



As healthcare professionals, we see climate change as the biggest health threat of our era. To address it we must move away from burning fossil fuels including natural gas, which now contributes more to climate pollution than coal(1). Consequently, we strongly urge the Council to take a lead role in moving towards electrification of all buildings in our state. The health repercussions of not doing so are simply not acceptable, as detailed in a recently published article in the *New England Journal of Medicine* titled The False Promise of Natural Gas, which closes with this astute comment: "Natural gas has been portrayed as a bridge to the future. The data now show that it is only a tether to the past."(2)

In Washington State, buildings are the most rapidly growing source of carbon pollution, driven primarily by the increased use of gas appliances to power, heat, and cool them. Gas appliances worsen air quality both indoors and outdoors by emitting pollutants. Mutually reinforcing effects of air pollution and climate change amplify hazards, resulting in higher temperatures, more wildfires and smoke, and degradation of the health of our community. We see the dire consequences of climate change and air pollution as evidenced by increases in lung cancer, chronic obstructive pulmonary disease, and heart disease associated with PM_{2.5} exposure; increases in premature deaths, in asthma and allergic illnesses, in hospital and emergency visits for acute respiratory symptoms, and in school and work absenteeism(3). We see increases in depression, suicide, violence; increases in traumatic illness and substance abuse(4)(5)(6). This is harming our patients with every breath. As such, we bear a moral obligation to speak out in strong support of a rapid transition to electrification of all new buildings in our state.

Today, pollution from buildings in Washington accounts for more premature deaths annually than air pollution from any other sector, including industry and transportation(7). Certain ethnic and racial minorities suffer the consequences of climate change and air pollution the most(8)(9). Black and Hispanic populations experience health ramifications of air pollution more than non-Hispanic white counterparts, despite creating less of it. Communities of color are more likely to live in areas with higher levels of outdoor air pollution both nationally and in Washington State(10)(11). We can and must do better for our people, and building electrification is a necessary next step.

As Americans, we spend about 90% of our time indoors, where levels of many harmful pollutants are generally 2-5 times higher than outdoors, and can be up to 100 times higher(12)(13). Those of us most susceptible to consequences of air pollution, such as the very young, very old, or those with pulmonary or cardiovascular disease often spend even more time indoors(14). We have known for decades that poor indoor air quality is harmful to human health(15)(16)(17)(18)(19)(20). Despite this, indoor air quality remains largely unregulated(21).

The majority of pollutants contributing to poor indoor air quality originate inside buildings(22). Gas burned in stoves, furnaces, water heaters and dryers emit fine particulate matter (PM_{2.5}), nitrogen oxides, carbon monoxide and formaldehyde and other volatile organic compounds (VOCs). Nitrogen dioxide (NO₂) impedes lung function and can lead to development of and exacerbation of asthma. In addition to respiratory damage, fine particulates can contribute to



cardiovascular consequences. Carbon monoxide has been well documented as a contributor to cardiovascular disease, and VOCs are known human carcinogens.

Gas stoves warrant particular attention for their contribution to indoor air pollution: Just one hour of cooking on a gas stove can lead to indoor pollutant levels that would be illegal if found outdoors. Children in homes that use gas for cooking have 42 percent higher prevalence of developing asthma symptoms and a 24 percent increased life-time risk of asthma(23). Compared to homes with electric stoves, homes with gas stoves have anywhere between 50 percent to over 400 percent higher NO₂ levels(24). Electric cooking is a cleaner, safer option.

In addition to the health impacts of gas in buildings, the infrastructure for gas distribution is old, dangerous, and expensive to maintain. In stark contrast to Washington state's clean energy ambitions, we are among the top 10 states accounting for the majority of new gas customers(25). Additionally, explosions from gas leaks occur all over the country, including in this state: Three PSE workers were injured in a gas explosion in North Seattle; a major gas leak in Seattle's University District forced a 12-block evacuation; a gas explosion in March 2016 leveled most of a city block, injured nine firefighters and caused millions of dollars in damage in the heart of Seattle's Greenwood neighborhood (26)(27)(28). The risk of earthquakes in Western Washington adds concern, as highly pressurized gas pipelines run the risk of exploding during earthquakes and causing fires. Electric homes and buildings are not subject to the same degree of risk, and are more resilient subsequent to earthquakes, as electricity can be restored more quickly. This is the time to be investing in a resilient future and letting go of an antiquated and dangerous system.

Potential benefits of building electrification extend beyond protecting community health and meeting our climate goals. A recent analysis by the Rocky Mountain Institute found that building one all-electric home in Seattle would save \$4,300 in net present costs over a 15-year period (29). Mixed-fuel homes require higher up front costs than all-electric homes, which, unlike most mixed-fuel homes, can use the heat-pump system for both heating and cooling. Further, low income residents often live in delicate housing that is prone to drafts; strengthening the building envelope would not only improve energy efficiency of buildings, but would reduce resident exposure to asthma-provoking mold and moisture, seasonal temperature extremes, and outdoor air pollution like ozone and wildfire smoke.

We need our Council to strive for a safer, healthier, economically viable future, and this requires ending our reliance on the fossil-fuel dominated infrastructure of the past. Building electrification is a crucial step toward building a better future for our people. This is why we are speaking out in such strong support of electrification of all new buildings in our state and urging our Council to be the leaders we need by doing the same.

We the undersigned thank you for your consideration,

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