Measurement Equals Management! Conducting a Greenhouse Gas Inventory

Summary by Sara Smiley Smith

Panelists
Jennifer Schroeder, *Program Officer, Clean Air-Cool Planet** *Workshop organizer
Ryan Levinson, *Research Analyst, World Resources Institute*

Clean Air-Cool Planet is a northeast U.S.-based non-profit organization working to find and promote global warming solutions. The clientele of Clean Air-Cool Planet includes corporations, campuses, and communities. The campus program employs the same methods as the other programs, engaging partners in a 5-step process of greenhouse gas management. In developing a greenhouse gas (GHG) strategy, it is very important to have a group of individuals involved in the planning process that is representative of the group that will be responsible for implementing the plan. In some cases this means working with a committee that already exists, while in others it requires the development of a new team of people. Taking the time to assemble a multi-stakeholder group will result in a much more productive process.

After establishing a team of partners, institutions need to create an entity-wide list of GHG emissions, also known as a GHG inventory. This inventory should include the sources of emissions, the activities that cause emissions, and their quantities. This is the first step in a more comprehensive carbon management strategy and operates as a management tool.

The World Resources Institute (WRI) is a non-governmental research and policy organization based in Washington, DC that deals with the issue of global warming from many angles. WRI collaborates with the Europe-based World Business Council for Sustainable Development (WBCSD) on a multi-stakeholder partnership called the GHG Protocol Initiative, which works to develop international standards for GHG reporting and accounting.

DEVELOPING UNIFORM ACCOUNTING STANDARDS FOR GHG EMISSIONS

It is often easiest to describe the concept of GHG accounting from a financial accounting perspective. Consider GAAP (Generally Accepted Accounting Principles) – these international accounting principles enable financial comparisons between different firms throughout the world. The same need for comparability exists to account for GHG emissions. In 1998, WRI and WBCSD brought together hundreds of representatives from business, government, and environmental groups around the globe to establish GHG accounting and reporting standards. The result of this several-year consensus-building process led to the creation of the GHG Protocol Corporate Accounting and Reporting Standard. This tool is now used by hundreds of companies and climate change programs worldwide and is widely regarded as the international standard for corporate GHG accounting and reporting.

There are two general approaches for GHG accounting. One approach is "'entity"' accounting which includes corporate accounting. Entity accounting examines a firm or organization's GHG emissions during a specific time frame (usually one year) and measures increases or decreases in its emissions by comparing current year emissions to the emissions of a historical "base year." A university developing a university-wide GHG inventory would follow entity level accounting procedures. A second approach is "'project"' accounting which looks at the GHG impact of a single GHG mitigation project. One example of this might be the installation of a solar field. For these project level evaluations, there is no historical base year emission comparison. Project accounting measures emission reductions based on a hypothetical "baseline scenario" of what emissions would have occurred had the GHG mitigation project not been implemented.

In the United States there are a number of voluntary programs for private firms interested in entity GHG reporting. For example, the federal-level Environmental Protection Agency administers the Climate Leaders program; the Eastern Climate Registry is being developed by NESCAUM,[1] and California has the California Climate Action Registry. WRI works closely with these groups to try to ensure accounting continuity across registries. On the international level, the International Organization for Standardization (ISO) recently adopted GHG Protocol entity accounting standards. All of these efforts help move the world closer to a global standard for GHG emissions accounting.

[1] NESCAUM is the Clean Air Association of the Northeast States

Similar efforts toward standardization are underway in the public sector, which faces unique challenges in institutional structure. Beginning in 2001, Clean Air-Cool Planet partnered with a graduate student at the University of New Hampshire to create their Campus Carbon Calculator tool to calculate the GHG emissions of that campus. This suite of Excel spreadsheets was purposefully designed to be highly accessible and user-friendly so that it could be of use to any campus. It has been revised through extensive stakeholder processes five times as of late 2006 to accord with the standardization of best GHG accounting practices being promoted by the GHG Protocol. The Campus Carbon Calculator has become a means for collecting

standardized data between institutions and has been used at more than 200 universities.

The benefits of having one GHG accounting standard go beyond comparability. Uniform accounting can help to facilitate a global carbon market because it provides the consistent data needed. It also alleviates much of the fear and confusion surrounding the issue.

To improve data collection and to increase the number of public and private groups interested in conducting an inventory, methods for simplifying measurement and reporting must be sought. If, for example, a company has to report its emissions differently to regulatory agencies and other GHG programs, it is likely they will choose not to participate due to the huge burden of time and effort.

One of the challenges in using similar accounting principles between the public and private sector has to do with the scope of the analysis done. Often private companies focus on entity-wide assessments based on ownership or control of company operations while public entities such as cities or towns look at entity emissions based on geography. For example, a company might assess their GHG emissions based on their resource use in a single factory. The town that the company is situated in might also include those emissions in its inventory because it is a firm within the municipal boundaries. This sort of double counting could hinder future carbon trading systems if a standardized approach is not adopted.

Conducting GHG inventories can have positive impacts on a company or institution's public identity. Not only does an inventory provide ideas for reducing waste, but it can spur overall attention to solving inefficiencies and enhancing institutional transparency and responsibility. At the University of New Hampshire, for example, after a few years of tracking emissions they were able to publicize a 5 percent reduction. This earned the university popular press coverage as well as attention from alumni and trustees. Many other institutions around the country have found similar successes. Some of these inventories are online for public use.

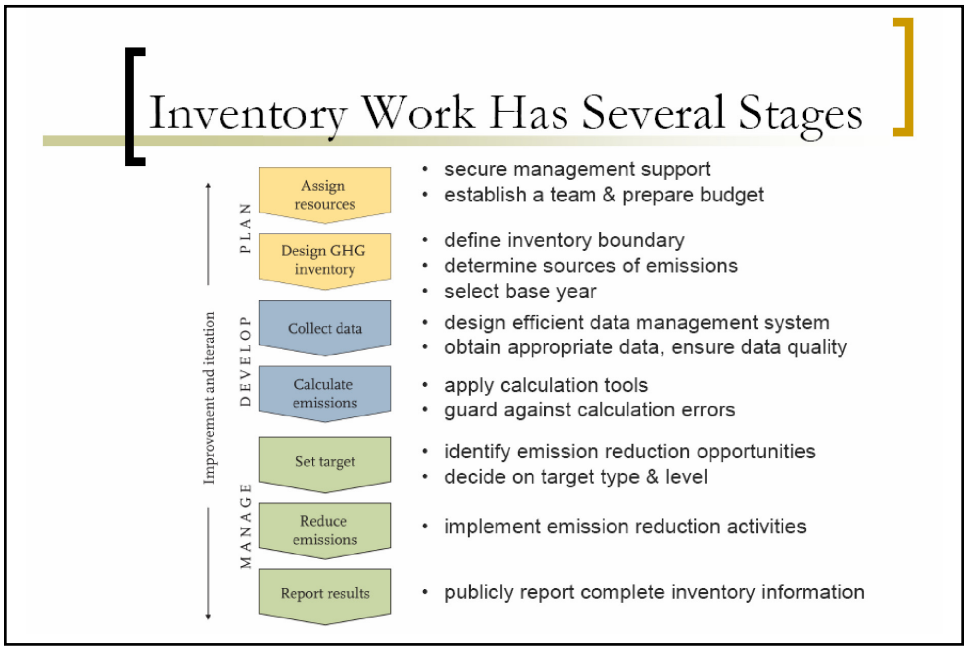
CONDUCTING A GHG INVENTORY

The five principles of GHG inventories include: accuracy, consistency, relevance, completeness, and transparency. In creating a GHG management plan there are three main steps: planning the inventory; collecting and analyzing the data, including reporting the results in a GHG inventory report; and developing emissions management strategies based on those results. In planning for an inventory it is imperative that the senior level management be committed to the process. For larger organizations, it can be difficult for one person to do an inventory on their own; input from facilities managers and others will be necessary.

The technical aspects of creating an inventory must be considered before undertaking the process. The key issues are establishing boundaries and deciding which facilities and which emissions sources will be included. Having a vision ahead of time about how the tool will be used can help in establishing a strong plan. It is important to have continuity in the team that conducts the analysis because of the

complexity and the number of assumptions involved. In some companies, interns do the analysis, which can make it more difficult to replicate efforts subsequently.

Figure 1 Steps in a greenhouse gas emissions inventory



Establishing boundaries and figuring out what types of emissions to include are the first challenges that must be faced. There are two major types of emissions. Direct emissions are from sources that are owned or controlled by the institution, such as a smokestack. Indirect emissions are emissions that result from activity by the reporting entity, but occur from sources owned or controlled by another entity, such as emissions associated with electricity use in a building. Often these boundaries are described as scopes. Scope 1 includes only direct emissions, Scope 2 includes electricity-focused indirect emissions. All other indirect emissions are Scope 3. Scope 3 emissions are considered optional to report because they are very difficult to account for (example: emissions produced when the product sold by the firm is built).

The new campus calculator provides for a similar approach to categorizing emissions at colleges and universities. It enables these institutions to prioritize emissions that can be readily calculated while prompting them to try to capture Scope 3 emissions. One example of Scope 3 emissions at a university would be commuter travel and waste disposal.

Establishing a base year for entity-level accounting is critical for setting goals for the future. This can be one specific year or it can be the average of emissions over a number of years to account for random variables such as weather that affect campus energy use. The standard, however, is just taking a single year. It is important to

choose a year for which strong data exist. Avoid the common temptation to try to create data for 1990 just to agree with the Seattle Mayor's agreement to meet Kyoto targets. It is best to get a reliable baseline, especially when too many indefensible assumptions would have to go into the 1990 number.

On a college campus, data would need to be collected from the following: fuel use in campus power plants and boilers; the campus vehicle fleet; electricity and steam purchases; transportation, including faculty and student commutes; air travel for faculty and perhaps campus wide; and sports teams travel. Regarding indirect emissions, every institution may need to make judgment calls to determine what data makes the most sense to collect. The best strategy is to obtain whatever data is known to be accurate, and then establish systems to determine how to get the data that is missing. It seems that much of the work in doing an inventory is determining how to obtain the data.

Figure 2 Categorizing greenhouse gas emissions into scopes