Carbon Accounting Compliance Challenges
Strategies to Meet the EPA’s New Mandatory
GHG Reporting Requirements

A Live 90-Minute Teleconference/Webinar with Interactive Q&A

Today’s panel features:
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Tuesday, June 8, 2010
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1 pm Eastern
12 pm Central
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Greenhouse Gas Mandatory Reporting Rule 101:
Basic Concepts

June 1, 2010
Presented by:

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GHG MRR Basics

• Requires monitoring and reporting of GHG emissions from certain sources
  – Data collection only at this point
  – Precursor to GHG control rules

• R&D excluded
GHGs Reported

- $\text{CO}_2$ (carbon dioxide)
- $\text{CH}_4$ (methane)
- $\text{N}_2\text{O}$ (nitrous oxide)
- Fluorinated GHGs
  - HFCs (hydrofluorocarbons)
  - PFCs (perfluorocarbons)
  - $\text{SF}_6$ (sulfur hexafluoride)
  - Other fluorinated gases
• Downstream reporting
  – Facility based reporting
    • Limited exceptions: fuel importers, non-light-duty vehicle/engine manufacturers

• Upstream reporting
  – Supplier reporting
    • Manufacturers of vehicles and engines (heavy-duty trucks, motorcycles, nonroad engines) must report CO2 beginning in model year 2011, other GHGs in following years
Facility Defined

- **Facility:**
  - Physical property, plant, building, structure, source, or stationary equipment located on one or more contiguous or adjacent properties;
  - In actual physical contact or separated solely by public roadway or other public right of way;
  - Under common ownership or common control; and
  - Emits or may emit GHGs.
Facility Assessment of Rule Applicability

- Any one facility may contain multiple “sources.”
- Thus, each facility must evaluate each source to determine applicability.
  - All-in
  - Threshold
  - Combustion Only: Facilities with stationary combustion units with rated heat input capacity of 30 mmBtu/hr or more that emit 25,000 tpy of CO$_2e$ from all stationary fuel combustion sources
• For all-in or threshold sources, if the rule applies, the facility must report emissions for all sources with rule-defined methods.

• For combustion only sources, the report covers emissions from stationary fuel combustion sources only.
“All-in” source categories:
- Any facility that contains an all-in source is subject to the rule.

Examples:
- Producers of: cement, aluminum, ammonia, HCFC-22, nitric acid, petrochemicals, phosphoric acid, silicon carbide, soda ash, titanium dioxide
- Petroleum refineries
Facilities containing threshold sources must aggregate source categories to determine if the 25,000 metric tons of CO$_2$e per year threshold is met.

Examples:
- Producers of: ferroalloys, glass, hydrogen, iron and steel, lead, zinc
- Pulp and paper manufacturers
- Stationary combustion units
• Facilities that
  – Are neither all-in nor threshold sources; and
  – That contain stationary fuel combustion units with aggregate maximum rated heat input capacity of 30 mmBtu/hr or greater; and
  – That emit 25,000 tpy of CO2e in combined emissions from all stationary fuel combustion units

• Must report GHG emissions from stationary fuel combustion sources only.
All-in & Threshold Sources - Remember:

• Once you’re in, you’re in all the way.
  – If a facility contains an all-in source, or aggregate CO$_2$e emissions from all facility sources exceed the 25,000 tpy CO$_2$e threshold, then all GHG emissions from all sources must be reported.
  – Calculation methodologies are provided in 40 CFR 98 Subparts C-JJ.
Categories Not Currently Included in Rules

- Electronics manufacturers
- Ethanol production
- Food processing
- Oil and natural gas systems
- Underground coal mines
- Geologic sequestration
- Industrial landfills
- Wastewater treatment
• CEMS: Continuous emission monitoring systems
  – Facilities must use this method if they already use under NSPS or Acid Rain Program and meet criteria

• Rule-defined source calculation
  – Defined GHG equations
  – 40 CFR 98 Subpart C-JJ
Facility Assessment Decision Tree

All-in source category?

- Yes
  - Subjec
t to rule.

- No
  - Threshold source category?
    - Yes
      - Emit ≥ 25,000 tpy of CO\textsubscript{2}e?
        - Yes
          - Subjec
t to rule.
        - No
          - No
            - Combustion only category?
              - Yes
                - Aggregate max. rated heat input capacity ≥ 30 mmBtu/hr?
                  - Yes
                    - Subjec
t to rule.
                  - No
                    - No
                      - Not subject to rule.
• Abbreviated reports may be submitted for reporting year 2010.
• Combustion only sources may use any method of GHG emission calculation.
• Combustion only source examples:
  – Boilers, stationary internal combustion engines, process heaters, combustion turbines, incinerators
Suppliers: Upstream Reporting

- Suppliers of certain products are also required to report the quantity of those products introduced into the economy and the GHG “emissions” from those products based on an assumption of 100% oxidation of fuels and 100% release of gases.

- Examples:
  - Producers of petroleum products, coal-based liquids, industrial GHGs (F-GHG and N₂O), and CO₂
  - Exporters/importers of 25,000 tpy of CO₂e
  - Fractionaters and distributors of natural gas and natural gas liquids
Reporting Logistics

- Reports self-certified
- Electronic submission
  - Automatic calculation and completeness checks
- Confidential business information claims can be made pursuant to 40 CFR Part 2, Subpart B
  - Emissions data not generally eligible for CBI treatment
- Records to be retained for 3 years
You may, after notification to EPA, stop reporting if:

– All processes/supply operations are shut down; or

– Annual reports show
  • $\text{CO}_2\text{e}<25,000$ tpy for 5 years; or
  • $\text{CO}_2\text{e}<15,000$ tpy for 3 years

Any future threshold exceedence requires reporting startup
Timeline

- January 1, 2010: Monitoring begins (except vehicle/engine manufacturing)
- January 28, 2010: Any extensions for best available monitoring must be requested
- January 1 – March 31, 2010: Best available monitoring methods can be used in lieu of prescribed monitoring in applicable Subpart
- April 1, 2010: Rule-defined monitoring methods must be used (where no extension granted); monitoring plan must be completed
- January 1, 2011: Combustion only sources must begin preparing a full report and must use prescribed monitoring methods; vehicle/engine manufacturers begin monitoring
- March 31, 2011: First reports due
Caution

- EPA has indicated that GHG reporting may be an enforcement priority
- Carefully determine applicability and reporting requirements, seeking assistance if necessary
• http://www.epa.gov/climatechange/emissions/ghgrulemaking.html
  – Online applicability tool
  – Frequently asked questions database organized by Subpart
  – Source category checklists
• Email: GHGMRR@epa.gov
GHG Accounting Basics
Overview

- Section I: Who is ClearCarbon?
- Section II: Greenhouse Gas 101
- Section III: How to calculate a GHG inventory

Q & A discussion
Section I: Who is ClearCarbon?
ClearCarbon Enables Companies to Improve Performance through Carbon Capitalization

Measure
Our experienced team delivers actionable carbon footprints, product and supply chain analyses, and other practical carbon measurements.

Manage
We turn risk into opportunity by reducing costs and increasing profitability, while lowering climate impacts.

Monetize
Put simply, carbon is money. We work to find innovative solutions that save and make our clients money in an increasingly low-carbon economy.
ClearCarbon Solutions Drive the Sustainability Efforts of Leading Companies Worldwide
Section II: Greenhouse Gas 101
What is the Greenhouse Effect?
Where do Greenhouse Gases Come From?

Percentage of U.S. GHG Emissions, 2006

- Agriculture: 7.6%
- Industry: 19.4%
- Commercial: 5.6%
- Residential: 4.9%
- Transportation: 27.9%
- Electricity Generation: 33.7%
- US Territories: 0.9%

Section III: Calculating a GHG Inventory
Getting Started – Terminology

- **Boundary Conditions**: The breadth and depth of an inventory.

- **Base Year**: A year against which GHG emissions are tracked over time.

- **The GHG Protocol**: A corporate accounting standard developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

- **Scope**: Emissions source categories
  - 1: Direct Emissions
  - 2: Indirect Emissions
  - 3: (Optional) Other Indirect Emissions

- **Major Greenhouse Gas (GHG) Emissions**:
  - Carbon Dioxide (CO₂)
  - Methane (CH₄)
  - Nitrous Oxide (N₂O)
  - Hydrofluorocarbons (HFC)
  - Perflorocarbons (PFC)
  - Sulphur Hexafluoride (SF₆)

- **Carbon Dioxide Equivalents (CO₂e)**: Standard GHG emissions reporting metric.
Calculation Tools and Emissions Factors

- WRI
- U.S. EPA Climate Leaders
- U.S. Department of Energy 1605b Voluntary Reporting of Greenhouse Gases Program
- Intergovernmental Panel on Climate Change (IPCC)
- Carbon Consultants
Two-Phased Approach

Phase I: Defining
- GHG inventory parameters
  - Organizational boundaries, base year, business units and key individuals
- Identify operational boundaries:
  - Scope 1, 2 and 3 emissions sources

Phase II: Quantifying
- Data collection and gap analysis
- Data review, modeling, and completion
- Data integration and quality analysis
- Calculate GHG emissions
- Analysis and reporting
Phase I – Define: Organizational Boundaries

- All countries
- All facilities
- All business units
- Offices
- Fleets
Phase I – Define: Operational Boundaries

Emissions Sources:
- Scope 1: Direct
- Scope 2: Indirect
- Scope 3: Other Indirect
Scope 1 Emissions

- Direct GHG emissions owned or controlled by company:
  - On-site combustion of fuels or chemicals
  - Fleet
  - Fugitive emissions (gas line leaks, refrigerants)
  - Other?
Scope 2 Emissions

- Indirect emissions:

  ✔ Purchased electricity
  ✔ Purchased steam
  ✔ Purchased chilled water
Scope 3 Emissions

- Other Indirect Emissions:
  - Employee business travel
  - Waste disposal
  - Outsourced activities
Phase I – Define: Operational Boundaries

- Determining Business Units and Key Individuals

```
Company

Scope 1
- Refrigerant Leakage: Contact: EHS Director
- Onsite fuel emissions: Contact: Building Engineer
- Mobile emissions: Contact: Fleet Manager

Scope 2
- Purchased Electricity: Contact: Accounts Payable

Scope 3
- Transport to Customer: Contact: Logistics Manager
```
Phase I – Regulated Facilities

- Not all facilities are required to report to the EPA
- “Facility” can mean more than one building (i.e. campus)
- Minimum threshold not required to report: Facilities with a Maximum rated heat input capacity of less than 90 mmBtu/hr
- Some facilities have to report regardless of capacity or quantity of emissions
Phase II – Quantify: EPA Monitoring

- **Tier 1** Based on fuel use, default high heat value (HHV) of fuel, and fuel specific emissions factor (in Table C-1 of the rule)
- **Tier 2** Based on fuel use, calculated HHV of fuel, and fuel specific emissions factor (in Table C-1 of the rule)
- **Tier 3** Based on fuel use and the calculated, annual average carbon content of the specific fuel
- **Tier 4** Based on data collected from continuous emission monitoring systems (CEMS)

*Rule of thumb: Measure GHGs the way the Clean Air Act requires measurement of other air pollutants*
Phase II – Quantify

- **Data Collection**

  - **Facility Data**
    - kWh purchased electricity
    - Onsite fuel usage
    - Facility refrigeration
    - Actual GHG’s

  - **Business Travel Data**
    - # Trips
    - Miles per trip
    - Mode of transportation
    - Fuel Usage

  - **Fleet Data**
    - # Trips
    - Miles per trip
    - Mode of transportation
    - Weight transported

Collect all data in one place to begin analysis and identify gaps.

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ClearCarbon
Phase II – Quantify

- Calculate GHG emissions
  - Collect energy data
  - Apply emissions factors and global warming potentials
Phase II – Quantify

- Example Calculation
  - Facility A uses 600,000 MMBTU of Natural Gas in 2010

<table>
<thead>
<tr>
<th>Fuel Usage Quantity</th>
<th>Fuel-Specific CO2 Emissions Factor</th>
<th>Fuel-Specific CH4 Emissions Factor</th>
<th>Fuel-Specific N2O Emissions Factor</th>
<th>CH4 Global Warming Potential</th>
<th>N2O Global Warming Potential</th>
<th>= Mtons CO2</th>
<th>= Mtons CO2eq (CH4)</th>
<th>= Mtons CO2eq (N2O)</th>
<th>= Total Mtons CO2eq from Onsite Combustion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mtons CO2</td>
<td>+ Mtons CO2eq (CH4)</td>
<td>+ Mtons CO2eq (N2O)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Phase II – Quantify

### Calculation Results

<table>
<thead>
<tr>
<th>MMBTU</th>
<th>Emissions Factors (kg GHG / kWh)</th>
<th>Global Warming Potential</th>
<th>CO$_2$e (kg)</th>
<th>CO$_2$e (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000</td>
<td>53.24</td>
<td>x 1 (CO2)</td>
<td>31,944,000</td>
<td>31,944</td>
</tr>
<tr>
<td></td>
<td>0.004747</td>
<td>x 21 (CH4)</td>
<td>59,812</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>0.0000949</td>
<td>x 310 (N2O)</td>
<td>17,651</td>
<td>18</td>
</tr>
</tbody>
</table>

**Total Tons CO$_2$e** 32,022
EPA Reporting Requirements

- The EPA requires the following for each facility that is above the threshold:
  - Unit Specific ID
  - Heat Input
  - Fuel Type and Annual Usage
  - Calculation Approach Used (Tier 1, Tier 2, etc.)
  - Emissions in CO₂, CH₄, N₂O, and CO₂e
Phase II – Quantify

- Analysis and reporting
  - Categorize data by emissions source to understand where the biggest impacts are coming from

Company X 2008 Footprint

- Business: 2%
- Travel: 2%
- Onsite Fuel: 17%
- Transport Fuel: 29%
- Purchased Energy: 50%
- Refrigerants: 2%

Facility Footprints

- Tons CO2e (thousands)

Electronics
- Refrigerants / Fugitive
- Mobile Fuel
- Onsite Fuel
Questions?

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Carbon Accounting Compliance Challenges

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June 8, 2010
EPA’s Final GHG Reporting Rule

- Designated Representative
- Verification
- Recordkeeping
- Enforcement
- Implications
  - Disclosure of data
    - To who?
    - Confidential Business Information
  - Use of data
    - Plaintiffs’ bar targets
    - State AG targets
    - Cap and trade
  - Corporate governance
  - SEC reporting
Designated Representative

- Need not be the owner or operator (per facility, per supplier)
  - but actions bind owners and operators
- Representative needs to be designated 60 days prior to reporting deadline
  - certificate of representation
- Report needs to be personally examined, signed
  - true, accurate, and complete
  - under penalty of law

- See 40 CFR § 98.3 - 98.4
Verification

- Self-certification / EPA emissions verification
  - Allows EPA to make the data available more quickly
- Automated review of data
  - Comparison to past data, similar facilities
- Review of facility-level monitoring plans
- Audits of selected reporting facilities to follow up on discrepancies
- See 40 CFR § 98.3
Recordkeeping

• Retain for at least 3 years
• Records available for inspection in expeditious fashion
• Retain the following:
  – A list of all units, activities, etc. for which GHG emissions were calculated
  – Data used to calculate emissions
  – Annual GHG reports
  – Missing data computations
  – GHG Monitoring Plan
  – QA/QC, maintenance
• See 40 CFR § 98.3(g)
Enforcement

- Violators of the rule could be potentially subject to enforcement action by EPA under CAA sections 113 and 203-205.
- CAA provides for injunctive relief to compel compliance.
- CAA provides for civil and administrative penalties of up to $37,500 per day per violation.
- Preamble to Rule.
Enforcement

- Potential violations include:
  - Failure to report GHG emissions (for suppliers, the emissions that would result from combustion or use of the products they supply).
  - Failure to collect data needed to calculate GHG emissions.
  - Failure to continuously monitor and test as required.
  - Failure to calculate GHG emissions according to the methodology(s) specified in the rule.
  - Failure of keep required records needed to verify reported GHG emissions.
  - Falsification of reports.
Implications - Disclosure of Data

• EPA plans to publish the data submitted or collected pursuant to this rule through EPA’s website, EPA reports, or other mechanisms with the exception of any confidential business information (CBI).

• EPA plans to share emissions data (with the exception of CBI) with state, tribal, and local level emissions reporting programs for the sake of consistency.
Implications - Disclosure of Data

• Confidential Business Information
  – EPA will protect any information claimed as CBI in accordance with 40 CFR Part 2, Subpart B
  – However, information collected under CAA sections 114 and 208 must be made available to the public and cannot be claimed as CBI.
  – Inputs used for calculating GHG emissions
    • Concern that it is trade secret information
    • EPA, however, requires reporting and disclosure
  – Separate CBI rulemaking
Implications – Disclosure of Data

- Future regulatory schemes
  - data disclosed may be used to develop more regulations
  - cap and trade
- State AG targets
- Plaintiffs’ bar targets
Implications - Disclosure of Data

• Corporate Governance
  – Reporting puts spotlight on GHG emissions
  – Evolving approaches / responsibilities for GHG accounting within organizations
  – No department → environmental, health and safety → executive / Board level
Implications - Disclosure of Data

- Relationship to SEC reporting?
- SEC Issues Interpretive Guidance on Disclosure Related to Business or Legal Developments Regarding Climate Change (Jan. 27, 2010)