



GREENHOUSE GAS PROTOCOL

Scope 2 Guidance: new developments in corporate GHG accounting for energy purchases and consumption

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Public Consultation Webinar

Goals for this workshop

- **Introduce** key elements of the Scope 2 Guidance
- **Ensure** informed feedback on Guidance
 - Clarify reporting requirements and rationale
 - Highlight feedback questions
- **Facilitate** initial feedback

Agenda for today

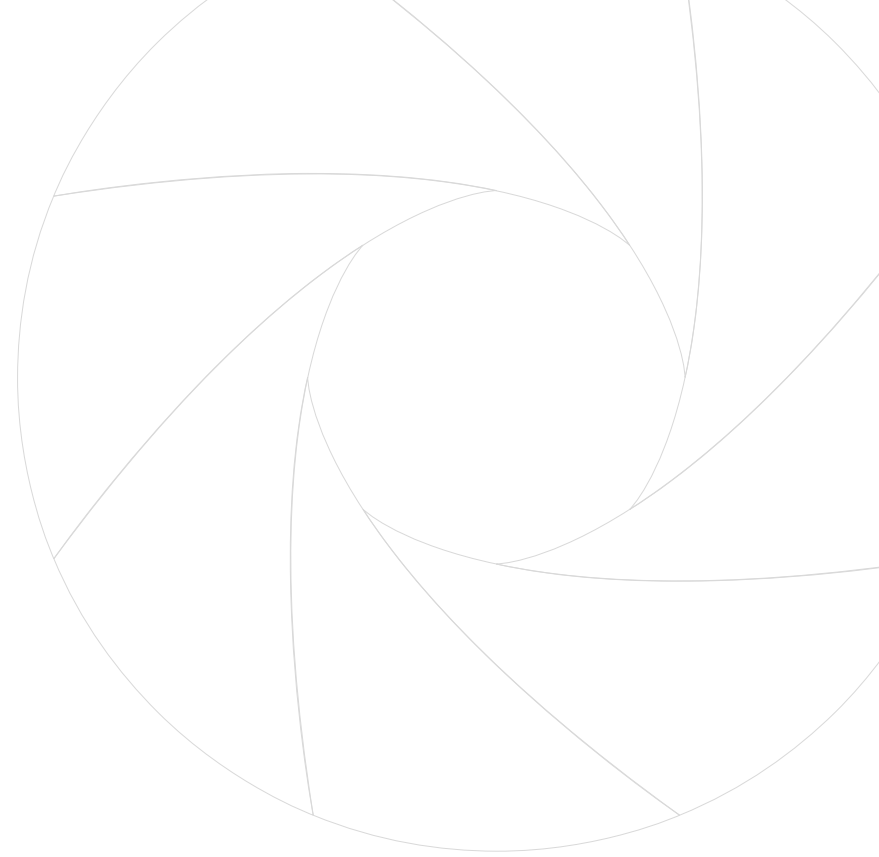
10 min	Introduction
20 min	Overview of Scope 2 Guidance proposal
10 min	Quality Criteria
5 min	Product Feature disclosure
15 min	Questions

Public consultation timeline

- Public comment period open Friday, March 14th – Monday, April 21st
 - See <http://www.ghgprotocol.org/feature/scope-2-guidance-public-comment-period>
 - Template for comments provided
 - *Concurrent with WRI internal review*
- Written comments shared publically (if reviewer approval)
 - Comments from workshops and webinars included in overall summary but not listed by organization
- Remaining questions and revisions presented to TWG end of May
- Publication launch early fall 2014



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Introduction to the GHG Protocol and need for Scope 2 Guidance

From the *Corporate Standard, 2004*

What is scope 2?

“Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company”

Why calculate scope 2?

“For many companies, purchased electricity represents one of the largest sources of GHG emissions and the most significant opportunity to reduce these emissions. Accounting for scope 2 allows companies to assess the risks and opportunities associated with changing electricity and GHG emissions costs.”

How should companies calculate scope 2?

To quantify scope 2 emissions, the GHG Protocol Corporate Standard recommends that companies obtain source/supplier specific emission factors for the electricity purchased. If these are not available, regional or grid emission factors should be used.”

External changes since 2004

- Energy market liberalization and deregulation
- supplier energy source quotas and public subsidy
- Distributed generation
- Voluntary corporate renewable energy purchasing
- Smart grid technology and responsive information

Questions

- Which instruments count?
- Do market-based instruments always take precedence? Why are they preferred?
- What are they conveying exactly?
- What conditions need to be in place to prevent double counting?
- How do these markets work?
- Do individual purchases, or markets as a whole, have an impact? Does that matter for GHG accounting?
- What decisions could companies make to drive GHG reductions throughout the electricity sector?

Concerns with market-based method instruments

Concept

Execution

Instrument
and market
impact

Purpose of Scope 2 Guidance

- Clarify scope 2 accounting and reporting procedures
- To make the market-based method reporting both consistent globally and rigorous
- Improve the transparency of company inventories and help stakeholders understand corporate action in the energy supply chain
- Ensure corporate inventory results support a range of GHG reduction activities throughout the energy supply chain

What it does not do

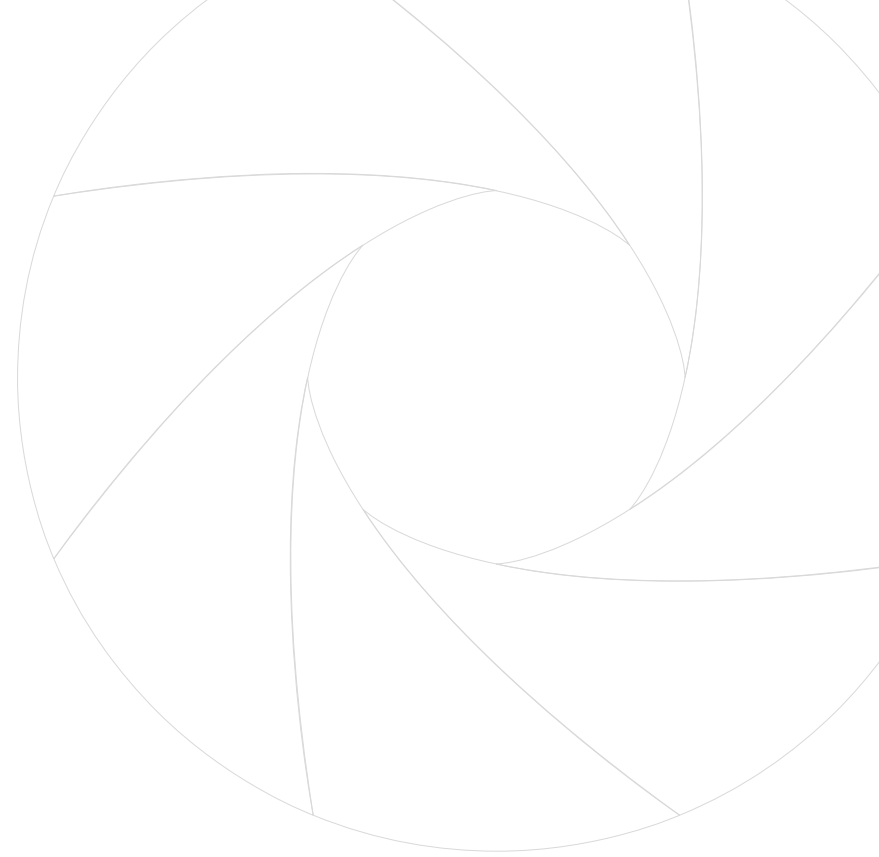
- Prescribe a universal strategy for scope 2 reductions
- Recommend electricity sector policies
- Assess relative costs/benefits of market-based systems

GHG Protocol principles

- ❖ accuracy
- ❖ transparency
- ❖ completeness
- ❖ consistency
- ❖ relevance



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Overview of the Scope 2 Guidance draft

For all companies

- All existing *Corporate Standard* reporting requirements **shall** be followed (see chapter 9 of the *Corporate Standard*)
- Companies **should** report energy consumption separately from the scopes (in kWh or MWh's), and **should** report on data quality using best practice data quality indicators (see chapter 10 of this Guidance)

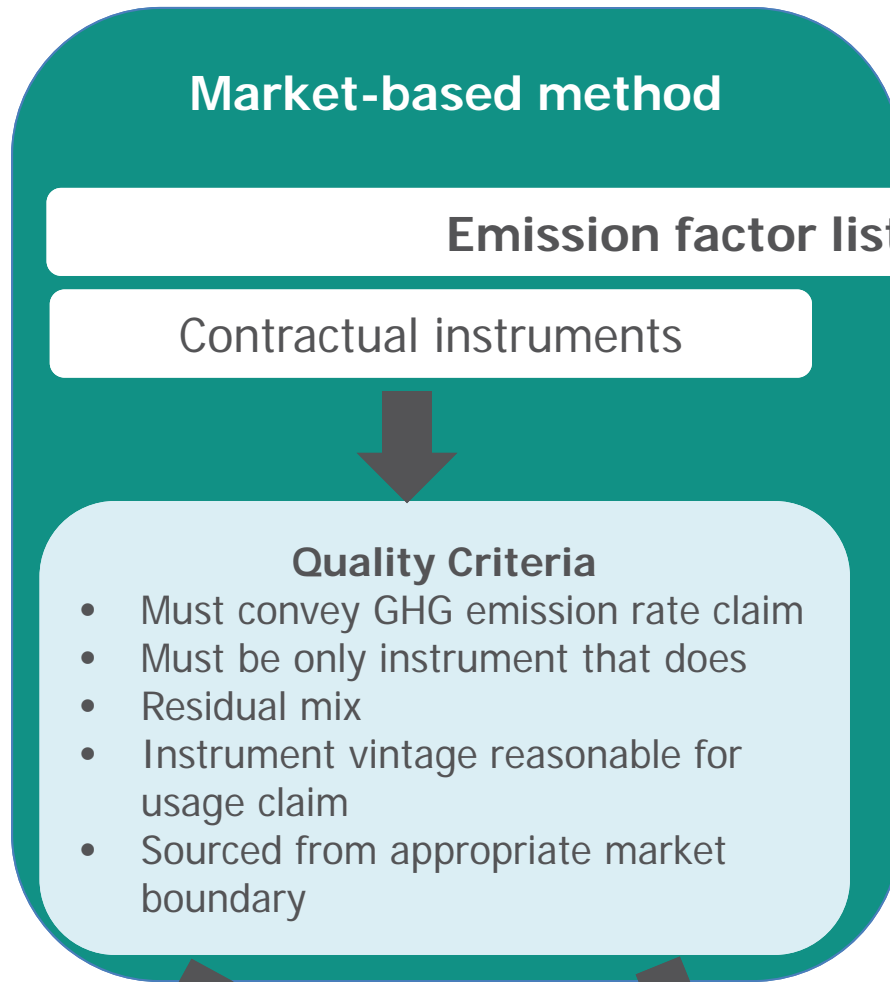
For companies with operations in markets without choice in electricity product or supplier

- Only one scope 2 total will be reported based on the location-based method. For most companies using the *Corporate Standard*, this represents no change in methodology or reporting.



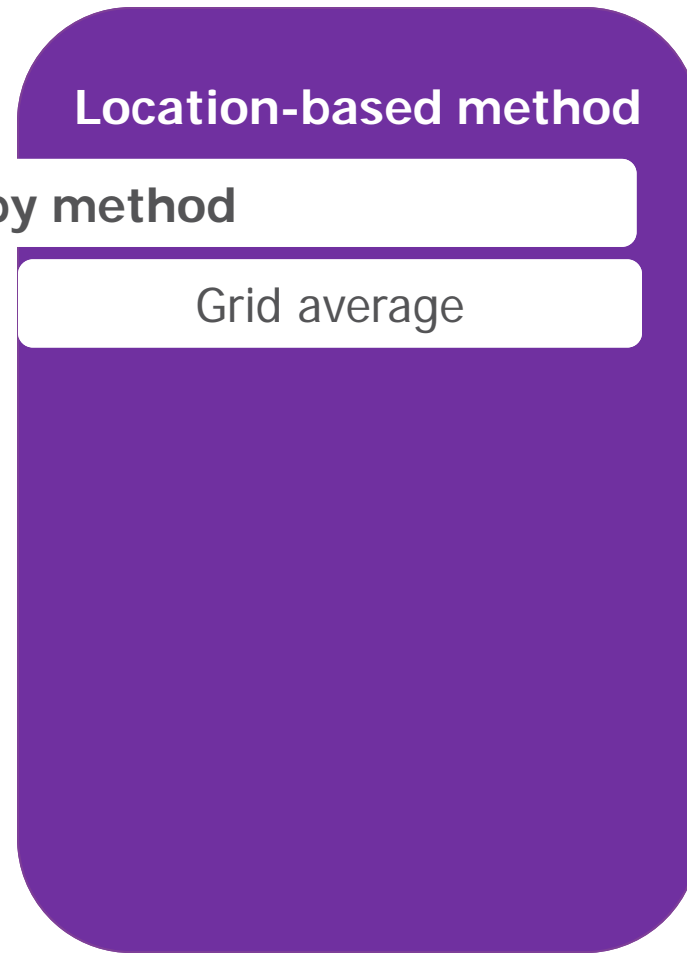
For companies with operations in markets *with choice* in electricity product or supplier (see chapter 6, 9):

- Companies **shall** report scope 2 in two ways: one total based on the location-based method, and one total based on the market-based method where applicable and Quality Criteria are met.
- Companies **shall** ensure that contractual instruments used in the market-based method meet the Quality Criteria outlined in this Guidance. A statement shall be made by a 3rd party ensuring that these Criteria have been met, or a reference given to the certification program which has verified conformance with the Quality Criteria
- Companies **shall** disclose the relationship between energy attribute certificates used in the market-based method and compliance instruments present in the same market.
- Companies **shall** identify which scope 2 total – location-based method or market-based method – serves as the basis for goal setting and for scope 3 data uses.
- Companies **should** disclose key features about their contractual instruments for added transparency about the context of the procurement choices
- Companies **may** report avoided emissions from projects or actions separately from the scopes using project-level methodology.



Required disclosure

Recommended disclosure



Box [5.5] Accounting for emissions from the production, transmission, and use of electricity

Figure [5.4] Emissions across an electricity value chain

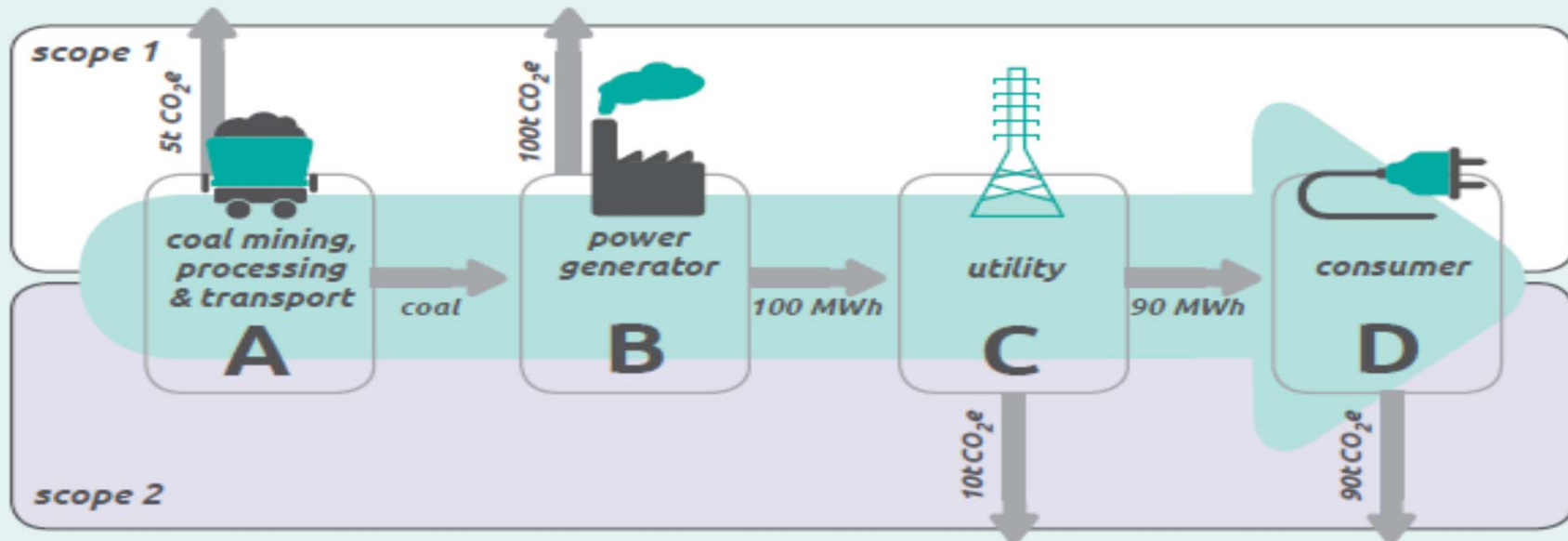


Figure 5.4 illustrates an electricity value chain. A coal mining and processing company (A) directly emits 5 metric tons of CO₂e per year from its operations and sells coal to a power generator (B), which generates 100 MWh of electricity and directly emits 100 metric tons of CO₂e per year. A utility (C) that owns and operates a T&D system purchases all of the generator's electricity. The utility consumes 10 MWh due to T&D losses (corresponding to 10 metric tons CO₂e of

scope 2 emissions per year) and delivers the remaining 90 MWh to an end user (D), which consumes 90 MWh (corresponding to 90 metric tons CO₂e of scope 2 emissions per year).

Table 5.6 explains how each company accounts for GHG emissions. In this example, the emission factor of the electricity sold by Company B is 1 t CO₂e/MWh. All numbers are illustrative only.

Outline

1. Introduction
 2. Business Goals
 3. Summary of Changes and Reporting Requirements
 4. Accounting and Reporting Principles
 5. Identifying Scope 2 emissions and Setting the Scope 2 Boundary
 6. Background on Energy Attribute Tracking in the Electricity Sector
 7. Identifying Scope 2 Calculation Methods
 8. Location-based Method
 9. Market-based Method
 10. Calculating Emissions
 11. Reporting Requirements
 12. Setting Reduction Targets and Tracking Emissions Over Time
- Appendix A: Survey of current energy attribute tracking systems by country
- Appendix B. Comparing offset credits with energy attribute certificates
- Appendix C. Methods for evaluating reductions in the grid-distributed energy sector
- Appendix D. Guidance on residual mix calculation

Location-based method

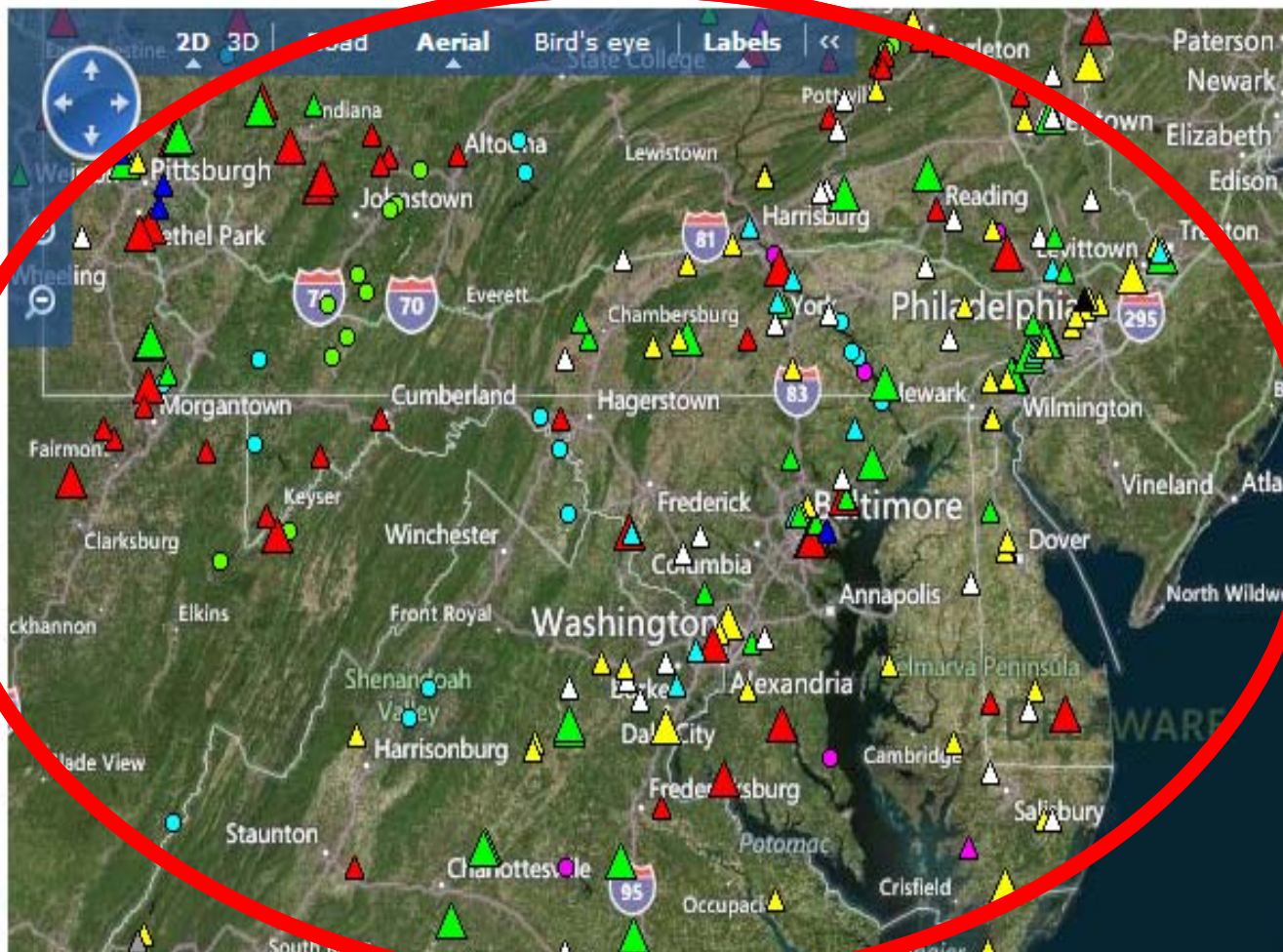
BASIS	The physics of energy generation and distribution
TYPE OF EMISSION FACTORS	Grid average emission factors (regional, sub-national, national)
DECISION-MAKING VALUE	DSM actions, efficiency, overall facility siting. Smart grid information on real-time usage optimization

Map of Power Plants in the Mid-Atlantic Region

Note: the map below has been updated to reflect 2009 [eGRID](#) data.

Show power plants utilizing:

- Clean Fuel Carbon-based Fuel All



Legend

Carbon-based Fuel (triangle):

- Large Coal, >300 MW (43 plants)
- Small Coal, <300 MW (48)
- Large Oil (5)
- Small Oil (78)
- Large Gas (30)
- Small Gas (37)
- Other Fossil Fuel (6)
- Black liquor (5)
- Municipal solid waste biomass compound (12)
- Landfill Gas (45)
- Digester Gas (1)
- Wood, wood waste (0, 4)

Clean Fuel (dot):

- Water (54 plants)

Table 8.1. Location-based Method Emission Factor Hierarchy and Indicative Examples

EMISSION FACTORS	INDICATIVE EXAMPLES
<p>Advanced grid studies on real-time information</p>	<p>Currently academic inquiry only</p>
<p>Regional or sub-national emission factors Average emission factors representing all electricity production occurring in a defined grid distribution region that approximates a geographically-precise energy <u>consumption</u> area. To better approximate a consumption area, emissions factors should reflect energy imports/exports across the boundary.</p>	<p>eGRID total output emission rates (US) In many regions this approximates a consumption or delivery boundary, as eGRID regions are drawn to minimize imports/exports</p> <p>Defra annual grid average emission factor (UK)</p>
<p>National production emission factors Average emission factors representing all electricity <u>production</u> information from geographic boundaries that are not necessarily related to dispatch region, such as state or national borders. No adjustment for imports or exports, not representative of energy consumption area.</p>	<p>IEA national electricity figures</p>

Market-based method	
BASIS	The market reality of energy contracts, claims, and accountability for choices. Allocate claims from generation across consumers
TYPE OF EMISSION FACTORS	Contractual instruments that meet Quality Criteria and convey emission rate claims. Can be: <ul style="list-style-type: none"> - Supplier-specific - Contract-specific - Certificates - <i>Residual Mix</i>
DECISION-MAKING VALUE	Procurement decisions reflecting market realities. Possibility for significant market shifts

Table 9.1. Market-Based Scope 2 Data Hierarchy and Indicative Examples

Data forms listed here should convey combustion-only (direct) GHG emission rates, expressed in metric tons per MWh or kWh. Reporting entities should ensure that market-based method data sources meet Quality Criteria instruments listed here not guaranteed to meet Quality Criteria, but are indicative of instrument type.

EMISSION FACTORS	INDICATIVE EXAMPLES
<p>Electricity attribute certificates or equivalent instruments (unbundled, bundled with electricity, conveyed in a contract for electricity, or delivered by a utility)</p>	<ul style="list-style-type: none"> • <i>Renewable Energy Certificates (US, Australia)</i> • <i>Guarantees of Origin (EU)</i> • <i>Electricity contracts (e.g. PPAs) with renewable generators that also convey RECs or GOs</i>
<p>Contracts for electricity, such as power purchase agreements (PPAs) that explicitly include the GHG emission rate attribute (or that are silent on attributes and these have not been otherwise conveyed to another party), and where certificates are not required for an attribute claim</p>	<ul style="list-style-type: none"> • <i>In the US, contracts for electricity from specified non-renewable sources like coal in regions other than NEPOOL and PJM</i>
<p>Supplier/Utility emission rates may be a standard product offer or a different product (e.g. a “green power product” or tariff), and must be disclosed (preferably publicly) according to best available information</p>	<ul style="list-style-type: none"> • <i>Default fuel mix and emission rate allocated to retail electricity users and disclosed for any utility, included on a utility bill or otherwise made available</i> • <i>Green energy tariffs</i> • <i>A supplier using a product label such as Green-e Energy or EKOenergy</i> • <i>Voluntary renewable electricity program</i>
<p>Residual mix (sub-national or national) (to be used where no specific electricity purchase is made)</p>	<ul style="list-style-type: none"> • <i>Calculated by EU country under RE-DISS project</i>
<p>Other grid-average emission factors (sub-national or national) – see location-based data</p>	<ul style="list-style-type: none"> • <i>eGRID total output emission rates (US). In many regions this approximates a consumption-boundary, as eGRID regions are drawn to minimize imports/exports</i> • <i>Defra annual grid average emission factor (UK)</i> • <i>IEA national electricity figures</i>

Supply choices

Certificates

Supplier programs/offerings

Regulated

Deregulated

Certificates

Contracts (PPA's)

Certificates

On-site project

Unbundled certificates

Example US consumer calculation

Activity data: Total electricity consumption in 2013 = 100,000 MWh			
		Emission factors used	Other information
Location-based scope 2	$100,000 \text{ MWh} \times 0.43 \text{ mtCO}_2\text{e/MWh}$ = 43,000 mtCO₂e	EF from eGRID RFCE	
Market-based scope 2	$100,000 \text{ MWh} \times 0 \text{ mtCO}_2\text{/MWh} =$ 0 mtCO₂e	100,000 MWh RECs acquired through supplier	Local program sourcing 100 % wind RECs from Pennsylvania (PJM), Green-e certified.

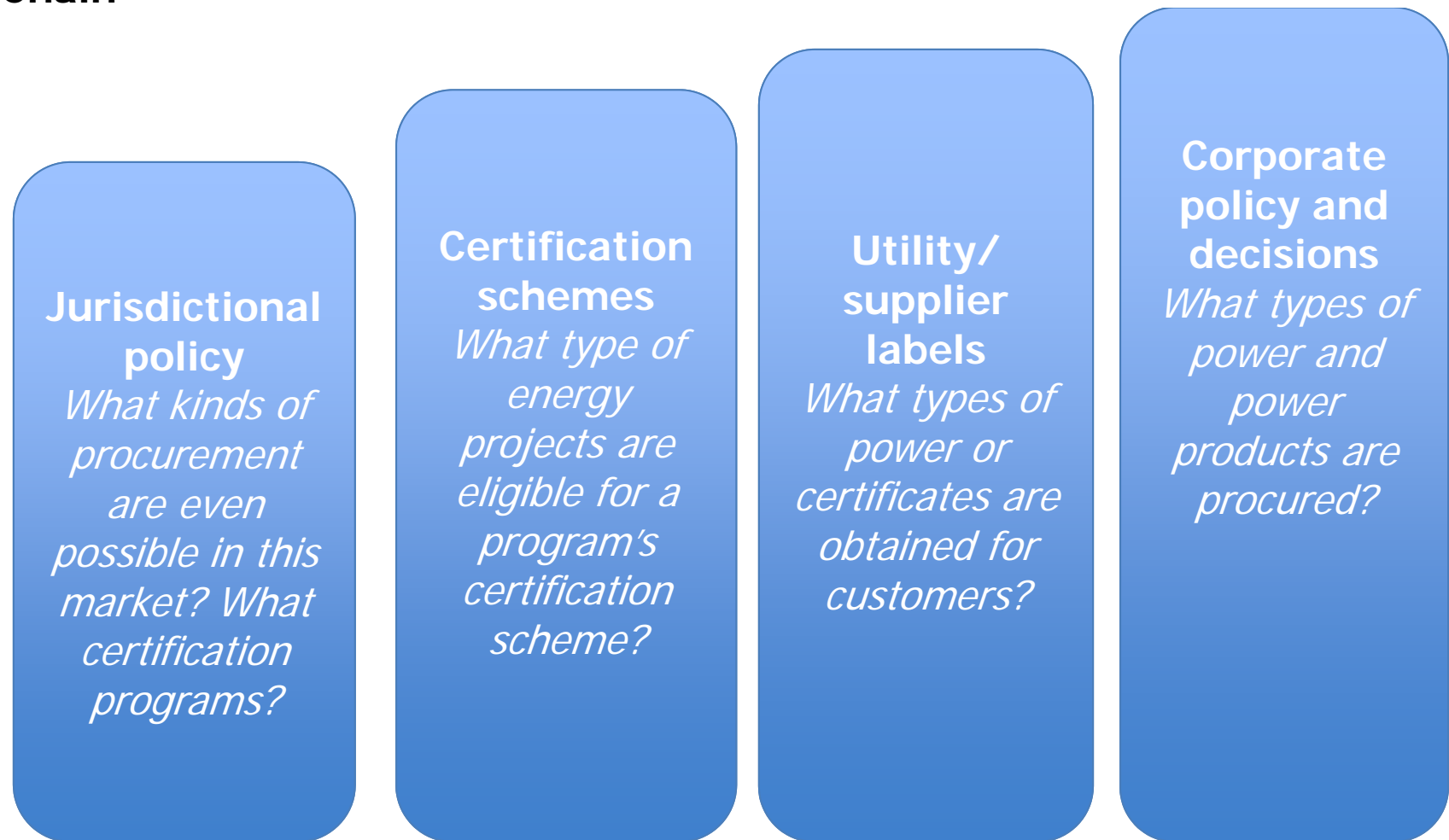
Example Norway consumer calculation

Activity data: Total electricity consumption in 2013 = 100,000 MWh			
		Emission factors used	Other information
Location-based scope 2	100,000 MWh x 0.02 mtCO ₂ /MWh = 2,000 mtCO₂e	National EF for Norway (IEA)	
Market-based scope 2	50,000 MWh x 0 mtCO ₂ /MWh = 0 mtCO₂e	50,000 GoO acquired through supplier	Ekoenergy label backed by GO's from Norway. Uses fund model for river restoration and RE investment
	50,000 MWh x .331 mtCO ₂ /MWh = 16,550mtCO₂e	Adjusted mix for Norway (reDISS project)	

How to “make a difference” with energy procurement?

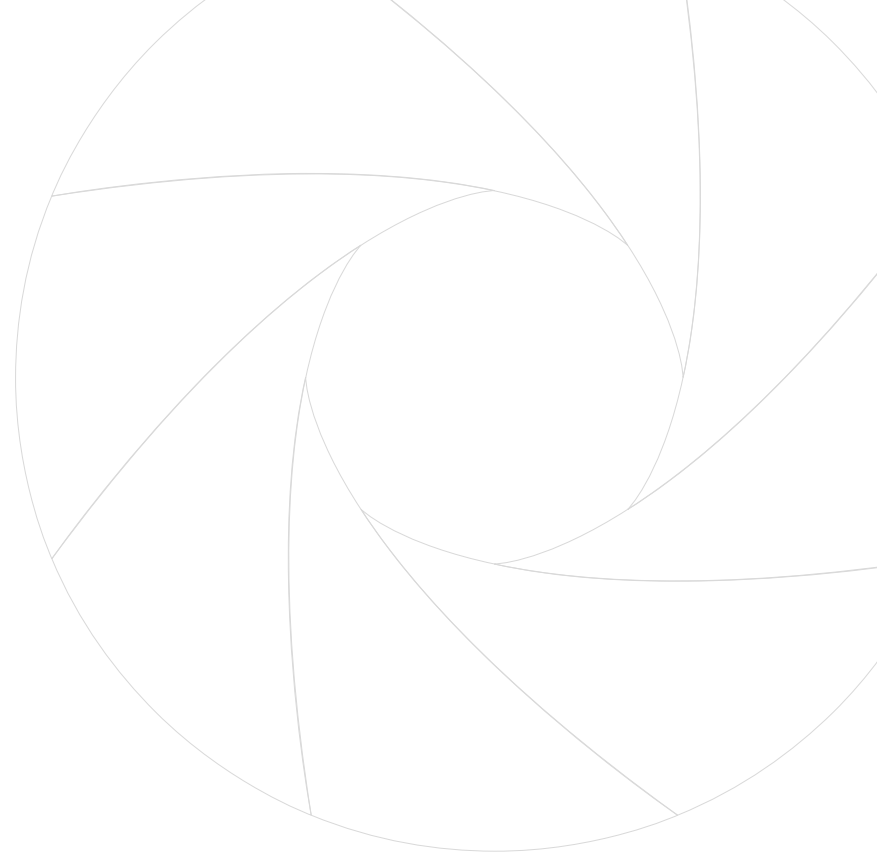
1. This Guidance’s reporting requirements
2. Enacting eligibility changes throughout the supply chain
3. Emphasizing project-based interventions

Figure 6.3 Eligibility Decisions Made Throughout the Electricity Supply Chain





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Quality Criteria

Table 9.3. Quality Criteria checklist

CRITERIA REQUIRED FOR ALL MARKET-BASED METHOD DATA

<p>1. Conveying GHG emission rate claims: The contractual instrument must convey with it the direct GHG emission rate attribute associated with the unit of electricity produced. In the absence of direct language on attributes, attestations from each owner in the chain of custody may also ensure this criterion is met.</p>
<p>2. Unique Claims: The contractual instrument must be the only instrument that carries the GHG emission rate attribute claim associated with that quantity of generation. If other instruments exist that can be used by end-users, it must be ensured that the one being used for a GHG emission rate claim is the only and sole one which does so. The underlying electricity (or megawatt-hour) minus the instrument, sometimes called “null power,” must also not reflect the same GHG emission rate, but should be assigned residual mix or average grid emissions for the purpose of delivery and/or use claims in the market-based method.</p>
<p>3. Retirement/Cancelation: The contractual instrument must be tracked and redeemed, retired or canceled by or on behalf of the reporting entity in order to support a claim in a GHG inventory. This can be done through a tracking system, an audit of contracts, or third-party certification.</p>
<p>4. Vintage: Vintage reflects the date of energy generation from which the contractual instrument is derived. Instrument vintage must be reasonably close to the inventory year of the energy consumption to which the instrument is applied, consistent with existing standards for the market where the contractual instruments exist.</p>

5. Used within appropriate market boundaries: The contractual instrument must be sourced from within the same market as the reporting facility to which it is applied. The regulatory authorities and/or certification/issuing bodies responsible for certificates may specify the boundaries in which certificates may be traded and redeemed, retired or canceled. Companies must adhere to these boundaries for the purpose of GHG accounting and reporting.

Contractual instruments in which electricity is sold bundled with the energy attributes or certificates are usually within a regional transmission organization, power pool or balancing area, but exports and imports may broaden these markets. Markets for unbundled certificates are less constrained and are typically national in scope unless other countries or portions of countries are interconnected electrically or are included in a common economic market.

Voluntary electricity labels or GHG reporting programs may restrict the boundary of certificate sourcing further, e.g. to a sub-national entity or an interconnected electricity region.

6. Residual mix: An adjusted, residual mix characterizing the GHG intensity of unclaimed or publicly-shared electricity, based on combining national or sub-national energy and emissions production data with contractual instrument claims, must be made available for consumer scope 2 calculations. If a residual mix is not currently available, a procedure or threshold by which a residual mix emissions rate will be calculated should be identified by regulatory authorities, issuing/certification bodies or other recognized data providers.

If a residual mix is not currently available, all reporters using a market-based method should provide a footnote: “No adjustment to the grid average emissions factor has been made to account for voluntary purchases. An adjusted emissions factor is not available or has not been estimated. This may result in double-counting.” Reporters may provide other information about the magnitude of this error, where it is available and where it puts the scale of the residual mix adjustment into a context of other sources of error in grid emission factor calculation.

ADDITIONAL CRITERIA FOR REPORTERS USING SUPPLIER- OR UTILITY-SPECIFIC EMISSION FACTORS

- 7.** The utility or supplier-specific emission factor must reflect delivered electricity based on certificates and other contracts for electricity either owned or retired by the utility/supplier on behalf of its customers or retired and claimed for the public benefit, such as with the US state RPS programs. As part of the calculation, the utility or supplier should disclose whether and how certificates are used in the emission factor calculation, unless there is third-party certification of the utility product.

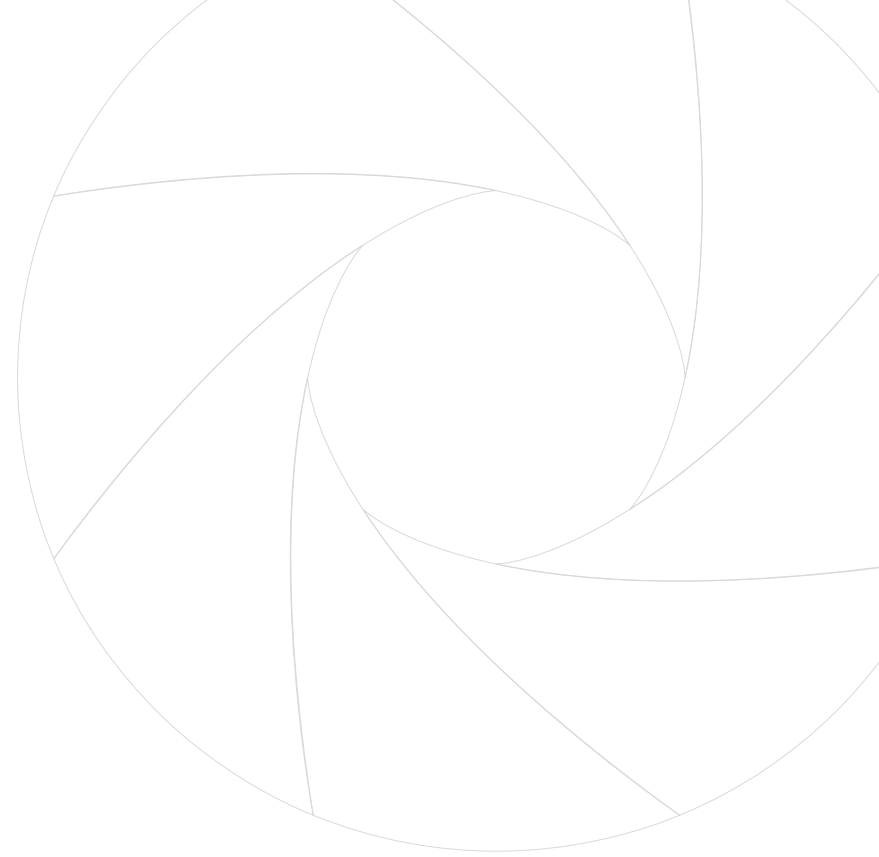
Electricity from renewable facilities for which the attributes have been sold off (via contracts or certificates) or are otherwise not owned by the utility or supplier must be characterized as having the GHG attributes of the residual mix in the utility or supplier-specific emission factor.

The utility or supplier-specific emission factor may be a standard product offer or a different product (e.g. a “green power product” or tariff), and must be disclosed (preferably publicly) according to best available information, and where possible best practice methods, such as The Climate Registry Electric Power Sector Protocol. In this case, the certificates or other contracts used for those products should only be used once for that product and not mixed into other product offers.

ADDITIONAL CRITERIA FOR REPORTERS PURCHASING ELECTRICITY DIRECTLY FROM A RENEWABLE ELECTRICITY GENERATOR OR USING ON-SITE RENEWABLE ELECTRICITY GENERATION

- 8.** All instruments conveying emissions claims must be included in the contracts and transferred to the reporting entity only. It must be true that no other instruments that convey this claim to another end user have been issued for the contracted electricity. The contract and claim associated with it should be verified by a third party to convey unique or sole ownership right to claim GHG emission rate.

The electricity from the facility must not also carry the GHG emission rate claim for use by a utility, for example, for the purpose of delivery and use claims.



Product feature disclosure

Table 9.4 Relationships between voluntary certificates and regulatory/ compliance instruments

Type of relationship	Description	Optional disclosure explanation
Voluntary instrument is above and beyond compliance quotas	Voluntary contractual instrument represents all the generation and environmental attributes of a MWh of electricity generation, and there are no other instruments or claims representing the same MWh for regulatory compliance.	“Organization X acquires instruments that solely represent the application, use or claim on a MWh of electricity generation. To the best of its knowledge, no other party can make a claim against this MWh for the purpose of meeting a regulatory mandate or other public policy objective.”
Voluntary instrument combined with retired compliance instrument	Voluntary contractual instrument is unique in conveying the emissions attribute claim (see Quality Criteria), but other instruments are created for the same MWh, or other claims may be made against the same MWh, including to meet regulatory mandates or other policy objectives. A reporting entity may strengthen its regulatory surplus claim by acquiring an equal number of such other instruments or rights to make claims against that MWh, such that their action eliminates any double claims against that MWh.	“Organization X acquires multiple instruments for each MWh of electricity generation, including rights that could otherwise be used to satisfy a regulatory mandate or other public policy objective. To the best of its knowledge, no other party can make a claim against this MWh for the purpose of meeting a regulatory mandate or other public policy objective.”
Voluntary instrument not surplus to compliance instruments	Voluntary instruments are unique in conveying the GHG emission rate and use claim, but other instruments created for the same MWh are used to satisfy a quota or other policy objective without environmental attributes	“Organization X acquires instruments that convey the emissions factor for electricity generation, but other instruments may be created for the same MWh and used by other parties for other purposes, including to meet regulatory mandates or other public policy objectives.”

Table 9.5 Product features and other information

Reported features should include, but are not limited to:

- **Certification or label name** (if applicable)
- **Energy resource type**—What energy resource was used to generate the claimed energy?
- **Facility location** —Where were the electricity generation facility(ies) where the instrument was generated located (state, nation, grid region for emission calculations)?
- **Facility age**—In what year was the generation facility that created the certificate/contract first operational or substantially repowered?
- **Cap and Trade**—Is the facility that produced the instruments you claim affected by a cap and trade policy? (Y/N)
 - If yes, Does the cap and trade program allocate allowances for retirement on behalf of voluntary renewable electricity purchases from this facility? (Y/N)
 - If yes, Were allowances retired in relation to on behalf of your voluntary purchase of instruments from this facility? (Y/N)
- **Funding**—Did the facility receive public subsidy? (If that subsidy resulted in the subsidy provider acquiring the certificates and GHG emissions rate claims, then claims must follow certificates, and the energy becomes “null power”).
- **Offsets**—Is the facility producing offset credits from the same MWh reflected in the contractual instrument? (Not applicable to contractual instruments in the US, Australia, EU.)



Thank you!

- Mary Sotos
- Mary.sotos@wri.org
- Public Comment Website
- <http://www.ghgprotocol.org/feature/scope-2-guidance-public-comment-period>