



Air Regulations and Emissions from Appliances

Background

Typically, a building's emissions are considered the outdoor emissions produced by constructing and powering that building. There is a growing movement to also address the emissions and harmful pollutants generated by the fossil-fueled appliances used within buildings. Limiting the outdoor emissions from appliances, such as nitrous oxides (NO_x) and carbon monoxide, is an essential part of decarbonizing the built environment. One way state energy offices can reduce building emissions is to work with partners they may not have worked with before, state air regulators.

State air regulators have typically focused on reducing harmful outdoor pollutants, such as nitrogen dioxide, particulate pollution, and ozone produced by fossil-fueled vehicles and power plants as required under [U.S. Clean Air Act](#) (CAA). As these harmful outdoor pollutants have become more managed on a federal, regional, and state level, air regulators are beginning to explore their authority under the CAA to reduce other harmful pollutants such as those produced by fossil-fueled appliances used in buildings. However, most air regulators and state energy offices have never worked together before, and this new relationship should be fostered to start limiting harmful emissions from appliances within buildings.

Energy Use Affects Air Quality

Harmful air pollution is often caused by energy usage, such as burning fuel to power a car, burning coal to produce electricity, or burning natural gas to heat a home's water. However, there are policy differences between how to improve outdoor air quality and promote energy efficiency. Air quality regulations are driven federally through programs such as the CAA since harmful air pollutants travel and impact regions instead of individual states. Energy efficiency policy, however, tends to be state-driven through energy offices with support from the U.S. Department of Energy. This latter process is also the one by which states establish appliance standards. Despite these differences, since energy use affects air quality, it is essential for air

NO_x Emissions

from Natural-Gas Powered Water Heaters

Some states and regional air quality management districts, such as Texas, Utah, and several California air quality management districts, already have pending or existing regulations to reduce emissions from appliances, specifically nitrous oxides (NO_x) from natural-gas fired water heaters. These regulations are one of the first ways that states are regulating emissions from appliances in buildings. States in the NEEP region have expressed interest in implementing similar regulations, but as of this writing (September 2022), there are none. NEEP is working with the Regulatory Assistance Project (RAP) to help disseminate a RAP model rule that states can adopt to reduce NO_x emissions from water heaters.



regulators and energy offices to work together to reduce emissions from appliances. It is also important to note that the CAA gives air regulators authority to regulate many greenhouse gas (GHG) emissions from stationary sources. Regulating GHG emissions can, in some cases, prove difficult because of political landscape. If state energy offices and air regulators work together on future rulemakings, this may allow energy offices to regulate building GHG emissions in instances where they have been unable to do so before.

How Air Regulators and Energy Offices Can Work Together

Air regulators and energy offices have numerous opportunities to work together to reduce emissions from appliances, including NO_x emissions from natural-gas-powered water heaters, which we are already starting to see outside the NEEP region. Energy offices should first ensure they know who their state air regulators are and what their emissions reduction goals are (i.e., if they are on a state implementation plan with the U.S. Environmental Protection Agency to reduce a specific harmful pollutant or if they have state-mandated goals of reducing specific emissions). Despite often having similar goals, these two offices are often not working together to achieve them. Also, as mentioned above, state air regulators typically have more authority granted under the CAA to regulate specific emissions, so developing these working relationships can allow energy offices to start regulating GHG emissions from new and existing buildings.

There are also ways that these two state offices can together to reduce further emissions and harmful pollutants from buildings that will create a more significant impact on energy efficiency programs in their state. For example, some jurisdictions are beginning to consider adding an air quality score to a building performance standard, so a building's outdoor emissions are considered when determining the effectiveness of a building performance standard. There are some other considerations states can examine when regulating emissions from appliances, such as:

- Ensuring that people in energy and environmental justice (EEJ) communities benefit from these regulations;
- Prioritizing early replacement programs for high energy use and high pollutant appliances; and
- Utility implementation a leasing model, similar to leasing a cable box, for electric appliances to ensure that consumers and utilities could both see energy savings.

Conclusion

As states look to regulate GHG emissions from buildings, state air regulators and energy offices must work together since they often have common and parallel goals but are not always aligned with developing plans and implementing rules. States have already considered or are considering limiting NO_x emissions from natural gas water heaters because appliances represent a large portion of a building's overall emissions, and NO_x is a harmful pollutant that affects both human and environmental health. To reduce emissions from the building sector, state energy offices and air regulators must begin focusing on how their offices can work together to regulate appliance emissions in buildings.