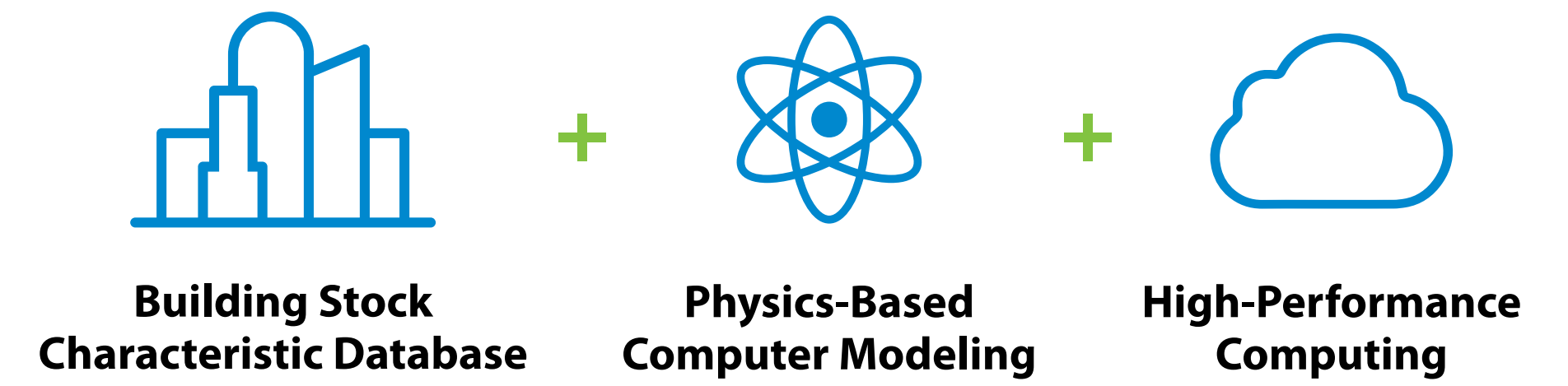


Commercial Building Stock Energy Consumption Dataset

Highly granular, data-driven decision-making for national, regional, and local building stock

- DOE-funded, NREL-developed models of the U.S. building stock
- Built on EnergyPlus® and OpenStudio®
- 350,000 models to represent the diversity of the U.S. building stock
- Validated to realistically represent hourly end uses



What's in the Dataset?

Characteristics

- Building Type
- HVAC System Type
- Construction
- Vintage
- Schedules
- Location
- And many more...

End Uses

- HVAC
- Lighting
- Refrigeration
- Water Heating
- Equipment

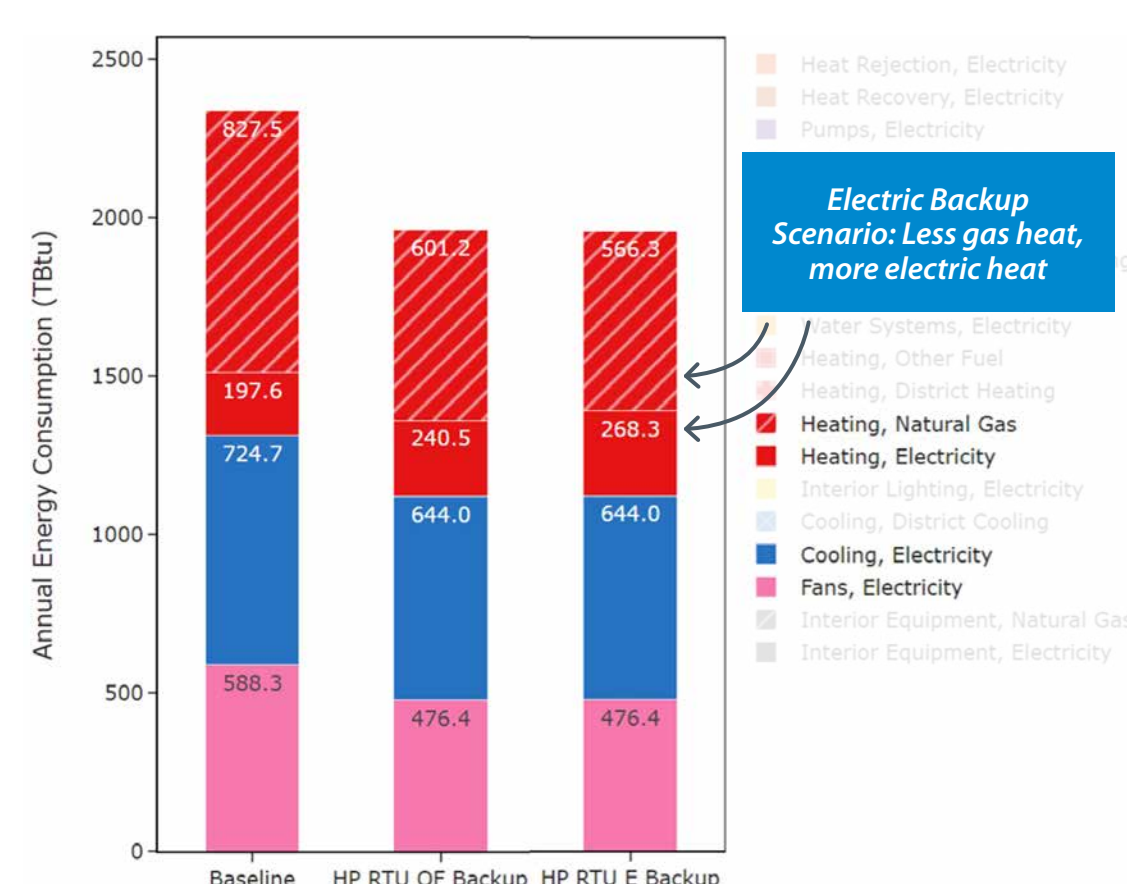
Data Format

- Individual Load Profiles
- Aggregate Load Profiles
- Individual Building Models
- Metadata

Data in Action

Heat Pump Rooftop Units (HP-RTUs) With Original Fuel Backup

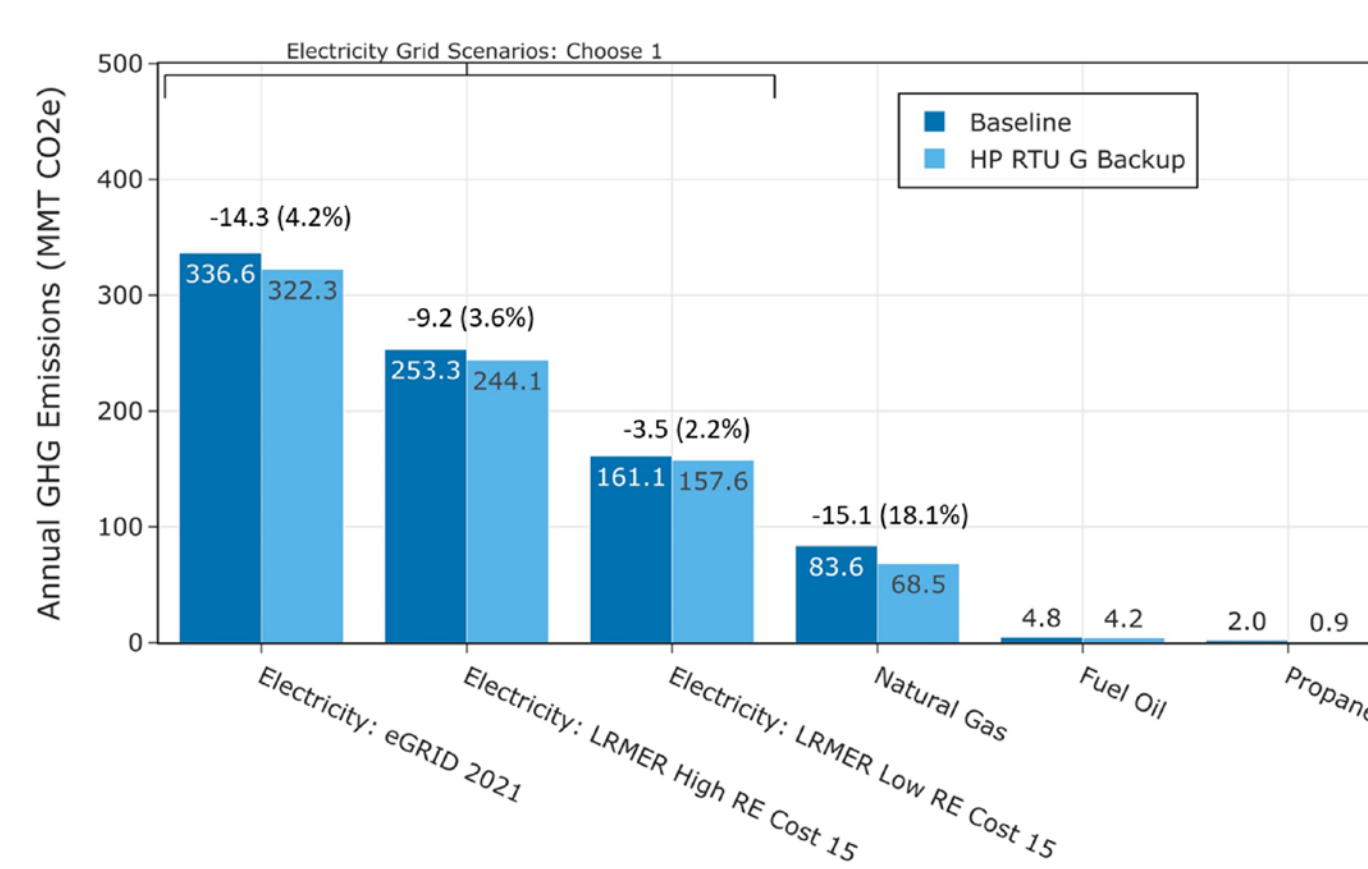
Stock Site Energy by Fuel and End Use



OF Original Fuel Backup E Electric Backup

For original fuel (OF) backup scenario:

- 27% stock heating gas savings (226 Tbtu)
- -22% stock heating electricity savings (-43 Tbtu)
- 11% stock cooling electricity savings (81 Tbtu)
- 19% stock fan electricity savings (112 Tbtu)
- Cooling and fan savings could also be attributed to high-performance non-HP-RTUs.
- Savings are associated with premium units.
- Electric backup scenario shows higher electricity and lower natural gas consumption compared to original fuel scenario.



- Emissions avoided across all presented grid scenarios.
- Electricity emissions avoided despite electrifying furnaces from cooling and fan end uses; also from replacing electric resistance RTUs with HP-RTUs.

HP-RTU: Electric vs. Original Fuel Backup Load Profile for Winter Peak

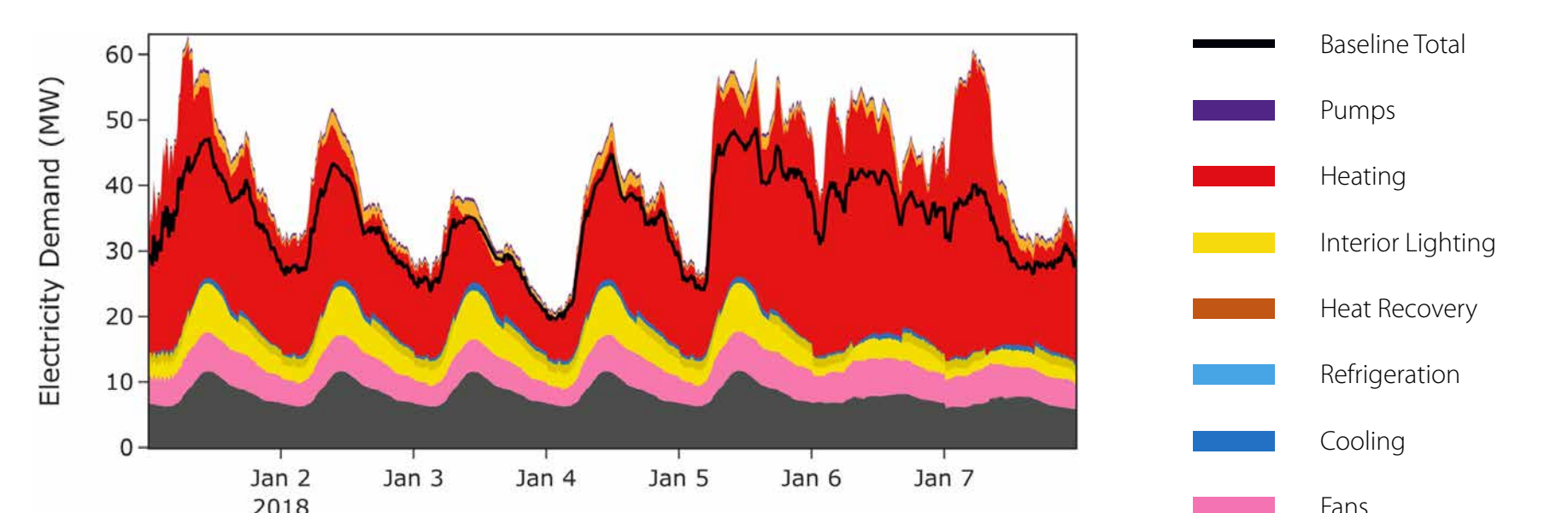
Sample Location: Boston, MA (Suffolk County)

Scope: Total commercial stock

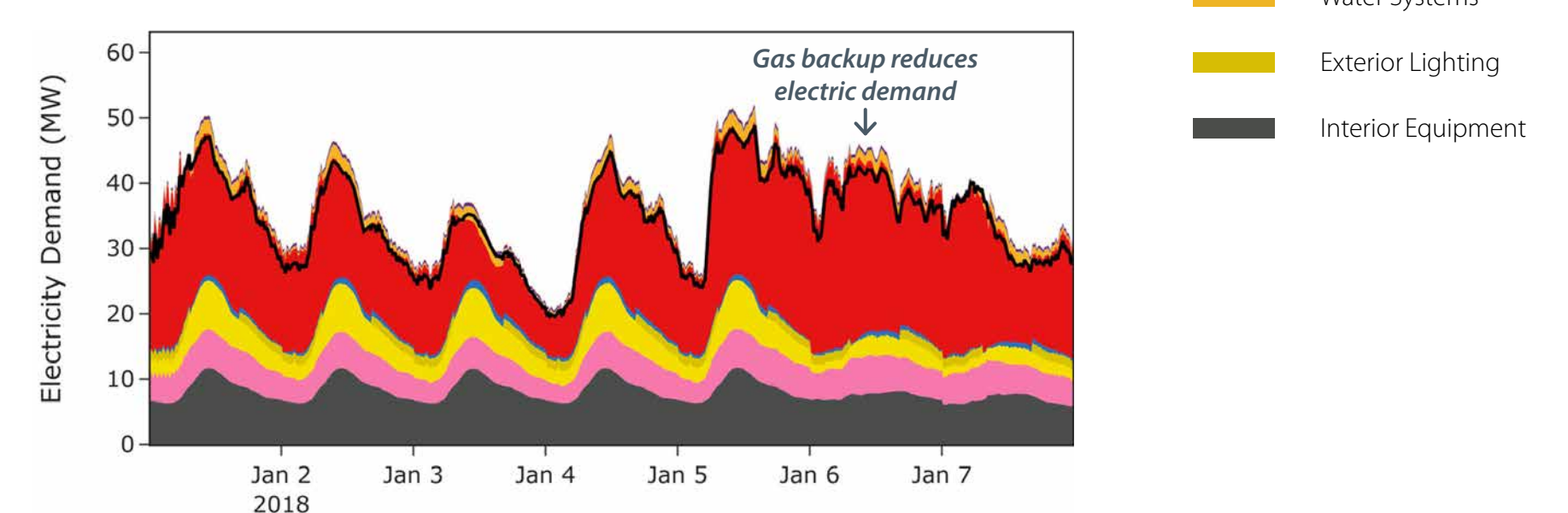
Time step: 15 minutes

Fuel: Electricity

HP-RTU, Electric Backup



HP-RTU, Original Fuel Backup



Note that load profiles are heavily influenced by assumptions for heat pump sizing routine, lockout temperature, and performance curves.

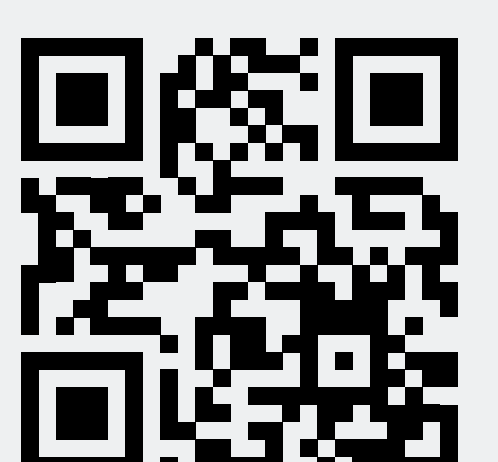


Use the Dataset

- Utility-integrated resource plans and load forecasts
- Electrification planning
- Emissions analysis
- Decarbonization analysis
- Policy and rate design

Access the Dataset

- Datasets are released every six months with upgrade measures and packages.
- Access datasets through a web data viewer.
- Download the raw datasets.
- Contact us via email: ComStock@nrel.gov
- How-to guides and tutorials are available on our website: <https://comstock.nrel.gov>



<https://comstock.nrel.gov>