

DRAFT Priority Climate Action Plan: Helpful Resources for Scaling Emissions Data



1 How to Use This Resource

This document provides a variety of resources to aid Climate Pollution Reduction Grant (CPRG) participants in adapting and scaling existing data sets to use in their Priority Climate Action Plans (PCAPs) and Comprehensive Climate Action Plans (CCAPs). Climate Action Plans (CAPs) exist for many states, local governments, Tribes, Territories, or regions, and may contain useful data that can be integrated into the PCAP through data scaling practices.

Please note that PCAP contents are specified by the U.S. Environmental Protection Agency's (EPA) CPRG Planning Grant Program. For more information about the required content of a PCAP, please consult EPA's [CPRG Program Guidance for Federally Recognized Tribes, Tribal Consortia, and U.S. Territories](#) or [CPRG Program Guidance for States, Municipalities, and Air Control Agencies](#).

If you would like to suggest a resource to be included in this document, please contact CPRG@epa.gov.

2 Notes on Scaling Emissions Data

The CPRG lead organization can leverage any existing inventories within their region as resources when developing an inventory for the PCAP. While drafting the PCAP, grantees may need to aggregate greenhouse gas (GHG) inventories from localities or regional organizations that comprise most of the State, Metropolitan Statistical Area (MSA), Tribe, or Tribal Consortia. The state(s) where an MSA or Tribe is located may also have existing GHG inventories and GHG projections that could provide a useful starting point for developing a PCAP GHG inventory. Common challenges in aggregating these data include partial data coverage for the geographic area, or varying inventory and base years among existing inventories.

Where existing inventory data are not readily available, emissions can be estimated by scaling available data to the desired geographic area by interpolating data between years or by extrapolating data from one year to a future year. Activity data and emissions can be scaled up from local GHG inventories that are similar in scope to the desired inventory, or they can be scaled down from state, regional, or national level data using the appropriate scaling factors related to geography or reporting year.

Per the GHG Protocol for Cities (GPC), inventory data can be scaled using the following formula:

$$Inventory\ Data = \frac{Factor_{Inventory\ Data}}{Factor_{Available\ Data}} \times Available\ Data$$

In this formula, *Available Data* refers to the activity or emissions data available that needs to be scaled, while *Inventory Data* is the activity or emissions data for the desired geographic area. *Factor* is the scaling factor data point for either the inventory data or the original available data. Potential scaling factors include, but are not limited to, activity data, population, or gross domestic product (GDP).

For example, population could be used as a scaling factor to scale the waste data from one location within the MSA to another similar location within the MSA:

$$\text{Location A waste data 2022} = \frac{\text{Location A population}_{2022}}{\text{Location B population}_{2022}} \times \text{Location B waste data 2022}$$

As another example, energy consumption can be used to scale emissions from one locality to another. State landfill data can be used to estimate municipal solid waste emission for an MSA. Grantees' approaches to data scaling will differ based on their data availability and needs. See Section 3 for suggested data sources from the American Community Survey (ACS), Bureau of Economic Analysis (BEA), Energy Information Administration (EIA), and National Agriculture Statistics Service (NASS) and their potential scaling application.

For more information about scaling emissions data where specific inventory data is unavailable, consult the User's Guide to Incorporating Existing GHG Inventories for the Priority Climate Action Plan (available in the TAF Resource Library) and the [Global Protocol for Community-Scale Greenhouse Gas Emission Inventories](#) Section 5.3.1.

3 Scaling Data Sources and Applications

Grantees may consult a wide range of publicly available data sources from other government agencies and state or local governments. This section contains two data resource tables outlining key resources for scaling emissions data.

The ACS is a key resource for detailed population and housing information, specified by a wide range of geographies including states, counties, tribal areas, and zip codes. The below table identifies potential data sources from ACS that can be used for data scaling. Search for each data source using the Table ID in the search function at <https://data.census.gov/>. Note that some data may be available at the MSA, county, city, census block, or census tract level. Users can access these data by selecting "microdata" in the upper righthand corner of the census search function, or at <https://data.census.gov/mdat/#/>.

Data Source	Table IDs	Data Name	Information	Potential Scaling Application
ACS	S1101	Households and Families (2022)	Household count, household size, household member ages, housing tenure.	Household count can be used to estimate electricity and fuel consumption as well as vehicles owned.
ACS	S0201	Selected Population Profile in the United States (2022)	Population estimates by state including demographic information such as age, race, sex, etc.	Population can be used to scale a wide variety of data including electricity and fuel consumption, waste production, vehicle miles travelled, etc.
ACS	BDSESIZE	Business Dynamics Statistics:	Number of firms, number of establishments,	Number of establishments and number of employees

Data Source	Table IDs	Data Name	Information	Potential Scaling Application
		Establishment Size (1978-2021)	number of employees. Available at the U.S., state, and metro/non metro area level.	can be used to estimate square footage, electricity consumption, and fuel consumption.
ACS	CB1600ZBP	ZIP Code Business Statistics: Business Patterns by Employment Size Class (2016)	Business establishment count and employee number for all sectors, organized by NAICS code.	Business counts and number of employees can be used to estimate overall emissions from certain sectors or industries.
ACS	CB1700CBP	All Sectors: County Business Patterns by Legal Form of Organization and Employment Size Class (2017)	Business establishment count and employee number for all sectors, organized by NAICS code. Available at the state, county, MSA, and congressional district level.	Business counts and number of employees can be used to estimate overall emissions from certain sectors or industries.
ACS	VIUS211A	All Vehicles by Registration State, Vehicle Type, and Trailer Configuration for the U.S. and States (2021)	Vehicle registration count, vehicle type, trailer configuration for all states and the District of Columbia excluding New Hampshire.	Vehicle counts can be used to estimate vehicle miles travelled and fuel consumption. Does not include vehicles owned by federal, state, and local governments, buses, and farm equipment.
ACS	VIUS213A	All Vehicles by Registration State and Vehicle Size for the U.S. and States (2021)	Vehicle registration count, make and model, other vehicle characteristic data.	Vehicle counts can be used to estimate vehicle miles travelled and fuel consumption. Does not include vehicles owned by federal, state, and local governments, buses, and farm equipment.
ACS	B25040	House Heating Fuel (2022)	House Heating Fuel	House heating fuel can be used to estimate the energy mix among households.

Other data sources relevant to emissions scaling include data on energy, agriculture, and landfills. The table below contains data query services for several datasets specific to these sectors, in addition to relevant census and economic data (e.g., GDP). To extract relevant data, search for the variables needed and select the most appropriate geographic region. Most services allow users to download data in multiple file formats, including as a PDF or CSV file. In some cases, the data in this table may not need to be scaled and could be suitable activity data for a state or MSA.

Data Source	Data Name	Information	Potential Scaling Application
ACS	Census Data Query	Select census data available at the national and state level.	See ACS scaling options above.
ACS	Census Microdata Query	Select census data available at the county and MSA level.	See ACS scaling options above.
BEA	GDP by State	GDP, employment, personal income, net earnings (includes interactive data tables and maps).	Economic statistics can be used to scale emissions activities that are more likely to impacted than economic drivers than other factors like population or land area (ex: Industry).
BEA	GDP by County, Metro, and Other Areas	GDP, employment, personal income, net earnings (includes interactive data tables and maps).	Economic statistics can be used to scale emissions activities that are more likely to impacted than economic drivers than other factors like population or land area (ex: Industry).
EIA	State Energy Data System	Energy consumption, production, and pricing (all by source and sector).	Average energy consumption by state can be used to estimate energy needs of different localities using population data.
EIA	Commercial Buildings Energy Consumption Survey (CBECS) Data	Commercial building size, age, square footage, energy consumption. See microdata for state, county, and MSA data.	Commercial building square footage and energy use can be used to scale energy consumption for commercial industries or municipalities without energy consumption estimates.
EIA	Residential Energy Consumption Survey (RECS) Data	Residential building size, age, square footage, energy consumption. See microdata for state, county, and MSA data.	Residential building square footage and energy use can be used to scale energy consumption municipalities without energy consumption estimates.
EIA	Manufacturing Energy Consumption Survey (MECS) Data	Manufacturing energy consumption by industry and region.	Manufacturing energy consumption can be used to scale industrial inputs for counties, MSAs, and municipalities.

Data Source	Data Name	Information	Potential Scaling Application
NASS	NASS Quick Stats Query	Query service to search for agricultural data by state and county.	Livestock totals for a state or county can be used to scale estimations to MSAs.
EPA	Landfill Methane Outreach Program	Landfill emissions data organized by state	Landfill data by state can be used to scale emissions data for smaller geographic regions.