

April 17, 2023

Dr. Carl Shapiro
U.S. Department of Energy
Office of General Counsel, EE-5B
1000 Independence Avenue SW
Washington, DC 20585

RE: Docket Number EERE–2014–BT–STD–0005/RIN 1904–AD15: Supplemental Notice of Proposed Rulemaking for Energy Conservation Standards for Consumer Conventional Cooking Products

Dear Dr. Shapiro:

Thank you for the opportunity to comment on the supplemental notice of proposed rulemaking for energy conservation standards for consumer conventional cooking products. As the country continues to enact policies that reduce emissions harmful to human health and the environment, this proposal is a step in the right direction. We therefore support the new standard and encourage you to adopt it.

The undersigned health and medical organizations represent people concerned with the impacts of the country's energy production on health and the environment. The methods by which energy is produced and used in this country result in major emissions of greenhouse gases and toxic chemicals. To protect the health of communities in this country, it is vital that we reduce these emissions now while moving towards a zero-emission future.

Electrification is Important, but Efficiency Reduces Global Emissions and Improves Health

DOE's proposed standard would apply to non-portable gas, electric resistance, and electric induction cooking products, all of which draw energy from outside the home via a pipe or wire to heat a cooking space. This rule therefore covers gas-based appliances which directly emit combustion pollution into the living space and electric (including induction) - based ones that do not. It is important to note that when electric appliance efficiency is raised, population-wide health will be improved in communities that are already using electricity to power appliances. For homes that do not use combustion within the home, health benefits will come primarily through a decrease in overall energy use, which will decrease the amount of pollution caused by coal and natural gas- powered power plants and mitigate climate change.

The most significant health impacts from producing electricity come from the air emissions from burning fossil fuels at the power plant including coal, methane gas and oil, as well as

biomass. These emissions include particle pollution, sulfur dioxide, nitrogen dioxide, and carbon monoxide, as well as hazardous pollutants that can cause cancer and other health problems.¹

For example, when coal is burned, the health-endangering pollutants it releases, including nitrogen oxides and sulfur oxides affect all the major body organ systems.² Coal combustion contributes to four of the leading causes of mortality in the US: heart disease, cancer, stroke, and chronic lower respiratory diseases.³ Air pollutants caused by coal combustion, in particular the very small particulates known as PM_{2.5}, adversely affect the respiratory system. PM_{2.5} is known to trigger asthma attacks; contributes to chronic obstructive pulmonary disease (COPD); and is correlated with mortality from lung cancer, the leading cancer killer in both men and women. Pollutants produced by coal combustion also damage the cardiovascular system and the neurological system. Coronary heart disease is a leading cause of death in U.S., and coal combustion air pollutants, especially nitrogen oxides and PM_{2.5}, are known to negatively impact cardiovascular health.⁴ These impacts include cardiac arrhythmias, heart attacks, and congestive heart failure. Effects on the neurological system include stroke, associated with exposure to fine particles, and developmental delay, reduced IQ and permanent loss of intelligence.⁵

Nitrogen dioxide is a precursor to ozone. Exposure to ozone causes irritation and inflammation of the lungs, and leads to coughing, wheezing, worsening of asthma and lowered resistance to lung infections.⁶ Long-term exposure to higher ozone levels can permanently reduce lung function. These health effects of ozone contribute to increased emergency department visits, hospital admissions and deaths on days with higher ozone concentrations, and to increased mortality associated with chronic ozone exposure.⁷

Increasing the efficiency of products used in the home will help reduce overall energy use, drive down the release of these toxic chemicals, and help save lives.

¹¹ World Health Organization *Air Pollution is Responsible for 6.7 million premature deaths every year*. Available at <https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/health-impacts/types-of-pollutants>

² United States Protection Agency. *The Sources and Solutions: Fossil Fuels* January 20, 2023 available at <https://www.epa.gov/nutrientpollution/sources-and-solutions-fossil-fuels>.

³ World Health Organization. *Household Air Pollution*. November 28, 2022 available at: <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

⁴ United States Protection Agency. *Air Pollution and Cardiovascular Disease Basics*. September 12, 2022. Available at: <https://www.epa.gov/air-research/air-pollution-and-cardiovascular-disease-basics>

⁵ United States Protection Agency. *Air Pollution and Cardiovascular Disease Basics*. September 12, 2022. Available at: <https://www.epa.gov/air-research/air-pollution-and-cardiovascular-disease-basics>

⁶ United States Protection Agency. *Basic Information about NO₂*. August 2, 2022. Available at <https://www.epa.gov/no2-pollution/basic-information-about-no2>

⁷ Lim CC, Hayes RB, Ahn J, Shao Y, Silverman DT, Jones RR, Garcia C, Bell ML, Thurston GD. Long-Term Exposure to Ozone and Cause-Specific Mortality Risk in the United States. *Am J Respir Crit Care Med*. 2019 Oct 15;200(8):1022-103

Power plants that burn coal, oil and methane gas are also the largest source of carbon pollution, the second biggest driver of climate change.⁸ The extraction and transport of oil and natural gas produced methane, a potent greenhouse gas that contributes to warmer temperatures that drive changes that threaten health. It will be beneficial to health to increase the efficiency of appliances, therefore, regardless of their fuel source.

The Proposed Standard Will Make an Impact

The proposed cooking product standards will cut 22 million metric tons of carbon dioxide emissions, 245 thousand tons of methane emissions, and 52 thousand tons of NOx emissions over 30 years of sales.⁹ Combined with other standards under development, carbon dioxide emissions reductions would reach 2.4 billion metric tons over 30 years of product sales, an amount equal to the emissions from 21 coal-fired power plants over that period.¹⁰ The cooking product standards would also improve indoor air quality for homes with gas stoves by enabling the same amount of cooking with less fuel. The transition will improve human health, combat climate change, and reduce consumer's utility bills.

The rest of comments will focus on the health improvements achieved directly for the user of a gas-powered appliance, rather than community wide. Increased efficiency for these appliances will improve indoor air quality by reducing emissions that would otherwise occur inside of the home.

Improving the Efficiency of Gas-Powered Appliances and Replacing them with Electric or Induction is Best for Health

Although we support the of the phase out of combustion within the home, during this transition, increasing the efficiency requirement for newly manufactured cooking products will reduce pollutants that harm human health, reduce climate change emissions, and save customers (including those in disadvantaged and low-income communities) money.

According to Census data from the U.S. Energy Information Administration, about 40 percent of the country's homes use natural gas for cooking, with a wide degree of regional variation, in New Jersey, California, Illinois and New York — approximately 60 to 70 percent of homes cook with gas.¹¹ These states are also the home of the country's biggest cities and places that are

⁸ United States Environmental Protection Agency. *Sources of Greenhouse Gas Emissions*. April 13, 2023. Available at <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.

⁹ Docket Number EERE-2014-BT-STD-0005/RIN 1904-AD15: Supplemental Notice of Proposed Rulemaking for Energy Conservation Standards for Consumer Conventional Cooking Products

¹⁰ Appliance Standard Awareness Project, Cooking Products Fact Sheet available at: <https://appliance-standards.org/product/cooking-products>

¹¹ United States Energy Information Administration. The majority of US households used natural gas in 2020. March 23, 2023 available at: <https://www.eia.gov/todayinenergy/detail.php?id=55940>

also subject to high levels of urban pollution. Overall, ninety percent of households using gas in the home are in urban areas.¹²

In general, higher efficiency burner systems correlate with more complete combustion and therefore a more efficient conversion of the energy content in the gas to thermal energy.¹³ Notably, gas cooking products are not required to be vented outside by law or regulation, meaning that often the pollution they produce is left at its source, which is typically within the kitchen area of the home. When people use the ventilation available to them (typically a hood over the stove), it often recirculates the air and has only a moderate impact on immediate air quality.

Health Impacts of Cooking with Methane

A significant amount of evidence on the detrimental health effects of exposure to air pollution shows that burned methane gas byproducts such as nitrogen dioxide contribute to premature mortality¹⁴ and increased risk for illness including ischemic heart disease, stroke, COPD, lung cancer, type 2 diabetes, and lower-respiratory infections.¹⁵ There is a growing body of evidence showing an association between long-term exposure to air pollution and adverse birth outcomes. Short term exposure to high levels of air pollution can exacerbate asthma and cardiopulmonary symptoms.¹⁶

Methane Gas Increases Risk of Heart Disease and Stroke

When methane gas is burned, it produces carbon monoxide and particulate matter, which impact the heart. Carbon monoxide is a damaging air pollutant that can cause headache, fatigue, and death.¹⁷ When inhaled, PM_{2.5} settles in the lungs which sets off a cascade of inflammatory reactions in the body. These reactions affect proper heart function and can cause arrhythmia and increase the risk of heart attacks.

Methane Gas Combustion Increases Risk of Asthma

Nitrogen dioxide is a primary air pollutant produced by the combustion of methane gas. The relationship between both short-term and long-term nitrogen dioxide exposure and the

¹² United States Energy Information Administration. *The majority of US households used natural gas in 2020*. March 23, 2023 available at: <https://www.eia.gov/todayinenergy/detail.php?id=55940>

¹³ Docket Number EERE-2014-BT-STD-0005/RIN 1904-AD15: Supplemental Notice of Proposed Rulemaking for Energy Conservation Standards for Consumer Conventional Cooking Products.

¹⁴Singer BC, Pass RZ, Delp WW, Lorenzetti DM, Maddalena RL. Pollutant concentrations and emission rates from natural gas cooking burners without and with range hood exhaust in nine California homes. *Building and Environment*. 2017;122:215-229. doi:10.1016/j.buildenv.2017.06.021

¹⁵Roda C, Kousignian I, Guihenneuc-Jouyau C, et al. Formaldehyde Exposure and Lower Respiratory Infections in Infants: Findings from the PARIS Cohort Study. *Environmental Health Perspectives*. 2011;119(11):1653-1658. doi:10.1289/ehp.1003222

¹⁶ Tiotiu AI, Novakova P, Nedeva D, Chong-Neto HJ, Novakova S, Steiropoulos P, Kowal K. *Impact of Air Pollution on Asthma Outcomes*. Int J Environ Res Public Health. 2020 Aug 27;17(17):6212.

¹⁷United States Environmental Protection Agency. *Carbon Monoxide's Impact on Indoor Air Quality*. July 31, 2014. available at: <https://www.epa.gov/indoor-air-quality-iaq/carbon-monoxides-impact-indoor-air-quality>

development of childhood asthma is well-documented.¹⁸ Low-income, Black, and Hispanic children are at higher risk of asthma exacerbation and respiratory symptoms from methane gas pollution than their high-income and white counterparts due to often living in historically disinvested communities with higher levels of ambient outdoor air pollution and poorly maintained housing stock and building appliances.¹⁹

Methane Gas Leak Risks

When methane gas leaks from defective or malfunctioning appliances it poses a risk to human health. A recent study found that consumer-grade natural gas contains varying levels of at least 21 different hazardous air pollutants, including benzene, toluene, ethylbenzene, xylene, and hexane.²⁰ The researchers also found that these leaks can be undetectable by smell, with small leaks up to methane concentrations of 20 parts per million void of odorant concentrations necessary for sensory detection.²¹

In summary, by significantly increasing the efficiency of cooking products and gas-powered cooking products in particular, the proposed standard will phase out older technology in favor of more-efficient technology. Because there is no current energy performance standard for these products, gas and electric stoves that are on the market today have likely not been specifically designed with features meant to improve cooking efficiency. For models compliant with the proposed standard, simple redesign changes that target energy efficiency can make a considerable impact. By optimizing burner and grate design including grate weight, flame angle, and distance from burner ports to the cooking surface, DOE estimated that the proposed standard for gas cooking tops will reduce energy use by about 30% compared to the least efficient models on the market.

The transition will improve human health, combat climate change, and reduce utility bills. We strongly urge you to adopt the proposed increased standard.

Alliance of Nurses for Healthy Environments (ANHE)
American Lung Association
Association of Public Health Laboratories
Asthma and Allergy Foundation of America
Climate Psychiatry Alliance

¹⁸*Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria* (Final Report, 2016). US Environmental Protection Agency, Washington, DC, EPA/600/R-15/068, 2016, Table ES-1, p. Lxxxii, <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879>.

¹⁹Hansel NN, Breyse PN, McCormack MC, et al. A Longitudinal Study of Indoor Nitrogen Dioxide Levels and Respiratory Symptoms in Inner-City Children with Asthma. *Environmental Health Perspectives*. 2008;116(10):1428-1432. doi:10.1289/ehp.11349

²⁰ Harvard Chan. Natural Gas Used in Homes Contains Hazardous Air Pollutants. June 28, 2022. Available at: <https://www.hsph.harvard.edu/c-change/news/natural-gas-used-in-homes/>

²¹ Harvard Chan. Natural Gas Used in Homes Contains Hazardous Air Pollutants. June 28, 2022. Available at: <https://www.hsph.harvard.edu/c-change/news/natural-gas-used-in-homes/>

Foundation for Sarcoidosis Research
Greater Boston Physicians for Social Responsibility
Medical Society Consortium on Climate and Health
National Association of Pediatric Nurse Practitioners
National League for Nursing
National Medical Association
Physicians for Social Responsibility