



What is Building Electrification?

Building electrification describes the shift to using electricity rather than burning fossil fuels like oil, gas, and coal for heating, and cooking. This process is an important first step towards building decarbonization. An ideal, fully electrified building would run entirely on solar, wind, and other sources of zero-emission electricity.

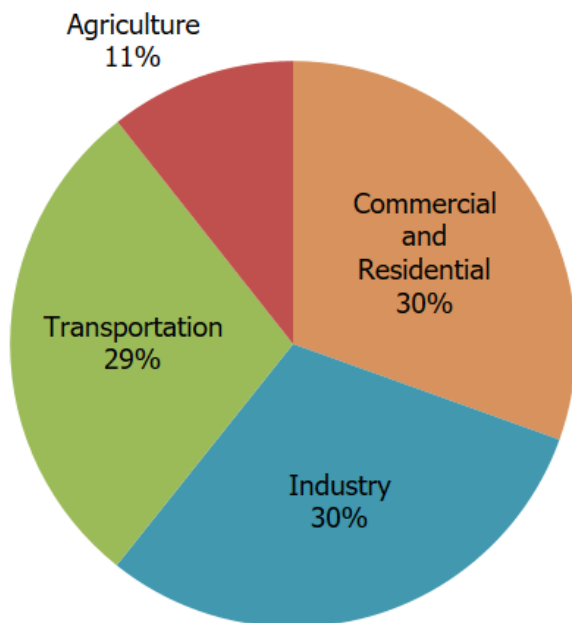


Benefits of Building Electrification

Reduced carbon footprint: This is the major benefit of building electrification. According to the EPA, building operations account for roughly 30% of energy-related CO₂ emissions in the USA. The sooner building codes and public policies address these emissions and reduce the overall building sector's carbon footprint the more impactful that reduction will ultimately be.

Reduction of harmful air pollutants: All-electric buildings cut out toxins that may be released indoors by oil, gas, coal, and propane appliances. Gas-powered stoves release carbon monoxide, nitrogen dioxide, and formaldehyde. Electrification also eliminates site-emissions that contribute to air pollution and smog, especially in urban centers.

Job-creation: A study by the UCLA Luskin Center for Innovation projected that 100% electrification of California's existing and new buildings would create roughly 100,000 full-time equivalent jobs, even after factoring in job loss in the fossil fuel industry.



U.S. Environmental Protection Agency (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021

Support for Building Electrification

Rebates: Rebates that can cover the upfront costs of building electrification, such as the High-Efficiency Electric Home Rebate Act (HEEHRA), are available for lower and middle income households. The Energy Efficient Home Improvement Credit is also available and enables home owners to receive a \$2,000 federal tax credit for qualified heat pumps. Programs, such as the 179D Commercial Buildings Energy Efficiency Tax Reduction, are available for commercial buildings.

Building Electrification Technology

Induction Cooking

Benefits:

- Improved indoor air quality
- Safe-to-touch surface if left on by accident
- Easier to clean surfaces
- More responsive than gas cooking with faster heating

Considerations:

- *Must* use ferrous (magnetic)-bottomed pans



Image credit: Whirlpool.com

Induction Cooktop in Use

Heat Pumps

Heat Pumps Can Be Used For:

Building Conditioning | Water Heating | Clothes Drying

Benefits:

- Easier to *move* heat rather than generate heat
- **Move up to 3 times more energy than consumed**
- Take advantage of multiple heat sources or sinks: air, water, and ground
- **Zero** on-site emissions compared to gas/oil burning appliances

Do They Work in Cold Climates?

YES! Cold-climate options work to as low as -20F, maintaining ~ 70% - 80% of rated capacity

Stay tuned for more on cold climate heat pumps!

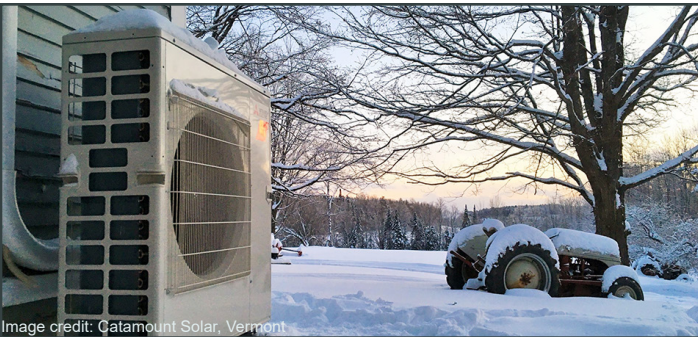


Image credit: Catamount Solar, Vermont

Who We Are

Have a Question About the Energy Code? Contact Us.

SEDAC is the Energy Code Training Provider on behalf of the Illinois EPA Office of Energy. Attend SEDAC's workshops and webinars to learn more. We also offer online courses and technical support.

Workshops | Webinars | Online Courses | Technical Support