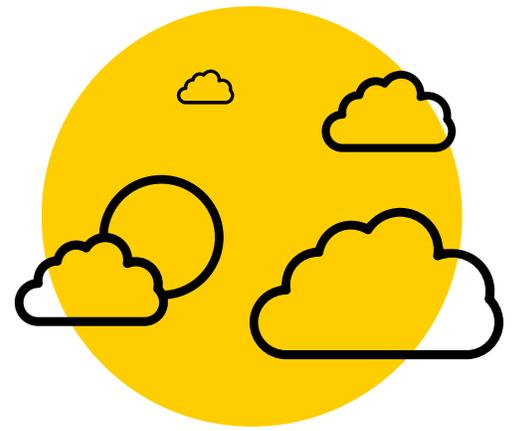


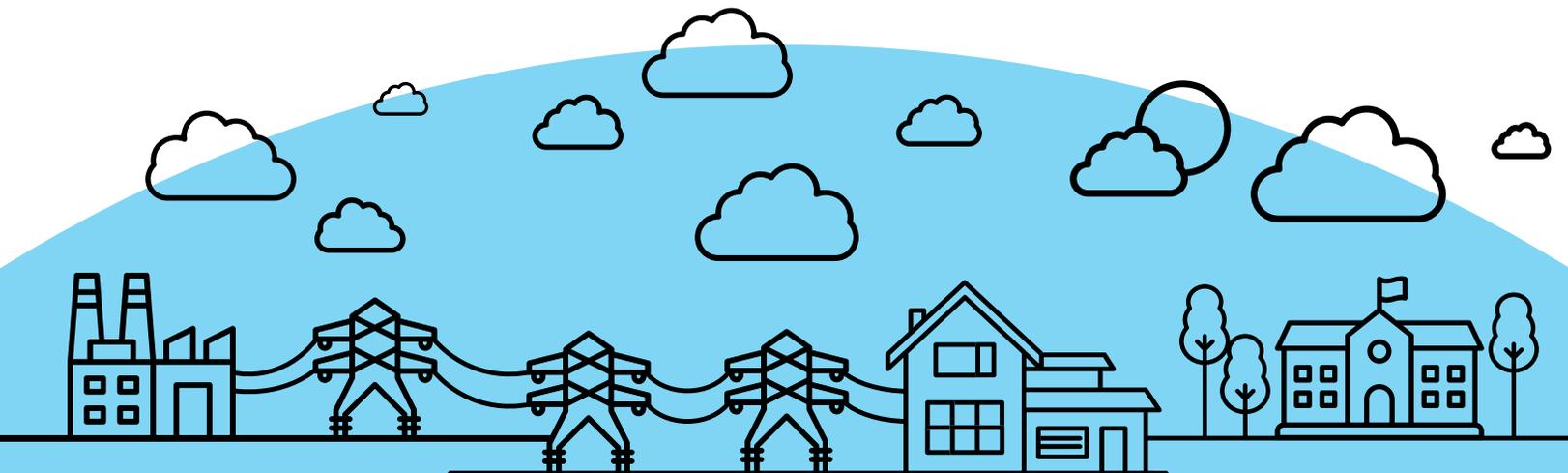
# Insulation Industry Opportunity Study

## Executive Summary



**Insulation is a cost-effective, easy-to-install product that can deliver energy savings for the life of the building. With building operations accounting for 30 percent of greenhouse gas emissions in the United States, installing air sealing and insulation is the first, best step toward decarbonizing the U.S. building sector.**

A coalition of national insulation trade associations commissioned ICF, an international consulting firm with expertise in the energy and efficiency sector, to undertake an analysis based on a simple proposition: how much can we reduce U.S. greenhouse gas emissions by investing in easily achievable insulation improvements to existing single-family homes, commercial buildings, and industrial facilities? As a result of the study, we learned the opportunity associated with simple insulation measures is immense and can significantly contribute to lowering emissions attributed to buildings. The impact is the equivalent of **increasing current wind production by 135 percent** or offsetting the emissions associated with **40 percent of all natural gas-fired generation** in the United States.



# Key Findings

## Residential Buildings



### Considerable savings potential for existing homes.

ICF estimates that energy savings ranging from **10 to 45 percent** can be achieved in existing homes that are air sealed and have insulation added in the ceiling and floors (and walls in limited circumstances) to levels prescribed by the 2021 International Energy Conservation Code.



### Expected long-term carbon reductions.

Nationally, this retrofit activity could yield the reduction of roughly **10 billion tons of carbon emissions over a 50-year period**, which is the minimum useful life of building insulation.

## Commercial Buildings



### Significant energy savings for commercial buildings.

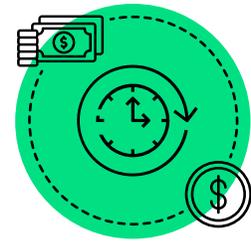
For schools, office buildings, apartments and stand-alone retail buildings, completing roof insulation and HVAC pipe insulation upgrades results in whole building energy savings of approximately **5 percent** nationally with higher savings available based on building type and location. Nearly **70 percent** of these savings flow from decreased need for natural gas use resulting in lower greenhouse gas emissions.



### Reduced energy costs for education subsector.

Nationally, primary schools would save an average of nearly **9 percent** by incorporating these insulation improvements, while secondary schools would average energy savings of **7 percent**.

## Industrial Facilities



### Exceptionally short payback periods.

ICF found that making pipe and mechanical insulation improvements to industrial facilities in eight major industrial sectors would save **more than \$126 billion** in energy costs based on an average capital cost of \$3.77 billion. The average **payback on this investment is about one year, with some being as little as six months**. This energy reduction also translates into significant carbon emissions prevented given the high use of natural gas during these processes.



### Insulation aids in transition to electrification.

Energy savings from insulation upgrades can reduce natural gas use by **118 billion therms** across the U.S. industrial sector and help reduce demand on the electric grid as electrification technologies roll out.

Making common sense insulation improvements to homes, buildings and industrial facilities yields enormous energy cost savings to consumers and drives tremendous greenhouse gas emission reductions. The emission reduction potential resulting from the improvements considered in this study would drive annual CO<sub>2</sub> equivalent emission reductions of nearly 282 million tons. The longevity of insulation measures translates to lifetime CO<sub>2</sub> equivalent emission

reductions of more than **11.5 billion tons**. These reductions are the equivalent of annual emissions from **over 3,000 coal-fired power plants**, or the electricity used in a year by **almost 2.5 billion** gasoline-powered passenger vehicles driven for one year. Perhaps most importantly, insulation improvements can be implemented immediately with off-the-shelf technology while allowing longer-term investments and electrification technologies to be planned and deployed.