Measuring and managing electricity emissions

Mary Sotos, Associate at World Resources Institute
Measuring electricity emissions matters!

- 40% global emissions
- 50% electricity use by business
- 60% Fortune 100 have set clean energy and GHG reduction targets
Emissions across an electricity value chain

**Scope 1**
- coal mining, processing & transport
  - 5 t CO₂e
- power generator
  - 100 t CO₂e
  - 100 MWh

**Scope 2**
- utility
  - 90 MWh
- consumer
  - 90 t CO₂e
Energy generator (supply) -> Electric grid -> Consumers on the local grid

Energy delivery through the grid ("null power" in the market)
Energy attribute certificate

Energy generator (supply)

Electric grid

Energy delivery through the grid ("null power" in the market)

Consumers on the local grid
Scope 2 Emissions = Activity Data x Emission Factor

MWh

mt CO$_{2e}$/MWh
Key Questions for Scope 2 Methods

CONCEPT
- Grid vs. market?
- Double counting?

INSTRUMENTS
- What counts?
- How to compare?

IMPACT
- Directly or indirectly reduce GHG emissions over time?
New Accounting and Reporting Requirements
For companies with operations only in markets without choice in electricity product or supplier

No change.
Only one scope 2 total will be reported based on the location-based method.
For companies with operations in markets with choice in electricity product or supplier:

1. Dual reporting
2. Scope 2 Quality Criteria
3. Recommended additional disclosures
Location-based method

(map not representative)
Location-based method emission factor hierarchy

1. Regional or sub-national emission factors

2. National production emission factors
Market-based method

(map not representative)
<table>
<thead>
<tr>
<th>Market-based method emission factor hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electricity attribute certificates or equivalent instruments</td>
</tr>
<tr>
<td>2. Contracts for electricity, such as PPAs</td>
</tr>
<tr>
<td>3. Supplier/Utility emission rates</td>
</tr>
<tr>
<td>4. Residual mix (sub-national or national)</td>
</tr>
<tr>
<td>5. Other grid-average emission factors (sub-national or national) <em>see location-based data</em></td>
</tr>
</tbody>
</table>
Residual Mix

(map not representative)
<table>
<thead>
<tr>
<th>Country</th>
<th>Location-Based Total (mtCO2e)</th>
<th>Market-Based Total (mtCO2e)</th>
<th>Instrument Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>650</td>
<td>0</td>
<td>RECs to cover 100% of consumption</td>
</tr>
<tr>
<td>Norway</td>
<td>100</td>
<td>500</td>
<td>Residual mix</td>
</tr>
<tr>
<td>China</td>
<td>800</td>
<td>800</td>
<td>N/A</td>
</tr>
<tr>
<td>India</td>
<td>850</td>
<td>400</td>
<td>Collaborative solar PPA to cover 50% of consumption</td>
</tr>
<tr>
<td>Mexico</td>
<td>400</td>
<td>0</td>
<td>PPA to cover 100% of consumption</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2,800</strong> mtCO2e</td>
<td><strong>1,750</strong> mtCO2e</td>
<td></td>
</tr>
</tbody>
</table>
Scope 2 Quality Criteria

**Contractual instruments shall:**
1. Convey GHG information
2. Be an exclusive claim
3. Be retired
4. Match up to inventory period
5. Be sourced from same market as company

**Utility emission factors shall be:**
6. Calculated based on delivered electricity

**Direct purchases shall:**
7. Convey GHG claims to the purchaser

**Using any instruments requires:**
8. Adjusted residual mix, or disclose its absence
Policy Neutrality
Concerns with market-based method instruments

Concept of market-based accounting?

Execution of market mechanics?

Impact of markets and instruments?

Dual reporting

Scope 2 Quality Criteria

Additional reporting recommendations
Additional recommended disclosures

• **Instrument labels**
• **Power plant features**
  – resource type, facility location, facility age
• **Policy context**
  – Supplier quotas like RPS?
  – Cap and trade?
  – Funding/subsidy receipt?
  – Offsets?
Choices by all players in the market can have an impact

Companies can:

1. Contract directly with new low-carbon energy projects
2. Work with electricity suppliers for new projects
3. Establish “eligibility criteria” for corporate procurement
4. Provide incremental funding or donations
• Download the publication, Executive Summary, other materials at:  
  [http://www.ghgprotocol.org/scope_2_guidance](http://www.ghgprotocol.org/scope_2_guidance)

• Other learning opportunities:
  – **CDP** workshop May 29th (New York)
  – **EDF Talk Power conference** June 17th (London)
  – **GHG Protocol webinar trainings:** New Guidance fully integrated into quarterly GHG Protocol *Corporate Standard* webinar trainings (next in **July**):  

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