



CARBON DISCLOSURE PROJECT

GHG Emissions Calculations

A brief introduction

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GHG Calculation Steps

1. Laying a Base for smooth calculations
2. Allowing enough time
3. Reporting Boundaries
4. Identifying Emissions Sources
 - Purchased Electricity
 - Leased Facilities
5. Picking a Calculator
6. Using De Minimis
7. Establishing Records
8. Finding Technical Assistance
9. Creating a Positive Mindset

Step 1: Laying the Base

Identify key personnel to assist you, particularly

- Real Estate, or whom ever pays the utility bills
- Fleet Services if your company owns any cars, trucks, planes or boats
- EH&S; they may have records for clean air act compliance on boilers, etc.
- SEC 10-K forms on line (faster than contacting your IR folks and you can prove wording is approved for public release)
- Identify who, if anyone, must approve release of GHG emissions data

Read the specs (either or both)

- “The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)” www.ghgprotocol.org
- “Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals” (ISO 14064-1) www.iso.org

You are not required to produce an inventory of separate GHG gases for this questionnaire

- metric tonnes CO₂-e is the preferred unit

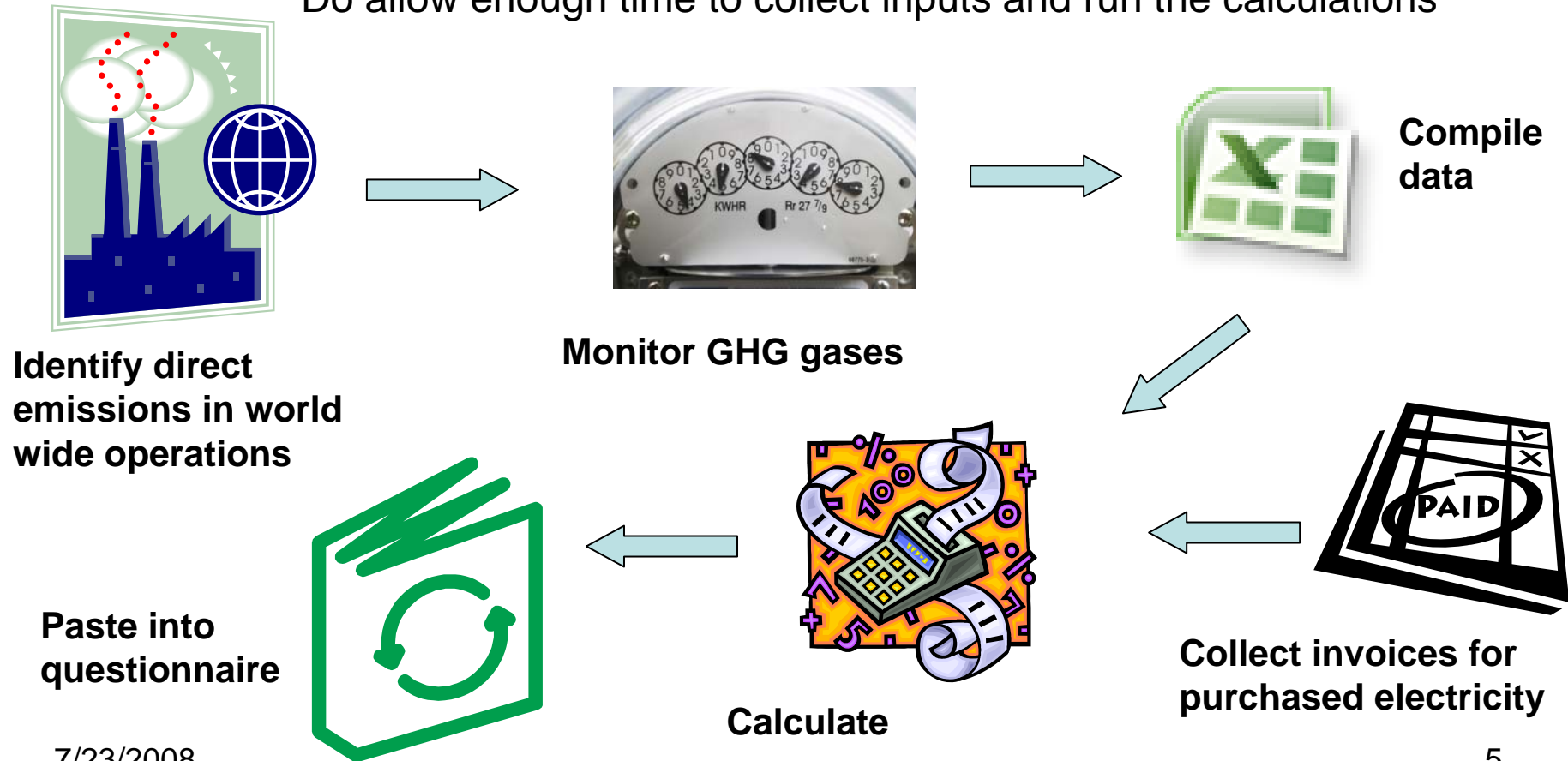
Step 1: Laying the Base pt 2

- Consider cross-sector guidance:
<http://www.epa.gov/climateleaders/resources/cross-sector.html>
- Consider sector-specific guidance for
 - Municipal Solid Waste Land Filling
 - Refrigeration and Air Conditioning
 - Iron and Steel Production
 - Aluminum Production
 - Cement Production
 - Pulp and Paper Production<http://www.epa.gov/climateleaders/resources/sector-specific.html>

Step 2: Time

Reporting period for SCLC08 is defined by you: fiscal year, calendar year or other

Do allow enough time to collect inputs and run the calculations



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Step 3: Determine Reporting Boundaries

- Before you start collecting data, determine your
 - Geographic Boundaries
 - Organizational Boundaries: financial control, operational control, equity share
 - Preferable to have to look at one well defined portion of your company rather than give up on the whole exercise
- Are you accounting for multiple facilities?
 - Ideally, include each individual facility in the calculation
 - If this is resource/time prohibitive, use a representative facility and extrapolate to include the rest of the plants/offices If you estimate or extrapolate, please explain in the section on methodology
 - This protects you in later years if the numbers have to change
- What 12-month time period will you use to report?
 - *SEC reporting is fiscal year; EPA used to ask calendar year*

Step 4. Identify Emissions Sources

Start with Scope 1 and 2

1. Direct Emissions

- Any factory production source already monitored for US EPA Clean Air Act compliance or similar
 - Catalytic cracking
 - Metal smelting
- Fleet fuel use
- Boilers used for heating buildings or evaporative cooling that run on natural gas, coal or other
- emergency generators

2. Purchased Electricity, Steam and Heat

- Collect all utility bills paid to obtain amount of power used

Purchased Electricity (Scope 2)

The emissions associated with ALL electricity sourced from the grid should be calculated using the grid average emission factor.

- Optional to list the types of electrical generation that feed into the grid and give the relative contributions that these types make to the electricity on the grid.

Contractual arrangements aimed at supporting particular types of electrical generation, such as a renewable electricity supply tariff, should be reported separately.

- Detail welcome: about the contractual arrangement, for example the number of KWh covered by the arrangement, the generation mix supported by the arrangement, and about the certification associated with the scheme.
- Companies may also compute an alternative emissions total, taking into account the contractual arrangement, e.g. "green tariff", based on the number of kWh purchased and the average emission factor of the electricity purchased through this arrangement, rather than the grid average emission factor.
 - This alternative figure must be labelled "Contractual Scope 2" and reported separately from the emissions total based on the average emission factor of the actual electricity consumed from the grid, which should be reported under Scope 2. CDP's online reporting system allows for additional information to be presented in response to all questions.



If you generate your own energy from renewable sources, please (still) provide gross GHG emissions numbers. Data is needed for climate change estimation

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Leased facilities

More information on leased facilities is also available from “Hot Climate, Cool Commerce: A Service Sector Guide to Greenhouse Gas Management” – particularly pages 21 and 26-30. This document is available at:

- <http://www.ghgprotocol.org/standards/publications>



This gets back to the issue of organizational boundaries: financial control, operational control or equity share

- Financial control = the operation is treated as a group company or subsidiary for the purposes of financial consolidation.
- Operational control = full authority to introduce and implement its operating policies at the operation.
- Equity share accounts for the % GHG emissions = % ownership
legal or accounting advisors can assist with decision

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Step 5: Calculations

Recommended calculator is

- <http://www.ghgprotocol.org/calculation-tools/all-tools>

Make a note of which calculator you picked and any constants/variables you used if you had some choices to make

Keep good records

- Simple spreadsheet or file is fine
- Written procedure important too, especially if you're ISO14000 certified. Auditors will want this.
- Records set up for baselining and benchmarking



Calculators

Comprehensive Tool

<http://www.ghgprotocol.org/calculation-tools/all-tools>

Facilities Energy Use

(<https://www.openeco.org/>). It calculates emissions from energy usage in facilities and is simple to use. Some companies may want to use OpenECO for their energy use because it's simple, and then use the GHG Protocol Tools for emissions from other categories. OpenECO is web-based, which might be good for companies who have multiple sites so that people can enter information from different locations.

Airline travel

http://www2.icao.int/public/cfmapps/carbonoffset/carbon_calculator.cfm

Step 7: Establishing Records

Ideally, maintain copies of all records that support the activity data used in the calculation

- Utility bills, purchase records, logs, etc.
- At a minimum, know:
 - Who provided records associated with the data
 - The process for obtaining and providing those records and how long that process might take in your organization
 - You may find that your success bears repeating next year



As you uncover cost savings opportunities, record those too

Step 6: Use of De Minimis

It's legitimate to ignore tiny sources of GHG emissions or certain gases that are not common in your sector.

- Classify emission sources as de minimis with caution and only when it yields notable reductions of effort
- Be prepared to explain
 - Industry groups provide advice
- Be aware of changes resulting in increases beyond threshold
- Keep de minimis sources the same from one year to the next
- List de minimis in process document



Step 8: Technical Assistance

The GHG Management Institute

<http://www.ghginstitute.org/elearning.htm>

e-Learning support team is ready to assist you 24/7 via email. For technical questions, or to embark on your e-learning adventure, send us an email at support@ghginstitute.org.

- **Instruction** - Most of our courses are instructor-led -- an instructor is available online for discussions, interaction and questions. Each class will also have an assigned learning support associate (LSA), who will ensure that students and instructors are communicating clearly and sufficiently. We've found this to be highly effective in helping you take charge of what, where, when, and how you learn.
- **GHG classes** - Classes are typically limited to 40 learners. They last 4 to 5 weeks and typically begin at the first of the month, during which period learners are expected to put in between 15-30 hours online. There are 3 levels of interaction that are emphasized in our e-Learning courses. At the first level, learners interact with the content. At the second level, learners interact with other learners through discussion and exchanges, and at the third level, learners interact with online instructors, who also provide substantive guidance.

Step 8: Technical Assistance pt 2

Recommended by The Climate Registry (US)

<http://www.climateregistry.org/tools/verification/technical-assistance-providers.html>

Data Verifiers for Registries provide technical assistance

- Technical assistance providers may be on GHG program websites in Europe and other regions
- In the US, ANSI is piloting a certification program. For a list of participants:
- <http://www.theclimateregistry.org/verification/verifiers.html>
- There is one German member of the ANSI pilot

Later this year, for the ICT* sector – the EICC* is producing a supply chain tool to provide scope 1 and 2 for input to CDP (GHG protocol methodology + deciding which are material and which are not.)

Not CDP – Carbon Disclosure Project cannot offer specific advice

- * ICT = Information Communication Technology
- EICC = Electric Industry Citizenship Coalition

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Step 9: Positive Mindset

- **Strategic Benefits**
 - Support management confidence in GHG actions (e.g. target setting, reduction projects, trading positions)
 - Facilitate transparency for an organization with stakeholders
 - Maintain the credibility of GHG program (internal or external)
- **Tactical Benefits**
 - Improve GHG management systems and data collection processes
 - Inform organizations on GHG quantification best practices
 - Enhance communication, coordination and cooperation of the GHG management team



Conclusion

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- Start Simple
 - Keep the best records you can
 - Work towards more comprehensive, accurate answers each year

Your participation in this project is voluntary.
We appreciate your time and talent.



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Examples derive from EPA examples,
CDP5 responses and provided examples

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http://www.cdproject.net/sclc_home.asp

SCLC08 members



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Colgate, Boeing, two Brazilian utilities

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Roadmap for Members – a backup slide

Supply Chain Emissions

Strategy decisions

- driving efficiencies
- voluntary cap-and-trade prep
- impending regulation prep
- carbon labeling
- baseline scope 3 emissions

Join SCLC

Identify Suppliers

Suppliers report risk and opportunities

- joint targets
- accessible data
- joint scorecards
- best practices

Suppliers risk can be re-evaluated
Product labeling can be devised
Logistics can be improved

Emissions Reduced
Money Saved

Climate &
humanity
suffer
less

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