PROPANE GAS
Association of New England

Comments Pertaining to the 2019-2021 April 30 Draft Plan

Councilors:

The Propane Gas Association of New England (PGANE) is a regional trade association representing nearly 750 members of the propane industry in the 6 New England States. We exist to serve the propane industry by promoting safety, education and public awareness of the uses of propane. Our membership includes the nation's largest propane companies and many small companies who are often family owned and operated, many for several generations.

Propane is an Environmental Protection Agency designated certified clean fuel and can contribute in many ways to reducing pollution. Propane is a bi-product that is left over when natural gas is processed. As long as our electric mix in New England contains natural gas, it makes no sense not to utilize the propane that is produced in the same natural gas processing. Capturing this bi-product and using propane as a fuel source reduces greenhouse gas emissions that would otherwise be produced if propane was simply burned off at the processing plant. Massachusetts' energy efficiency plan should include and promote the use of propane as a beneficial bi-product of our major source of electric generation.

Propane is a non-toxic gas that does not contain the greenhouse gas methane like natural gas. Propane's molecular structure has low carbon content compared to electricity. Propane is an essential energy that can be used for: space heating, water heating, cooking, clothes drying, fireplaces, and standby generators. Propane is backup power source for wind and solar installations, it is the most reliable backup power in times of natural disaster and it is a critical component of the Commonwealth's energy security.

Propane cooking equipment produces 30% fewer carbon emissions than electric units. Tankless propane water heaters produce nearly 40% fewer carbon emissions than electric storage tanks, and propane water heating is best for a zero net energy home. Propane dryers heat faster than electric models, reducing energy use and produce up to 2,000 pounds less carbon emissions than electric dryers over the life of the unit, by producing 42% less greenhouse gas emissions.

<u>Fuel Switching and Heat Pumps</u>

PGANE is concerned that the Massachusetts Energy Efficiency Advisory Council's (EEAC) recommendation on fuel switching does not support the Commonwealth's long term greenhouse gas reduction requirements, as established under the Global Warming Solutions Act. The ISO New England power grid is already taxed during peak periods and adding to the demand with additional electric heat pumps will further weaken the power grid. A scientific review of the emissions profile of propane and its energy efficiency in a Full Fuel Cycle analysis demonstrates that propane is a readily available fuel source that naturally aligns with the state's goals. The US Energy Information Administration has concluded that propane usage creates substantially less carbon dioxide emissions than natural gas when measured over the Full Fuel Cycle analysis, or a Lifecycle analysis. The EEAC should make sure to look at a comprehensive analysis when comparing fuel sources, because otherwise, it is ignoring the energy loss and carbon emissions lost in extraction, generation, distribution, and delivery. This method of analysis is not only better for the environment, but it also aligns with the EEAC's first priority to consider the level of targeted lifetime energy savings and related benefits achieved by the programs.

Converting propane furnaces with heat pumps is not logical. First, propane primary heat systems are extremely efficient and long lasting. Taking a working highly efficient system out of a house creates environmental waste and wastes energy. It does not make environmental or economic sense for working propane furnaces and boilers to be a part of a fuel switching priority. Furthermore, following the winter of 1017-2018, our industry experienced numerous calls from customers that had installed electric heat pump who found that they did not work, and our industry installed propane boilers in many residential homes that had switched to these high efficiency cold climate heat pumps.

The problem is that air heat pump systems are not efficient when the temperature drops below 37 degrees. At this temperature (the thermal balance point), they use more electricity and generate higher carbon emissions than other heat sources. There are numerous studies that show that this type of technology does not make sense for New England. New York and Maine are looking at heat pump usage during the shoulder months, but both have recognized that heat pumps must have supplementary systems to function during the winter.

Let me share some practical information from the members of our association who have actually been installing heat pumps for decades.

• Heat pump systems are difficult and expensive to retrofit into older houses. The duct work for heat pumps must be sized properly because heat pumps require a lot of air flow to operate properly. Existing ductwork is often not large enough.

• Heat pumps must defrost frequently. In order to defrost, the heat pumps reverse their flow in order to melt frost on the outside of their coils. **This means that heat pumps cycle over to air conditioning during the winter and stop blowing heat and start blowing cool air.** Many customer complaints result from this process. The defrost cycle is also very noisy and heat pumps installed near bedrooms often cause complaints from customers being awakened at night.

• Heat pumps must be kept completely clear of ice and snow. Owners have to keep the units shoveled out during the winter so that they can properly drain and maintain adequate airflow. As shown in the 2015 CT study, this does not happen. Many homeowners don't shovel their walk to their tanks for fuel deliveries today, and it is unlikely that they will keep their heat pumps shoveled in the winter. Even if they are covered with a roof, the cover would have to be four feet above the unit for proper air conditioning in the summer.

• During the heating cycle of the heat pump operation there is often a problem with vibrations. The heat pump compressor goes directly into the house and causes complaints from homeowners if the piping is connected to the frame of the house.

• Proper refrigeration pressure is key for these units to properly operate, and this is often a problem where the units do not operate efficiently, thus defeating their efficiency savings.

<u>Propane is Recommended as a Zero Energy Ready Buildings and Passive House Solution by the US Department of Energy</u>

PGANE is perplexed that the EEAC would recommend replacing propane as an energy source with electric, yet it is promoting Zero Energy Ready Buildings and Passive House Solutions. Propane is being used more and more in these types of housing units because of its outstanding energy efficiency. Utilizing a propane stove is the most efficient way to cook. Propane cooking equipment produces 30% fewer carbon emissions and 83% fewer SOx emissions than electric units. Propane tankless water heaters have 67% less greenhouse gas emissions in Zero Energy Ready Buildings than electric water heaters. Propane water heaters are often used in combination with solar hot water heating in northern climates to provide reliable water heating year-round. Combining propane and solar systems provides a source ration 70% lower than the baseline for zero net energy construction. Propane has become a major player in the Zero Energy Ready building industry so it makes no sense for Massachusetts to recommend switching to an electric unit from a propane unit if the EEAC truly wishes to reduce to targeted lifetime energy savings and increase energy efficiency.

<u>Propane Promotes the Green Communities Act Goal of Providing a Clean Affordable Energy</u>

Propane is non-toxic and it does not contaminate groundwater. In many parts of the world, propane is being used to reduce particulate emissions and improve public health. Propane is blessed by chemistry. Because it is a compressed gas that is easily transported and distributed, propane is the only currently available product to convincingly attack the largest environmental health threat globally. Over three million people die worldwide annually from cooking-related indoor air pollution from solid fuel fires such as wood, charcoal and coal. This amounts to more people than die annually from Malaria, HIV/AIDs, and Tuberculosis combined. A program called Cooking for Life is working to convert

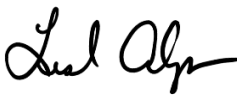
one billion people from cooking with traditional fuels to cleaner-burning propane by 2030. In India, over 9 million families were moved to clean propane cooking systems last year.

Summary

In Massachusetts, propane fills an essential void in the rural areas of the state by providing a clean reliable energy source to residences and businesses. As we move toward more renewables, propane is often the backup power of choice and our industry is working with partners to create renewable propane for future energy supplies. When you compare propane to other energy sources by using a lifecycle analysis, propane produces fewer carbon emissions than electricity because there is no line loss of energy and fewer greenhouse gas emissions than natural gas, because there is no methane in propane and propane systems do not leak like natural gas pipelines. Propane is a closed supply system that does not lose energy throughout the distribution of its supply. Propane plays a positive role in reducing greenhouse gas and providing energy security and energy choices to the citizens of Massachusetts. Propane should be given an equal seat at the table regarding energy efficiency, incentives, and grant benefits as other alternative or renewable energies.

Thank you so much for the opportunity to comment.

Sincerely,



Leslie Anderson
President and CEO

Sources:

U.S. Environmental Protection Agency, Transportation and Air Quality Division, Clean Alternative Fuels: Propane (March 2002), available https://nepis.epa.gov/Exe/ZyNET.exe/P100PKAA.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000035%5CP100PKAA.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSe

U.S. Energy Information Administration, Environment, Carbon Dioxide Emissions Coefficients (Feb. 2, 2016), https://www.eia.gov/environment/emissions/co2_vol_mass.php

Propane Education & Research Council, Energy Cost & Carbon Calculator, http://www.buildwithpropane.com/Research-and-Training/Interactive-Training-Module/Energy-Cost-and-CarbonCalculator/ (last visited Sept. 20, 2017). As indicated, the tool also provides a snapshot of potential carbon emission reductions for switching to propane fueled appliances because propane has a low carbon emissions profile.

U.S. Energy Information Administration, Total Energy: Table 12.1 Carbon Dioxide Emissions From Energy Consumption by Source, available at https://www.eia.gov/totalenergy/data/monthly/pdf/sec12_3.pdf.

The National Academies of Sciences, Engineering & Medicine, Review of Site (Point-of-Use) and Full-FuelCycle Measurement Approaches to DOE/EERE Building Appliance Energy-Efficiency Standards (2009), available at http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12670

U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, Appliance & Equipment Standards, Plans and Schedules, available at https://energy.gov/eere/buildings/plans-and-schedules (last visited Sept. 20, 2017). 31 Gas Technology Institute, Carbon Management Information Center, Source Energy and Emissions Analysis Tool Version 7.2, http://seeatcalcbeta.gastechnology.org/Account/login.aspx (2016) (last visited Sept. 22, 2017). For greater elaboration in scientific detail on FFC, energy loss, and emissions, we include with this comment a joint research product of the Propane Education & Research Council and the Gas Technology Institute. Propane Education & Research Council, Gas Technology Institute, GHG and Criteria Pollutant Emissions Analysis (Feb. 17, 2017).

Propane Education & Research Council, The Propane Technical Pocket Guide: For Residential and Commercial Construction, 11 (2016), available at http://www.buildwithpropane.com/uploadedFiles/buildwithpropane/website/guide-technical-pocket-guide.pdf