

Housing team recommendation:

“All new buildings constructed on municipal property shall have electric heat pumps providing heating for the heated space. These buildings shall not have natural gas connections for cooking or water heating.”

Justification and Background:

Natural gas use is a significant source of greenhouse gas emissions (GHG) in Columbia. In 2020 it was 26% of Columbia’s total. Of that used in residential buildings the majority is used for heating and this is likely true for commercial and municipal buildings as well. This source of GHG is what CAAP action H-1.5.1 is intended to address. Air conditioning as well as heat is provided by ground-source heat pumps (GSHP).

Ground source heat pumps run by electricity are an energy efficient way of heating as the ground sourcing results in about 3 to 4 times as much of the heat as would be produced by using the electricity directly for heating. The main resistance to GSHPs is the up front cost and the payback period of about 12 years.

Household use and municipal building use of natural gas for heating can be replaced with electricity run GSHPs and at some point Columbia’s electric distribution company will purchase sufficient renewable energy to cover 100% of the electricity they sell to customers. At this point, the electric energy replacing natural gas will be 100% clean and renewable.

One of the reasons the Climate Action and Adaptation Plan has different and more aggressive goals for municipal operations is the desire for the municipal government to lead by example. This mandate for new municipal buildings is an excellent way to display leadership. The airport building installing new natural gas connections brought this issue to our attention. Additionally, new municipal buildings including two fire stations are being planned. Acting quickly is important to eliminate new fossil gas infrastructure and avoid the expense of fossil gas connections in municipal buildings.

In addition to natural gas use producing carbon dioxide (CO₂) there is a small but significant quantity of fugitive emissions of natural gas that escapes into the atmosphere during the process of extraction and transportation. Measured for 20 years, natural gas has over 80 times as much impact on global warming as CO₂. This extra warming potential raises the CO₂ equivalent impact beyond the CO₂ produced when burning fossil gas for heating and other uses. Given the urgent need to dramatically reduce GHG emissions by 2030, it is extremely important to eliminate the larger and near term impact of methane (fossil gas) emissions.

It is important for city operations to begin reducing greenhouse gas emissions with a broad array of measures. To date many measures have focused only on building energy efficiency. Eliminating fossil gas connections in new municipal buildings is another step in the right direction.

Reference:

H-1.5.1 Incentivize switching space and water heating from fossil fuel-based to electric heat pumps.