

Highlights

Revolutionizing Energy Efficiency

Digitalization, and the evolution of new smart technologies utilizing artificial intelligence, grid edge, cloud, and internet of things technologies are revolutionizing many industries, including energy efficiency.

Control and Connectivity

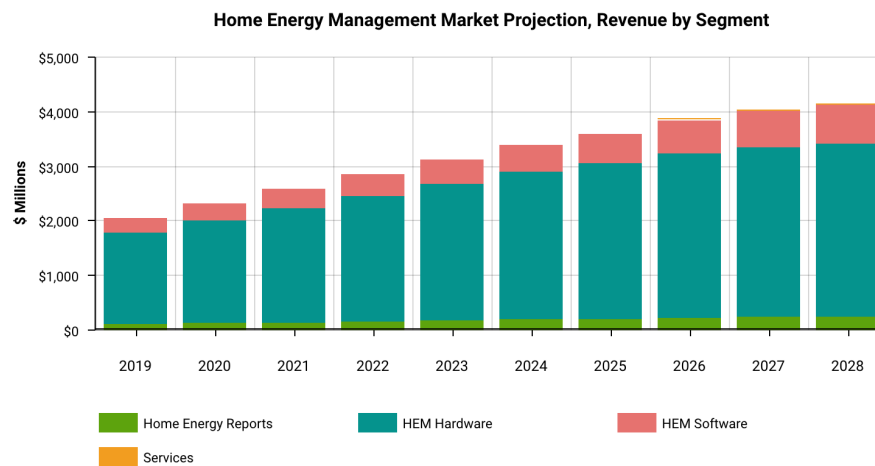
Smart appliances and building automation market penetration are projected to continue to grow. In the residential sector alone, control and connectivity are expected to be included in half of new construction by 2023.

Untapped Potential

As a foundational tool for decarbonization, energy efficiency still has enormous untapped potential, and could reduce U.S. greenhouse gas emissions by 50% by 2050.

53 Digitalization

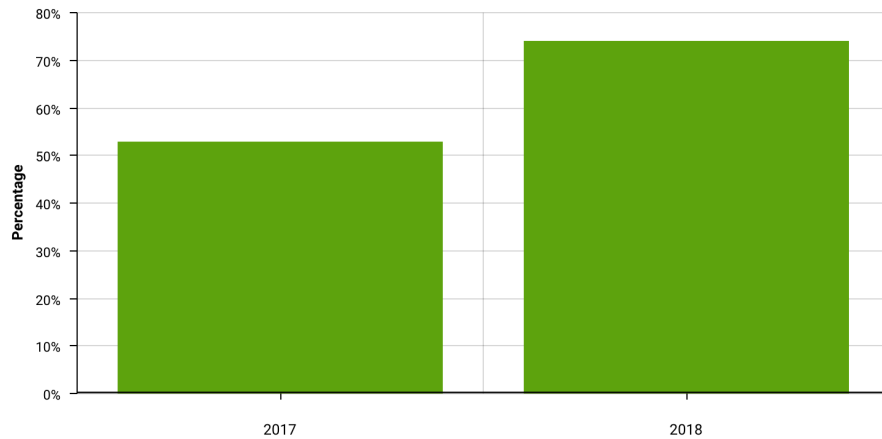
Global investment in digital infrastructure and software for electricity systems has increased by more than 20% annually from 2014 to 2016



Source: Navigant (2019), [Home Energy Management Market Overview](#)

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Survey Respondents who Invested in Building Controls in Previous Year



Source: Johnson Controls (2018), [Energy Efficiency Indicator Survey](#)

Explosive innovation is occurring at the nexus of information technology (IT), connectivity, and energy consumption. A market forecast by Navigant estimates that home energy management (HEM) systems, including home energy reports (HERs), hardware, software, and services, will surpass \$4 billion by 2028.¹ Growing investments in smarter, more digitalized technologies signal ample opportunities for greater optimization of energy use to time- and location-dependent needs: a 2018 Johnson Controls survey found that 74% of respondents in the U.S. invested in building controls in the previous year; and global investment in digital infrastructure and software for electricity systems has increased by more than 20% annually from 2014 to 2016.²

Digitally-enabled advancements have implications for all sectors, including the potential to:

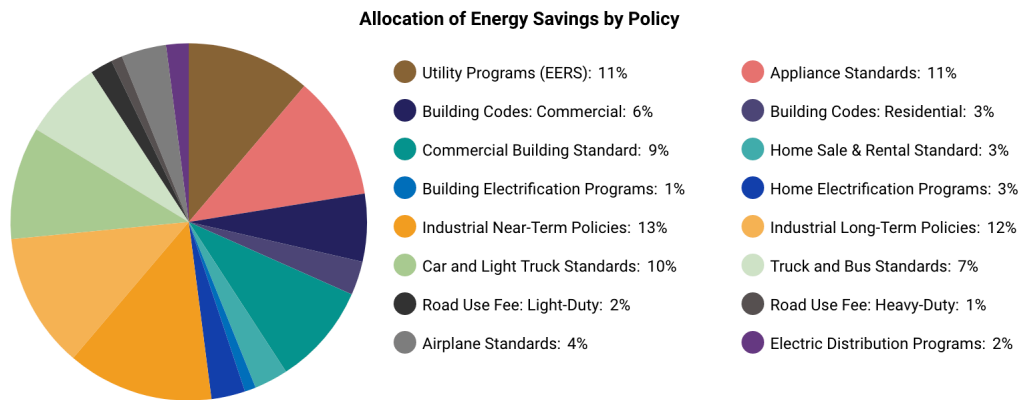
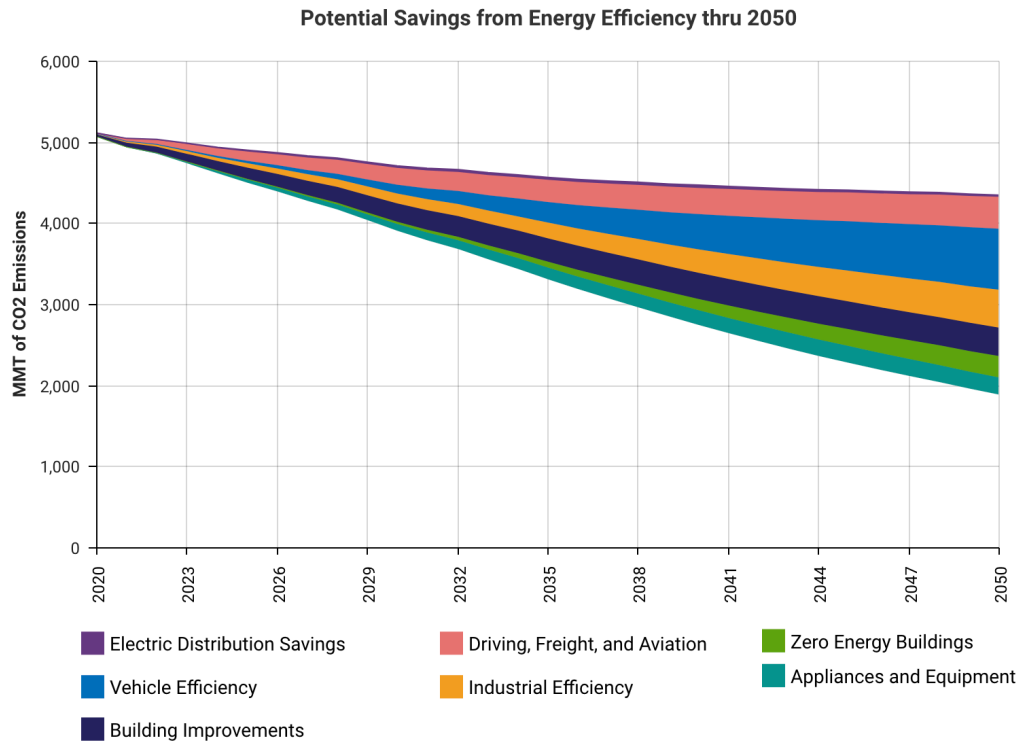
- Push the market penetration of control and connectivity technologies for homes to reach 50% by 2023.
- Save more than 10 PWh cumulatively through 2040 in U.S. buildings.
- Reduce global road freight energy consumption by about 15% by 2050 through improved supply chain and logistics operations.
- Reduce global operations and maintenance costs by 5% in power plants and electricity networks by 2040.

1 Navigant (2019), [Home Energy Management Market Overview](#)

2 IEA (2017), [Digitalization and Energy 2017](#)

54 Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half

Energy efficiency can reduce greenhouse gas emissions by 50% by 2050



Source: ACEEE (2019), [Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half by 2050](#)

Through an analysis of the potential of 11 different energy efficiency opportunities, ACEEE estimates that energy efficiency could reduce projected U.S. energy consumption and projected greenhouse gas emissions by about 50% by 2050 (and even greater carbon dioxide reductions, as shown in the line graph). ACEEE also finds that almost all the savings could be achieved through government policies and programs (pie chart). The policies and programs can provide more than \$700 billion worth of savings in 2050.³

3 ACEEE (2019), [Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half by 2050](#).