Residential electricity and natural gas county-level emissions

Basic local allocation strategy

1. Identify one or more **county-level indicator variables** that should track the local share of statewide emissions

2. Calculate annual or monthly county-level **proportions** of the indicator(s)

3. **Distribute** the statewide emissions using county-level proportions

4. If the major indicator proportions are based on annual data, separate monthly data may be applied to **distribute annual emissions among individual months**

Local Residential Allocation CO_2 Data Sources

1. Census American Community Survey annual public use microsample

   a. Cost of electricity: The ACS asks: "LAST MONTH, what was the cost of electricity for this house, apartment or mobile home?"

   b. Tenure: was the dwelling unit owned or rented

   c. Number of rooms

2. Census American Community Survey 5-year sample county-level data

3. EIA Residential Energy Consumption Survey (RECS) microdata

4. NOAA 1991-2020 Climate Normals for local heating and cooling degree days

5. EIA Open Data API for monthly residential natural gas usage, heat content, and CO_2 coefficients

County-level Residential Allocation of Electricity and Natural Gas CO_2 Emissions

DRAWDOWN GA

From annual ACS microdata calculate household **electricity and natural gas expenditures** by local area and tenure

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Convert ACS **PUMA** local area geography to counties

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Calculate each county's **annual shares** of statewide electricity and natural gas expenditures

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From 2005, 2009, and 2015 RECS microdata, calculate **variable** electricity and natural gas space heating and cooling costs as percentage of total electricity and natural gas costs, by tenure

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Transfer nearest-station 1990-2020 **climate normals** (hdd and cdd) to counties

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Use county **monthly hdd and cdd** to proportion variable costs among months

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Allocate statewide CO_2 emissions based upon county share of statewide expenditures and monthly share of hdd and cdd