FACT SHEET

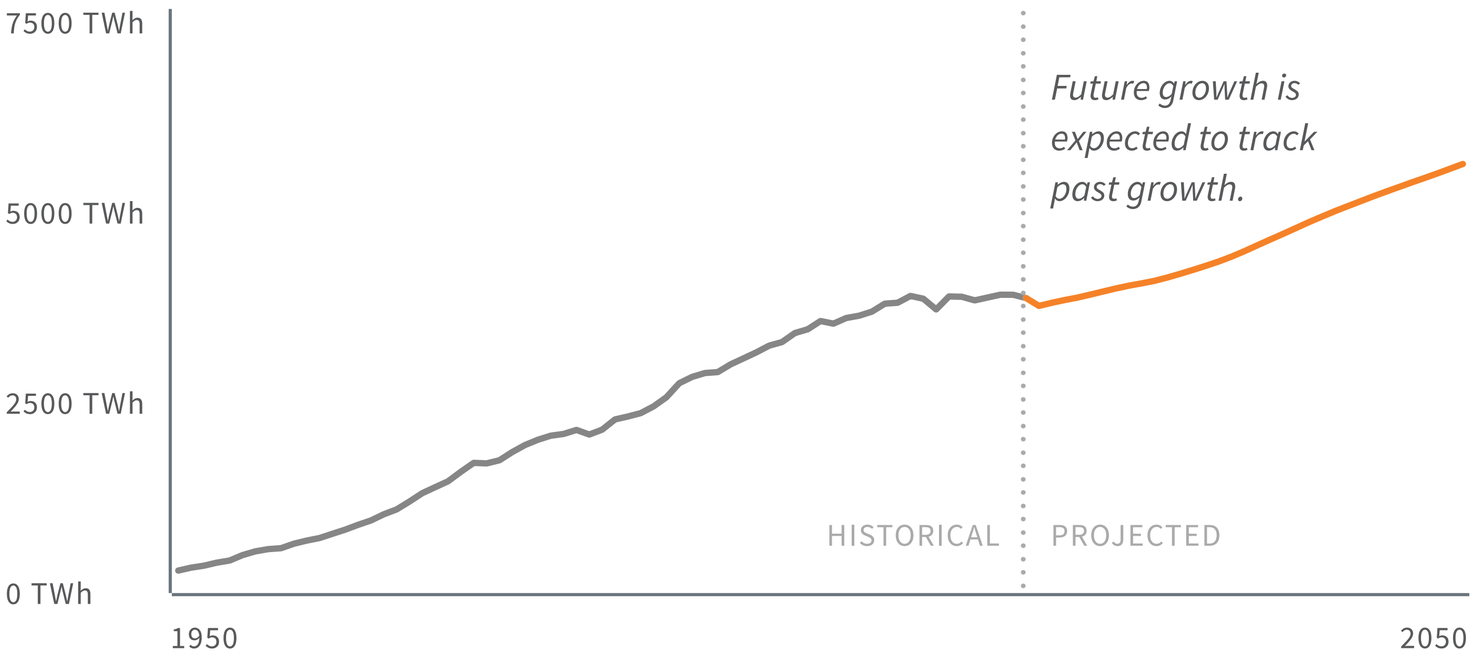
Modernizing Massachusetts' Grid with All-Electric Buildings

Massachusetts must modernize its electric grid to maintain reliable and affordable power. Efficient, all-electric buildings can be a valuable tool in optimizing this evolution. There's no need to wait: today's grid can already serve thousands of new electric systems as utilities continue long-term planning efforts.

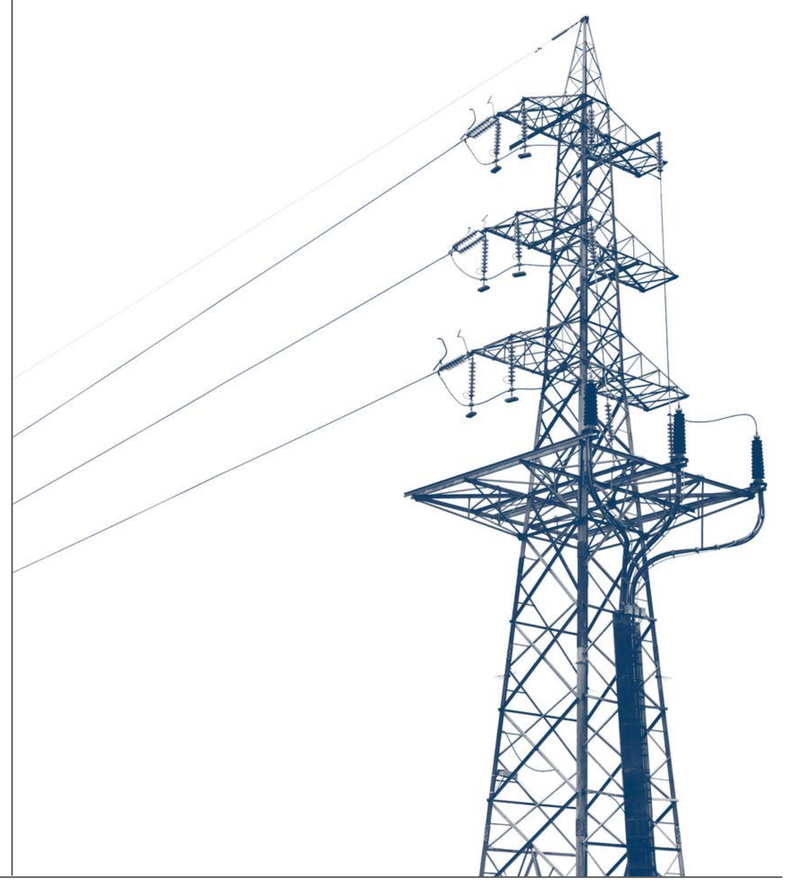
Building the grid of the future starts today

Updating and expanding Massachusetts' grid is essential to improving reliability and powering electrified buildings and vehicles as part of our clean energy transition. Managing this growth will require coordinated investments in grid infrastructure, distributed energy resources like solar and battery systems, and building technologies that give grid operators more flexibility. Utilities need to inform this process by creating infrastructure plans that reflect a climate-aligned trajectory.

U.S. electricity consumption will continue to rise with the growing adoption of all-electric vehicles and buildings[1]



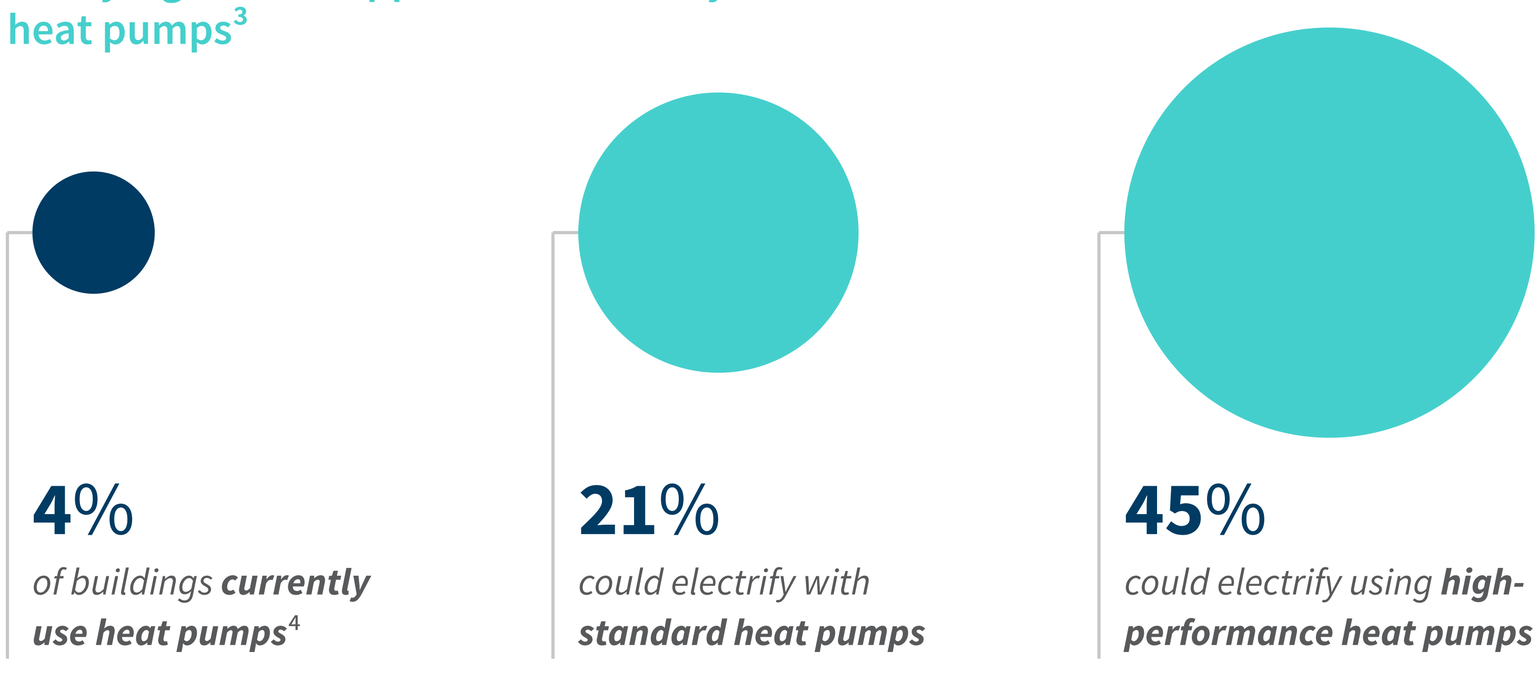
Grid-interactive technology could offset **20% of projected electric demand** by 2030, helping manage grid growth.[2]



We are ready for accelerated heat pump adoption

Massachusetts policymakers and regulators should advance building electrification efforts to both catalyze and inform long-term grid planning. Today's grid distribution system can already serve 6-12 times more heat pumps than are currently in operation.[3] Utility operators are well-prepared to meet this growing demand as long-term plans are developed.

Today's grid can support substantially more heat pumps[3]



4%
*of buildings **currently use heat pumps***[4]

21%
*could electrify with **standard heat pumps***

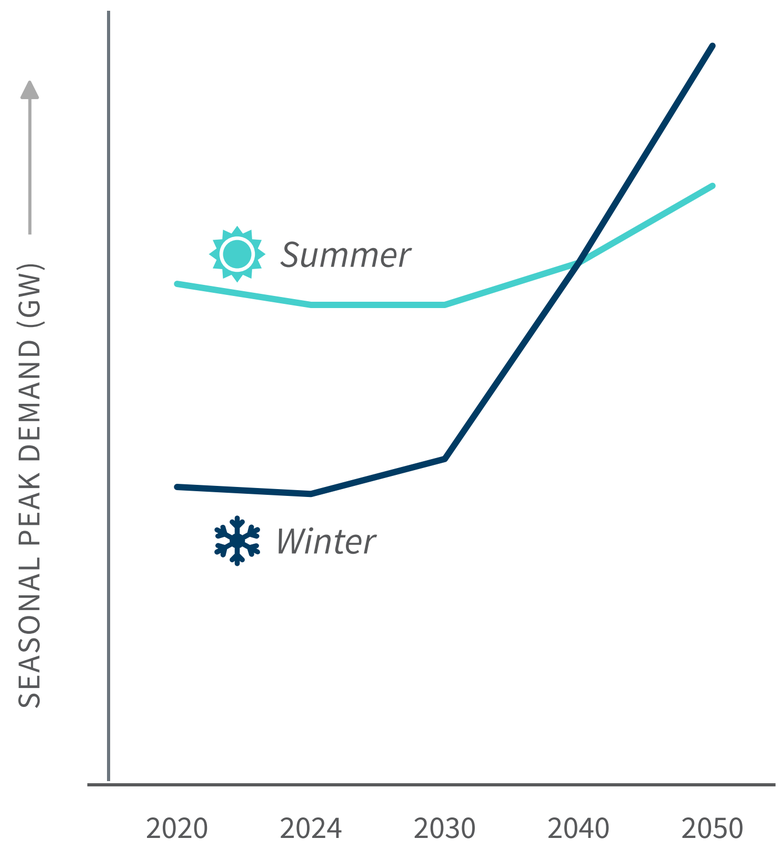
45%
*could electrify using **high-performance heat pumps***

Electrification will change how our grid operates

Massachusetts' infrastructure is designed to meet the maximum load (a.k.a. “peak demand”) that buildings require throughout the year. Today, peak demand is dominated by air conditioners running at full blast on the hottest day of summer. Replacing these units with more efficient heat pumps can **reduce this summer peak and minimize the risk of summer blackouts.**

Massachusetts will also see an increased winter peak as heating systems are electrified. In Massachusetts’ climate, this winter growth will result in a greater balance in seasonal grid usage, allowing utilities to serve more load with the same infrastructure and potentially reduce costs for consumers.

States like Massachusetts will see a more seasonally balanced grid[5]



All-electric buildings can help modernize the grid

Massachusetts’ transition to a clean power grid will rely on several innovations in all-electric buildings to improve reliability while increasingly running on renewable energy. Together, the technologies described below can balance energy use throughout the day to reduce carbon emissions and electricity bills. They can also help prevent blackouts and allow for the continuation of essential services when the power does go out.

Efficient equipment

Heat pumps and other modern, energy efficient building systems reduce overall electricity consumption year-round.

Distributed energy resources

Solar, battery storage, and electric vehicles can act as grid assets and maintain building operations when the power goes out.

Grid interactive technology

Smart appliances and energy management systems let buildings shift power use during the day based on real-time grid conditions.

Microgrids

These networks cost-effectively balance operations across multiple buildings and support community-scale resilience.

Take action

Policymakers can help guide strategic investment in the grid in several ways:

- **Adopt high-performance building codes** that incentivize or require solar, battery systems, and other technologies to support grid flexibility and increase resilience.
- **Direct utilities to establish integrated distribution plans** that account for climate-aligned electrification of all sectors and leverage available federal funding.
- **Direct utilities to adopt ratemaking processes, tariffs, and incentives** to encourage the adoption of building energy management systems, on-site energy generation, and energy storage.
- **Improve state oversight** over transmission spending to prioritize regional and interregional projects that support grid decarbonization efforts.

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Learn more

What States Can Do to Modernize the Grid, Climate XChange, 2023: bit.ly/44nqXSH

Modernizing the Electric Grid: State Role and Policy Options, National Conference of State Legislatures, 2021: bit.ly/3pq0a9G

Cut Costs, Reduce Carbon, and Improve Health with Demand Flexibility, RMI, 2020: bit.ly/3r6cLzv

NOTES

1. National Renewable Energy Laboratory, 2018, bit.ly/3XuUdVJ
2. The Brattle Group, 2019, bit.ly/3XqD5QT
3. Waite and Modi, 2019, bit.ly/3JAFl2h
4. Baseline data for residential buildings; graphic assumes equivalent commercial heat pump penetration. US Energy Information Administration, 2020, bit.ly/44A8GT6
5. NREL Electrification Futures Study, High Electrification Scenario, residential/commercial/industrial loads, 2018, bit.ly/3XOdJfl