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Title: Energy Efficiency: Reducing Emissions and Improving Health in the Midwest

Abstract: States throughout the Midwest are feeling the effects of climate change. In an attempt to combat these impacts, many states in the region have introduced proposals to reduce emissions and reach a carbon-free electricity sector by 2050. While increasing renewable generation is an important aspect to achieving carbon-free power, energy efficiency also plays a vital role that is often overlooked. Energy efficiency upgrades mitigate climate change by lowering the energy demand and reducing the need to build new power generation, thereby curbing harmful emissions and the adverse health impacts from fossil-fuel generation. Significantly increasing established energy efficiency programs will aid in reaching goals to reduce greenhouse gas emissions. These established practices include weatherization upgrades, such as sealing air leaks, adding insulation, installing efficient windows and doors, installing programmable thermostats, upgrading to a more efficient heating and cooling system, and installing energy efficient lighting, among others. Currently in the Midwest, coal makes up 64% of electric generation and renewable generation makes up only 8%. Until the generation mix is transformed to a cleaner energy portfolio, energy efficiency is the most cost-effective energy resource for reducing emissions. Some have argued that reducing energy consumption by as little as 15% in each Midwest state could reduce emissions and improve air quality. Using EPA tools, it becomes possible to estimate the amount of emissions reduced through energy efficiency which would aid in meeting the varying carbon reduction targets throughout the Midwest. These estimates also allow us to examine other non-energy impacts outside of carbon reductions, such as estimating the various health impacts. Pollutants from burning fossil fuels contribute to four of the leading causes of death in the nation: cancer, chronic lower respiratory disease, heart disease and stroke. Examining these Midwest health impacts could lead to estimates on the number of school or work days missed, asthma attacks, and lives saved within the region.