

# Greenhouse Gas Inventory

## In a Nutshell

A greenhouse gas inventory is an accounting of all greenhouse gases (GHGs) released into or removed from the atmosphere over a certain period of time. Local governments use greenhouse gas inventories to create baselines in order to track emission trends. Creating a greenhouse gas inventory is usually the first step a local government takes to reduce emissions.

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## The “How To”

Municipal greenhouse gas inventories typically address two categories: emissions associated with the community as a whole and emissions created by local government activities. The International Council for Local Environment Initiatives has created tools and established protocols to help municipalities complete a greenhouse gas inventory. Membership is required to access these tools, however. Click [here](#) for a list of greenhouse gas inventories completed by local governments in the St. Louis region.

Municipalities typically take the findings of the greenhouse gas inventory and develop a [Climate Action Plan](#) to identify strategies to reduce greenhouse gas emissions and to adapt to changes anticipated as a result of climate change.

Broadly speaking, greenhouse gas inventories typically estimate emissions associated with residential, commercial, and industrial energy use; refrigerant use; vehicle fuel use; the decomposition of solid waste and wastewater; and water consumption.

### GHG Inventory Benefits

According to the [Environmental Protection Agency](#), there are six clear benefits local governments can receive by completing a greenhouse gas inventory.

1. Identify sectors, sources, and activities responsible for greenhouse gas emissions.
2. Understand emission trends.
3. Quantify the benefits of activities that reduce emissions.
4. Establish a basis for developing a local action plan.
5. Track progress in reducing emissions.
6. Set goals and targets for future reductions.

### Steps to Conducting a GHG Inventory

The Environmental Protection Agency also provides steps as to how to conduct a greenhouse gas inventory. By clicking the link above, more information can be found regarding each step listed below.

1. Set boundaries.
2. Define the scope.
3. Choose a quantification approach.

4. Set a baseline.
5. Engage stakeholders.
6. Procure certification.

## Planning & Zoning

### Laws and Legislation

There are not many, if any, laws or pieces of legislation dictating greenhouse gas inventories. The greenhouse gas inventory is primarily a study and so long as standard codes of professional ethics and local, state, and federal laws are being followed, the completion of the inventory should not be challenged on a legal basis. Mayors can, with the endorsement of the city council, sign the U.S. Mayors' Climate Protection Agreement.

### ICLEI-USA

Many municipalities within the United States, including those in the St. Louis area, join [ICLEI-USA](#) in order to gain assistance and guidance regarding completing a greenhouse gas inventory. ICLEI-USA offers many tools to assist municipalities in completing their greenhouse gas inventories, including Clean Air and Climate Protection software, detailed guides, accounting protocols, and skills trainings to use the resources.

## Dollars & Cents

### Costs of Creating a Greenhouse Gas Inventory

The actual cost of creating and performing a greenhouse gas inventory can vary greatly between municipalities. The size and complexity of the municipality combined with the availability of the desired records and information each have a significant impact on the total cost. When preparing for its [greenhouse gas inventory](#), the City of Creve Coeur was informed that the total cost would be equivalent to the total cost of a full-time staff member for thirteen weeks. The city chose to hire an intern to complete the majority of the work for the inventory.

### Internship Programs

Using an intern, under guidance and supervision of city staff, might be the most cost-effective way to complete a greenhouse gas inventory. Interns from SIUE have [partnered with](#) the Cities of Granite City and Collinsville to complete greenhouse gas inventories.

## Measuring Success

A successful greenhouse gas inventory will tell you the key sources of emissions, the key sectors which create emissions, and how much is being released into and captured from the atmosphere.

A successful greenhouse gas inventory will also be written into a report and presented to the appropriate governmental body. In the case of a local government, the report can be presented to the City Administrator, the Mayor, and the City Council. There is little point to a greenhouse gas inventory if it is not presented to

those who can make policies based on the information.

In addition, a greenhouse gas inventory can be deemed successful if it creates policies which decrease emissions. Typically, the ultimate goal of a greenhouse gas inventory is to promote the creation of new policies and if these policies are not created, it can be argued that the inventory was a waste of time and money.

## **Discover More**

### **Campus GHG Inventories**

The Association for the Advancement of Sustainability in Higher Education provides a [listing](#) of and links to greenhouse gas inventories completed by colleges and universities. The site contains more than 40 examples from across the United States.

Conducting a GHG inventory is an excellent opportunity to educate multiple sectors about the ways their behavior contributes to the creation of greenhouse gas emissions. Education can be provided through presentations to appointed and elected officials and to community members. In addition, the educational effect of informal interactions involving officials, staff, and community members should not be underestimated.

## **Case Studies**

### **Greenhouse Gas Inventory-Washington University**

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#### **Description**

Washington University had an interest in reducing their carbon footprint. They worked with Burns and McDonnell to study their Scope 1, Scope 2, and Scope 3 emissions measurements. The study covered emissions between 1990 and 2008. They sorted through energy bills, coal consumption and measured emissions on their off campus properties.

They want to get their CFP back down to 1990 levels by 2020. This task is difficult because they are a large campus and because they cannot purchase offsets or vouchers. Also, any green improvements they make to campus must also be a fiscal improvement.

The future growth of the campus is all separated. New buildings are built to green and high efficiency

standards. They want attainable goals. Through energy reduction goals, building retrofits and reducing energy demands they are making huge strides. They have cut their emissions by 50% so far.

Burns and McDonnell works with the University to track the inventory, especially the Scope 1 and 2 emissions, and keep it up to date each year.

**Cost \$0**

## **Lessons Learned**

This project has given the University a much greater knowledge of emissions levels. They now know what it takes to become carbon neutral. They found that they need to balance new buildings by neutralizing old ones with no offsets. They are creating demand and reduction value to the University by reducing energy costs.

The program has been challenging. It is not realistic for Washington University to become carbon neutral. They need to do more due diligence before setting realistic goals. They are growing too fast with research buildings to become carbon neutral. They need to balance investments with goals. They have struck one by spending up front and saving in the long run.

Geographically there are huge differences in emissions. This makes it very difficult to benchmark against peer institutions in other parts of the country, especially those who use hydro power. The University studies energy emissions rather than coal emissions.