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# Carbon Accounting: The Nuts and Bolts

NHBSR Webinar  
April 28, 2010

# Greenhouse Gas Inventory

An accounting of the individual and total greenhouse gas (GHG) emissions resulting from a firm's operations annually, with a breakdown of how various activities drive those emissions



NOT:

- An energy audit
- A sustainability audit
- A life-cycle analysis



# Why Do a GHG Inventory?

- Required to report (or anticipate required reporting)
- Internal management tool
- Stakeholder relations
- Participation in carbon markets

# Overview of the Process

1. Assemble your team
2. Assign your boundaries
3. Collect data
4. Do calculations
5. Report and share
6. Update





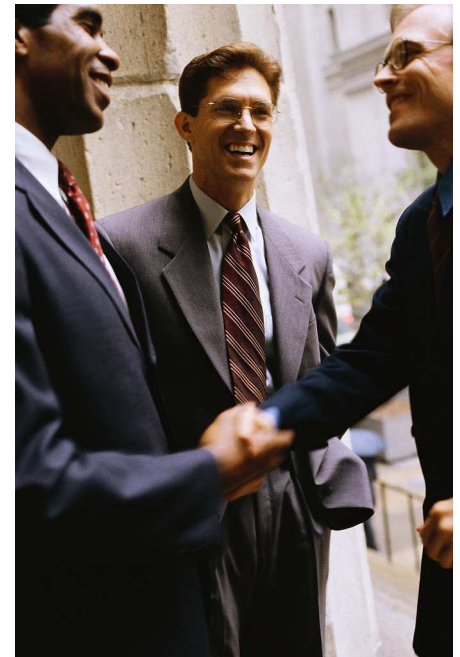
# Find the Right People

This will vary by firm, especially due to different administrative structures

- Who will coordinate the process?
- Who has the data?
- Who will analyze the data?
- Who can make decisions about using the data, planning for GHG reductions?
- Who can affect the success of that plan?
- What general community members should be involved?

# Find the Right People

- Energy, facilities, fleet, office and/or operations manager/s
- Accounts payable, controller or financial administrators
- Landlord
- Consultants and vendors
- Senior management
- Board members
- Marketing department
- Customers
- Board members



# Boundaries: What will we measure?

- Temporal - Baseline Year
- Spatial – “Organizational”
- Scope - “Operational”
  - Scope 1: onsite and direct control
  - Scope 2: offsite and indirect control
  - Scope 3: less control





# Organizational Boundaries

Reporting Option	Entity (e.g., joint venture)	What to report
<b>1. Control (operational or financial)</b>	Controlled	100% of emissions
	No control	Zero emissions
<b>2. Equity share</b>	Wholly owned or controlled	Equity share of emissions
	Significant influence/ associated entities	Equity share of emissions
	No equity	Zero emissions



# Organizational Boundaries

## Case Study: Control Approach



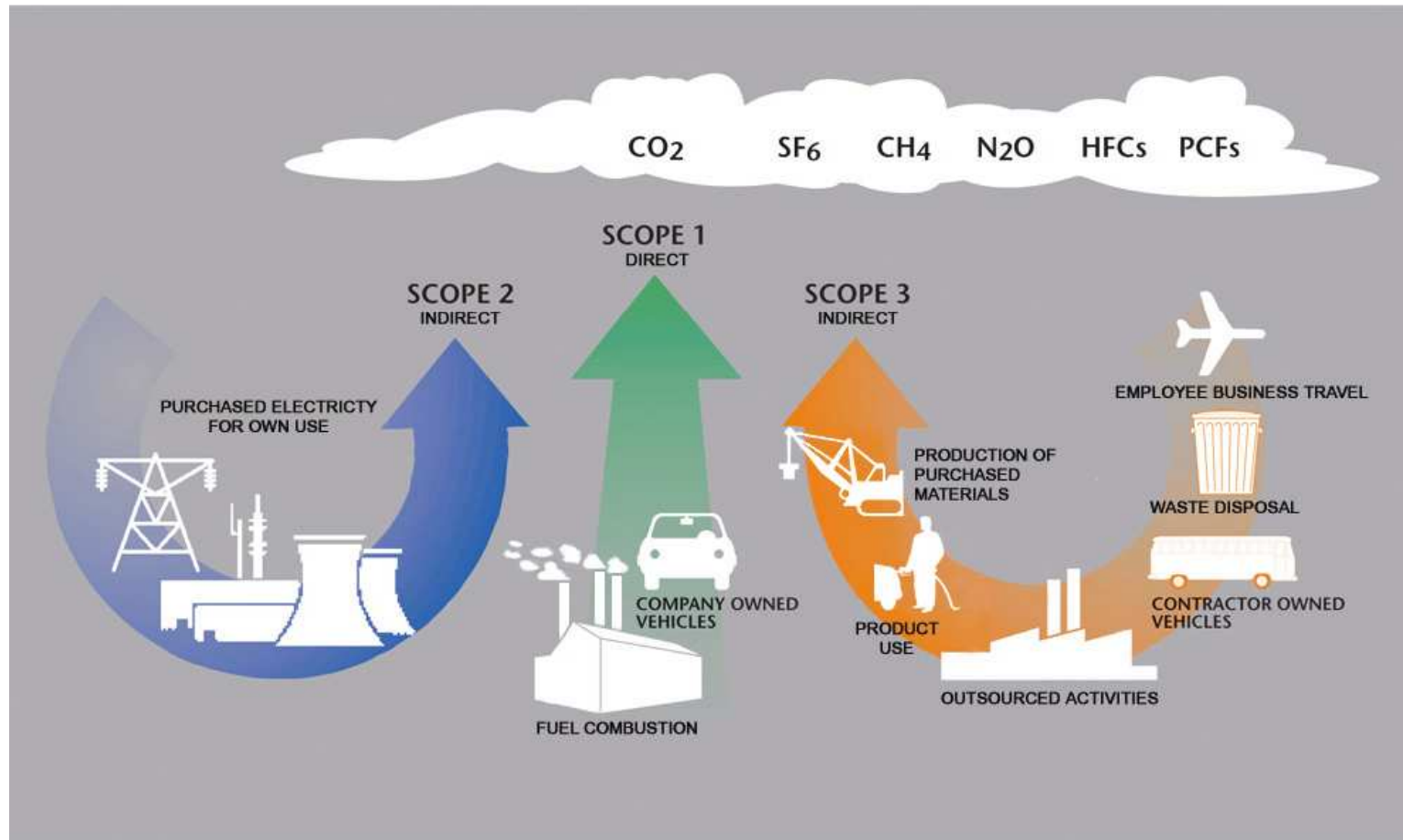
CA-CP leases three offices; we own no property, heavy equipment or vehicles



# Organizational Boundaries

Polling question....

# Operational Boundaries: Scopes



# Operational Boundaries

## Case Study: Required Boundaries

### Oakhurst Dairy

#### Scope 1

- Fuels for on-site processing
- Fuels for building heat
- Fuels for fleet vehicles

#### Scope 2

- Purchased electricity

#### Scope 3

- None

[www.cleanair-coolplanet.org/information/pdf/Oakhurst Dairy Case Study 01272009.pdf](http://www.cleanair-coolplanet.org/information/pdf/Oakhurst%20Dairy%20Case%20Study%2001272009.pdf)



# Operational Boundaries

## Case Study: Expansive Boundaries

Timberland



### Scope 1

Heating fuels

Transportation fuels

### Scope 2

Purchased electricity

### Scope 3

Directly-financed business travel (air and ground)

Employee commuting



# Operational Boundaries

Polling question.....



# GHG Inventory Tools

- **GHG Protocol**
  - Available to anyone for free download:  
[www.ghgprotocol.org](http://www.ghgprotocol.org)
  - Offers sector-specific tools
- **EPA Climate Leaders**  
[www.epa.gov/climateleaders/index.html](http://www.epa.gov/climateleaders/index.html)
- **Campus Carbon Calculator**
  - Available to anyone for free download:  
[www.cleanair-coolplanet.org](http://www.cleanair-coolplanet.org)
  - Inventory, projection, solutions modules



# Collecting Data

- Use your tool as a guide to the data you need to collect:

## **ACTIVITY DATA**

- Gallons
- MMBTU
- Pounds or tonnes
- kWh

## **BENCHMARKING DATA**

- Square feet
- # of employees, customers, visitors, etc
- Units of output

- Look at bills (use price/unit to find units)
- Other sources:
  - Expense reports/reimbursement records
  - Surveys
  - Other companies (electric utility, waste hauler)





# Collecting Data

- Create Streamlined Systems
- Allow for detailed record keeping
- Keep assumptions transparent
- Build in extra time

# The Calculations

$$10 \text{ gallons} \times \frac{8.806 \text{ kg CO}_2}{1 \text{ gallon}} \times \frac{1 \text{ GWP}}{1 \text{ GWP}} = 88.06 \text{ kg CO}_2$$

$$10 \text{ gallons} \times \frac{0.0018 \text{ kg CH}_4}{1 \text{ gallon}} \times \frac{23 \text{ GWP}}{1 \text{ GWP}} = 0.414 \text{ kg CH}_4$$

$$10 \text{ gallons} \times \frac{0.0006 \text{ kg N}_2\text{O}}{1 \text{ gallon}} \times \frac{90.25 \text{ GWP}}{90.25 \text{ GWP}} = 0.006 \text{ kg N}_2\text{O}$$

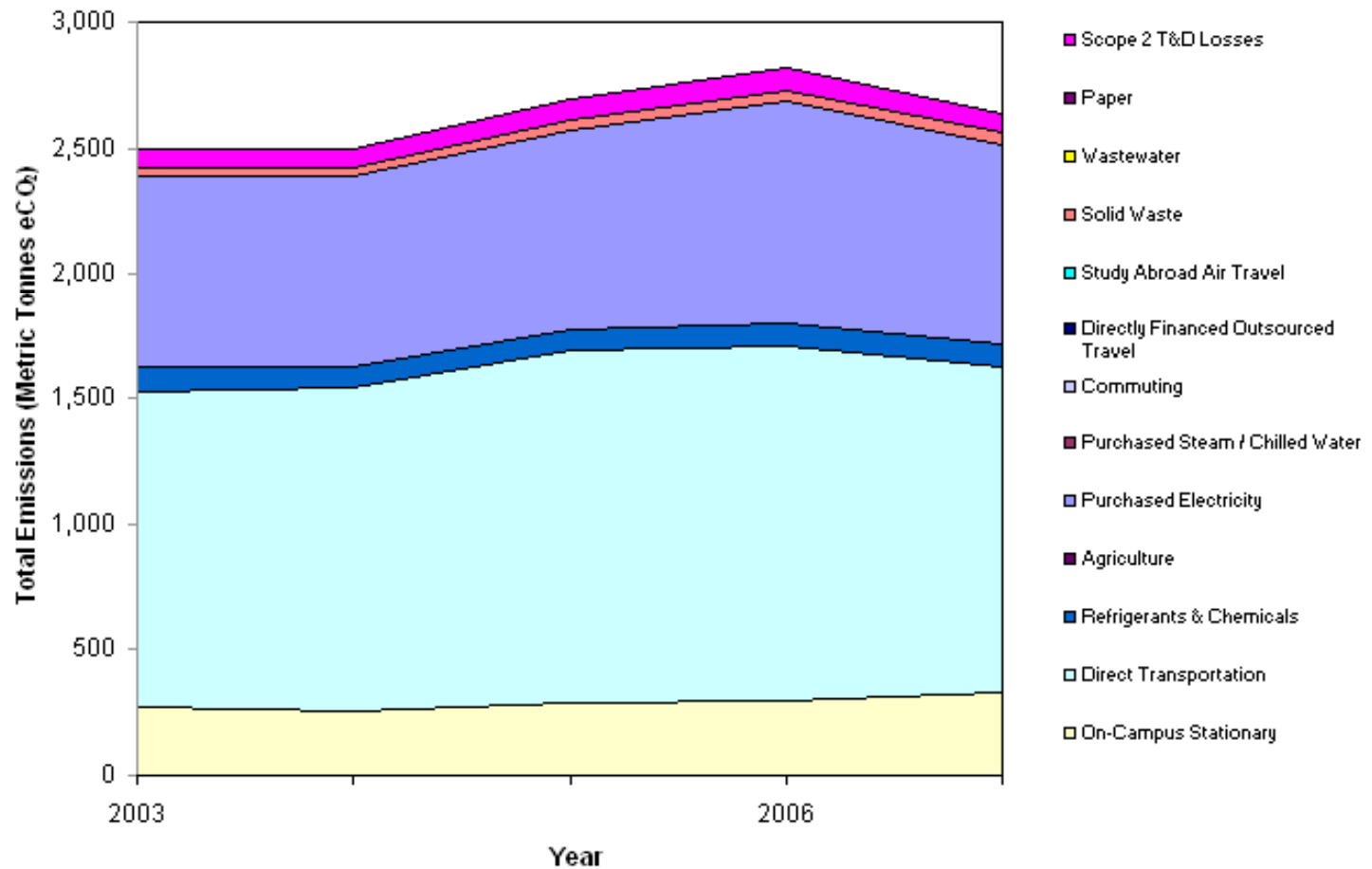
# Biogenic Emissions

- Plant based fuels do emit CO<sub>2</sub>; “neutral” on a lifecycle basis
- Accounting best practices require this to be reported, separately
- The intent is not to disincentivize use of biomass or biofuels, but to be scientifically accurate



# Analyzing Your Results

On this worksheet: Total emissions by sector (Metric Tonnes eCO<sub>2</sub>)





# Reporting Your Results

- EPA (Mandatory for large emitters)  
[www.epa.gov/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.html)
- EPA (Voluntary for all others, through Climate Leaders program)  
[www.epa.gov/climateleaders/](http://www.epa.gov/climateleaders/)
- The Climate Registry
- The Carbon Disclosure Project
- “Self-publish”—on website, in corporate sustainability reports, etc.



# Some Additional Thoughts

Boundaries revisited:

- Scope 3, very difficult: Commuting as example
  - Estimate versus Survey
  - Data needed:
    - Number of people
    - Mode of transport
    - Fuel efficiency for given transport modes
    - Percent in personal vehicle, percent carpool
    - Trips per week, weeks per year
    - Miles per trip



# Some Additional Thoughts

Protocols and best practices still evolving...

- On supply chain emissions reporting (scope 3)
- On carbon offsets and renewable energy credits
- On murky areas like leased facilities, appropriate benchmarking and comparisons, changing “baseline,” etc.



# Some Additional Thoughts

Your first inventory, you will likely learn as much from the process as the results.

- Approach it as an opportunity to learn about organizational efficiency, and enhance communication between stakeholders
- Allocate time and resources (and be patient)
- Understand your numbers will be somewhat fluid, not absolute



# An Iterative Process





# Find More Information

- Clean Air-Cool Planet  
[www.cleanair-coolplanet.org](http://www.cleanair-coolplanet.org)
- EPA
- GHG Protocol
- GHG Management Institute
- Carbon Disclosure Project