



AAPA Climate Change Workshop

GHG Emission Inventories at Ports

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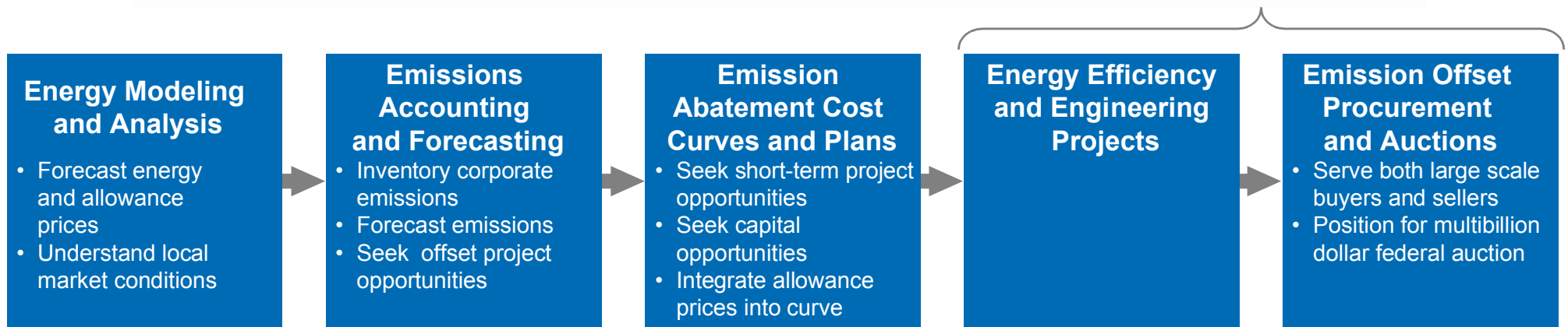
November 12, 2008

Presentation Overview

- Introduction
- GHG Protocols
- What to report and how?
- Organizational boundaries and tenant emissions
- Accounting for direct and indirect emissions
 - Stationary combustion

Our Consulting Work in Climate Change Policy

Vision: Policy consulting supports efficiency and engineering projects for large commercial, industrial, and government clients



- **GHG Reporting Protocols**

- California Climate Action Registry
- The Climate Registry
- DOE 1605(b) Program
- EPA Climate Leaders
- Western Governors Association

- **GHG Inventories**

- Port of Long Beach
- Nebraska Public Power District
- ConocoPhillips
- Oklahoma Gas & Electric
- Chicago Transit Authority
- Defense Logistics Agency
- Sunrise Assisted Living
- NASA

Emerging GHG Protocols

Where to Report GHG Emissions from Ports?

Organization	Coverage	Status
Enhanced 1605(b) Voluntary GHG Reporting Program DOE Energy Information Administration	<ul style="list-style-type: none"> - United States - Reporters can register emission reductions against 2002 baseline starting 2003 	<ul style="list-style-type: none"> - Reporting expected to begin by March 2009
Climate Leaders Environmental Protection Agency	<ul style="list-style-type: none"> - United States - Partners agree to GHG target 	<ul style="list-style-type: none"> - Ongoing
Mandatory GHG Reporting Rule Environmental Protection Agency	<ul style="list-style-type: none"> - United States - Mandatory for large emitters 	<ul style="list-style-type: none"> - Scheduled Sep. 08 draft delayed. OMB reviewing rule - Final rule scheduled for Spring 2009
The Climate Registry (TCR) Thirty-nine U.S. states, the District of Columbia, nine Canadian provinces, six Mexican states, and several North American Indian tribes	<ul style="list-style-type: none"> - Canada, Mexico, and the United States - Voluntary; supports mandatory reporting in 18 states 	<ul style="list-style-type: none"> - 2008 data must be reported by June 2009 and verified by December 2009 - Historical third-party verified data can be submitted now - Transitional reporting allowed for 2 years.
The California Climate Action Registry (CCAR) California	California and the United States	<ul style="list-style-type: none"> - Accepts inventory data through 2009 reporting year - In 2010 all reports will be transferred to The Climate Registry
GHG Protocol WRI/WBCSD	Worldwide	<ul style="list-style-type: none"> - No official reporting program

What GHGs to Report?

- Greenhouse Gases

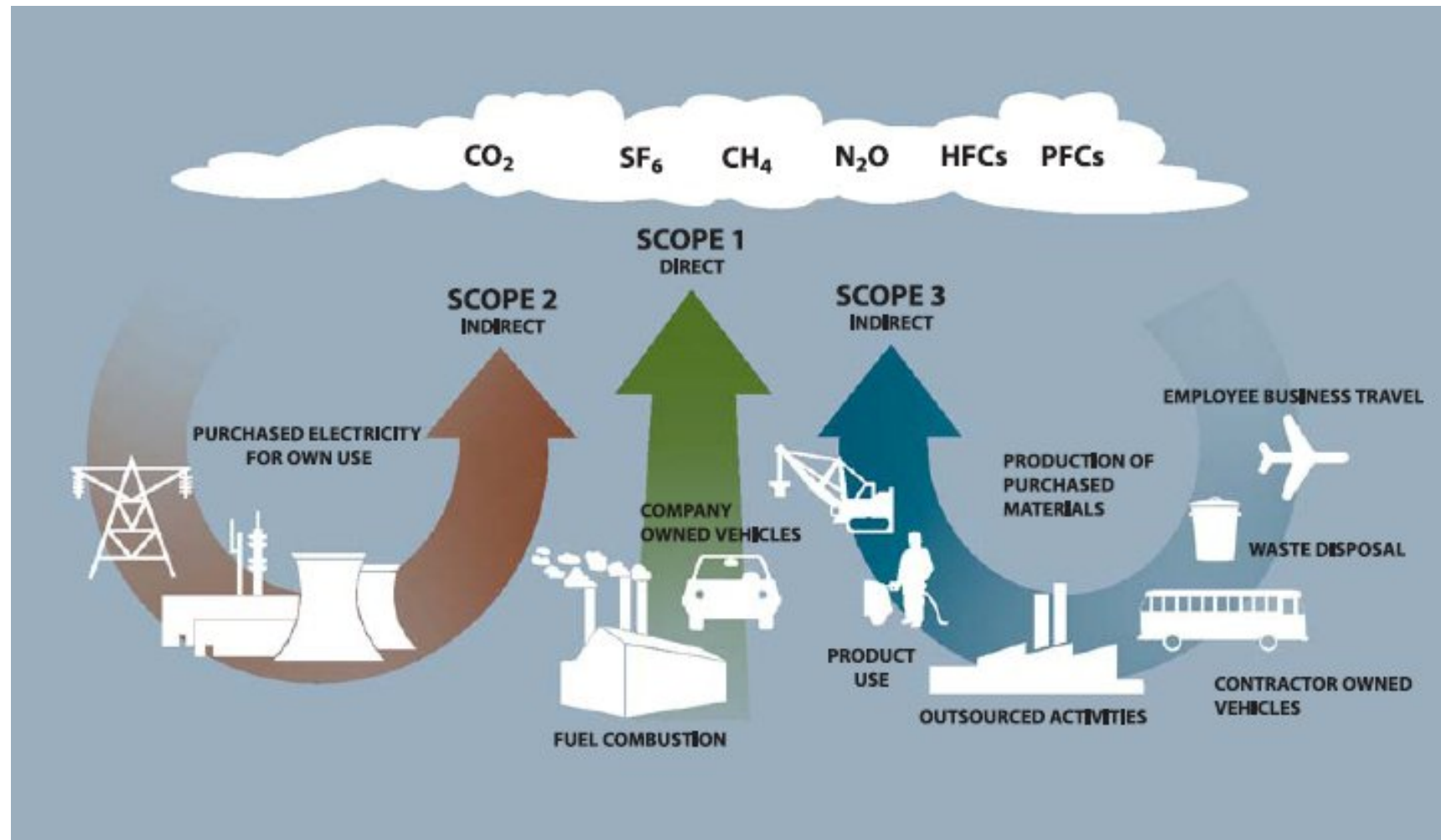
- Carbon Dioxide (CO₂)
 - Stationary/mobile combustion, industrial processes, fugitive emissions, etc.
- Methane (CH₄)
 - Stationary/mobile combustion, industrial processes, fugitive emissions, landfills, agriculture, etc.
- Nitrous Oxide (N₂O)
 - Stationary/mobile combustion, industrial processes
- Hydrofluorocarbons (HFCs)
 - Industrial processes, refrigeration
- Perfluorocarbons (PFCs)
 - Industrial processes, refrigeration
- Sulfur Hexafluoride (SF₆)
 - Electricity T&D systems

- Typical Sources at Ports

- Buildings
 - Electricity, heating, and cooling
 - Fugitive emissions from cooling and air conditioning
- Fleet vehicles
- Commercial marine vessels
- Cargo handling equipment
- Landfills
- Attracted travel
- Employee commuting



What to Sources to Include, and How?



Two Options for Organizational Boundaries

1. Equity share

- Report all sources that are wholly or partially owned by your organization

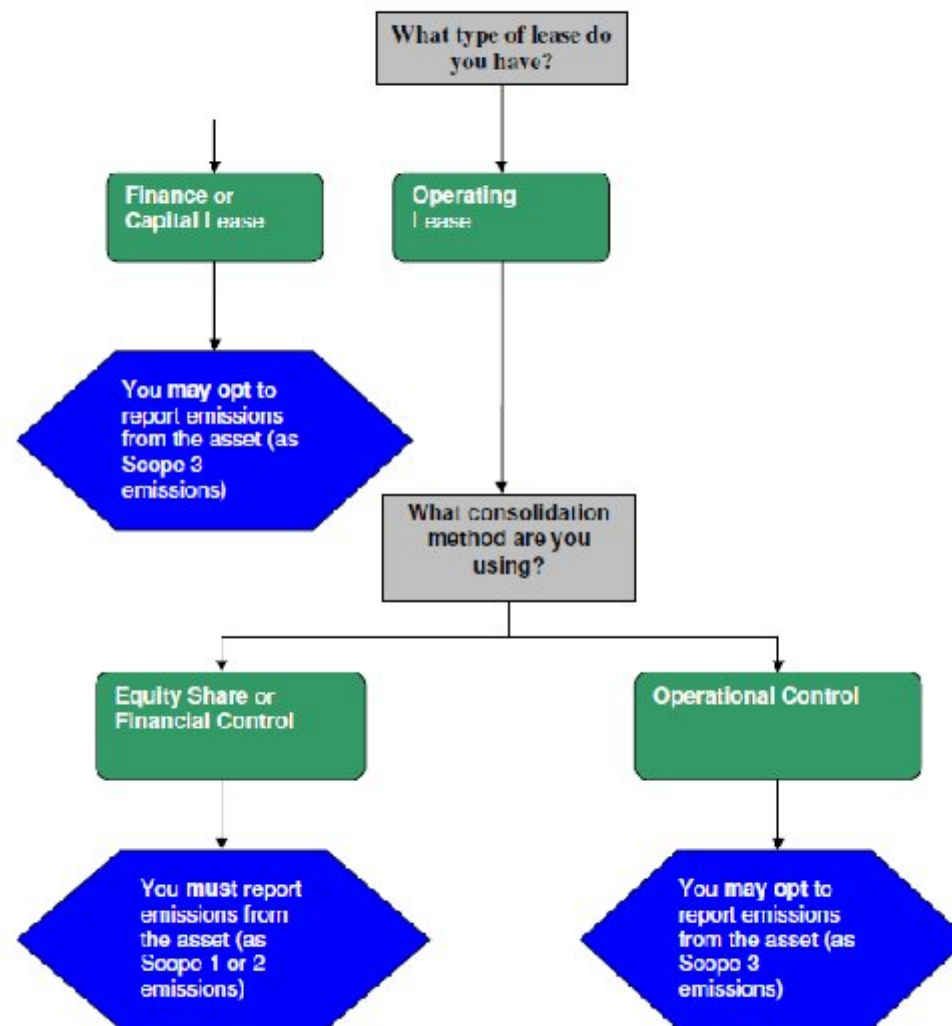
2. Management/operational control

- Report all sources that are under your control
- Two approaches:
 - **Financial control**
 - Authority to direct the financial policies of the operation with an interest in gaining economic benefit
 - **Operational control**
 - Authority to introduce and implement operating policies



Reporting of Tenant Emissions Depends on Organizational Approach

The Climate Registry: Decision Tree for a Leased Asset



Example: Port and Tenant Emissions at Port Authority of New York & New Jersey

Port Commerce Department GHG Emissions by Facility and Scope (metric tons CO₂e), 2006

	Scope 1	Scope 2	Scope 3	Facility Emission Totals
All Port Authority Ports	-	-	146,735	146,735
Commercial Marine Vessels	-	-	146,735	146,735
Port Newark/ Elizabeth Terminal	189	-	710,143	710,332
Cargo Handling Equipment	-	-	219,955	219,955
Attracted Travel	-	-	299,029	299,029
Buildings	-	-	44,424	44,424
Fleet Vehicle	189	-	-	189
Direct Fugitive Emissions	18	-	-	18
Howland Hook Marine Terminal/Port Ivory	9	-	78,911	78,920
Cargo Handling Equipment	-	-	31,445	31,445
Attracted Travel	-	-	47,015	47,015
Buildings	-	-	451	451
Fleet Vehicle	9	-	-	9
Red Hook Container Terminal and Brooklyn PA Marine Terminal (Brooklyn Piers)	66	-	1,894	1,960
Cargo Handling Equipment	-	-	Included in Howland Hook	
Attracted Travel	-	-	1,443	1,443
Buildings	-	-	451	451
Fleet Vehicle	66	-	-	66
Auto Marine Terminal and Greenville Yard	-	-	3,687	3,687
Cargo Handling Equipment	-	-	150	150
Attracted Travel	-	-	Included in Red Hook	
Buildings	-	-	3,537	3,537
Elizabeth Landfill	4,073	-	-	4,073
PORT COMMERCE DEPARTMENT	4,337	-	941,370	945,707

Mobile sources represent the largest share of emissions and the biggest opportunity for reductions

Scope 3 (optional sources) represents the largest source of emissions by far

Example Accounting Methodologies

Stationary Sources: Direct and Indirect

	Source	Method	References
Scope 1 Direct	Stationary combustion	Fuel consumption x emission factor	Use established emission factors from protocols
	Fugitive Emissions	Based on leak rates	
Scope 2 Indirect	Imported electricity	KWh x emission factor	Utility-specific emission factors
			Power pool emission factors from EPA's eGRID database
Scope 3 Indirect	Electricity in tenant buildings	KWh x emission factor	Utility-specific emission factors
			EPA's eGRID database
			Estimates of per square foot energy use of similar buildings using EIA Commercial Buildings Energy Consumption Survey (CBECS)

Contact Us



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