

May 24, 2018

Debra Howland Executive Director and Secretary  
New Hampshire Public Utilities Commission  
21 S. Fruit Street, Suite 10  
Concord New Hampshire 03301  
RE: DG 17-198  
Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities

Thank you for accepting my comments on Granite Bridge.

Liberty Utilities must stop telling New Hampshire residents and policymakers that natural gas heating is better for the environment and climate change than heating with oil. At best, these statements are misleading. At worst, Liberty is engaging in false advertising when it talks only about reduced carbon emissions.

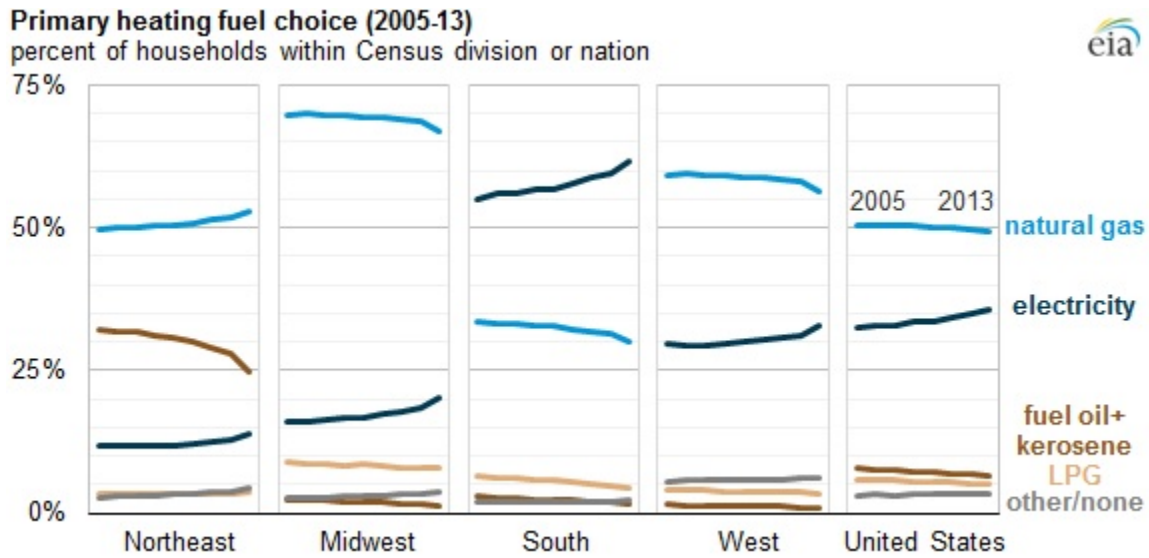
Heating with Natural Gas produces 27% fewer molecules of Carbon Dioxide (CO<sub>2</sub>) upon burning than heating with oil. That is true, but we also need to pay attention to how much methane (CH<sub>4</sub>) is leaked to the atmosphere. The problem is that a molecule of CO<sub>2</sub> has a Global Warming Potential (GWP) factor of 1, while a molecule of methane has a GWP potential of 86 over the next 20 years. Over 100 years, methane's GWP drops to 25, but we don't have 100 years to slow down global temperature increases. <https://www.nature.com/news/methane-leaks-erode-green-credentials-of-natural-gas-1.2123#/ref-link-5>

It turns out that the science behind calculating GWP equivalencies between methane leak rates and CO<sub>2</sub> emissions of other fossil fuels is still evolving. Most of the existing literature focuses on coal versus natural gas electric generating plants. There are many factors such as plant efficiency and type of coal used that go into the calculation, but generally high efficiency natural gas plants are considered to emit 50 to 60% less CO<sub>2</sub> than coal plants. The article in Nature notes, "A study<sup>4</sup> published in April by scientists at the EDF and Princeton University in New Jersey suggests that shifting to natural gas from coal-fired generators has immediate climatic benefits as long as the cumulative leakage rate from natural-gas production is below 3.2%; the benefits accumulate over time and are even larger if the gas plants replace older coal plants. By comparison, the authors note that the latest estimates from the US Environmental Protection Agency (EPA) suggest that 2.4% of total natural-gas production was lost to leakage in 2009." Note that the leakage rate only addresses the production process and doesn't account for transportation and distribution losses.

How do we use this data to determine an "acceptable" leak rate for methane in a distribution system? If a leakage rate of 3.2% is acceptable for a 50 to 60% reduction in carbon emissions from a coal plant, how much leakage can be tolerated in a system that reduces CO<sub>2</sub> emissions by 27%? If we solve for  $x/3.2 = 27/55$ , we get an acceptable leak rate of 1.6%. On page 49 of Liberty's 2017 Annual Report [https://www.puc.nh.gov/Gas-Steam/Annual%20Reports/2017/engi\\_dba\\_liberty\\_annual\\_report\\_2017.pdf](https://www.puc.nh.gov/Gas-Steam/Annual%20Reports/2017/engi_dba_liberty_annual_report_2017.pdf) it states that "Unaccounted for Volumes" of distributed gas totaled 2.2% statewide. Using my estimation, Liberty's distribution loss of greater than 1.6%, makes natural gas heating from a distribution system worse for the environment than heating with oil.

Moreover, there are much better alternatives for reducing CO<sub>2</sub> emissions from fossil fuel heating. Former Massachusetts Department of Public Utilities Chair, Ann Berwick, notes. "As the region struggles to abandon its use of fossil fuels, it should be moving from oil heat to new, efficient electric heating technologies, such as air-source heat pumps. As the electric grid gets cleaner, thanks to state laws requiring that electricity increasingly be generated by renewable resources, switching from oil to gas for heating instead of switching from oil to electricity would be a step in the wrong direction." <https://commonwealthmagazine.org/opinion/natural-gas-is-not-a-clean-fuel/>

According to the EIA, the Northeast is the only region of the country that is still increasing it's use of Natural Gas for home heating. <http://www.eia.gov/todayinenergy/detail.php?id=18131>



A major policy problem in the NHSAVES program is that the overall electricity consumption of a building in the program must decrease. That stipulation makes it impossible to recommend an electric powered high efficiency air source heat pump system as a more sustainable and lower cost heating option than oil. For a look at the relative costs of different heating options, people can visit <https://www.energymaine.com/at-home/home-energy-savings-program/heating-cost-comparison/>

There are also opportunities to switch to biofuels and biodiesel which emit less CO2 than natural gas. <https://genesee-energy.com/natural-gas-vs-heating-oil/>

If all of Liberty's "unaccounted for volumes" of gas are not due to leakage, I would welcome a detailed explanation and data to support any claims otherwise. People should also understand that the lost gas is paid for by existing customers, so the utility has little incentive to fix the leaks.

Sincerely,

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