage for biomass units that could receive millions in subsidies do not comply with EPA emissions and thermal storage requirements.
- CHP plants that do not meet the standards for RPS credits can get subsidies for electricity and thermal generated through the laxer APS program – no minimum efficiency standard, and now, requirement for full lifecycle GHG accounting has been eliminated (changes made in October).
- CHP biomass systems that do meet the RPS criteria can “double-dip” by getting electricity credits from both APS and RPS, and get thermal APS credits
- DOER’s 30-year timeframe for reducing net emissions will cause bioenergy emissions to surge, directly undermining the emission reduction goals of the Global Warming Solutions Act
- Coal and other fossil-fuel fired CHP plants may be able to receive credits for co-firing with solid biomass
- Sustainable biomass standards are far weaker than those developed for the Renewable Portfolio Standard
- Impossible to monitor and enforce whether fuel was sustainably harvested
- DOER has not analyzed the GHG emissions impacts of its proposed regulations
- DOER has not conducted an environmental justice review
- Regulations provide no limits on amount of heavy metals or other hazardous air pollutants that can be found in "eligible" biomass fuels
- Failure to require best available emissions control technology, as required by law
- Inadequate emissions testing requirements
- Regulations set different PM 2.5 standards for "sensitive groups" such as schools, hospitals and nursing homes than for the general population, even though children, the infirm, and the elderly can live anywhere.

12/11/17

Parnay, Angela L (DEP)

Subject: RE: MA Clean Heat Standard

From: Jim Patrick <lynjimp@verizon.net>
Sent: Wednesday, August 23, 2023 8:09 AM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Subject: MA Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom This May Concern:

I am writing to voice my concerns with this effort. As a home owner, I am aware of climate change and many of the efforts to reduce the impact of greenhouse gases. I have recently built a new home and installed a geothermal HVAC system to reduce my fossil fuel consumption.

Additionally in my new home because my wife and I are now retired and not getting any younger.... we have installed a Genrac back up generator for our home as we live in a small town on a back country road where storms tend to knock out power lines on occasion. The back up generator runs on Propane. We spent in excess of \$12,000 having this system installed so that we would not have to worry about power outages as we age. We do not rely on Propane or any other fossil fuel for heating or cooling our home. Please do not eliminate the use of propane. That would not only put us at the mercy of power outages, but would have also been a lot of money wasted.

I also understand that global warming and clean energy are a very high concern for many. I don't happen to agree with the level of concern. We could spend ten times the money we are spending today and drive every homeowner into poverty with inflation fighting this issue and still not make a dent in the global problem. Radical outcry is driving people into dire situations and making a few people very wealthy. Let's stop the nonsense!!

Parnay, Angela L (DEP)

Subject: RE: the MA Clean Heat Standard

From: Jim Patrick <lynjimp@verizon.net>
Sent: Sunday, August 27, 2023 8:53 AM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Subject: the MA Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To: The Mass DEP,

After reading the CHS information on the website, I am more convinced that the people driving this activity are radical tyrants that want to dictate to people how they will live while they get rich with their investments in China companies that supply most of the products required to make this transition. It is disgusting that we allow the few to ruin the lives of so many.

The United States could invest 10 times the amount of money we are already spending in an effort to control climate change and we won't make a dent. All the while making life more expensive for those that cannot afford this initiative. I have seen my electric bill double in the past year because of this nonsense and I'm frankly pretty tired of it.

Eliminate fossil fuels and that will be the quickest way to ensure that China becomes the world's super power overtaking the USA.

Anyone that supports this activity should immediately resign or be fired!!

Regards,

Jim Patrick
50 Park St.
Mendon, MA 01756

Parnay, Angela L (DEP)

From: Brown, Jason R (DEP)
Sent: Wednesday, August 9, 2023 9:35 AM
To: Parnay, Angela L (DEP)
Subject: FW: Clean Heat Standard for Massachusetts

From: Peter Pelland <plpelland@pelland.com>
Sent: Wednesday, August 9, 2023 9:08 AM
To: Strategies, Climate (DEP) <climate.strategies@mass.gov>
Cc: lindsay.sabadosa@mahouse.gov; Paul.Mark@masenate.gov
Subject: Clean Heat Standard for Massachusetts

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good Morning,

I am writing to express my support for the proposed Clean Heat Standard for Massachusetts. I was not even aware of this issue until I saw a commercial message on one of the local television stations, a lobbying effort by a fuel oil provider that is opposed to the new standard. That company also has a page on its website with a form that is submitted to you, Governor Maura Healey, and Lieutenant Governor Kim Driscoll. That form includes a message expressing opposition to the standard, and the content of that message cannot be edited by the user.

I was sorry to see a business embracing politics and lobbying on behalf of its personal agenda, and I felt compelled to express my support of the proposed standard.

Sincerely,

Peter Pelland

25 Depot Road, Haydenville, MA 01039
413-364-7653



September 1, 2023

Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Thank you for the opportunity to offer comments on the Clean Heat Standard. The Pellet Fuels Institute represents the manufacturers of wood pellets serving domestic heating and barbecue markets in the United States. Wood pellet manufacturing and use as a space heating fuel has widespread economic and environmental benefits, not least of which is offering to consumers a renewable heating fuel with dramatically lower carbon intensity than its fossil fuel marketplace competitors. If the Clean Heat Standard is to have any chance of achieving the noble goals outlined in "A Clean Heat Standard for Massachusetts" published by the Regulatory Assistance Project (RAP), wood pellet heating must be considered an eligible fuel/technology combination.

In the two-page summary authored by RAP the stated goals of the standard include reducing climate pollution, improving energy equity, driving down the carbon intensity of heating residential and commercial buildings and providing consumers with flexibility in choosing their heating options. It is hard to see a scenario where the Commonwealth's goals for the Clean Heat Standard could be met without making wood pellet heating eligible to generate clean heat credits.

Wood Pellets Reduce Climate Pollution

Wood pellet manufacturing is arguably the renewable energy sector's best example of the efficient capture and conversion of waste streams into a renewable energy product. According to [data](#) from the U.S. Energy Information Administration, in 2022 wood pellet manufacturers purchased over 7.3 million tons of sawmill residuals and 770,000 tons of secondary wood production manufacturing residuals from upstream forest product manufacturers. These residuals are converted into clean burning wood pellets, simultaneously providing vital cash flow to wood product manufacturers, while also mitigating a waste disposal challenge. Without wood pellet manufacturing these materials could flow into landfills or be burned in place, the carbon consequences of which would far outstrip the carbon intensity of those materials when converted into wood pellets and used for space heating.

Wood Pellets Improve Energy Equity

Wood pellets have long been favored by consumers as a means of generating vital BTUs to heat their homes in a cost-effective manner. New Hampshire's Department of Energy maintains a

regularly [updated data set](#) of heating fuels that also predominate the Massachusetts heating market as well, and the economic advantage of wood pellet heating is clear. At \$26.32 per MBTU wood pellet heating is more cost effective than Fuel Oil (\$32.36 per MBTU), Propane (\$45.64 per MBTU), Kerosene (\$44.49 per MBTU) and Electric Heat Pumps (\$32.36 per MBTU). Only natural gas (\$20.76 per MBTU) offers consumers a cheaper pathway to BTUs than wood pellets. Paired with the low purchase and installation price of modern pellet appliances, wood pellets offer consumers a pathway to affordable, renewable, low-carbon heat right now.

Wood Pellets Reduce the Carbon Intensity of Heating Residential And Commercial Buildings

In a 2021 report, [*“Life Cycle Analysis of Renewable Fuel Standard Implementation for Thermal Pellets and Chips”*](#) prepared by Stefan Unnasch and Lucy Buchan from Life Cycle Associates for the Biomass Thermal Energy Council, the authors calculated the carbon intensity per megajoule of a number of common heating fuels and the carbon intensity of wood pellets manufactured from a number of fiber sources, including sawmill residuals. The report found that wood pellets delivered a significant reduction in carbon intensity per megajoule of generated energy, in some instances reducing the carbon intensity of space heating by 65%.

Wood Pellets Offer Consumers Flexibility and Choice in their Home Heating Options

As local, state and federal governmental agencies work towards the decarbonization of our energy needs, the list of fuels and technologies that can meet the required energy needs with a reduced carbon intensity dwindles dramatically. In many instances, the electrification of space heating via heat pumps is offered as the only low carbon option limiting greatly consumer choice and flexibility. Wood pellets are a low-carbon home heating option available in the marketplace today and making them ineligible for clean heat credits would undermine the Commonwealth’s ambition of offering consumers flexibility and choice.

Wood pellets may well be this country’s least celebrated, but most deserving clean heat technology available to consumers today. We hope the Commonwealth will include modern wood pellet heating in their technologies eligible for generating clean heat credits.

Very respectfully,

Tim Portz
Executive Director
Pellet Fuels Institute

PLUMBERS AND PIPEFITTERS UNION

LOCAL NO. 104

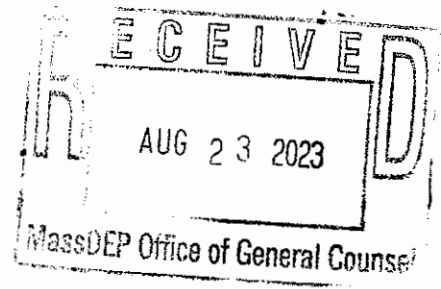
86 Lower Westfield Road • Holyoke, MA 01040
(413) 594-5152

Business Manager
MICHAEL D. LANGONE

Business Agent
JOHN J. BLANCHARD

August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114



VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The Plumbers & Pipefitters Local 104 of Springfield appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.

Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

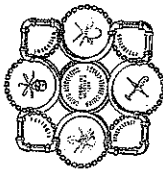
Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Langone", with a stylized, flowing script.

Michael Langone
Business Manager



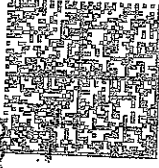
PLUMBERS AND PIPEFITTERS UNION

LOCAL NO. 104

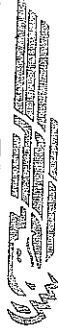
86 Lower Westfield Road
Holyoke, MA 01040

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US POSTAGE

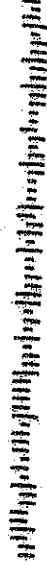


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Massachusetts Department of
Environmental Protection
100 Cambridge Street Suite 900
Boston, MA 02114

02114-255499





PLUMBERS • PIPEFITTERS REFRIGERATION

August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The Plumbers & Pipefitters Local 51 of South Eastern MA appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.

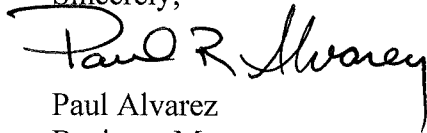
Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately

encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul R. Alvarez". The signature is fluid and cursive, with the first name "Paul" and last name "Alvarez" clearly legible, and a middle initial "R." in between.

Paul Alvarez
Business Manager

August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The Plumbers and Pipefitters union of Worcester appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.


Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions

reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robbie McCarthy".

Robbie McCarthy

Local 4 Plumbers and Pipefitters
Worcester, Massachusetts

August 30, 2023

Department of Environmental Protection
100 Cambridge Street,
Boston, MA 02114

Re: Massachusetts Clean Heat Standard - Additional Comments on Development

Sent via email: climate.strategies@mass.gov

Our association members have been engaged in the stakeholder process (virtual community meetings) initiated by the Massachusetts DEP regarding development of a Clean Heat Standard (CHS) regulation. We have provided input; however, it is difficult to comment on a process when there is not any written draft or proposed language available, and this puts our industry at a severe disadvantage in terms of crafting public comments.

We are concerned that the MA DEP will not utilize every available pathway to reduce greenhouse gas emissions and will instead, craft the CHS to prioritize electric heat pumps. We are very concerned about comments made during the virtual meetings in regard to MA developing their own measurements, yardsticks, or data, rather than utilizing a Lifecycle Analysis of emissions under the Argonne National Laboratory GREET Model for Life Cycle Analysis (LCA). GREET is the nationally recognized benchmark for scientific analysis, and it makes no sense to craft a unique-to-Massachusetts emission standard.

The fundamental purpose of the Clean Heat Standard is to reduce emissions, not promote certain technologies for extrinsic reasons (CECP, Appendix B-3, page 61).¹ We have attached a copy of our comments submitted by our association in May of this year at the end of this letter, and in addition to these comments, we wish to stress that we believe propane should be an incentivized clean heat credit energy under the MA CHS. Today, geologic propane in MA has a carbon intensity of 77 which is less than the carbon intensity of electricity and heat pumps in MA which is 100. Even assuming that MA electricity will become cleaner, it still makes no sense to disincentivize propane systems as the propane industry will continue to lower its carbon intensity with the addition of renewable propane blends, and we anticipate propane in MA to always have a lower carbon intensity than MA electricity and heat pumps. Thus, if MA DEP is indeed trying to reduce carbon emissions today with a CHS, propane should be awarded clean heat credits.

We encourage MA DEP to support the CH Commission's report findings which include that "MassDEP should evaluate how to address life cycle assessment for electricity, as well as the methodology for doing so, given the required decarbonization of the electric grid under existing standards such as RPS and the Clean Energy Standard (CES), as well as how the Massachusetts' GHG inventory methodology and the building sector sublimit methodology account for building and electric emissions." (Final Report:

¹ Final Report: Commission on Clean Heat, November 30, 2022, Governor Baker's Commission on Clean Heat

Commission on Clean Heat, Appendix C, p. 45); and “The accounting methodology for heat pumps should consider refrigerant leakage, and program design within the Clean Heat Standard and elsewhere should consider approaches for tracking, analyzing, and remediating refrigerant leakage.” (Final Report: Commission on Clean Heat, Appendix C, p. 46).

We are concerned that MA DEP is not taking into account the importance of accounting for all emissions including those associated with refrigerant leakage from heat pumps and those associated with electricity produced to power heat pumps. We encourage DEP to consider the bigger picture and craft a clean heat standard that not only promotes clean technologies that exist today, but also encourages energy diversity and security for MA citizens.

Propane has a strong role to play in decarbonizing MA from both an energy security and emissions standpoint, but also from an environmental justice perspective. MA citizens deserve the right to choose the energy source they want for their homes and businesses and we believe that any mandate to restrict the ability of a consumer’s right to choose their energy source is a violation of the Dormant Commerce Clause under the US Constitution.

Respectfully submitted,

Leslie Anderson,
President and CEO
Propane Gas Association of New England

May 1, 2023

Department of Environmental Protection
100 Cambridge Street,
Boston, MA 02114

Re: Massachusetts Clean Heat Standard

COMMENTS OF THE PROPANE GAS ASSOCIATION OF NEW ENGLAND

On behalf of the Propane Gas Association of New England (PGANE), which represents propane marketers, suppliers and equipment manufacturers across Massachusetts, we appreciate the opportunity to provide comment regarding the Massachusetts Department of Environmental Protection's (DEP) proposed Clean Heat Standard (CHS) regulation. Our members provide clean-burning and critical energy to residential, commercial, industrial, and agricultural customers across the Bay State.

The Commonwealth of Massachusetts boasts a robust propane market, having nearly 250,000 retail accounts and 92,000 primary home heating customers.² Massachusetts' propane industry provides good-paying jobs and generates more than \$615 million in economic activity annually.³

The proposed CHS regulation would fundamentally alter the marketplace in which our members seek to operate and conduct business. To be clear, we share DEP's desire to reduce greenhouse gas (GHG) emissions and promote a more carbon-friendly energy sector. Sustainable and cost-effective decarbonization is best achieved through a multi-pronged approach that includes clean and efficient energy molecules, such as propane, in addition to bulk electricity generated from more cleaner sources. Such an approach would take into consideration the reliability and resilience of various energy options, as well as the aggregate costs passed along to energy consumers and commercial businesses.

I. Heating Oil Conversions

The proposed CHS program design states that "the installation of new fossil fuel equipment and services should not be supported the CHS."⁴ This restriction would be short-sighted and fails to recognize the distinct differences between traditional energy sources. Propane burns cleanly, efficiently and has a low-

² *Propane's Impact on Economy: 2018 Massachusetts*, National Propane Gas Association, https://www.npga.org/wp-content/uploads/2020/06/Massachusetts_Propane-1-Pager_2020.pdf

³ *Id.*

⁴ *MassDEP Stakeholder Discussion Document, Clean Heat Standard Program Design*, Massachusetts Department of Environmental Protection, (March 2013), <https://www.mass.gov/doc/clean-heat-standard-discussion-document/download>

carbon content.⁵ It is nontoxic and will instantly vaporize when released from a pressurized cylinder. Unlike other energy sources, it presents no threat to soil, surface water or ground water.⁶ This protects Massachusetts' critical land and water resources. As a less carbon-intensive fuel, the state could achieve immediate GHG reductions in the thermal sector if more consumers simply replaced their antiquated fuel oil heating systems with efficient propane equipment. The carbon reduction opportunities are real and substantial. More than 662,000 households use fuel oil or kerosene to meet their primary space heating needs.⁷ And space heating, by far, accounts for the largest share of energy use in a typical household.⁸ Encouraging and incentivizing fuel oil or kerosene to propane conversions lowers carbon emissions and provides a faster path to zero.

A. Wood Heat

While DEP alludes to this point in the discussion document,⁹ it is important to emphasize that any potential credit generating source should not only be evaluated on its GHG profile, but also its impact on air quality and the broader environment. For example, wood smoke contains high levels of particulate matter that can negatively affect our respiratory and cardiovascular systems and degrades local air quality.¹⁰ And regarding the broader environment, allowing wood stoves to generate credits would incentivize tree felling activities, which would result in a reduction in woody habitat for plants, animals and has other ecological impacts as well. Of course, trees are also natural carbon sinks.

II. Renewable Propane

The CHS standard's focus on fuel-switching to electricity is premised, in part, on the assumption that the bulk electric sector will become greener and more carbon-friendly over time. However, this same assumption is not used to evaluate our industry.

Renewable propane is a by-product of renewable liquid fuels such as sustainable aviation fuel, and can be derived from a variety of sustainable sources, such as biomass, animal fats and vegetable oils.¹¹ In addition to retaining all of the same environmentally friendly attributes as traditional propane, it has an

⁵ *Carbon Dioxide Emissions Coefficients by Fuel*, U.S. Energy Information Administration, (Oct 5, 2022), https://www.eia.gov/environment/emissions/co2_vol_mass.php

⁶ *Propane Fuel Basics*, U.S. Department of Energy, https://afdc.energy.gov/fuels/propane_basics.html

⁷ *House Heating Fuel 2021: ACS 5-Year Estimates Detailed Tables*, American Community Survey, U.S. Census Bureau (2021), <https://data.census.gov/table?q=home+heating+fuel&g=040XX00US25&tid=ACSDT5Y2021.B25040>

⁸ *Space heating and water heating account for nearly two thirds of U.S. home energy use*, U.S. Energy Information Administration, (November 7, 2018), <https://www.eia.gov/todayinenergy/detail.php?id=37433>

⁹ *Supra* 3.

¹⁰ *Wood Heating: Health and Environment*, Vermont Department of Environmental Conservation, <https://dec.vermont.gov/air-quality/compliance/owb/health-and-environment>

¹¹ *Propane Production and Distribution*, U.S. Department of Energy, https://afdc.energy.gov/fuels/propane_production.html

even lower carbon intensity (CI).¹² In California, renewable propane being used as a vehicle fuel has a carbon intensity score as low as 20.5, far less than other energy sources.¹³ Renewable propane is chemically identical to our conventional molecule and can be used as a drop-in replacement in combustion applications.

Recently, the Massachusetts Institute of Technology highlighted research detailing how propane can be produced from waste plastics (e.g., bottles, packaging material) via a new, efficient chemical process.¹⁴ This means propane can help further reduce GHG emissions associated with material production, disposal and waste management. This new production process would further cement propane's place in the circular economy. Clean and renewable energy like propane accelerates the march towards decarbonization, not slows it.

III. Electricity

Bay Staters have long relied on propane for space and water heating, fireplaces, cooking and clothes drying. And the direct use of propane is clean and efficient way to consume energy. It is important to remember that electricity, unlike propane, is a secondary energy source that must first be created. Grid electricity is extremely inefficient and energy is lost during each step of the production and delivery process. For example, 77 percent of our in-state generation for bulk electricity comes from burning fossil fuels, including natural gas and petroleum.¹⁵ The efficiency of a typical natural gas plant, however, is only 44 percent; the efficiency of a petroleum-fired power plant is a paltry 30 percent.¹⁶ Following power generation, additional energy is lost during the transmission and distribution of that electricity to an outlet for an end-use purpose.¹⁷ These inherent inefficiencies mean that more GHGs, as well as air pollutants, are released.

For context, the federal government's Energy Star Program gives propane a source-site ratio of 1.01, compared to 2.80 for electricity from the grid.¹⁸ This means it takes 2.80 units of electricity to produce and deliver one unit of energy to a home, compared to only 1.01 for propane. As such, it should be no

¹² *Staff Summary, Renewable Naphtha and Renewable Propane from Distillers' Corn Oil, Used Cooking Oil, and Rendered Animal Fat*, California Air Resources Board (April 30, 2021), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0189_summary.pdf

¹³ *Id.*

¹⁴ *New Process Could Enable More Efficient Plastics Recycling*, David Chandler, MIT News, (October 6, 2022), <https://news.mit.edu/2022/plastics-recycling-cobalt-catalyst-1006>

¹⁵ *Electricity Data Browser: 2021 Annual Massachusetts*, U.S. Energy Information Administration, (2021), <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2,0,1&fuel=vtvv&geo=002000000002&sec=008&freq=A&start=2021&end=2022&ctype=linechart<ype=pin&rtype=s&mapttype=0&rse=0&pin=>

¹⁶ *Table 8.1. Average Operating Heat Rate for Selected Energy Sources*, U.S. Energy Information Administration, https://www.eia.gov/electricity/annual/html/epa_08_01.html

¹⁷ *Frequently Asked Questions*, U.S. Energy Information Administration, <https://www.eia.gov/tools/faqs/faq.php?id=105&t=3>

¹⁸ *Energy Star Portfolio Manager, Technical Reference*, U.S. Environmental Protection Agency (October 2020), <https://portfoliomanager.energystar.gov/pdf/reference/Source%20Energy.pdf>

surprise that conventional propane has a CI score of 77 in Massachusetts,¹⁹ far lower than the commonwealth's CI score for electricity. Utilizing a full fuel-cycle analysis, it is clear that the direct use of propane is a clean and climate friendly way to consume energy.

Finally, our industry continues to deploy cleaner and more efficient products, including tankless water heaters that use considerably less energy than traditional storage units, and micro cogeneration systems that produce electricity and useful thermal energy simultaneously to achieve maximum efficiency.

A. Heat Pumps

DEP's discussion draft makes clear that electric heat pumps installation will be a creditable action in the credit generation marketplace. However, the performance of air-source heat pumps degrades in cold weather and they begin to lose efficiency around 32 degrees.²⁰ In a cold climate, such as ours, they will require a supplemental heating system to provide adequate warmth and comfort throughout the heating season. With this in mind, efficient propane systems that are installed to provide supplemental building heating to a structure that also utilizes a heat pump should be a credit generating action. Under no circumstance should the installation of inefficient electric resistance heating, even as a backup source, generate CHS credits. These systems put a large burden on the electric grid and are not an adequate means to reduce emissions.

IV. Energy Security

The framework for any clean heating standard must be structured in a way that it does not diminish the reliability, resilience or security of the overall energy sector. Focusing on a single, secondary energy source to reduce carbon emission from residential and commercial buildings would fail this test.

American propane production is at record levels.²¹ As a result, clean and reliable domestic energy is readily available to consumers. Propane can easily and economically be transported multiple ways, including by pipeline, rail, ship and over-the-road vehicles. Electricity generated at power plants, in contrast, has only one transportation option: electric utility lines. Unfortunately, power outages are becoming more prevalent. Across the U.S., the average duration of total power interruptions roughly doubled between 2013-2020.²²

¹⁹ *Understanding Carbon Intensity – New England*, Propane Education and Research Council, (2022), <https://propane.com/resource-catalog/resources/understanding-carbon-intensity-new-england/>

²⁰ *Glossary: heat pump (air source)*, U.S. Energy Information Administration, <https://www.eia.gov/tools/glossary/index.php?id=H>

²¹ *U.S. Field Production of Propane*, U.S. Energy Information Administration, (March 31, 2023), https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=M_EPLLPA_FPF_NUS_MBBL&f=M

²² *U.S. electricity customers experienced eight hours of power interruptions in 2020*, U.S. Energy Information Administration, (November 10, 2021), <https://www.eia.gov/todayinenergy/detail.php?id=50316>

And closer to home, when you include major event days, in 2021, Massachusetts had the highest System Average Interruption Duration Index (SAIDI) of any state in New England.²³ SAIDI details how many minutes the average utility customer, who is connected to the bulk electric grid, lost power for over the course of a year. An underappreciated fact about propane is that it reduces stress on the electric grid and helps it cope with peak demand. These are the real-world circumstances under which the CHS framework must be evaluated.

V. Responses to Questions

Responses to some of the questions asked in the MassDEP Stakeholder Discussion Document can be found on Page 6 of this letter.

VI. Conclusion

As DEP continues to design the regulatory framework for the CHS, we encourage you to consider our input and create a structure within which efficient propane systems, including systems used to supplement heat pumps, can play a role in advancing Massachusetts' climate goals in a realistic and cost-effective manner.

Thank you again for the opportunity to provide comment.

Respectfully submitted,

Jim Blake
Immediate Past Chairman
Propane Gas Association of New England
9 Hemlock Street
Danvers, MA 01923
jblake@eastern.com

Leslie Anderson
President and CEO
Propane Gas Association of New England
1024 Suncook Valley Highway, Unit C-5
Epsom, NH 03234-1071
leslie@pgane.org
Telephone: 888-445-1075

²³ Table 11.2 Reliability Metrics Using IEEE of U.S. Distribution System by State, 2021 and 2020, U.S. Energy Information Administration, https://www.eia.gov/electricity/annual/html/epa_11_02.html

Responses to Questions in Major Topic Areas:

Topic # 1—Setting the Standard

The proposed clean heat standard has targeted fuels utilized at the building site as the primary source of emissions, without regard to electricity and the emissions related to its generation, transmission, and distribution. This is not only inaccurate; it is an injustice to the fuel industries and the citizens of Massachusetts. Electricity in Massachusetts is generated primarily by burning natural gas, which comprises 78% of the energy mix.²⁴ This translates into a carbon emissions factor of 1.6 times the amount of carbon emitted from propane appliances that deliver the same amount of energy.²⁵

The cost to completely upgrade US electrical infrastructure has been estimated to be anywhere from \$1 trillion (Reuters²⁶) to \$7 trillion (Oilprice.com²⁷). Certainly, Massachusetts citizens will be responsible for bearing a portion of this burden and the fruits of this labor will not even be realized for several years. In the meantime, much headway can be made in reducing carbon emissions and the financial burden on the citizens of Massachusetts by not imposing the counterproductive measures being considered. Alternative methods might utilize proven systems such as a LCFS (Low Carbon Fuel Standard) provide a path and have proven success in transitioning to Net Zero.

The Climate Commission recognized the GREET model in its recommendations and we encourage DEEP to consider a lifecycle analysis approach in their measurements.

Topic # 2—Regulated Heating Energy Suppliers

For the reasons outlined above and in recognition that the path to net zero carbon emissions is not a step function, it is necessary to impose clean heat standards on the entire energy infrastructure, not just companies that sell fuel and the citizens who consume it on site. Over time, the electricity generation fuel mix will change and become cleaner, but it is critical that the Massachusetts DOER recognize the important contributions that both fossil fuels and fuels made from renewable resources can provide. In the meantime, Massachusetts must acknowledge that the current fuel mix for generating electricity is not optimal for the reduction of carbon emissions and that propane and other fuels provide better performance per unit of energy consumed. To have a true path to zero it is essential to include electric power generation. If the power generation carbon intensity is not reduced the emissions will be reduced on a site basis but increased on the generation side.

Topic # 3—Credit Generation

²⁴ *Source Energy and Emissions Analysis Tool*, GTI Energy, <https://cmicseeatcalc.gti.energy/>

²⁵ *Id.*

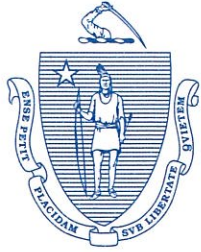
²⁶ *Creaky U.S. power grid threatens progress on renewables, EVs*, McLaughlin, T., Reuters, (May 12, 2022), <https://www.reuters.com/investigates/special-report/usa-renewables-electric-grid/>

²⁷ *The \$7 Trillion Cost Of Upgrading The U.S. Power Grid*, Hyman, L. and Tilles, W., Oilprice.com, (2021), <https://oilprice.com/Energy/Energy-General/The-7-Trillion-Cost-Of-Upgrading-The-US-Power-Grid.html> .

Massachusetts citizens and businesses reside in Climate Zone 5, which will provide many days and nights where temperatures drop below freezing, sometimes by tens of degrees. The statement that “electric heat pumps must be creditable” cannot pass without being challenged. All heat pumps are not the same, and air-to-air heat pumps do not perform well when temperatures are in the low 30’s (F) and below. In these cases, the only solution is to provide supplemental heat and if reliance is made on electric resistance heat, residents and businesses will be saddled with the burden of high energy costs, as well as the additional carbon emissions that will be realized due to the fuel mix currently feeding the electric grid, as referred to in Topic #1.

If the end game is to achieve close to net zero carbon emissions from the electric grid, then the performance of the grid in its current state should be the benchmark by which all other energy sources are evaluated. Any fuel source or alternate energy source that performs better than the electric grid with respect to carbon emissions calculated on a full fuel cycle basis, should be eligible for the allowable energy credits being developed by Massachusetts. This would require that the fuel mix used for electricity generation be determined regularly to set the new benchmark for the coming year.

Taking this pathway would allow for the gradual upgrading of the clean heat standard and a more orderly transition to both a cleaner electric grid and renewable fuel sources with reduced carbon intensities used on site.



The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES
STATE HOUSE, BOSTON 02133-1054

WILLIAM J. DRISCOLL, JR.
STATE REPRESENTATIVE
7TH NORFOLK DISTRICT

STATE HOUSE, ROOM 527A
TEL. (617) 722-2020
William.Driscoll@MAhouse.gov

CHAIR
Joint Committee on
COVID-19 and Emergency
Preparedness and Management

May 17, 2023

The Honorable Bonnie Heiple
Department of Environmental Protection (MassDEP)
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Stakeholder Input on the Development of a Proposed CHS Regulation

Dear Commissioner Heiple:

Thank you for the opportunity to offer input on the development of a proposed Clean Heat Standard (CHS) regulation and related heating fuel supplier reporting requirements. I would like to contribute to the already submitted comments and express my support for efforts that prioritize the protection and involvement of low-and moderate-income (LMI) and environmental justice (EJ) populations, in addition to an electrification-only compliance program.

As lead sponsor of H. 3694 (An Act relative to the clean heat standard), moving forward on this issue is a top priority. We know that a CHS can only be useful for meeting our decarbonization and environmental justice mandates if properly implemented, so it is critical that we get the difficult details of this complex program correct.

My district is home to EJ populations, notably those who live in the town of Randolph, and I have seen firsthand the damage inflicted on these populations when they are not adequately included in the early stages of planning and program design. As DEP moves forward and considers the direct and indirect burdens and benefits of clean heat standard regulations, I implore the Department to ensure that efforts are focused on soliciting input from LMI and EJ communities.

I was pleased to see the Commission on Clean Heat's final report recommend the immediate pursuit of a CHS and I look forward to the work ahead on this issue. Thank you again for the opportunity to comment and please don't hesitate to let me know if I may be a resource as this process unfolds.

Respectfully,

William J. Driscoll Jr.
State Representative
7th Norfolk District



The Commonwealth of Massachusetts
MASSACHUSETTS SENATE

SENATOR PATRICK M. O'CONNOR
First Plymouth and Norfolk District

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PATRICK.OCONNOR@MASENATE.GOV
WWW.MASENATE.GOV

August 2, 2023

Bonnie Heiple
Department of Environmental Protection
100 Cambridge St., Suite 900
Boston, MA 02114

Dear Commissioner Heiple,

First, I'd like to thank you for your tireless work in leading the Commonwealth's effort to protect our environment and combat climate change. I am writing to request that you, along with the Department of Environmental Protection (DEP) reconsider the implementation of the Clean Heat Standard (CHS).

I wholeheartedly agree that climate change is an emergency and should be addressed through every avenue we can find. However, a CHS that exclusively favors electrification comes at the detriment of homeowners and local energy companies. Bioheat and other fuels that are scientifically proven to reduce greenhouse gas emissions should continue to exist as viable choices for homeowners to heat their homes.

A strategy that heavily favors electrification has its own shortcomings. Overreliance on our already fragile electrical grid not only poses a massive risk of outages, but will require additional natural gas to meet the demand. Burning more natural gas to support electrification is counterproductive to the mission of this initiative: reducing greenhouse gas emissions.

We have the shared goal of finding the best solutions for reducing greenhouse gas emissions and mitigating the effects of climate change. This is an endeavor that will require continued innovation and open-mindedness. In order to best secure a smooth transition toward a greener future, we must provide as many options as we can for homeowners.

I respectfully ask for your consideration of a plan that's more inclusive to Bioheat and other clean fuels, for the good of homeowners, energy companies, and the environment. If you have any questions, please do not hesitate to contact me directly.

Sincerely,

A handwritten signature in blue ink, appearing to read "P. O'Connor", with a long horizontal stroke extending to the right.

PATRICK M. O'CONNOR
State Senator
First Plymouth & Norfolk District



LOCAL UNION 550 U.A.
SPRINKLER FITTERS and APPRENTICES OF BOSTON
AND VICINITY

46 ROCKLAND STREET • BOSTON, MASSACHUSETTS 02132
TELEPHONE 617-323-0474
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MARK FORTUNE
BUSINESS AGENT

PETER GIBBONS
BUSINESS MANAGER
SECRETARY-TREASURER



MATTHEW JONES
ORGANIZER

August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

Sprinkler Fitters Local #550 of Boston, appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be contemplating. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.

(continued on next page...)

(...continued from previous page)

Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are greatly concerned that any new rules, no matter how well intended, have the potential to halt economic development and housing construction in particular. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and can't be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

A handwritten signature in cursive script, reading "Peter Gibbons".

Peter Gibbons
Business Manager
Secretary-Treasurer

60 SHUMWAY STREET
AMHERST, MA 01002
(413) 253-5999



34 MONTAGUE CITY ROAD
GREENFIELD, MA 01301
(413) 773-5999

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

RE: Clean Heat Standard Stakeholder Commentary #2

To Whom It May Concern,

Today I write to you as a frustrated stakeholder regarding the proposed Massachusetts Clean Heat Standard. I am the owner of Surner Heating Co. headquartered in Amherst, serving Hampshire and Franklin county and 8,000 customers. We have been in business for SIXTY years. I am second generation.

My company sells deliverable fuels (heating oil, propane, biofuel, and diesel) and provides HVAC and home comfort service to many Massachusetts communities that would be affected by the proposed MA Clean Heat Standard. I write this letter today with grave concerns about implementation of the MA Clean Heat Standard ("CHS"), not only for my business and its employees but for all Massachusetts residents and consumers of delivered fuels in the state as well.

I regretfully write this letter that after months of stakeholder input MA DEP has not addressed many of the basic questions provided in stakeholder comment or provided additional clarity on the workings of the MA CHS. Despite 300 plus pages of letters, many, many hours of testimony from stakeholders, and solutions being proposed, the MA DEP has yet to revise or even address any one of a number of holes in their proposed regulations.

For a regulation that will cost Massachusetts consumers in the estimated **tens of billions of dollars** the lack of study on the potential economic impact on MA consumers of these regulations is irresponsible. The lack of quantification of the actual climate impact these measures seek to mitigate is careless at best and at worst an **intended omission**. The fact is these regulations are still un-quantified in terms of cost and questionable climate impact at this late stage of proposal is unconscionable. The nonchalant way MA DEP is dealing with these foundational questions and others is frustrating to those who have dutifully participated in the stakeholder process, have asked for working formulas, processes or guidance on these issues over many months.

What MA DEP **has clarified** is the MA CHS proposing is an **Electrify Everything Expensively with Heat Pumps** regulation. This regulation is certainly not technology neutral as proposed by the CEPC. How does MA DEP propose this regulation with not only zero consideration of MA consumers but no discussion of increased demand for electricity, potential electrical generation shortfalls, electric grid capacity issues or a grid reliability study that details the increased cost for ratepayers to fund all of this electrification. In addition, they also have not addressed the cost and availability of mechanical heat pumps, the skilled labor to install them, consumer's ability to pay for these mechanical upgrades nor a timetable for implementation for the MA CHS.

There has been a lot of talk in the CHS meetings about equity and justice for low income and BIPOC communities. As of the writing of this letter there has been zero cost estimate of these proposed regulations for these (or any) communities. That omission is a clear (and purposeful?) oversight when proposing this regulation as the cost to Massachusetts consumers is estimated to approach the \$10's of billions over the course of a decade or so.

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AMHERST, MA 01002
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GREENFIELD, MA 01301
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Deliverable fuel dealers in the state have been providing sustainable and affordable heating fuels to Massachusetts customers for many decades. These small businesses have reacted to consumer demand about reducing carbon intensity and other greenhouse gases in the fuels that Massachusetts homes burn. They have implemented cleaner alternative fuels such as bioheat, biodiesel, renewable propane, renewable heating oil, low sulfur diesel, and ultra-low sulfur diesel. Most of these fuel-based carbon-reduction strategies are not at all considered in the "CLEAN" Heat Standard. How does this happen?

The track record of deliverable fuel dealers in the state being environmentally friendly and reducing carbon impact over the many decades of being in business is something that we are all proud of. Massachusetts customers reward our small businesses with their loyalty and trust. For every boiler replacement, furnace upgrade, or thermostat replacement we have quantifiably demonstrated our commitment to reducing our customers' environmental and climate impact. We have made many of these mechanical efficiency improvements in Massachusetts homeowners' basements for decades. Keep in mind most of these initiatives were initiated by the dealers themselves in order to serve their customers (the consumers of Massachusetts) with a more efficient, sustainable, and affordable way to heat their homes. In our role as trusted home heating companies, we will continue to communicate to our customers that the MA CHS as written is a bad deal for them.

I get the feeling that MA DEP has been guided along the most difficult path on purpose and has been advised to go out of its way to propose the most progressive regulations not only in the northeast but in the United States in order to meet the ticking due date of the MA Climate goals. MA CHS has a % carbon reduction goal per year over and above anything else proposed in the United States! Clearly, MA DEP (and its green policy wonks who attempt to advise regulators in multiple states) see MA consumers as their own guinea pig/test tube experiment for pushing climate-action agenda. It looks as if Massachusetts consumers will become the victim of MA DEP's inaction since 2008 and their attempt to solve for X by placing the burden of carbon reduction on the deliverable fuels industry and all MA consumers. I question whether parts of the MA CHS program that MA DEP has authored are even legal in regard to maintaining small business-competitiveness in the state.

It is not too late to change course! Listen to the stakeholders and revise this version of the MA CHS to something that looks like an actionable regulation and is in line with other states' laws on the books. There are many models out there and many great proposals from stakeholders that MA DEP has (so far) failed to consider. Failure to do so will further delay implementation of MA CHS and will certainly not bring the state any closer to achieving its' climate goals.

In summary, the CHS regulations, as written, will place undue economic and regulatory burden on Massachusetts residents, consumers, and small businesses within the state. It's contribution to achieving the climate goals of the state is extremely unclear and unquantified. It's lack of a study on the potential economic impact on Massachusetts consumers and small businesses should make it a clear non-starter.

I strongly urge you to **not** enact the MA CHS rules until a comprehensive study with adequate study of economic, energy security, and fairness across ALL hydrocarbon users is completed.

I remain optimistic that with enough consideration, due diligence, and planning that a MA Clean Heat Standard that makes sense for all and contributes to achieving the MA climate goals can be implemented in the future.

Sincerely,

Susan Surner
Surner Heating Co.
Owner



August 29, 2023

Department of Environmental Protection
100 Cambridge St, Suite 900
Boston, MA 02114

Re: Comment submission, Clean Heat Standard

Thank you for taking action to reduce carbon emissions from the heating sector. We appreciate the outreach and open comment opportunity. Tarm Biomass is an importer and distributor of wood, wood pellet, and wood chip-fueled, hot water heating systems. We primarily represent the Fröling brand of boilers, which are best demonstrated technology worldwide.

Tarm Biomass strongly supports using all available carbon reducing technologies to replace fossil fuel heating sources. For example, Tarm Biomass supports heat pump technology because studies indicate that in real world use, heat pumps use electricity at just over double the efficiency of resistance heating. Even though the grid powering heat pumps is primarily fossil fuel driven and will likely remain so for decades, heat pumps are a promising technology. Likewise, using wood fuels for heating has a positive impact on atmospheric carbon compared to fossil fuels.

Tarm Biomass supports market driven technology switching in which, among other factors, the cost of heating energy is influenced by the carbon impact of energy used. Tarm Biomass does not support blind trust in any single technology based on what hopes there may be for the future. Therefore, we think incentivizing only electric heat is foolish. There is simply no proof that electrified heat is the only good path forward, so Tarm Biomass does not support the concept that only electric heat should be incentivized.

As market demand for fossil fuels drops, fossil fuel companies will offer fuel at lower prices, thus competing more easily for what is becoming far more expensive electricity. Carbon reduction goals can be quickly washed away as the market naturally finds the lowest cost heat. We have already seen the impacts of this goal perversion in natural gas markets. As coal plants have closed, natural gas has come under extreme demand. As a result, electricity rates have become quite high, exceptionally so during peak demand periods. At the same time, electric supply has come under increasing pressure to the extent that consumers have become wary of the reliability of their electrical supply. The DEP should be very cautious about creating a sudden and somewhat arbitrary demand for electric only heating. The plan to reduce carbon emissions can easily backfire. A more cautious approach based on true costs rather than arbitrary goals is better. Wood fuels have proven to have stable pricing and are already widely adopted as a source of heat. Wood should be considered an important tool in avoiding price traps created by artificial market forces.

While on the topic of failed intent, there is much talk of a climate emergency. While we agree that climate related disruptions are increasing and are increasingly damaging, we cannot agree that there is any chance that humanity will reverse the warming trend in the next decade or even in several decades. Massachusetts has admirable goals that represent repairing one tiny stitch in the carbon blanket over the Earth. Apart from recent impacts of the COVID 19 pandemic, atmospheric carbon emissions show no sign of decreasing. We have to come to grips with the fact that atmospheric carbon emissions are actually increasing at an increasing rate. Pragmatically, we must steel ourselves to solving the carbon problem over the next several decades. When we think in terms of several decades rather than the splashy, politically expedient (and completely arbitrary) ten year horizon, wood fuels are virtually carbon neutral so long as we are also smart enough to also encourage retention of our forests.

That brings us to another point, which is that when we value trees, they tend to remain on the landscape. As reported by Harvard Forest in their Wildlands and Woodlands Study, we are losing forests in New England at a rate of about 60 acres per day. According to the study, pressure on forests is from permanent development and agriculture not from traditional forestry uses such as fuel. On the contrary, using wood as carbon neutral fuel to offset fossil fuel use helps keep forests forested. Using wood from sustained forests not only has a large carbon benefit, but there is also a substantial social justice component beyond the inexpensive fuel that wood represents. People who rely on local forests for fuel, food, income, recreation and other benefits include many lower income citizens. Trees, wood, wood fuels, and all uses and benefits of the forest are holistically intertwined with humans of all walks of life.

Bringing heating energy into a home through a wire seems elegant until one truly accounts for inelegance of the grid itself together with the upstream processes that move electrons on our grid. Nothing is quite as elegant as the ways in which humans interact with the forest including deriving carbon neutral fuels from those forests while at the same time encouraging the forests to remain intact.

In summary, we believe:

- Electric heat should not be the only form of heat incentivized (not penalized) in a Clean Heat Standard.
- Choosing to penalize heating technologies based on anything but carbon impacts creates perverse outcomes.
- Wood fuels are virtually carbon neutral in the time horizon that pragmatic problem solvers should consider for reversing the atmospheric carbon level below 350 ppm.
- Use of wood fuels has the added carbon benefit of adding value to forests, which helps keep forests forested rather than being converted to permanent development and agricultural land.
- Wood fuels are price stable and almost always the lowest cost heating option. Thus, use of wood fuels represents a substantial social benefit for lower income residents.

Please include wood fuels in the Clean Heat Standard. We welcome further conversation about how to integrate the carbon calculations for wood fuels in the Massachusetts Clean Heat Standard.

Feeling good about wood,



Scott W. Nichols, President



UNITED ASSOCIATION

of Journeymen and Apprentices of the
Plumbing and Pipe Fitting Industry of
the United States and Canada

Founded 1889

HARRY J. BRETT
International Representative
580 Main Street
Hanson, MA 02341
Cell: (617) 794-9444
e-mail: hbrett2@uanet.org

General Office File Reference:
August 15, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street
Suite 900
Boston, MA 02114

VIA E-MAIL: climate.strategies@mass.gov

Re: Comments to MassDEP Clean Heat Standard Program Design

The United Association of Plumbers, Pipefitters, Sprinklerfitters, HVAC Tech's, and Apprentices of Massachusetts appreciates the opportunity to file these comments relative to the development and implementation of a clean heat standard for the Commonwealth.

In short, we are highly concerned that this process NOT be utilized as an administrative effort to implement a dramatic ban on all natural gas hookups in the future. The Legislature has authorized a ten-community pilot program to better understand the positive ... and negative impacts ... associated with any restrictions on the use of natural gas in homes or businesses. That program requires participating communities to report data that will quantify all impacts such as the emissions reductions realized and the impacts to consumers costs, homebuilding production and overall affordability. In its rulemaking, we strongly urge the Department to not promulgate dramatic new regulations that are clearly beyond the bounds of any legislative intent.

We also urge the Department to fully understand the costs and jobs impacts of any rules that it might be considering. The working families that are members of this union have seen explosive costs in their electrical and heating bills, especially in the winter. We very much support decarbonization efforts, but the more that these efforts result in costs that are simply unaffordable the more difficult sustainable decarbonization efforts will become since they will be rejected by the consuming public. We hope that the Department will consider the benefits of a purposeful, deliberate, cost-sensitive strategy that matches existing and new demand with actual new, and not wished for, supply.

Our Union, like many in the building trades are excited by the prospect of new decarbonized energy sources like hydrogen and renewable natural gas, Geothermal that can make use of existing infrastructure along already permitted rights of way to enhance the portfolio of renewable energy sources available to Massachusetts industries and consumers. We hope that the Department will appreciate that capacity of these new sources to better position us to achieve our emissions reduction goals and broaden consumer choice. The Biden Administration is

Mark McManus
General President

Patrick H. Kellett
General Secretary-Treasurer

Michael A. Pleasant
Assistant General President

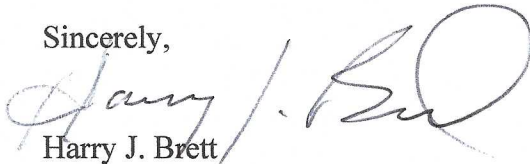


appropriately encouraging the deployment of these resources into our national energy portfolio. The Commonwealth should in no way administratively subvert their efforts.

Finally, and most importantly, please think about jobs. We are concerned that any new rules, no matter how well intended, can halt economic development and housing construction. There are many new rules and programs in furtherance of emissions reduction objectives being implemented now such as the new Stretch Building Code, changes to MassSave and the already mentioned pilot program. We have seen, firsthand, in the construction and jobs marketplace confusion that exists at the municipal building department level regarding the scope and breadth of these changes, what can and cannot be built and significant misinterpretation. When this happens, building stops along with the construction jobs that go with it.

We appreciate your consideration of our comments and concerns relative to any new Clean Heat rules and hope you will not hesitate to let me know any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Harry J. Brett", with a large, stylized loop at the end.

Harry J. Brett
International Representative



June 13, 2023

Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114
Submitted via email to: climate.strategies@mass.gov

RE: Vergent Power Solutions' Comments on the Massachusetts Clean Heat Standard Discussion Document and Heating Fuel Supplier Discussion Draft Regulations

Dear Commissioner Heiple:

Vergent Power Solutions ("Vergent") appreciates the opportunity to comment on the pending Clean Heat Standard rulemaking. Vergent develops clean energy projects to decarbonize power and building sector emissions. We have historically done this through combined heat and power (CHP) projects and now with cleaner fuels like renewable natural gas (RNG). We have operating CHP plants in Massachusetts at the Northampton VA Medical Center, Mass Maritime Academy, DCAMM's Pappas Rehabilitation Hospital, and Phillips Andover Academy, among others.

We are in favor of the Clean Heat Standard allowing RNG for hard to decarbonize sectors including any end users utilizing steam or other high temp thermal applications for process or space heating, as well as any CHP installation at new or existing sites. We are in favor of a system that allows the end user to choose their decarbonization measures.

If the state is going to mandate reductions for the building sector, it should be up to the user to decide if and how they want to decarbonize more than what the mandate requires. The use of 3rd parties vs. an LDC approach is similar to the electricity market where users can choose their electric supply and renewable power proportion all the way to 100% of their consumption. Many users go beyond what their utility or supplier has been mandated to provide under the RPS. Massachusetts should support these types of proactive users.

The end user should be able to earn the Clean Heat Credit. The Obligated Parties should be allowed to buy the Credit or pay a higher Alternative Compliance Payment. The ACP should be in a cost per ton and the standard set to the state's building emissions reduction goal for 2025, with an increase each year to match the reduction percentage required to meet the various five-year targets. The standard will raise the cost of "brown gas" and other fossil fuels, but only to the percentage reduction and the ACP cost.

Proactive users will earn a Clean Heat Credit based on their cost per ton of their own decarbonization measures. The credit price will be slightly less than the ACP, so while there is a premium to decarbonize, users would get the credit to help defray the increase.

RNG is currently eligible for a MA Class I REC if the biofuel is sourced within the ISO-NE and adjacent regions since that is where our power comes from. RNG needs to have a contractual pathway, i.e., physical delivery via pipeline. There should not be a geographic restriction on the biogas when it is used to offset natural gas in a boiler or CHP system, as Massachusetts' natural gas supply comes from various regions in the US and Canada.

Massachusetts should evaluate RNG from a lifecycle emissions perspective utilizing GREET models and expressed in gCO₂/MJ. This is common for the California Air Resources Board and its LCFS program. It can also be expressed as zero GHG emissions for Scope 1. Regardless, all RNG would reduce emissions compared to natural gas, but whatever the state does for gas it should also do for the electricity side.

CARB calculates its lifecycle emissions for the grid each year. As far as the obligated parties we would favor it being the wholesale gas marketers that are bringing the gas into the state. We can't speak to all of the discussion points, but we are talking about a limited amount of RNG supply and a limited subset of hard to decarbonize customers for this particular RNG measure.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Justin Rathke', with a stylized, flowing script.

Justin Rathke
President
Vergent Power Solutions, Inc.

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Woburn, MA 01801

7244 Washington Avenue South
Eden Prairie, MN 55344

1895 Clements Road, Unit 133
Pickering, Ontario L1W 3V5 Canada



August 25, 2023

BY ELECTRONIC SUBMISSION

RE: Clean Heat Standard Program Design

Vicinity Energy Inc. (Vicinity) has actively engaged in the virtual community and technical sessions hosted by the Massachusetts Department of Environmental Protection (MassDEP) and we are pleased to provide additional comments to inform the development of a proposed Clean Heat Standard (CHS). We applaud Commissioner Bonnie Heiple and MassDEP staff for their continued commitment to achieve an economy-wide reduction of greenhouse gas emissions in Massachusetts. As an energy provider, we stand shoulder to shoulder with the Commonwealth in reaching and surpassing Governor Healey's decarbonization goals.

Background

Vicinity operates a combined heat and power (CHP) plant in Cambridge (Kendall Station), generating electricity delivered to the grid alongside co-generated thermal energy. Vicinity supplies thermal energy to over 230 buildings and more than 70 million square feet of space in Boston and Cambridge. This thermal energy is used to heat buildings, heats and chills water supply, cools spaces during summer months by way of steam-driven air conditioning, and enables advanced production technologies that rely on processes such as sterilization and humidification. Vicinity serves many of the most critical customers in Boston and Cambridge, including all the major downtown hospitals. Ongoing reliability of supply to these customers is our number one priority as we transition to a decarbonized future.

eSteam™

In October of 2020, Vicinity released our own [2050 Net Zero Carbon Roadmap](#) and, with this plan in place, we know we can make unique and vital contributions to the Commonwealth's greenhouse gas (GHG) emissions reductions goal. Vicinity has already taken drastic steps toward the decarbonization of our operations and a migration away from carbon emitting fuels. These efforts will have a dramatic impact on the carbon footprint of the 70 million square feet of space we serve today as well as the future buildings we connect to our system.

The backbone of Vicinity's decarbonization plan is to electrify our operations by generating steam using electric boilers, installing a heat pump complex along the Charles River and procuring renewable electricity from the grid as our primary fuel source. Our revolutionary product, eSteam™, will be available to customers in early 2024 and will give building owners the ability to successfully meet state and local regulations with 100% renewable, carbon-free thermal energy. (eSteam™: <http://www.vicinityenergy.us/products-services/esteam>). Boston and Cambridge will soon be the first two American cities to offer renewable thermal energy through a district energy system and the Charles River will be a renewable energy source by the middle of this decade. **This plan will enable us to eliminate 400,000 tons or more of carbon annually by 2035, which will greatly impact the reduction of emissions in the Commonwealth.**

CHS Recommendations

As noted in the recently released Clean Energy and Climate Plan for 2025 and 2030 (CECP 2030), emissions from the operation of Massachusetts buildings were equal to approximately 30% of the Commonwealth's total GHG emissions in 2020. In Boston and Cambridge, the two cities that we are proud to serve, that percentage more than doubles. This is a direct result of the building sector's heavy reliance on on-site combustion of fossil fuels for space and water heating. Across much of the Commonwealth, building efficiencies and the electrification of heating can be relied on to decrease emissions.

However, in urban areas, dense construction and the long lives of commercial buildings will make it nearly impossible to electrify without significant retrofit costs and grid congestion. In these areas, production of thermal energy with progressively lower carbon content at a central plant and supplying it to end use customers through an extensive district energy distribution network will remain the most efficient and cost-effective way to condition these buildings without compromising reliability.

- **Vicinity encourages MassDEP to include district energy distribution (i.e. steam, hot water, chilled water, etc.) in its proposed regulations as a valuable tool to be relied on by the Commonwealth to achieve its 2050 net zero statewide greenhouse gas emissions goal. As proven in Europe, district energy systems can be electrified to quickly decarbonize the heating and cooling profile of all connected buildings and should be considered a pivotal means to quickly decarbonize dense urban environments.**

Credit Generation

During the July 25th technical session focused on the *Calculation of Credits by Technology and Hybrid Heat System*, MassDEP shared that “the range of technologies that are eligible for crediting” have not yet been determined. Vicinity acknowledges the challenge in assigning credits to different technologies.

- **Vicinity strongly advises MassDEP to recognize electric boilers and industrial scale heat pumps as technologies eligible for crediting. As mentioned, these technologies will allow us to significantly reduce emissions in the Commonwealth and should be included to generate clean heat credits. In line with the CHS goal of reducing climate pollution and transitioning away from fossil fuels, Vicinity supports maintaining a 'technology-neutral' approach. This approach would enable all emission-reducing actions to qualify for generating credits for clean heat.**

MassDEP shared two possible approaches to calculating credits by technology: Low Carbon Fuel Standard (LCFS) and the “yardstick” approach. Vicinity supports a framework that recognizes the potential for a specific volume of emissions reduction and equally incentivizes all emission reductions independent of the qualified technology that was used to accomplish the emission reduction. Assigning every “pathway” a specific credit value would allow the risk for technology favoritism. Vicinity advocates for a “technology-neutral” approach. As such, Vicinity is more closely aligned with the “yardstick” approach of CHS crediting. Conversely, if MassDEP were to go forward with the LCFS approach, Vicinity would be supportive only if pathway-specific crediting appropriately reflected the difficulty of the sector and the building that is being decarbonized.

Vicinity's procurement strategy for renewable electricity to generate **eSteam™** is intentionally flexible. As we discuss options to serve our customers with renewable thermal energy (**eSteam™**), we are proposing a few different renewable alternatives, including Power Purchase Agreements – Physical,

Power Purchase Agreements – Financial, and Renewable Energy Certificates (RECs). Our intention is to design our renewable energy purchasing to be compliant with state and local regulations.

- **Vicinity strongly recommends the Commonwealth recognize a multitude of carbon neutral electrical sources and a diversity of decarbonized certification to allow time for large scale renewables to come online. These sources should include:**
 - 1. Renewable/decarbonized certificates for electrical supplies outside of the New England ISO grid; and**
 - 2. Carbon neutral electricity generated sources and associated certificates of generation within and outside the New England Grid.**

Alignment with and Updating Existing Programs and Mandates

Municipal Mandates

Undoubtedly, tackling the climate emergency is of utmost importance and the CHS is an additional regulation that will accelerate decarbonization in the Commonwealth. However, it is equally crucial that there is alignment between the CHS and the existing mandates and regulations at the municipal level. We urge MassDEP to examine regulations, such as the Building Emissions Reduction and Disclosure Ordinance (BERDO) 2.0 in Boston, Building Energy Use Disclosure and Emissions Reductions Ordinance (BEUDERO) in Cambridge, and the ten municipalities participating in the ongoing Fossil Fuel Ban Demonstration Pilot program in the Commonwealth, which, if successful, will be expected to see an increase in other municipalities opting in. Comprehending existing state and local policies will provide valuable insights for shaping CHS regulations and provide MassDEP with a clearer understanding of technical and financial support available. This understanding will further allow building owners, businesses, and residents to make informed decisions about investments and improvements related to their properties while ensuring resources are allocated effectively.

Alternative Compliance Payment (ACP) and Credit Banking

After participating in the virtual session conducted on July 24th, it has become evident that the ACP continues to serve as the upper limit for compliance in instances where the load serving entities do not hold sufficient credits. Vicinity is seeking clarification from MassDEP regarding the precise applicability of the unlimited banking of credits and whether it is directed towards credit generators, load serving entities, or both. Vicinity supports the implementation of a banking framework that encompasses both credit generators and load serving entities. If, however, the Commonwealth's intention is to solely allow banking for load serving entities, the unlimited banking could potentially exert downward pressure on prices and disincentivize producers of clean heat credits from optimizing their complete output potential.

Alternative Portfolio Standard (APS)

The Alternative Portfolio Standard (APS) currently lists the criteria for large, water-source heat pumps to qualify for the program and the means to generate APS credits. This is stipulated within 225 CMR 16. The Massachusetts Department of Energy Resources (DOER) Guideline (Metering and Calculating the Useful Thermal Output of Eligible Renewable Thermal Generation Units), which is referenced within the same regulation, stipulates criteria that effectively eliminates the largest and most efficient industrial heat pump complexes from consideration. The DOER's guidelines provide specific temperature requirements that are not applicable to high temperature industrial heat pumps and only apply to those appropriate for residential and small commercial settings. In addition, the DOER guidelines introduce efficiency criteria that effectively eliminate any industrial heat pump complex seeking to generate at temperatures well above normal space heating or domestic hot water use. This not only introduces

confusion, but also partially excludes Vicinity's aggressive, efficient, and exciting heat pump complex from the program. We do not believe these guidelines are in the best interest of Massachusetts's decarbonization efforts and recommend MassDEP support the following changes to DOER guidelines:

1. **The DOER Guideline should be revised to use temperature criteria that is reflective of a high temperature heat pump;**
2. **The DOER Guideline should use a coefficient of performance (COP) that reflects the type of COP that is achievable when doing high temperature discharges and high temperature lifts; and**
3. **The DOER Guideline should recognize waste heat (suitable for industrial heat pumps) as a qualifying heat source.**

Moreover, it is crucial that if the Alternative Energy Credits (AEC) currently accessible within the APS program are phased out, a seamless transition from AEC to the CHS should be contemplated for existing AEC program beneficiaries. Vicinity recommends the Commonwealth create a platform that offers an equivalent value to current AEC participants and ensures a smooth adjustment in credit valuation during the phase-out of one program and the implementation of the other.

Clean Peak Energy Portfolio Standard

As accurately noted in the CECP 2030, "additional clean energy resources are likely to be needed to ensure there are sufficient balancing resources available when intermittent renewable energy is not available". **Vicinity recommends updating the Clean Peak Energy Portfolio Standard to include thermal energy storage systems as a qualified energy storage system and updating the clean peak resource definition to include the dispatch of thermal energy to an interconnected thermal energy distribution network.** Similar to electric energy storage systems, thermal energy storage systems will allow Vicinity to procure the greenest, most affordable electricity when it is available (typically overnight, offshore wind), generate heat, and store it in the thermal battery until district heating demand is high (early morning as buildings heat up for the workday). Because there is a several-hour disconnect between our morning peak steam generation and peak renewable generation, our future plans to further decarbonize our district energy system will include the installation of up to 1,000 MWh of thermal storage. Using molten rock 4 technology, thermal storage will allow us to mitigate the cost and carbon content of electrified steam by procuring renewable energy during the overnight hours when demand is low and storing it in the thermal battery until district heating demand is high, typically the early morning hours as buildings heat up for the workday. As a result, Vicinity will dramatically lower the average cost of renewable thermal energy for our customers.

District Energy

As an alternative to, or in conjunction with heat pumps, building owners should evaluate connecting to the district energy system where available, leveraging thermal energy delivered in the form of steam, hot water, or chilled water. Thermal energy heats and cools buildings by transferring energy from the district energy network to/from the buildings heating and air conditioning systems. It also enables advanced production technologies for clinical and life sciences manufacturing and research that rely on processes such as sterilization and humidification. For many buildings, connecting to the system will be more efficient, more reliable due to system redundancies, and cost effective depending upon the building, location, and existing infrastructure. During cold periods when commercial heat pumps require auxiliary heating to meet building requirements, district heating could provide the needed "lift" to meet critical high temperature processes that cannot be served by commercial heat pumps alone.

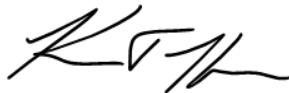
In densely developed urban areas, where building-by-building electrification may prove to be difficult and expensive, customers who are currently receiving steam through the district energy system should be encouraged to continue doing so. Customers in low-income and environmental justice communities who are unable to electrify their heating uses should be incentivized to obtain their thermal energy needs by connecting to a district energy system that can leverage low carbon and renewable energy sources whenever feasible.

Conclusion

Vicinity is dedicated to a [Clean Energy Future](#). With decades of experience tackling global energy problems on a local level while using local resources, Vicinity is committed to ensuring more efficient, reliable, and resilient generation of thermal energy for consumers across the Commonwealth, especially in its urban centers. Considering this, we fully support the Commonwealth's incentives to meet GHG emissions reductions goals set forth in the Clean Heat Standard. We are proud to be a leader in innovative approaches and techniques that align with the objectives of the standard.

Thank you again for the opportunity to participate in the MassDEP initiative to develop a regulatory standard for reducing greenhouse gas emissions from fossil heating fuels. We welcome the opportunity to discuss these comments in greater detail with the Commissioner and staff.

Thank you,



Kevin Hagerty
President, Deputy CEO



Matthew O'Malley
Chief Sustainability Officer

Vicinity Energy Inc.
vicinityenergy.us

Lamb, Emily (DEP)

From: Carol Walker <carwalker58@gmail.com>
Sent: Thursday, June 15, 2023 6:15 PM
To: Strategies, Climate (DEP)
Subject: Clean Heat Standard

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The Clean Heat Standard (CHS) would require heating energy suppliers to replace fossil heating fuels with clean heat over time and I care deeply about this standard being adopted because I have children and grandchildren, one of whom has seasonal allergies, so I want to see our environment made cleaner and healthier. Too many children in Winthrop where I live and in our neighboring community, East Boston, have asthma and I know there are many areas of our state with higher pollution and correspondingly higher asthma rates and/or other respiratory conditions.

We know that to meet our climate goals in Mass. that we need to fully electrify our buildings, first making them as efficient as possible with insulation and all the latest technologies. The Clean Heat Standard is a practical & cost-effective tool and has been endorsed by the Mass. Commission on Clean Heat, showing it is a well-thought out plan. It creates a new market for clean heating solutions by incentivizing obligated parties to deliver cleaner heating technologies, electrifying our buildings, increasing building efficiency and moving us away from fossil fuels. Most importantly it meets our Commonwealth's goals with an equitable transition and in a timely manner.

In my town, and all across Massachusetts, many residents are renters, and one very important part that really should be in this policy is some protections for renters that ensures landlords cannot increase their rent whenever upgrades are done on the buildings. This is crucial because otherwise lower income tenants would often be forced out and we know that affordable housing is at an all time crisis situation. We must not worsen it! Thus for all low or low to middle income residents there must be *energy bill relief*. Beyond this, what should be done when forming committees of stakeholders to discuss the needs involved with the CHS, included among these should be at least a few low income advocates and housing justice advocates.

I also believe it is very important that you prohibit alternative fuel blending as a compliance pathway for gas utilities because they would like to add some hydrogen to the mix which has been a bad idea for going into homes or most buildings because it is explosive, more toxic in emissions coming into the home or building **and** more expensive. There are some uses for hydrogen in industry but it is bad in every way for the buildings as I mentioned here.

Thank you for taking my comment.

Carol Walker, member of Mothers Out Front
29 Jefferson St.
Winthrop, MA 02152

carwalker58@gmail.com

The following message is a copy of a form letter that was submitted to MassDEP by approximately 1,100 citizens.

Subject: Homeowner Concerns RE: the MA Clean Heat Standard

Dear MA null DEP,

As a Massachusetts homeowner, I'm asking that you address my concerns regarding the Clean Heat Standard being proposed by the Department of Environmental Protection.

Like many across the Commonwealth, I have long depended upon heating oil provided by a local business – also from MA – to keep my family warm from October to April each year. Not only has this been a reliable and affordable option that supports our local economy, but I also believe it is the right choice from an environmental perspective.

With clean, renewable Bioheat fuel, our heating oil provider is helping us to decarbonize our home right now - more affordably and more quickly than if we were to convert our home to electric heat pumps and wait on decarbonization of the power grid. Rather than mandating that a percentage of heating oil customers convert to heat pumps each year, the Clean Heat Standard would do better to mandate that a percentage of customers transition to Bioheat – which is commercially available today at increasingly clean blends and requires no modifications to heating systems such as mine.

Across our region and country, headline after headline addresses the enormous obstacles that continue to slow our progress towards achieving a 100% renewable power grid. So why push millions of more homes onto the grid when there is a more affordable, cleaner option that offers immediate decarbonization without the cost of conversion?

Rather than steering us towards a singular point of failure, we should be encouraging growth, technology, and advancement in areas that make the most sense. In a state where the liquid fuels infrastructure, distribution network, and workforce is already in place, renewable biofuels should absolutely be part of the equation. Any comprehensive clean energy policy should be diverse and include low-carbon biofuels, as well as other renewable liquids and gases.

Many thanks for your attention,
[signature and homeowner address]
