

Health Benefits of Energy Efficiency

How Saving Energy Saves Lives

Energy efficiency doesn't just save energy and money, it can also help prevent and alleviate serious health issues, including respiratory and heart diseases. When we invest in energy efficiency, we simultaneously lower our energy costs and improve community health.

Energy Efficiency Reduces Pollution and Improves Outdoor Air Quality

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.¹

Fine particulate matter and nitrogen oxides from burning fossil fuels are proven to contribute to a variety of serious respiratory health issues, such as lung cancer, chronic obstructive pulmonary disease and asthma.²

Energy efficiency lowers energy demand and the need to build new generation, thereby curbing harmful emissions and adverse health impacts from fossil-fuel generation.³ This reduced need for generation not only saves lives, but also reduces the number of lost work and school days. Currently within the Midwest, coal makes up 64% of electric generation.

Until the generation mix is transitioned to a cleaner energy portfolio, energy efficiency is the most cost-effective way to reduce emissions.

The Environmental Protection Agency (EPA) issues regulations called National Ambient Air Quality Standards (NAAQS), which place limits on six pollutants that are harmful to human health. Energy efficiency can help meet the NAAQS and improve air quality and health.

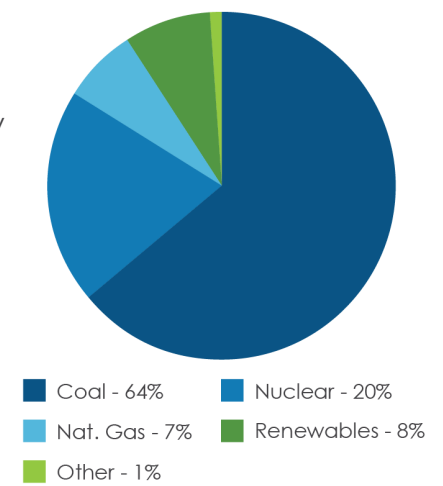
Reducing energy consumption nationally through efficiency by 15% for just one year would reduce PM_{2.5} (particulate matter) emissions by 11%, NO_x (nitrogen oxide) emissions by 18%, SO₂ (sulfur dioxide) emissions by 23% and CO₂ (carbon dioxide) emissions by 14%.⁴

According to ACEEE, several Midwest states have the potential to reduce their annual pollution through energy efficiency by more than 2,500 tons of SO₂, PM_{2.5} and NO_x. These include Illinois, Iowa, Indiana, Michigan, Missouri and Ohio. In addition, three other Midwest states, Wisconsin, Kentucky and Minnesota, could lower their pollution by 1,001-2,500 tons.⁵

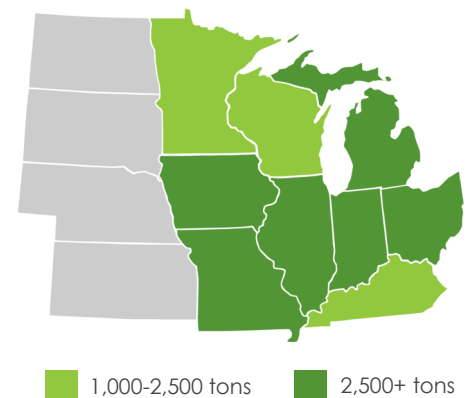
Efficient Buildings are Healthier for Occupants

People spend 90% of their time indoors, so it's no surprise that the quality of our indoor environment influences our health. What may be surprising is the environmental quality of our homes and workplaces is determined, in part, by the efficiency of our buildings.

Electricity Generation Mix in the Midwest by Fuel Type⁶



Potential to Reduce Pollution through Energy Efficiency



Buildings that are leaky and lack adequate insulation can have moisture issues, including mold and dampness. These conditions, coupled with inconsistent indoor temperatures, can lead to building-related illnesses such as asthma, headaches and fatigue. **Negative health effects, triggered by poor indoor environmental quality, make up nearly 14% of healthcare costs today.**⁷

The good news is even minor efficiency updates to buildings can have a large impact on occupant health. Efficiency improvements to homes, such as air sealing and insulation, can reduce asthma-related visits to the emergency room by 12%.⁸ Studies have also found that 40% of diagnosed asthma cases are related to exposure to moisture, pests or inconsistent temperatures at home. These building efficiency improvements, combined with an adequate ventilation system, can alleviate these issues and help stabilize indoor temperatures.⁹

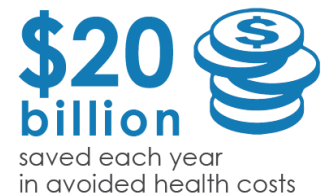
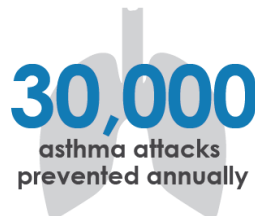
Appropriate ventilation systems and improving building efficiency also results in reduced indoor air pollutants and mold.¹⁰ Lower rates of sinus infections, allergies and colds have also been observed after efficiency upgrades to the building envelope. **Studies have also found an increase in productivity and cognitive function for workers employed in energy efficient buildings.**¹¹

Additionally, weatherization upgrades can improve mental health though enhancing comfort and reducing stress from high energy bills. Research from the Department of Energy found that after upgrades, residents reported a reduction in poor mental health days by 48%.¹²

Health Issues Exacerbated by Poor Indoor Air Quality



Benefits of reducing energy consumption by just 15%



Sources

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- ⁴ Hayes, Sara and Kubes, Cassandra. (2018) "Saving Energy, Saving Lives: The Health Impacts of Avoiding Power Plant Pollution with Energy Efficiency." American Council for an Energy-Efficient Economy.
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- ⁶ EIA-923 Monthly Generation and Fuel Consumption Time Series File, 2016 Final.
- ⁷ UL Environment. (2016) "Effects of Indoor Environmental Quality on Performance and Productivity"
- ⁸ Tonn B, Rose W, Hawkins B, Conlon B. (2014) "Health and household-related benefits attributable to the weatherization assistance program." Oak Ridge National Laboratory. Env Sciences Division. ORNL/TM-2014/345.
- ⁹ Robert Wood Johnson Foundation. (2009)" Beyond Health care: New Directions for a Healthier America"
- ¹⁰ E4The Future. (2016) Occupant Health Benefits of Residential Energy Efficiency
- ¹¹ Allen, Joseph G. et al. (2015) "Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments"
- ¹² Liddell C, Guiney C (2014), "Living in a cold and damp home: frameworks for understanding impacts on mental well-being." "Public Health, 129(3), 191-199.

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