Community Carbon Footprint

For more information, see www.sustainablejersey.com.

A Community Carbon Footprint is a measurement of the amount of greenhouse gas emissions produced by municipality's residents, schools, businesses, and industries in a given year. It shows a community's impact on global warming and climate change. The footprint can be reported publicly to build awareness and support for actions that can bring down carbon emissions. It also can be used to track the progress of a municipality as they implement actions to combat global warming and climate change. This action provides instructions and links to accepted protocols for establishing a Community Carbon Footprint or Greenhouse Gas (GHG) Inventory and has forms and information for gathering the necessary data.

Completion of a Community Carbon Footprint will earn 10 points toward certification. The Municipal Carbon Footprint action is a pre-requisite and must be completed before points will be awarded for this action.

Who should lead and be involved with this action?

This action involves coordination with any staff and departments involved in developing a local government carbon footprint. If the "Municipal Carbon Footprint" action has not yet been pursued, it should be undertaken at the same time. See the "Municipal Carbon Footprint" action for a list of recommended participants. Collecting data at the community level may include participation from one or more of the following:

* Green Team / Climate Action Team members
* Facilities managers
* Administrator
* Public Works
* Recycling coordinator
* Utility provider liaison

Timeframe

Data collection and analysis may take several weeks to several months or more depending on the availability of data, staff and resources. Availability of data, which is often out of your hands, will be the biggest determinant of time. If the data is forthcoming, the timeframe will be short.

Project Costs and Resource Needs

The resources needed to implement this action vary depending on the scope and comprehensiveness with which the project is pursued. Generally it can be completed with a modest number of hours from a high level volunteer or professional staff that knows how to use spreadsheets with formulas in them.

Why is it Important

The greenhouse effect is a natural process that results from naturally occurring heat-trapping gases in the atmosphere, such as carbon dioxide, water vapor, and methane. The problem arises because human activities have now sharply increased the presence of greenhouse gases in the atmosphere. These gases prevent the escape of earth's infrared radiation into space. In general, the more gases that accumulate, the more heat the atmosphere traps.

The Intergovernmental Panel on Climate Change (IPCC) is the major international scientific effort to understand climate change and what can be done. According to a 2007 report issued by the IPPC, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." [1]

Greenhouse gas emissions and the climate changes associated with the accumulation of GHGs in the atmosphere pose serious concerns and challenges such as: rising sea levels, changes in rainfall patterns, more severe droughts and floods, harsher hurricanes and other windstorms, and new pathways for disease. With vast assets in facilities, parks, roads, bridges, waterfronts, and water and sewage networks, climate change creates significant risks for local governments in New Jersey.

In the U.S., nearly 900 mayors (94 in New Jersey) have signed the U.S. Mayors' Climate Protection Agreement pledging to meet or beat the Kyoto Protocol's goal of reducing GHG emissions to a 7% reduction from 1990 levels by 2012.

The Stern Review, The Economics of Climate Change, concluded that the risks of climate change could be substantially reduced if greenhouse gas levels in the

atmosphere can be stabilized between 450 and 550 ppm carbon dioxide equivalent (CO_2e). [2] The Stern Review's conclusion is that "stabilization…requires that annual emissions be brought down to more than 80% below current levels."

This is the same target established by New Jersey's Global Warming Response Act, which calls for a reduction in greenhouse gas emissions to 1990 levels by 2020, approximately a 20 percent reduction, followed by a further reduction of emissions to 80 percent below 2006 levels by 2050.

Meeting greenhouse gas emission goals set by the state requires commitments at the local level. Conducting a Community Carbon Footprint establishes a baseline upon which progress towards greenhouse gas reduction targets can be evaluated. It helps identify a particular sectors' contribution to the community's emissions and helps to identify which sectors or activities should receive the most attention.

[1] Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: Synthesis Report; http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[2] Nicholas Stern, The Economics of Climate Change. Cambridge, U.K.: Cambridge University Press, 2007, p. xvi.

What to do, and how to do it ("How to")

Satisfying this action requires gathering data to calculate your community's carbon emissions and reporting them publicly. The public reporting is intended to attract attention to your progress and can lead to a process for creating a Climate Action Plan and identifying other activities to reduce your emissions.

A Community Carbon Footprint includes all greenhouse gas (GHG) emissions from direct emissions from stationary combustion of fuels like natural gas, heating oil, coal, and diesel (Scope 1), and from indirect emissions from consumption of purchased or acquired electricity (Scope 2). The optional reporting categories include emissions related to transportation and solid waste disposal.

Completion of the "Municipal Carbon Footprint" action is a pre-requisite to credit for completion of this Community Carbon Footprint action.

Overview

Step 1: Establish a Baseline Year.

Step 2: Calculate emissions from Scope 1 direct emissions from stationary combustion of fuels like natural gas, heating oil, coal, and diesel.

Step 3: Calculate emissions from Scope 2 indirect emissions from consumption of purchased or acquired electricity.

Step 4: (Optional) Calculate emissions from Scope 1 direct emissions from mobile combustion of fuels for vehicle transportation (e.g., cars, trucks, off-road equipment).

Step 5: (Optional) Calculate emissions from waste related activities.

A spreadsheet is provided to assist with calculations.
See this action at www.sustainablejersey.com to download the spreadsheet file.
It includes the following worksheets:
Worksheet 1, "Community Carbon Footprint," should be used to enter usage totals and will automatically calculate emissions. It will produce the total carbon footprint from activities in each sector and will be used in all 5 steps.
Worksheet 2, "Heating Oil Estimate" provides one method of estimating residential heating oil usage during the selected baseline year. It may be used in Step 2.
Worksheet 3, "Vehicle emissions of CH4 & N20" can be used in optional Step 4.

Step 1: Establish a Baseline Year

A baseline is a reference point against which to measure greenhouse gas emissions increases and decreases over time. In selecting a baseline year, determine the earliest year for which ALL required data can be assembled to complete an emissions report.

Note: For municipalities serviced by PSEG the baseline year should be 2008 – the earliest year for which PSEG can provide complete municipal-wide energy use data. In general, check with your local utility provider for the earliest year for which energy data is kept at the municipal level.

Required data

The following information must be gathered in order to complete the Community Carbon Footprint spreadsheet:

- The completed Municipal Carbon Footprint spreadsheet.
- Baseline year usage of each stationary combustion fuel type (therms of natural gas, heating oil, or other fuels) by sector (residential, commercial, industrial, other).
- Baseline year consumption of electricity (kilowatt-hours) by sector (residential, commercial, industrial, other).

Optional data

The following additional information must be gathered in order to complete optional Steps 4 and 5:

- Annual fuel consumption of all vehicles in the community during baseline year in gallons of each fuel type (If this information is not available, estimates of fuel use can be made using mileage data for each vehicle type). Annual mileage of all community vehicles by vehicle type during baseline year will be needed (there are 30 possible vehicle types determined by model year and vehicle characteristics).
- Tons of waste generated in each of 34 categories (by sector or community-wide total). For each waste category, tons recycled, tons landfilled, and tons combusted.

Step 2: Calculate emissions from Scope 1 direct emissions from stationary combustion of fuels like natural gas, heating oil, coal, and diesel.

Follow these three steps and enter the data into the worksheet to calculate the emissions:

For more information, please refer to Chapter 6: Facilities- 6.1 Stationary Combustion of the Local Government Operations Protocol. Available for download at http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

A. Determine the annual consumption of each fuel combusted for each of the following sectors: residential, commercial, industrial, and local government;
B. Calculate the total CO2, CH4, and N20 emissions for each fuel;
C. Convert CH4 and N20 emissions to CO2 equivalent (CO2e) and determine total CO2e emissions.

A. Determine the annual consumption of each fuel combusted for each of the following sectors: residential and commercial, industrial.

For more information on calculating local government emissions, please see the Municipal Carbon Footprint Action. The data collected for local government will then be subtracted from the commercial sector (business and industrial) emissions data.

Natural Gas:
First, construct a list of all natural gas service providers for your municipality.

See http://www.njua.com/html/find_your_utility_companies.cfm.

Request aggregated annual natural gas use (in therms) broken down by residential, commercial, and industrial sectors. See “Municipal Energy Data Request Template” (natural gas and electricity).

Additionally, in order to estimate natural gas heating use in the following section, request that utility providers include monthly natural gas usage data for June, July, and August of the baseline year.

Enter the total natural gas usage on Worksheet 1.

If industrial and commercial sector information is not provided separately, rename the commercial sector in Worksheet 1 as “commercial/industrial” and ignore rows requesting separate industrial sector data.

Heating Oil:

Gathering data on heating oil usage is not as straightforward as natural gas. Municipal heating oil usage can be obtained and should have already been calculated for the “Municipal Carbon Footprint.” However, residential, commercial, and industrial heating oil usage data may be unavailable. Estimates are acceptable as long as a brief explanation is provided.

Below is a method for estimating residential heating oil consumption using Worksheet 2. These steps are based on the strategy employed by Maplewood, NJ, in conducting their CO2 inventory.

Estimating Residential Heating Oil Consumption:

1. Determine annual use of natural gas heating. Assume the gas usage for the summer months was for non-heating purposes. Use Worksheet 2 to annualize this amount and subtract from the total natural gas use to yield an assumed gas heating use.

2. Obtain the ratio of homes heating with gas and oil from the 2000 Census and enter on Worksheet 2.

First, go to the US Census Bureau American FactFinder page at www.factfinder.census.gov/.

In the “Fast Access to Information” box, type in your municipality’s name and the state, and click “go”. The general fact sheet will come up for your municipality. At the top of this sheet will either be one or two tabs, indicating the years of data available for your town. 2000 is available for all municipalities, while in some instances there may also be data for 2006. Hover over “housing” on the left column of options, and choose “physical characteristics”. Under “Structural Characteristics”, click on the link for “Rooms, Bedrooms, and Heating Fuel”. This will give you a data sheet that breaks down the owner-renter occupancy data, as well as the house heating fuel data for your municipality. You can follow the same procedure for the county and state level to see how your municipality compares to the rest of New Jersey.

3. Assume that average gas and oil households used the same number of therms.

Enter heating oil usage to Worksheet 1.

B. Calculate the total CO2, CH4, and N20 emissions for each fuel.

For natural gas and heating oil, emissions of CO2, CH4, and N20 will automatically be calculated by Worksheet 1, “Community Carbon Footprint.” The formulas are set up to use the following emissions factors as defined by the U.S. Energy Information Administration:

Emissions from Natural Gas
117.080 pounds of CO2 per Million BTU
0.000005 metric tons CH4 per Million BTU
0.0000001 metric tons N20 per Million BTU

Emissions from Heating Oil
161.386 pounds of CO2 per Million BTU
0.00001 metric tons CH4 per Million BTU
0.0000006 metric tons N2O emissions per Million BTU

For other fuel types in use, emissions data must be gathered from the Energy Information Administration website:
http://www.eia.doe.gov/oiaf/1605/excel/Fuel%20Emission%20Factors.xls

Note that the Energy Information Administration provides carbon dioxide emissions in pounds. Therefore, CO2 emissions must be converted to metric tons (1 pound (lb) = 0.0004535927 metric tons) to be added to the total CO2 equivalent emissions. Similarly, emissions factors for methane and nitrous oxide are provided in grams (g) per Million BTU. Therefore, the calculation of these emissions should include conversion from grams to tons (1 gram = 1.0 × 10-6 metric tons).

C. Convert CH4 and N20 emissions to CO2 equivalent (CO2e) and determine total CO2e emissions.

Worksheet 1, “Community Carbon Footprint,” will automatically convert methane (CH4) and nitrous oxide (N20) emissions to metric tons of C02 equivalents.

The method of calculation is also outlined below.

Global Warming Potential (GWP) factors represent the ratio of the heat-trapping ability of each greenhouse gas relative to that of carbon dioxide. For example, the GWP of methane is 25 because one metric ton of methane has 25 times more ability to trap heat in the atmosphere than one metric ton of carbon dioxide. To convert emissions of non-CO2 gases to units of CO2 equivalent, multiply the emissions of each gas in units of mass (e.g., metric tons) by the appropriate GWP factors in the following table.

Common Name	Formula	GWP
Carbon Dioxide	CO2	1
Methane	CH4	25
Nitrous Oxide	N20	298

Source: Global Warming Potentials (GWP) from the IPCC's Fourth Assessment Report http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf

C02 Emissions (metric tons CO2e) = CO2 Emissions (metric tons X 1 (GWP)

CH4 Emissions (metric tons CO2e) = CH4 Emissions (metric tons) x 25 (GWP)

N20 Emissions (metric tons CO2e) = CH4 Emissions (metric tons) x 298 (GWP)

Total Emissions (metric tons CO2e) = CO2 + CH4 + N20 (metric tons CO2e)

Step 3: Calculate emissions from Scope 2 indirect emissions from consumption of purchased or acquired electricity.

Follow these two steps and enter the data into the worksheet to calculate the emissions:

For additional information please refer to Chapter 6: Facilities – 6.2 Electricity Use of ICLEI's Local Government Operations Protocol; http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

A. Determine the annual electricity use for each sector: residential, commercial, industrial. Local government is embedded within the commercial or industrial (for public works) categories. For more information on calculating local government emissions, please see the Municipal Carbon Footprint Action. The data collected for local government will then be subtracted from the commercial sector (business and industrial) emissions data.
B. Calculate the total CO2e emissions for electricity use.

A. Determine the annual electricity use for each sector: residential, commercial, industrial.

First, construct a list of all electric service providers for your municipality.

See http://www.njua.com/html/find_your_utility_companies.cfm.

Follow these instructions to request energy usage information for the community. Use the Municipal Energy Usage Data Request form to request aggregated electricity use (in kilowatt hours) during the baseline year broken down by residential, commercial, and industrial sectors from the appropriate utilities as identified in the instruction. JCP&L and

ACE customers should use the forms provided here to request data.
See this action at www.sustainablejersey.com for links to the files referenced here.

Enter the total municipal kilowatt-hour usage on Worksheet 1 as reported in the "Municipal Carbon Footprint." Enter residential and industrial (if provided separately from commercial) totals and any "other" sector totals. Municipal usage must be subtracted from the commercial usage information provided by the utility company before entering the commercial sector kilowatt hours onto Worksheet 1.

If industrial and commercial sector information is not provided separately, rename the commercial sector in Worksheet 1 as "commercial/industrial" and ignore rows requesting separate industrial sector data.

B. Calculate the CO2e emissions for electricity use.

Worksheet 1 will automatically calculate the emissions of CO2e once the annual kilowatt-hours of electricity consumption are entered for each operations category.

The following factor has been used in the calculations:
1312 lbs of CO2e per MWh

This factor was provided by the NJ Department of Environmental Protection and is based on the 2008 average mix figure of 1219.54 lbs of CO2 (source: PJM Environmental Information Services, Inc. Generation Attribute Tracking System https://gats.pjm-eis.com/), augmented to account for line losses and to include N2O and CH4 emissions from power plants.

Step 4: (Optional) Calculate emissions from Scope 1 direct emissions from mobile combustion of fuels for vehicle transportation (e.g., cars, trucks, off-road equipment).

Overview:

This step is optional because it may be difficult to find the required data, and the methods for estimating and calculating emissions are more complicated and are still a subject of debate. Regardless, developing a general estimate according to any method will help you better understand where your GHG emissions are coming from, and help you better focus your efforts to lower your Footprint.

For information on calculating local government fleet emissions, see the "Municipal Carbon Footprint" action.

Follow these four steps and enter the data into the worksheet to calculate the emissions:

For additional information please refer to Chapter 7: Vehicle Fleet of ICLEI's Local Government Operations Protocol;
http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

A. Identify total annual fuel consumption by fuel type*;
B. Calculate the total CO2 emissions for each fuel;
C. Calculate the total CH4 and N20 emission for each fuel;
D. Convert CH4 and N20 emissions to CO2 equivalent (CO2e); and determine total CO2e emission.

A. Identify total annual fuel consumption by fuel type.
Transfer the fuel consumption data from the "Municipal Carbon Footprint" Worksheet into Step 4 of the "Community Carbon Footprint" Worksheet 1.

The community's fuel consumption can be estimated with annual mileage data. Municipalities in the Delaware Valley Regional Planning Commission can access VMT data in the March 2009 Regional Greenhouse Gas Emissions Inventory located at http://www.dvrpc.org/reports/09038.pdf. If a regional transportation study has not been conducted, there may not be good VMT data available. If necessary, municipal VMT data can be estimated based on regional or statewide averages. Some communities may choose to account for public transit use and residents working at home to reduce this travel estimation slightly based on Census or other survey data. Other approaches to estimation may be used as long as a description of the method is included.

If your municipality is able to obtain mileage estimates in order to calculate greenhouse gas emissions from private and commercial vehicle use, this data should be broken down by vehicle type. The fuel usage may be estimated for each type of vehicle based on mileage information. Estimates for vehicle characteristics can be created for an average community. Carbon dioxide emissions can be calculated from gallons of vehicle fuel used (gasoline, diesel, compressed natural gas (CNG)). Methane and nitrous oxide emissions can be calculated from mileage information but will vary by vehicle type.

Municipalities may use commercial databases to inventory the number and classes of vehicles registered in the town. Identify the vehicle make, model, model year, and fuel type for all vehicles. Identify annual mileage by vehicle type (enter this data into Worksheet 3 to be used later for calculating emissions). Convert the annual mileage into fuel consumption by determining vehicle fuel economies and using the following formula developed by the U.S. Environmental Protection Agency (EPA):

EPA: http://www.fueleconomy.gov/feg/findacar.htm.

Total annual fuel consumption (gallons) =
Total miles ÷ [(Fuel Economy City mpg * .55) + (Fuel Economy Highway mpg * .45)]

The EPA estimates that 45% of mileage is from time spent on a highway and 55% of accrued mileage is from time spent driving in a town or city. NJ municipalities may adjust and use different estimates of highway vs. city driving in their communities for these calculations, as appropriate.

Sum the total annual fuel consumption for each vehicle type to calculate the total usage for each fuel type. Enter these data into Step 4 of Worksheet 1.

B. Calculate the total CO2 emissions for each fuel and convert to metric tons.

Worksheet 1 will automatically calculate CO2 emissions for gasoline, diesel and CNG vehicle fuels.

For other types of vehicle fuels, specify the fuel in Worksheet 1 under Step 4, and enter the total usage in gallons. See the Fuel Emission Factors spreadsheet provided by the Energy Information Administration at http://www.eia.doe.gov/oiaf/1605/excel/Fuel%20Emission%20Factors.xls. The emissions factors in Kilograms CO2 Per Million Btu should be selected from the right hand column of "Table 2. Carbon Dioxide Emission Factors for Transportation Fuels." The emissions will be calculated automatically in the Worksheet once the emission factor and gallons of usage are entered.

For more information about how these emissions are calculated, see below.

The general formula is:

Fuel A CO2 Emissions (metric tons) = Fuel Consumed (gallons) × Emission Factor (kg CO2/gallon) ÷ 1,000 (kg/metric ton)

The following emissions factors are already incorporated into Worksheet 1:

CO2 emissions from motor gasoline = 19.54 lbs CO2 per gallon

CO2 emissions diesel fuel = 22.37 lbs CO2 per gallon

CO2 emissions natural gas = 120.36 lbs CO2 per 1000 cubic feet

Source: Fuel Emission Factors provided by the Energy Information Administration http://www.eia.doe.gov/oiaf/1605/excel/Fuel%20Emission%20Factors.xls.

C. Calculate the total CH4 and N20 emission for each vehicle type.

Methane and nitrous oxide emissions must be calculated based on mileage, not on gallons of fuel consumption. Emissions vary based on type of vehicle and model year.

Use Worksheet 3, “Vehicle CH4 & N20,” to enter annual mileage during the baseline year for each vehicle type. Note that there are 30 vehicle types, so that completion of this section requires detailed information on the model years and baseline year mileage of all vehicles. Estimates are permitted where exact figures can not be obtained.

Worksheet 3 will automatically calculate CH4 and N20 emissions based on the following formulas:

Vehicle Type A CH4 Emissions (metric tons) = Annual Distance (miles) X Emission Factor (g CH4/mile) / 1,000,000 g/metric ton.

Vehicle Type A N20 Emissions (metric tons) = Annual Distance (miles) X Emission Factor (g N20/mile) / 1,000,000 g/metric ton.

D. Convert CH4 and N20 emissions to CO2 equivalent (CO2e) and determine total CO2e emissions.

Enter the Metric Tons of CH4 and N20 calculated on Worksheet 3 into Step 4 of Worksheet 1, “Community Carbon Footprint.” Worksheet 1 will automatically convert these emissions to metric tons of C02 equivalents. See section C of Step 2 for method of calculation.

Step 5: (Optional) Calculate emissions from waste-related activities.

Local governments are often responsible for providing solid waste services to their communities. This may include activities like collecting and transporting waste, sorting waste, managing recycling and composting programs and facilities, and managing landfills. However, experience indicates that it is often very challenging to find reliable data on the amount of waste generated at the municipal level. As a result, Step 5 is optional.

Local governments who wish to calculate emissions from a local community’s waste related activities are encouraged to use the U.S. EPA’s Waste Reduction Model (WARM) for calculating the lifecycle emissions from waste generation. The model requires input of tons generated for each waste category, along with the tons recycled, landfilled, or incinerated. If this step was completed in the “Municipal Carbon Footprint,” enter the results for the local government sector. If community-wide waste tonnage by category is available for residential, commercial, and industrial sectors, use the WARM tool separately for each sector to generate totals. Subtract municipal numbers from commercial numbers if applicable. If data is not available by sector but community-wide waste tonnage for each category can be obtained, complete the WARM tool only once using the community-wide data and enter the output directly to the Waste Management Total section of Worksheet 1.

Using the WARM model to calculate waste-related emissions:

This tool is available as an excel spreadsheet or a web-based calculator:

U.S. Environmental Protection Agency: Waste Reduction Model
http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html.

The web-based calculator will require input of an alternative management scenario as well as existing waste management figures. However, the numbers entered in the alternative management scenario will not affect the output needed for the Community Carbon Footprint. Identical figures may be entered in this section so that the calculator will move to the next step.

The calculator will ask for tons of waste generated in each of 34 categories. For each waste category, it will be necessary to indicate tons recycled, tons landfilled, and tons combusted.

For output, select
"Metric Tons of Carbon Dioxide Equivalent (MtCO2E)"

Choose
"create summary"

Note the figure of
"GHG Emissions from Baseline Waste Management (MtC02E)"

If data is available by sector, repeat the tool for commercial, residential, and industrial waste.

Add results to Step 5 of Worksheet 1, "Community Carbon Footprint."

What to submit to get credit/points

Satisfy the action for establishing a Community Carbon Footprint through the reporting and verification requirements specified in this toolkit for greenhouse gas emissions from residents, businesses, industries, and local government. A spreadsheet file is provided with worksheets that will assist in calculating the Community Carbon Footprint. Submit the completed spreadsheet to Sustainable Jersey.

Spotlight: What NJ towns are doing

Maplewood's CO2 Inventory
http://maplewoodisgreen.org./carbon-footprint

Resources

Technical Resources

Local Government Operations Protocol for the quantification and reporting of greenhouse gas emissions inventories, January 2009
http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

EPA Guidance on Mobile Combustion Sources
http://www.epa.gov/stateply/documents/resources/mobilesource_guidance.pdf

Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007
http://www.epa.gov/climatechange/emissions/usinventoryreport.html

Energy Information Administration Fuel Emission Factors
http://www.eia.doe.gov/oiaf/1605/excel/Fuel%20Emission%20Factors.xls

Intergovernmental Panel on Climate Change Fourth Assessment Report
http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf

General Resources

Intergovernmental Panel on Climate Change
http://www.ipcc.ch/index.htm

State of New Jersey – Global Warming
http://www.state.nj.us/globalwarming/index.shtml

National Conversation on Climate Action
http://www.climateconversation.org/

Mayors Climate Protection Center
http://usmayors.org/climateprotection/about.htm

ICLEI – Local Governments for Sustainability USA (ICLEI USA)
www.icleiusa.org

CACP- Clean Air and Climate Protection Software
www.cacpsoftware.org

California Climate Action Registry
www.climateregistry.org

U.S. EPA - Clean Energy-Environment Municipal Network
http://www.epa.gov/cleanenergy/energy-programs/state-and-local/local.html

Energy Information Administration
http://www.eia.doe.gov/