

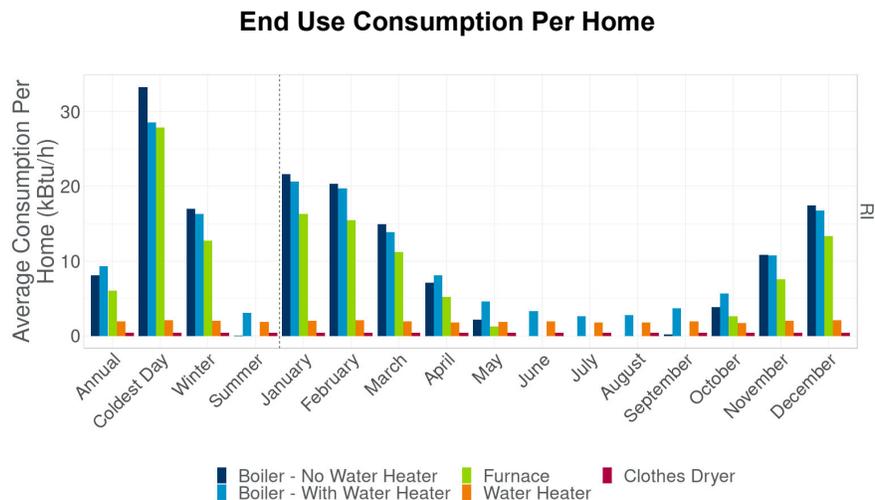
# National Grid RI Gas End-Use Consumption Study

Guidehouse derived natural gas end-use consumption estimates for National Grid customers in Rhode Island by applying adjustment factors to models originally developed using metered data in Massachusetts. This work produced average consumption estimates by time period (annual, monthly, coldest observed day) and day type (weekday vs. weekend/holiday) for boilers, furnaces, domestic hot water (DHW) and clothes dryers. The analysis also produced peak load shape factors for a limited set of temperature conditions.

## Key Findings

-  Heating end uses account for the vast majority of gas consumption during the Coldest Day; therefore, programs addressing peak demand should first focus on furnaces and boilers.
-  Heating also accounts for most Annual consumption, though DHW has a larger share; therefore, programs for energy efficiency may benefit from including DHW as well.
-  Clothes dryers account for an insignificant amount of Coldest Day and annual consumption.

End-use consumption per home is shown in the figure to the right. The heating end uses account for the vast majority of the consumption during winter months and on the coldest day. The same is true of annual consumption, though water heaters account for a larger proportion. Clothes dryer consumption is minimal relative to the other end uses.



## Recommendations

-  The results of the study provide an indication of natural gas end use consumption estimates by time period and day type for National Grid's single-family residential customers in RI. The "coldest observed day" consumption and peak load shape factor values developed in this study are appropriate to use for managing peak demand in a typical year. Guidehouse recommends applying the percentages detailed in the report by end use when calculating peak demand savings attributable to EE programs.
-  If consumption estimates with greater precision, hourly load shapes, or multifamily results are desired, a metering study would be needed to collect detailed consumption data specific to RI. If design day consumption estimates are desired, further analysis involving building simulation modeling could be used to produce those results.