Demand-Side Grid (dsgrid) Building Load Profiles using ResStock™ and ComStock™ v2021

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This dataset contains simulated hourly end use load profiles of the residential and commercial building sector in the contiguous United States for every other year from 2010 to 2050. Data were produced in 2021 using ResStock™ and ComStock™, which are building stock energy models of the US residential and commercial sector, respectively, and are published in dsgrid Toolkit format.

The dataset consists of base year 2018 ResStock and ComStock (collectively known as BuildStock) timeseries data differentiated by county, building type, fuel type, and end use, along with backward-and forward-looking projections created by applying regional-, sectoral-, and end use-specific growth rates derived from EIA's 2021 Annual Energy Outlook (AEO)'s Reference Scenario. The base year datasets represent the US building stock as of 2018 and were simulated in 2021 using AMY 2012 weather to align with NREL's wind and solar resource datasets. They were produced using the BuildStock tools during the End Use Load Profiles (EULP) calibration project. The base year datasets published here are not the same as those produced by the EULP project (available here) as the former used AMY 2012 and the latter used AMY 2018. The projection methodology is described in NREL/TP-5500-84471. Reflecting EIA's reference scenario assumptions to provide a baseline for exploring long-term trends, the projection does not reflect large-scale electrification of building space heating, water heating, clothes drying, cooking, or other end uses. The dataset also does not include electric vehicle charging that might occur on-site at buildings. Electric vehicle charging is described in this companion dataset.

Dataset Access

The full projected dataset is over 500 GB. For convenience, six aggregated views are also available, and the dimensions of each view are summarized in Table 1 below. The dimension records (e.g., the county dimension record maps the FIPS code to county name) and the mapping between different aggregated dimensions are available in the "dimensions" folder. The energy unit associated with the value column can be found in the metric records. Refer to this dsgrid tutorial on how to query a dataset with python.

Table 1: Summary of dataset views.

View	Full Dataset	Full State-level	State-level Simplified	Simple Profiles	Annual Summary (CONUS)	Annual Summary (State)	Annual Summary (County)
File type	parquet	parquet	parquet	csv	csv	csv	csv
Dimension							
Scenario	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Model Year	2010-2050, even years (21)	2010-2050, even years (21)	2010-2050, even years (21)	2010-2050, every 5 (9)	2010-2050, even years (21)	2010-2050, even years (21)	2010-2050, every 5 (9)
Weather Year	AMY 2012 (1)	AMY 2012 (1)	AMY 2012 (1)	AMY 2012 (1)	AMY 2012 (1)	AMY 2012 (1)	AMY 2012 (1)
Sector	Residential and commercial (2)	Residential and commercial (2)	Residential and commercial (2)	Residential and commercial (2)	Residential and commercial (2)	Residential and commercial (2)	Residential and commercial (2)
Subsector	Building types (19)	None	Building types (19)	None	Building types (19)	Building types (19)	None
Metric	End uses (56)	End uses (56)	Fuel types (5)	Fuel types (5)	Fuel types (5)	Fuel types (5)	Simplified end uses (13)
Geography	County FIPS (3108)	State abbreviation (49)	State abbreviation (49)	Census Division (9)	CONUS (1)	State abbreviation (49)	County FIPS (3108)
Time	CY 2018, EST (8784)	CY 2018, EST (8784)	CY 2018, EST (8784)	CY 2018, EST (8784)	Annual 2018 (1)	Annual 2018 (1)	Annual 2018 (1)
File size	528 GiB	5.4 GiB	7.1 GiB	641 MiB	132 KiB	6.3 MiB	24 MiB
Partitioning	Sector, model year, state, county	Sector, model year, state, county	Sector				

Note: Values in parathesis denote the number of unique values. AMY: actual meteorological year, FIPS: Federal Information Processing Standards, CONUS: Contiguous U.S., CY: Calendar Year, EST: Eastern Standard Time