Overview of the GHG Protocol

*Power Accounting Guidelines*

Mary Sotos
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Outline

• How are companies purchasing renewable energy, and why?

• How are companies accounting and reporting these purchasing in their GHG inventories?

• What are the accounting challenges associated with reflecting purchasing instruments?

• How is the GHG Protocol addressing these issues?
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Scope 2 Total \(=\) Consumption \(\times\) Generation-Only Emission Factor of Consumed or Purchased Electricity

- Purchase and apply an offset credit to reduce any scope’s emissions
- Efficiency
- Conservation
- Install Onsite RE to reduce grid purchase (any emissions from owned/operated become scope 1)

Factor may change due to no personal efforts of consumers

Large-scale efficiency or on-site RE may impact this, but indirectly

*Change the GHG-intensity of the product you’re consuming!*
Power Purchase agreements (generator-consumer)

Change to suppliers with GHG-intensive profile (or differentiated product)

WindSource, NatureMade, Ok Power

Purchase tracking instrument reflecting environmental “benefits” of low-carbon energy production
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Purchase tracking instrument reflecting environmental “benefits” of low-carbon energy production
Renewable Energy Certificates in the US

- **Purposes**: regulatory quota tracking and voluntary support (revenue stream for developers) - 1997

- **Implementation**:
  - Certified primarily by Green-e across US with specific eligibility criteria for voluntary uses, meeting consumer demands
  - Tracking systems in place for RECs across all states
  - Government recognition program - EPA Green Power Partnership

Guarantees of Origins in the EU

- **Purposes**: supplier fuel mix disclosure, accurate tracking

- **Implementation**:
  - Country-specific, may not always be defined with carbon attributes appropriate for accounting
  - Varying popularity as voluntary corporate purchasing instrument separate from physical energy
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Using a grid-average emissions factor to allocate production emissions to end-consumers
Total system emissions = 45 tons
Total system energy output = 10 MWh
Grid average emissions factor = 4.5 tons/MWh
Scope 1

- 0 tons
- 10 tons
- 0 tons
- 5 tons
- 10 tons
- 10 tons
- 5 tons

Scope 2

- 9 tons
- 9 tons
- 9 tons
- 9 tons
- 9 tons
- 9 tons

Total system emissions = \textbf{45 tons}

Total system energy output = \textbf{10 MWh}

Grid average emissions factor = \textbf{4.5 tons/MWh}
Using a grid-average emissions factor to allocate production emissions to end-consumers

Using a supplier-specific emissions factor to allocate production emissions to end-consumers
Scope 1

Supplier 1
Total system emissions = 15 tons
Total system energy output = 6 MWh
Grid average emissions factor = 2.5 tons/MWh

Supplier 2
Total system emissions = 30 tons
Total system energy output = 4 MWh
Grid average emissions factor = 7.5 tons/MWh

Scope 2
## Supplier 1

**Scope 1**

- Total system emissions = **15 tons**
- Total system energy output = **6 MWh**
- Grid average emissions factor = **2.5 tons/MWh**

**Scope 2**

- Total system emissions = **15 tons**
- Total system energy output = **6 MWh**
- Grid average emissions factor = **2.5 tons/MWh**

## Supplier 2

**Scope 1**

- Total system emissions = **30 tons**
- Total system energy output = **4 MWh**
- Grid average emissions factor = **7.5 tons/MWh**

**Scope 2**

- Total system emissions = **15 tons**
- Total system energy output = **4 MWh**
- Grid average emissions factor = **7.5 tons/MWh**
Using a grid-average emissions factor to allocate production emissions to end-consumers

Using a **supplier-specific** emissions factor to allocate production emissions to end-consumers

Using a **tracking instrument or other contractual mechanism’s** emissions factor to allocate production emissions to end-consumers
**Scope 1**

- Total product emissions = **0 tons**
- Total product output = **2 MWh**
- Product’s emissions factor = **0 tons/MWh**

**Scope 2**

- Adjusted grid average for remaining grid generation
  - Total system emissions = **45 tons**
  - Total system energy output = **8 MWh**
  - Grid average emissions factor = **5.625 tons/MWh**
Scope 1

Total product emissions = 0 tons
Total product output = 2 MWh
Product’s emissions factor = 0 tons/MWh

Adjusted grid average for remaining grid generation
Total system emissions = 45 tons
Total system energy output = 8 MWh
Grid average emissions factor = 5.625 tons/MWh

Scope 2

0 tons
11.25 tons
11.25 tons
11.25 tons
11.25 tons
11.25 tons
How does the accounting and reporting work?

<table>
<thead>
<tr>
<th>100 MWh consumption</th>
<th>50 MWh RECs purchased (@ 0 tons/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted consumption = 50 MWh</td>
<td></td>
</tr>
</tbody>
</table>

| Grid average = 0.5 tons/MWh |
| 50 x 0.5 tons/MWh = 25 tons |

**GROSS**
(alternative emissions factor)

| 100 MWh consumption | 100 x 0.5 tons/MWh = 50 tons |

**NET ADJUSTMENT**
(separate mitigation instrument akin to offsets)

| 50 MWh RECs purchased (@ 0 tons/MWh) |
| Adjusted consumption = 50 MWh |
| Grid average = 0.5 tons/MWh |
| 50 x 0.5 tons/MWh = 25 tons |
Company1’s performance calculating scope 2 with 3 different emission factors:

- 9 tons
- 5 tons
- 0 tons
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1. Could a company theoretically use this?
   *Ensuring that the emissions-rate information was for an accounting function (many instruments have other purposes), and that it contains minimum information about attributes*

2. Does the information source function as an emission factor that is accurate, and does not have double counting across scope 2 users?
   *Unique ownership ensured through tracking in registry, serial number, adjusted grid factor information (residual mixes)*

3. **Should** this be used?
   *GHG Protocol principles, stakeholder views, determining parameters for evaluating instrument’s appropriateness for inventory disclosure*
For the purposes of calculating a scope 2 inventory, do “contractual” methods produce an inventory that meets the GHG Protocol principles?

- **Accurate** → a contractual means of allocation (purchase vs. consumption profile)

- **Consistent** → logic for products (scope 3)

- **Complete** → full picture of corporate responsibility?

- **Transparent** → clear to outside stakeholders what these instruments mean? Hiding real risks in the energy supply chain?

- **Relevant** → meaningful reflection of company action and performance?
What are the problems/risks?

• Dynamics of market (supply/demand) determine whether purchasing tool achieves goal of supporting and driving new RE development

  • Risk of contractual “paper shuffling” exercise, not meaningful change

• De-prioritizes other actions

• Fairness questioned

• Confusion with offsets

• Contentious decisions of what “counts” or is eligible
How do additionality and other eligibility questions play in?

**Linking instrument to causation for project** – project-specific or tests

**Regulatory Quota** – sometimes ownership question

**Financial Support** – identify threshold of what other types of support are “enough” (Subsidies, tax credits, FiT?)

**Vintage** – drive new projects → also difficult temporal element (when does rate become public good?)

**Technology** – specifying types to achieve enviro outcomes or spur innovation

**Environmental Performance** – Other impacts beyond GHG’s

**Geographic Boundaries** – Local economic/enviromental benefits
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STAKEHOLDERS

GREENHOUSE GAS PROTOCOL

RECS Market Meeting 2012

defra

Programa Brasileiro GHG Protocol

United States Environmental Protection Agency

Walmart

Sony

Oeko-Institut e.V.

GREENPEACE

Østfoldforskning

Microsoft

EDF Energy

Carbon Disclosure Project

The Climate Registry

Pepsi

NREL

Dow

Green Mountain Energy

ghg management institute

Online training, networking, professionalizing
Current discussion draft structure

1. Chapter 1: Background on GHG Protocol accounting principles and the energy supply chain

2. Chapter 2: Survey of instruments and attributes

3. Chapter 3: Accounting procedures and quality criteria
   - Capped power sector case study
   - Offset- scope 2 case study

4. Chapter 4: Best practices in emission factor choice, calculation and preventing implicit double counting

5. Chapter 5: Eligibility and other policy considerations
Materials to date and summaries of scoping workshops available on project website


Contact: Mary Sotos
mary.sotos@wri.org
202-729 7627