

Energy efficiency technologies offer major savings

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Energy efficiency technologies that exist today or that are likely to be developed in the near future could save considerable money as well as energy, says a new report from the National Research Council. Fully adopting these technologies could lower projected U.S. energy use 17 percent to 20 percent by 2020, and 25 percent to 31 percent by 2030.

Achieving full deployment of these efficiency technologies will depend in part on pressures driving adoption, such as high [energy](#) prices or public policies designed to increase energy efficiency. Nearly 70 percent of [electricity consumption](#) in the United States occurs in buildings. The [energy savings](#) from attaining full deployment of cost-effective, energy-efficient technologies in buildings alone could eliminate the need to add new [electricity generation](#) capacity through 2030, the report says. New [power generation](#) facilities would be needed only to address imbalances in regional energy supplies, replace obsolete facilities, or to introduce more environmentally friendly sources of electricity.

Many cost-effective efficiency investments in buildings are possible, the report says. For example, replacing appliances such as air conditioners, refrigerators, freezers, furnaces, and hot water heaters with more efficient models could reduce energy use by 30 percent. Opportunities for achieving substantial energy savings exist in the industrial and transportation sectors as well. For example, deployment of industrial energy efficiency technologies could reduce energy use in manufacturing 14 percent to 22 percent by 2020, relative to expected trends. Most of these savings would occur in the most energy-intensive industries, such

as chemical manufacturing, petroleum refining, pulp and paper, iron and steel, and cement.

Although there is great potential, many barriers exist to widespread adoption of energy efficiency technologies, the report points out. The upfront costs can be high, which can deter investment despite the possibility of long-term cost savings. Volatile energy prices can cause buyers to delay purchasing more efficient technology due to a lack of confidence that they will see an adequate return on their investment. In addition, there is a shortage of readily available, trustworthy information for consumers hoping to learn about the relative performance and costs of energy-efficient technology alternatives. Investments in energy-efficient infrastructure are particularly important, as these can lock in patterns of energy use for decades. Therefore, taking advantage of windows of opportunity for infrastructure is crucial.

Overcoming these barriers will require significant public and private support, and sustained effort. Many energy efficiency initiatives have been successful, such as the U.S. Department of Energy and U.S. Environmental Protection Agency's Energy Star labeling program. Efforts undertaken by California and New York have yielded large energy savings for those states. These experiences provide valuable lessons for national, state, and local policymakers on enacting effective [energy efficiency](#) policies.

This is the final report in a series from the National Academies' America's Energy Future project, which was undertaken to stimulate and inform a constructive national dialogue about the nation's energy future.

Source: National Academy of Sciences ([news](#) : [web](#))

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