

A Trillion Dollars Saved on Our Electric Grid from Wide-Scale Ground Source Heat Pump Deployment

Summary of [DOE report](#), “Grid Cost & Total Emissions Reductions Through Mass Deployment of Geothermal Heat Pumps for Building Heating and Cooling Electrification in the U.S.” Nov. 2023

The scenarios modeled assume ground source heat pumps are installed in 68% of existing and new buildings in the U.S. coupled with weatherization in single-family homes between 2022-2050.

KEY NATIONAL OUTCOMES *(Achievable under varied national deployment scenarios)*

- More than \$1 trillion in cumulative electricity cost savings
- Consumer heating fuel bills cut by \$19 billion per year
- Grid expansion decreased by 38%—avoids 43,500 miles of transmission lines
- 13% less electricity needed
- 12% reduction in wholesale price of electricity
- Building-sector emissions down 26%

Massachusetts Data

MA has a current electric peak demand of 55.3 Terawatt hours (TWh), shown below in blue. The green bars represent the future electric peak demand as we electrify buildings with either air-source heat pumps or the more efficient ground-source heat pumps.

The DOE analysis conservatively predicts a **36% reduction in electricity use in MA, or 34.29 TWh**, with GSHPs compared to electrification with air-source heat pumps only.

Current MA Electricity Use vs. Future Electrification (with and without GSHPs)

