

Rhode Island Energy Efficiency Market Potential Study (MPS)

A Comprehensive Assessment of Demand-side Energy Resource (DER) Opportunities 2021-2026



Overview

The MPS assesses the potential for utility and government programs to accelerate the adoption of commercially viable, energy saving technologies in Rhode Island over the 2021-2026 period. The study evaluates **five different DERs**:

The study estimates the impact on **electricity, natural gas, oil and propane sales**, as well as **peak electricity demand**.

- 1 Energy Efficiency
- 2 Electric Demand Response
- 3 Combined Heat & Power
- 4 Heating Electrification
- 5 Customer-sited Solar PV

Scenarios

For each opportunity, the MPS models a **low, mid, and max scenario**:

Low

Lower bound of projected savings. For most programs and DERs modeled, this scenario represents maintaining a **business as usual** approach.

Mid

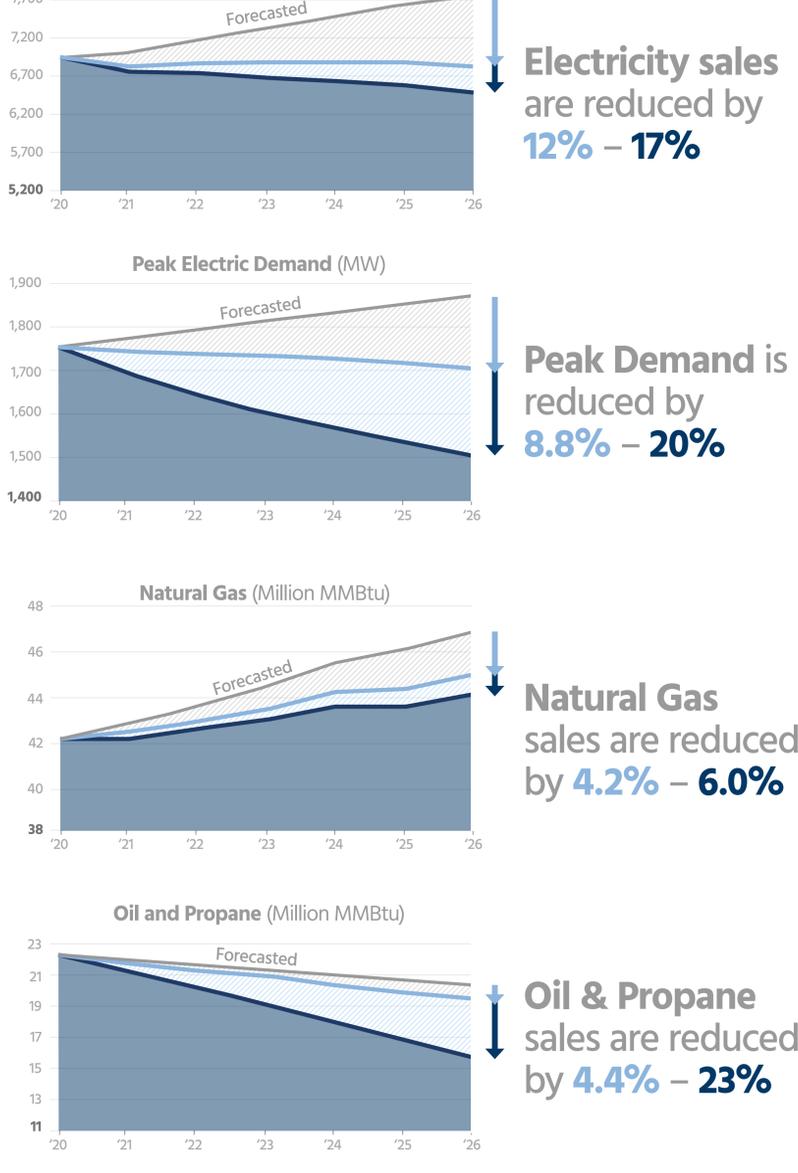
Scenario where **incentives and enabling activities are increased** above current levels as applied in the Low scenario.

Max

Upper bound of potential savings with incentives covering the full additional costs of installing energy saving technologies in comparison to standard equipment.

Impact on Energy Use in Rhode Island

When the impacts of each DER opportunity under each scenario are considered together, the MPS finds that by 2026...



These savings will result in significant ratepayer, economic, and environmental benefits:



By 2026, these savings will reduce Rhode Island's emissions by the equivalent of:

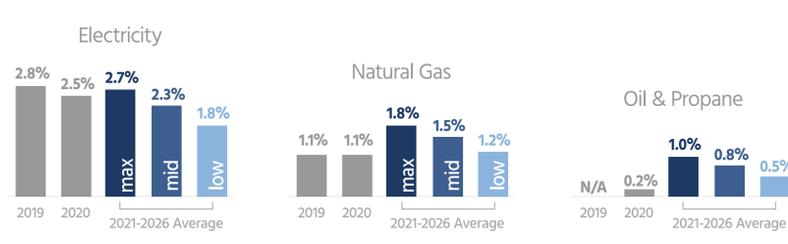


Results by DER

Energy Efficiency

Using energy more efficiently allows Rhode Islanders to reduce their consumption of electricity, natural gas, oil, and propane, while still delivering the same products and services. By emphasizing long lasting savings via deep energy retrofits (e.g. more efficient heating and cooling systems, improved insulation, etc.) today's energy efficiency investments in Rhode Island can generate savings for years to come.

Average % reduction in sales achieved each year¹



Every year, energy efficiency programs can reduce electricity sales by an additional **1.8% to 2.7%** - similar to savings in the past.

Efficiency programs can also reduce peak electric demand by 1.1% to 1.9% each year.

Efficiency programs can reduce natural gas sales by **1.2% to 1.8%** each year.

Natural gas savings can be expanded with increased investment and will grow in importance in the overall energy efficiency portfolio.

Efficiency programs can reduce oil and propane sales by **0.5% to 1.0%** each year.

Delivered fuel savings can be greatly expanded if efficiency programs incentivize technologies not currently offered.

Electric Demand Response

Incentivizing customers to reduce electricity consumption during peak hours, by strategically encouraging behavioral changes and applying equipment controls, can defer electricity system infrastructure investments, thereby **helping keep electricity rates affordable for all Rhode Islanders**.

% Reduction in Peak Electricity Demand in 2026²

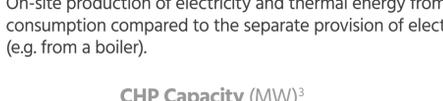


By 2026, demand response programs can reduce forecasted peak demand by **1.7% to 4.5%**. (note that this in addition to peak demand reductions from efficiency equipment investment)

Compared to existing enrollment, **demand response programs can be expanded** nearly two to five times by leveraging new approaches and technologies.

Combined Heat and Power (CHP)

On-site production of electricity and thermal energy from a single source of fuel reduces overall energy consumption compared to the separate provision of electricity (e.g. from the grid) and thermal energy (e.g. from a boiler).

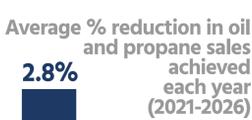


Larger commercial, educational and public facilities in Rhode Island offer further opportunities for CHP technologies. Offering moderate incentives under the low and mid scenario results in an **additional CHP potential of 21 MW to 27 MW** over the study period.

Heating Electrification

Replacing or displacing existing inefficient fossil-fuel based space and water heating systems with high efficiency electric heat pumps will decrease fuel consumption without a proportionate increase in electricity consumption.

Average % reduction in oil and propane sales achieved each year (2021-2026)



With moderate incentives, electrification could reduce oil and propane sales by **0.2% to 0.4%** each year.

Completely eliminating the additional cost of heat pumps through incentives significantly boosts adoption and increases fuel savings to 2.8% of sales each year - driven by nearly **9,000 homes** electrifying their heat annually.

Customer-sited Solar PV

Customer-sited solar PV helps reduce customers' reliance on electricity from the grid by producing their own carbon-free electricity.

Customer-sited solar PV capacity (MW)⁴



Demand for customer-sited solar PV will continue to grow despite the phase out of the federal investment tax credit (ITC) as solar costs continue to decline and customers participate in Rhode Island's solar programs.

Rhode Island's **customer-sited solar PV can increase by 195 MW to 273 MW** over the study period.

The MPS was prepared by Dunsky Energy Consulting for the State of Rhode Island Energy Efficiency & Resource Management Council (EERMC). The full report can be accessed on the EERMC website.



STATE OF RHODE ISLAND
ENERGY EFFICIENCY & RESOURCE MANAGEMENT COUNCIL

Footnotes

¹ 2019 and 2020 values are derived from savings estimated in National Grid's 2019 Energy Efficiency Fourth Quarter Report and 2020 Energy Efficiency Program Report, respectively. Oil and propane savings were not reported for 2019.

² 2019 value is based on Dunsky's analysis of National Grid's 2019 demand response programs.

³ Pre-2020 CHP capacity represents systems connected to National Grid's distribution network only and are based on National Grid interconnection data.

⁴ Pre-2020 solar PV capacity represents customer-sited systems (e.g. excludes virtual net metered systems) connected to National Grid's distribution network and are based on National Grid interconnection data. 2020 capacity is estimated by Dunsky.