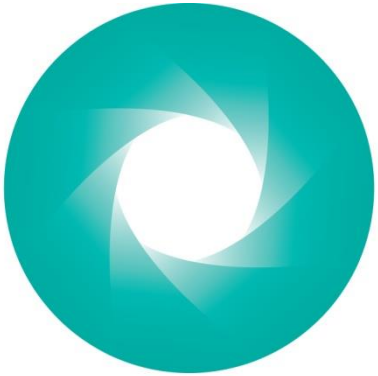

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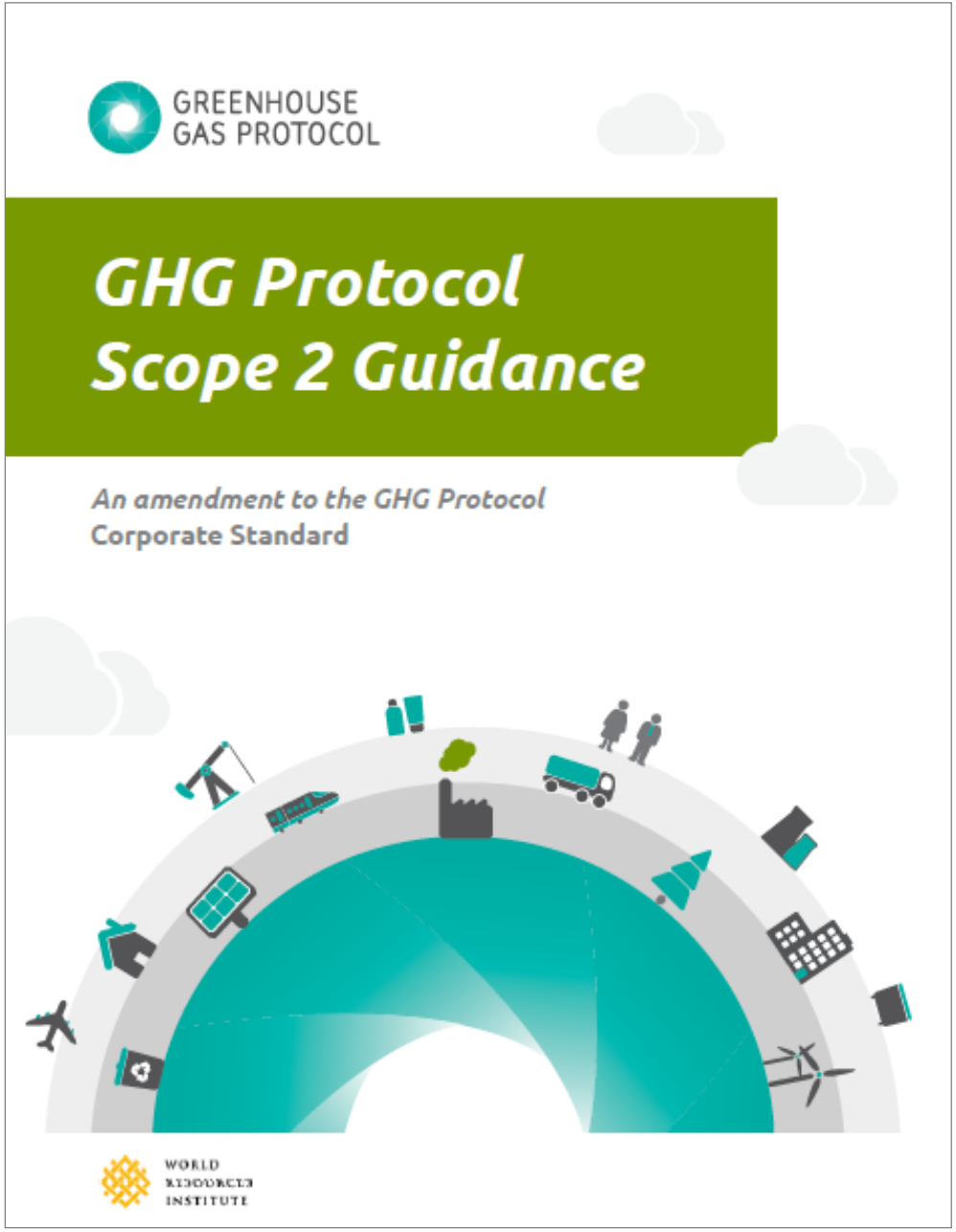
Scope 2 Guidance Training

September 12, 2016

10:00am-2:00pm EST

Mary Sotos, *Associate at World Resources Institute*



- **Status**: Amendment to the *Corporate Standard*
- **Effective date**: Goes into effect for next applicable reporting cycle (2015 data)
- **Over time can help support:**
- Better electricity supply data
- More electricity market opportunities
- Reduced emissions

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The Greenhouse Gas Protocol (GHGP)

- Launched in 1998 by

WORLD RESOURCES INSTITUTE

World Business Council for Sustainable Development

- Multi-stakeholder partnership of businesses, NGOs, governments and others

- Mission: to develop internationally accepted greenhouse gas (GHG) accounting and reporting standards for business and to promote their broad adoption

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Mary Sotos

- Led the 4 year stakeholder process
- Author of the Scope 2 Guidance
- Other GHGP publications: *Public Sector Protocol, Global Protocol for Community-Scale Emissions*

- Currently working on corporate renewable energy procurement and utility collaboration on WRI's Energy team

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In this training (Who are You?)

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Training structure

- 8 chapters of content (maps close to Guidance chapters)
- Learning objectives in each chapter
- PDF of slides available
- Survey after training completed
- **4 hour training**
  - **10:00-11:20am:** Guidance overview, new methods
  - **11:20-11:30am**: *Break*
  - **11:30-12:20** Calculating emissions
  - 12:20-12:30 *Break*
  - **12:30-1:00** Reporting requirements, additionality
  - **1:00-1:45** Calculation examples
  - **1:45-2:00** Wrap Up
- Take questions throughout in chat box, will respond to them at the end of the lesson

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Outline

1. **Introduction:** Background on Scope 2 and the need for Guidance
2. **Boundary:** How do I determine what are my scope 2 emissions and how do I set my scope 2 boundary?
3. **Background:** What are "energy attribute certificates" like RECs?
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8. **Impact:** How can I drive bigger impacts on new low-carbon projects that reduce emissions beyond BAU?
9. **Examples:** Calculation examples

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Learning objectives

- How and why the Guidance was developed
- What the Guidance should (and should not) be used for
- How a scope 2 GHG inventory can bring value to a business
- How the Guidance interacts with GHG programs

For further reading, see:
GHG Protocol Scope 2 Guidance Chapter 1: Introduction

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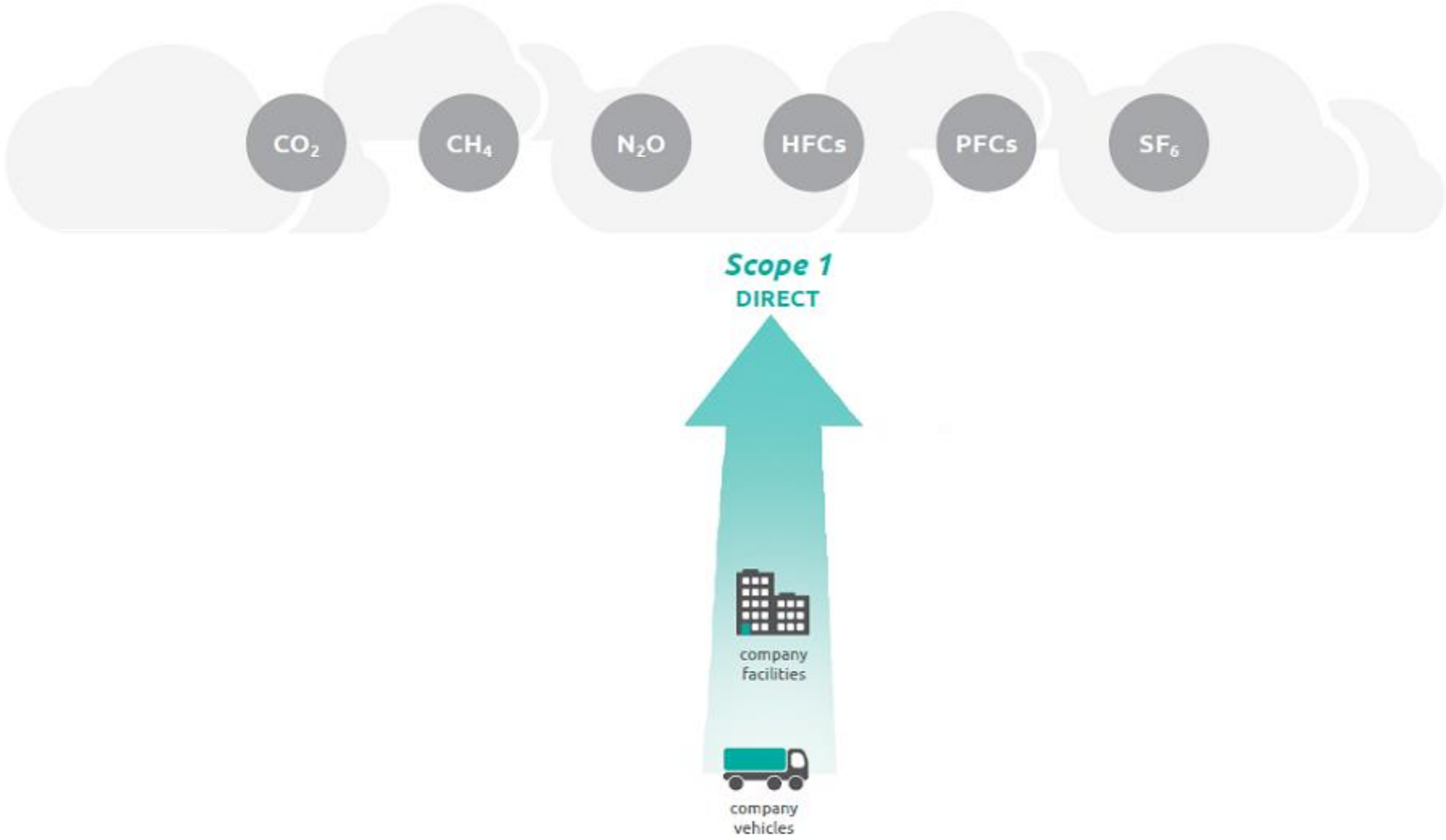

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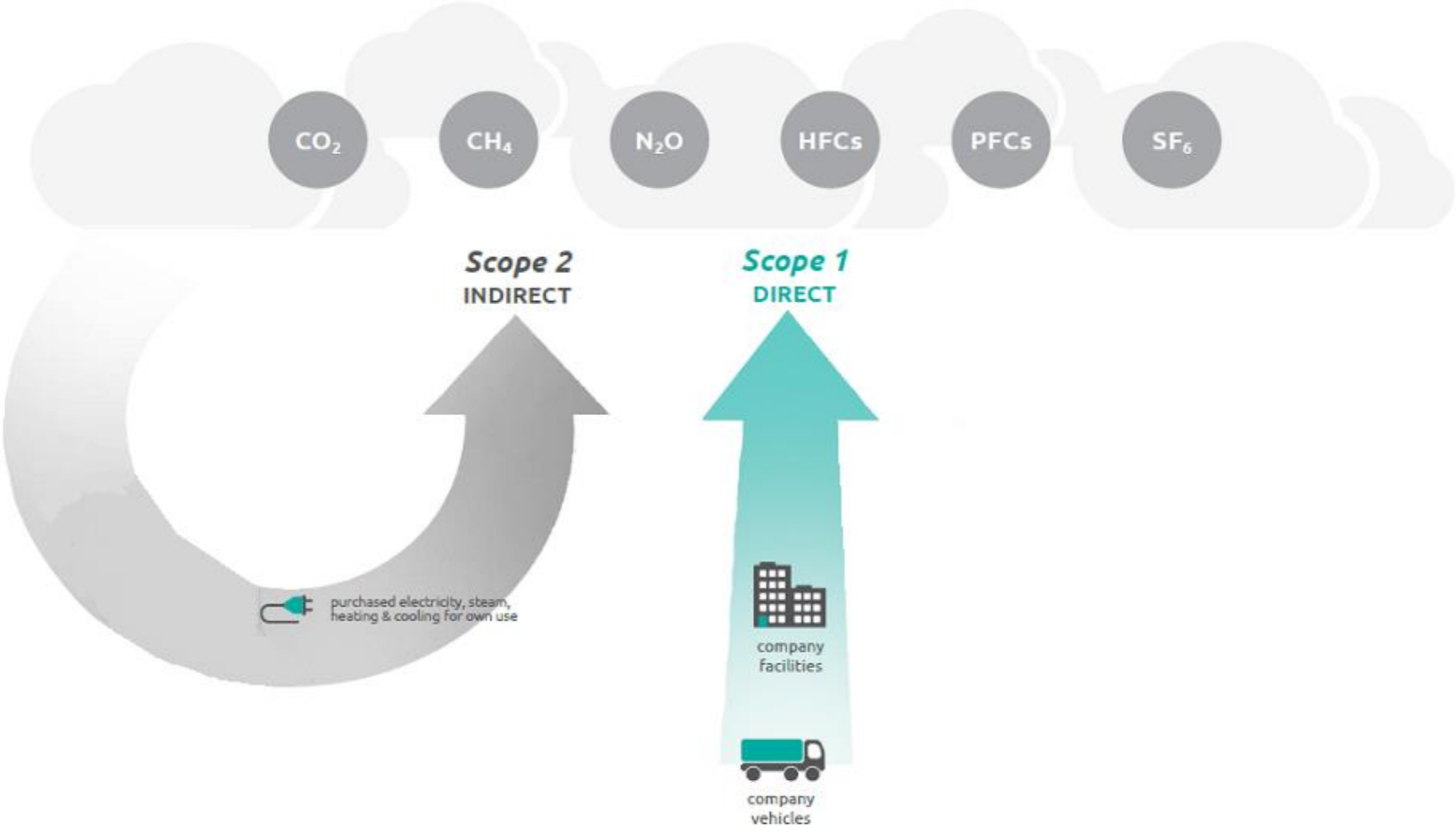

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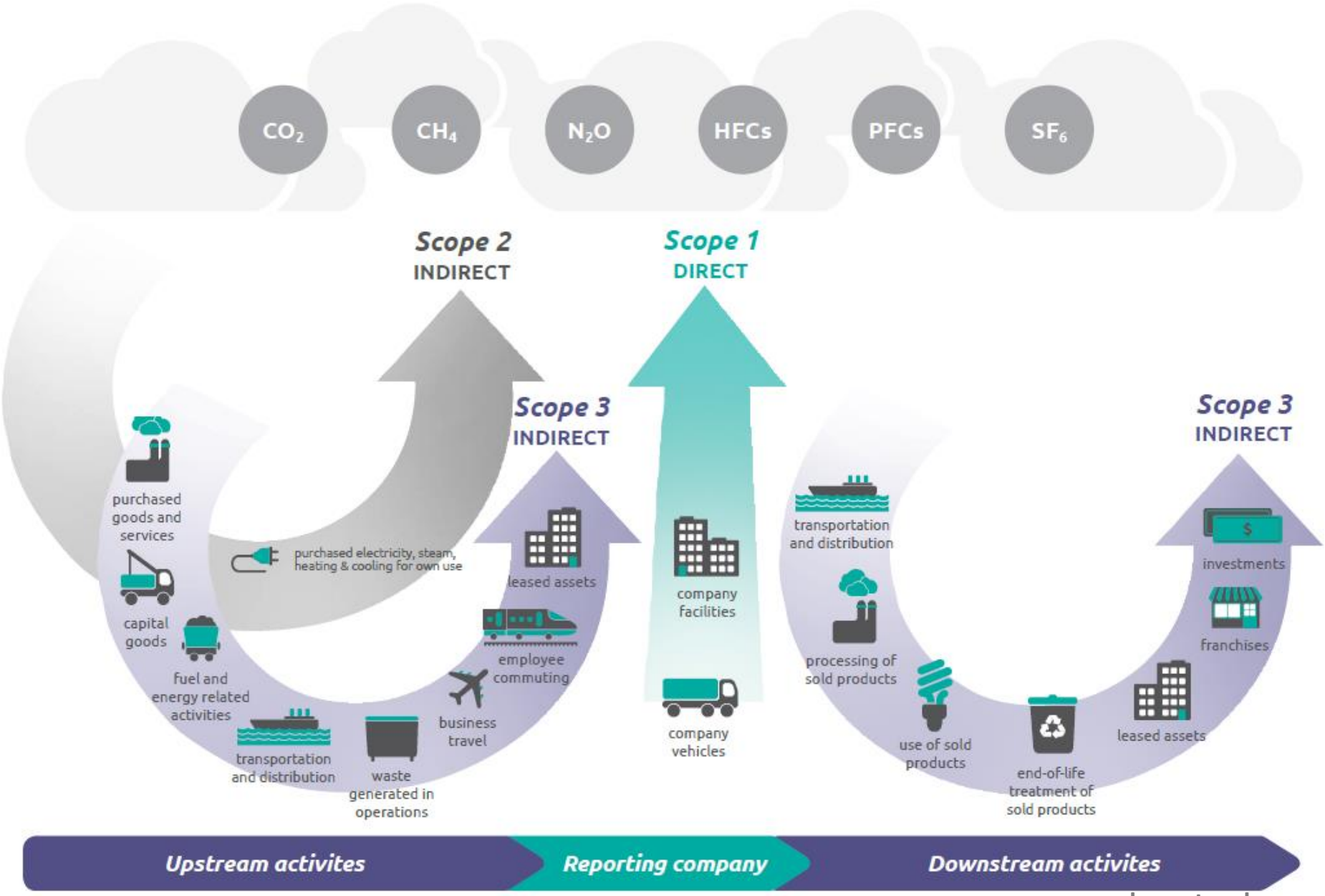

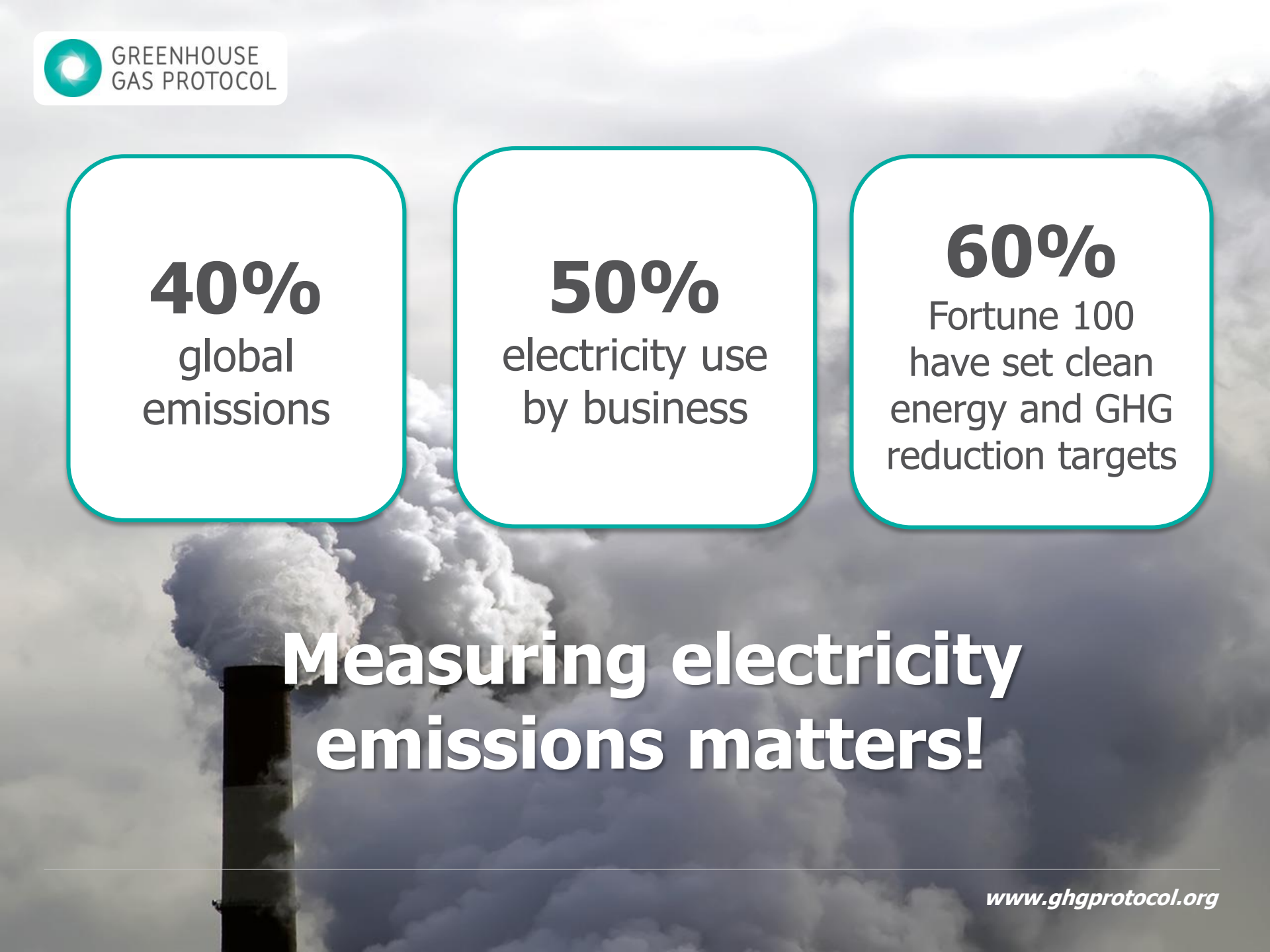
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40%
global
emissions
50%
electricity use
by business
60%
Fortune 100
have set clean
energy and GHG
reduction targets
Measuring electricity
emissions matters!
www.ghgprotocol.org

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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."

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Corporate Standard references to calculating and reducing scope 2

- Example of a company, IBM, working with a local electricity supplier, Austin Energy, to purchase renewable energy to reduce scope 2 emissions (p. 14)

- Example of a utility, Seattle City Light, providing emission rate information to customers (p. 30)

- Example of a company, Alcoa, purchasing RECs in the U.S. to reduce emissions, based on an avoided emissions estimation and deduction accounting approach (p. 63)

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Why New Guidance?

Most electricity markets have changed since 2004

- Deregulation/liberalization
- More government requirements for sourcing renewable energy
- Growth of the renewable electricity markets
- Increase in consumer choice and supplier disclosure
- New purchasing options and instruments (e.g. certificates)

Unclear rules for new instruments, consistent accounting

- Inconsistent interpretations of how to treat renewable energy certificates in GHG inventory
  - *Like an offset*
  - *Like a product-specific emission rate*
  - *Not at all*
- Did not address double counting between those with specified purchases, and those without
- Did not address instruments outside the U.S.
- Did not explain supplier-specific emission factors

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Analyzing "decision-making value": what reduces GHG's from the system that a consumer can impact?

1. **Facility-siting decisions**

2. **Demand-related decisions**

3. **Decisions to influence grid mix of resource technologies**

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How was this Guidance developed?

200+ Technical Working Group members

23 countries

4 years

5 discussion drafts

1 public comment period

2 final TWG reviews

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High-level summary of changes in the Guidance

- Previously, reference to different energy emissions data: supplier-specific, grid average, contracts, RECs
- Now, two scope 2 totals, not one
  - New terms for *methods* with different data
- Renewable energy treated as *zero emissions factor,* not "reduced" or "avoided" emissions
- Base year will be from one of two required methods, so in most cases recalculation not needed

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How the Guidance interacts with programs

- Integrated into GHG reporting requirements for:
  - CDP reporting
  - Dow Jones Sustainability Index
  - The Climate Registry

- Quality Criteria inform and align with:
  - CDP Defra (UK) Guidance
  - RE100 "What Counts" document
  - Sustainable Purchasing Leadership Council V.1
  - EPA Green Power Partnership guidance document (currently under revision)

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Learning objectives

- Distinguish scope 1, 2 and 3 emissions along the electricity value chain
- Identify how ownership and control structures impact how emissions from electricity consumption are classified
- How to avoid double counting in scope 2

For further reading, see:

GHG Protocol Scope 2 Guidance Chapter 5: Identifying Scope 2 Emissions and Setting the Scope 2 Boundary.

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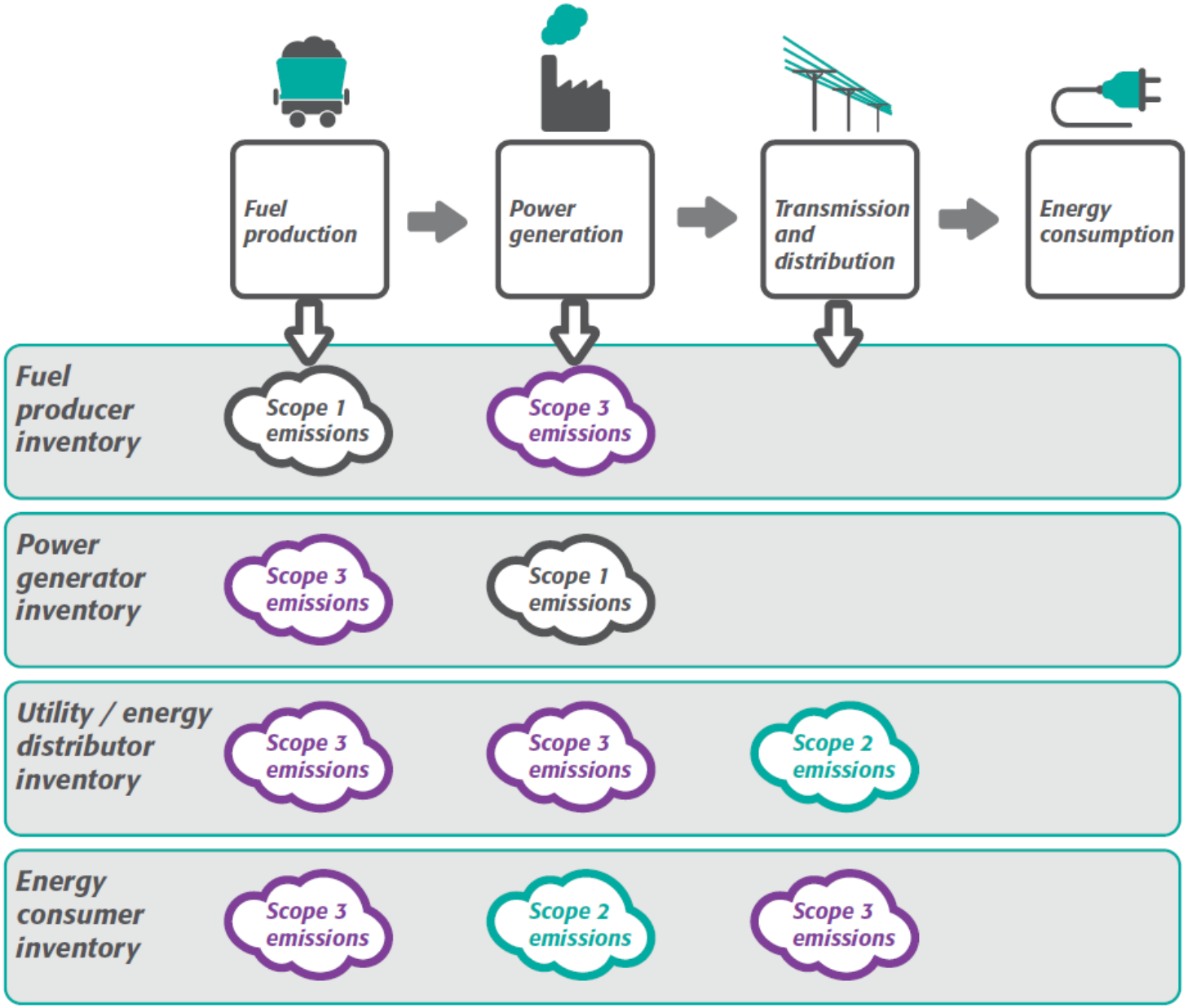
Steps

1. Organizational boundaries – consolidation approach

2. Operational boundaries

3. Distinguishing scopes reporting by electricity production/ distribution method


Fuel production
Power generation
Transmission and distribution
Energy consumption
Fuel producer inventory
Scope 1 emissions
Scope 3 emissions
Power generator inventory
Scope 3 emissions
Scope 1 emissions
Utility / energy distributor inventory
Scope 3 emissions
Scope 3 emissions
Scope 2 emissions
Energy consumer inventory
Scope 3 emissions
Scope 2 emissions
Scope 3 emissions

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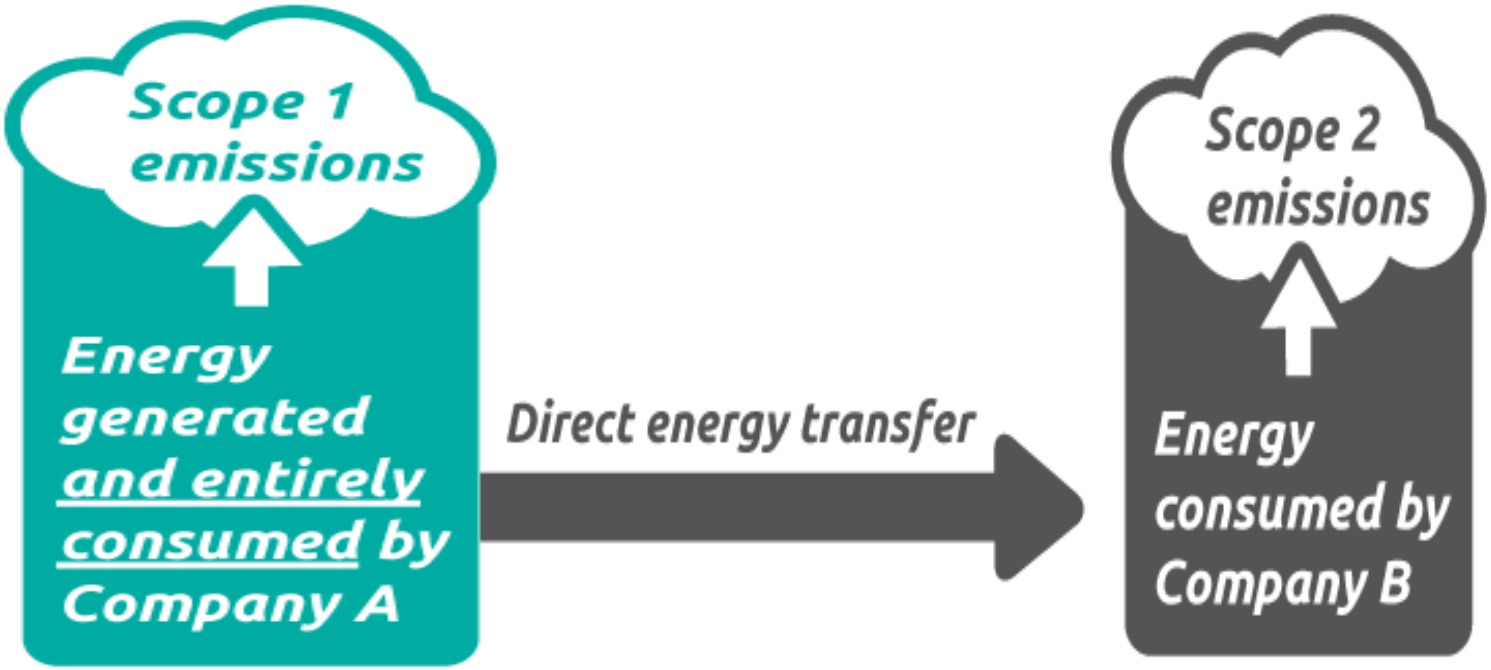
If the consumed electricity comes from owned/operated equipment

If the consumed electricity comes from a direct-line transfer



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Leased spaces

- First determine whether lease confers financial or operational control to the tenant. Corporate Standard Appendix F states that all leases confer operational control unless otherwise noted. So if you are lessee, assume you have operational control and electricity use is reported in scope 2.

- Onsite heat consumption from a common generation source (e.g. boiler) in a multi-tenant building should be classified as scope 2 for tenant, scope 1 for building owner.

- Data center co-lo guidance coming soon as sector-specific guidance from BSR's Future of Internet Power

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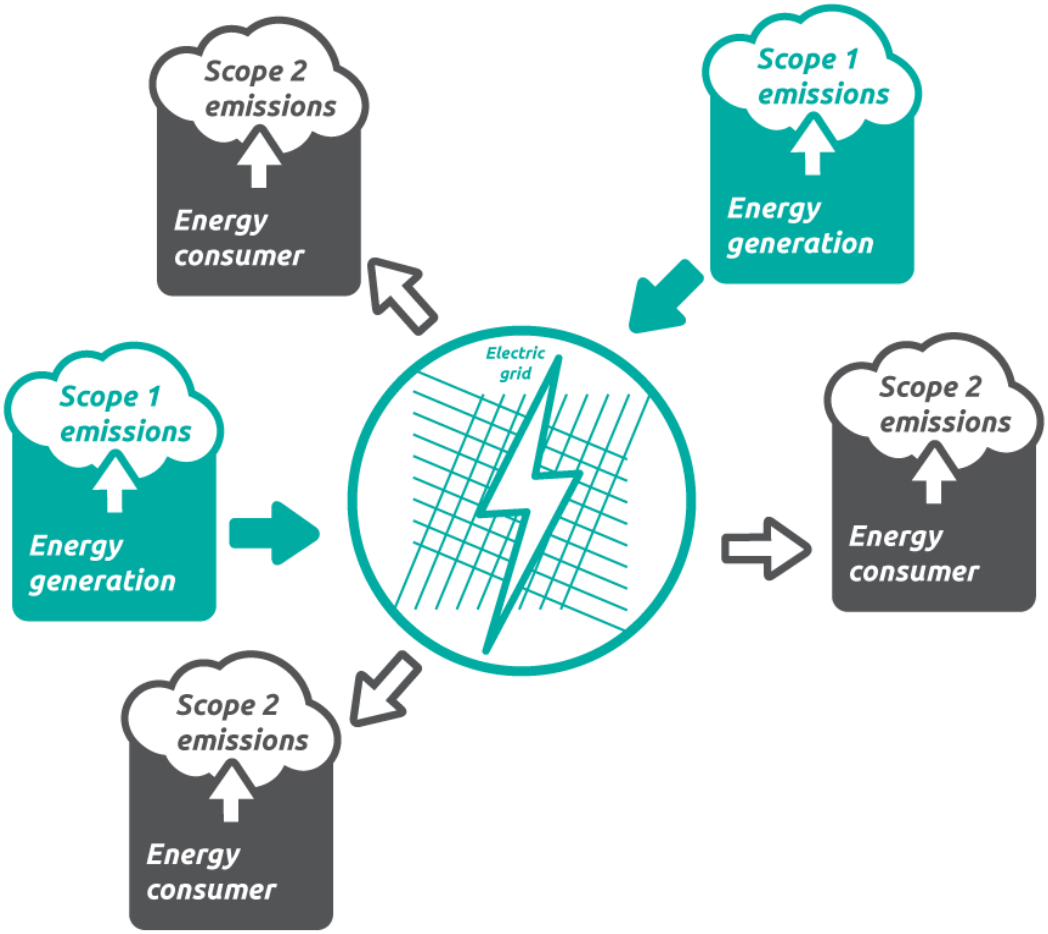
If the consumed electricity comes from the grid



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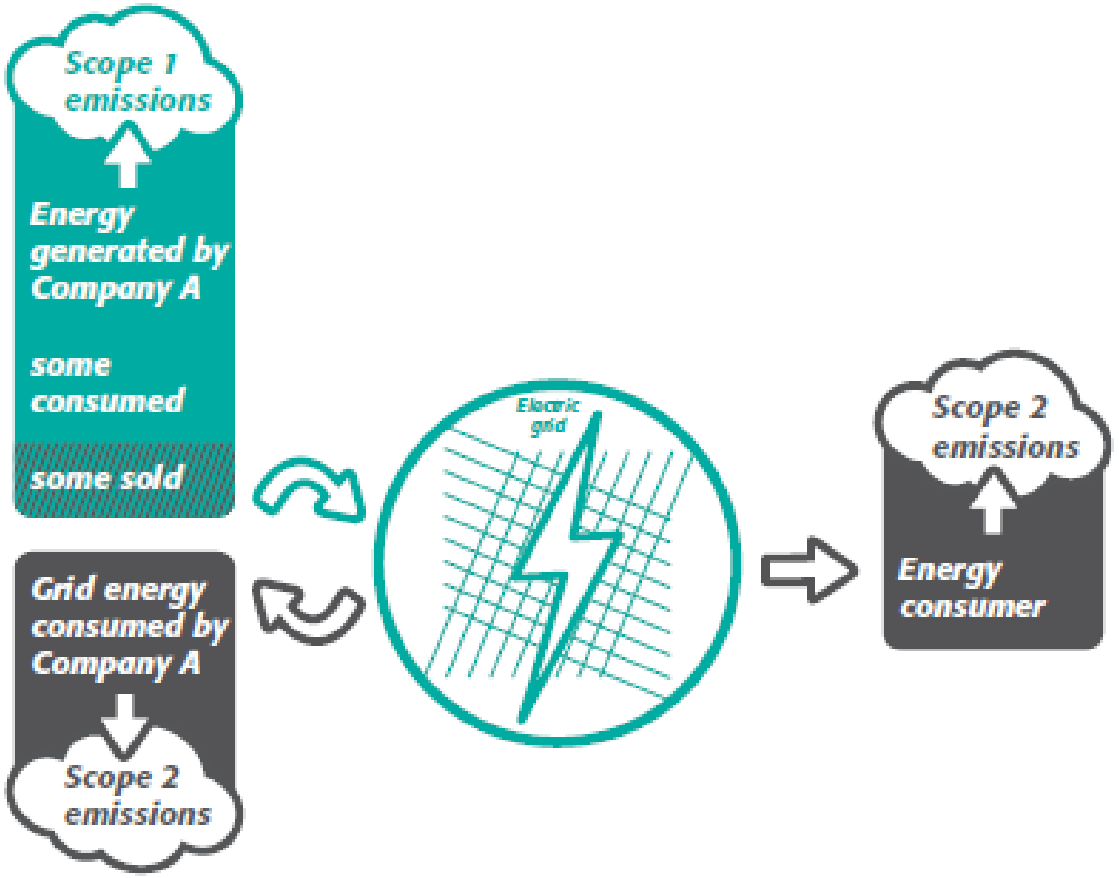
Facility consuming both energy generated on-site and purchased from the grid



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Net Metering

- For scope 2 calculation, use the total—or gross—electricity purchases from the grid rather than grid purchases "net" of generation for the scope 2 calculation.

- If a company cannot distinguish between its gross and net grid purchases, it should state and justify this in the inventory.

Table 5.1 Comparing gross and net energy consumption

Total energy production from on-site system	On-site energy consumption from on-site system	Energy exported from the on-site system to the grid	Energy imported from the grid
100 kWh	50 kWh	50 kWh	70 kWh

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Total energy consumption (to be reported separately) = 120 kWh
50 kWh consumed from on-site system + 70 kWh imported from grid

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100 kWh	50 kWh	50 kWh	70 kWh
Total energy consumption (to be reported separately) = 120 kWh 50 kWh consumed from on-site system + 70 kWh imported from grid			
"Net" grid consumption= 20 kWh (70 kWh imported from grid - 50 kWh exported)			

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Learning objectives

- What energy certificate attributes are and how they're used
- The difference between certificates and offsets
- Examples of current certificates and their attributes
- The difference between emission rate and avoided emission attribute

For further reading, see:

GHG Protocol Scope 2 Guidance Chapter 10: Key Concepts and Background in Energy attribute Certificates and Claims.

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Energy attribute certificate

- **Definition:** A category of contractual instrument that represents certain information (or attributes) about the energy generated, but does not represent the energy itself. This category includes a variety of instruments with different names, including certificates, tags, credits, or generator declarations.

- For the purpose of this guidance, the term "energy attribute certificates" or just "certificates" will be used as the general term for this category of instruments.

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Examples of energy attribute certificates

U.S.
Australia

Renewable Energy Certificate

European Economic Area

Guarantee of Origin

Other countries

Tradable Instruments for Global Renewables

I-REC

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Frequently Asked Question

Does GHGP "approve" of, evaluate or certify any of these certificates?

- No, we do not.
- We established **Quality Criteria** to help companies, utilities, 3rd party certifiers and inventory verifiers understand whether they meet the Criteria.
- The examples we list here, and in the Guidance, are indicative (e.g. RECs are an established legal instrument in the U.S. that fits the categorical definition of what's appropriate for scope 2. But, due diligence is needed to ensure individual REC purchases meet the Criteria.

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What is a REC?

Renewable Energy Certificate

"A tradable, contractual instrument that represents the full suite of attributes of 1 Megawatt-hour of renewable energy generation on the electricity grid."

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Who makes a REC?

Renewable energy generators

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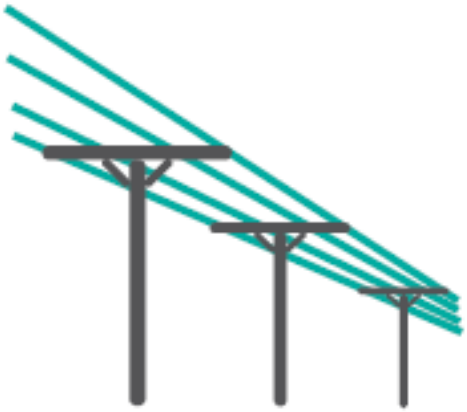
Who makes a REC?

Renewable energy generators

Who uses a REC?



Utilities/Load-Serving Entities (LSEs)

Electricity consumers

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Why is a REC needed?

1. Only way for utilities and consumers to demonstrate delivery or use of specified electricity or its attributes.

2. Only way to prevent double counting RE use and claims on its attributes between consumers

3. Utility and consumer demand for RE can be a way to influence (increase) RE supply in short and long term.

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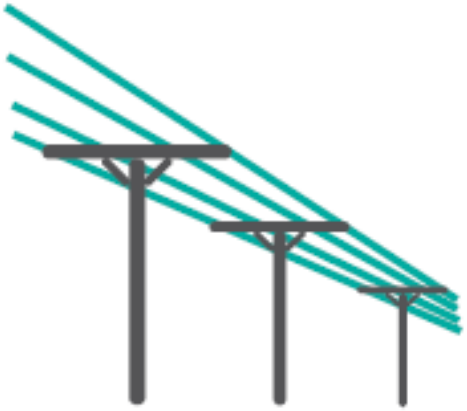
Utilities need RECs to :



Utilities/Load-Serving Entities (LSEs)

- Demonstrate % of renewable energy sourced and delivered to customers for RPS, for standard products, or green power programs
- Calculate a utility-specific GHG emission rate (tons CO2e/MWh)

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Consumers need RECs to:

Electricity consumers

- Make claims about use of renewable energy (ex: RE100)
- Make claims about attributes of renewable energy, including its zero-emissions rate (ex: GHG Protocol scope 2 inventory)

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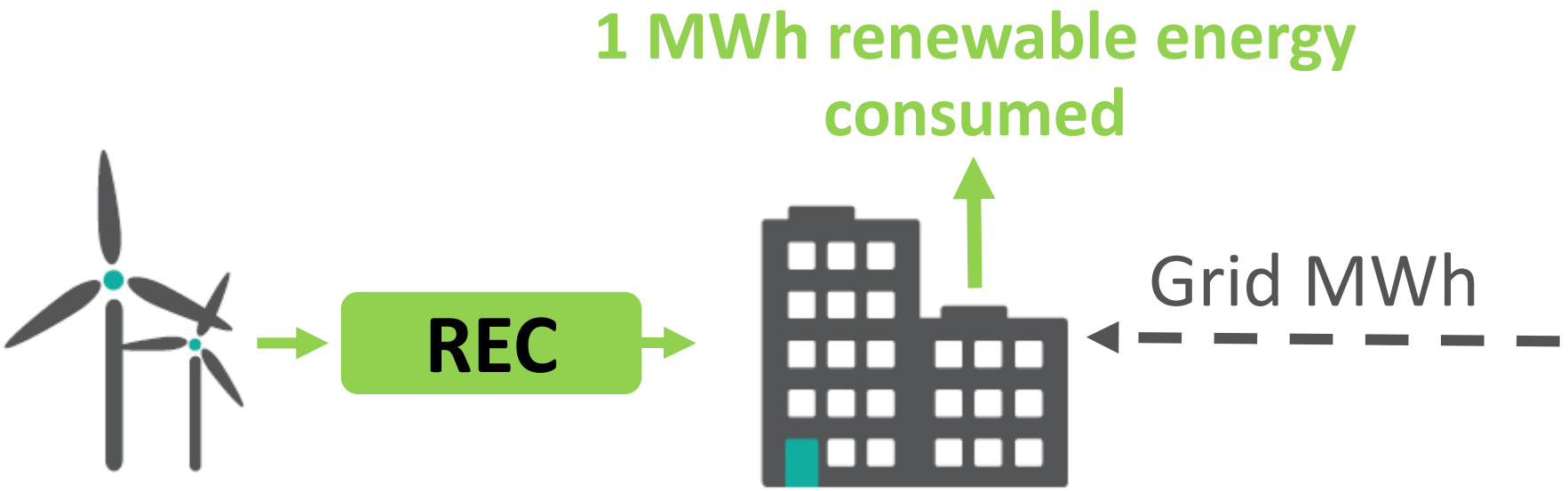
How are RECs used?

RECs only useable when applied like a label to a MWh of electricity that's supplied or consumed. NOT a stand-alone instrument like offset credits.



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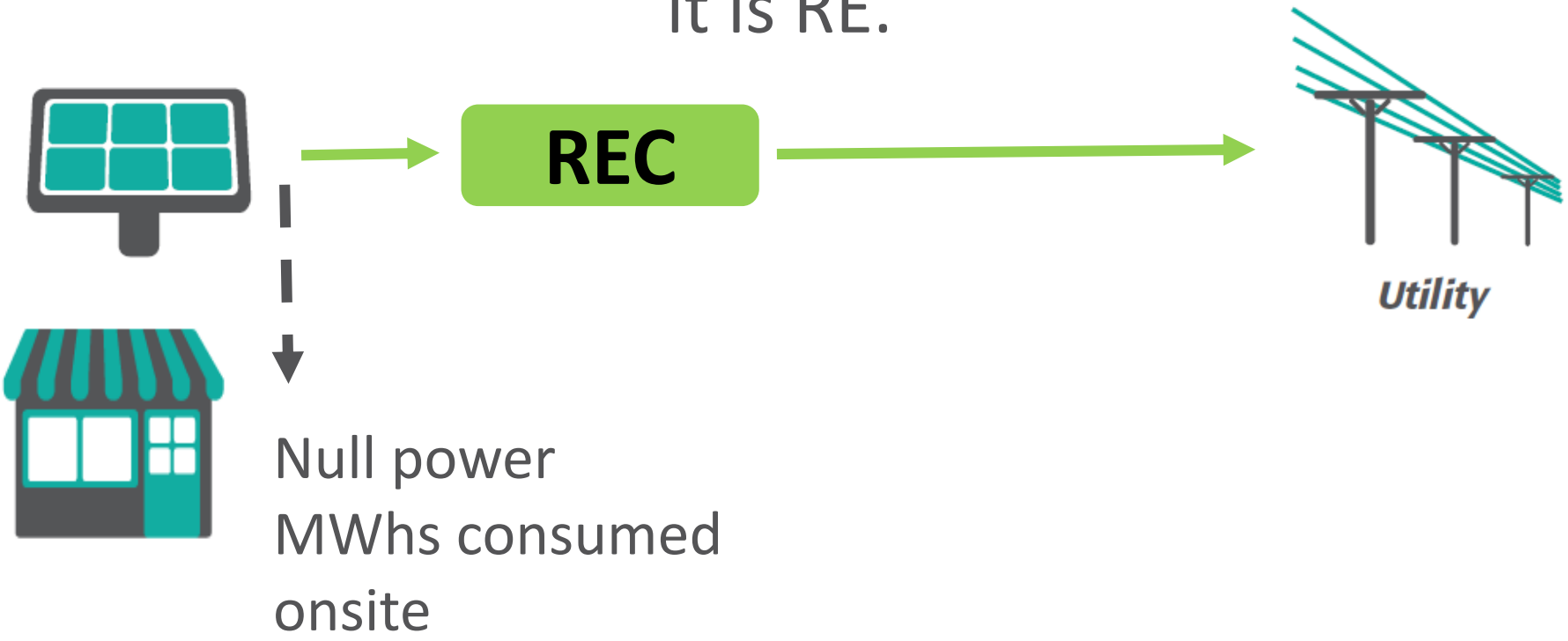
A MWh stripped of its REC = **null power.** The consumer of the null power cannot make claims it is RE.



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REC attributes and power plant features

- GHG emission rate (tons CO2e/MWh)
- Technology
- Fuel type (if biofuel)
- Vintage date of generation
- Facility commission date

- *Implicit avoided emissions impact (voluntary RECs)*

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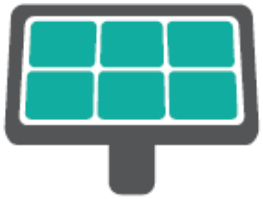
Scope 2 accounting only addresses the emission rate attribute

0.9 t CO_2e/MWh

0.5 CO_2e/MWh

0.2 t CO_2/MWh (reported separately)



0 t CO_2e/MWh

0 t CO_2e/MWh

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RE is often valued for its *emissions avoiding* impact on the rest of the grid in addition to its zero *emission rate.*

1 RE MWh avoided this gas on the margin, so *it "avoided" 0.5 tons emissions*

0.5 CO_2e/MWh

0 t CO_2e/MWh

Avoided emissions impact

0.5
CO_2e/MWh

1 RE MWh avoided this gas on the margin, so *it "avoided" 0.5 tons emissions/MWh*

Emission rate attribute

0 t CO_2e/MWh

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How can I acquire RECs?

- Buy unbundled through a broker
- Conveyed through a power purchase agreement
- Retired on your behalf by your energy supplier
  - Bundled with energy from generation assets or energy contracts of the supplier or
  - Unbundled from supplier's energy purchases

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Example of US renewable energy tracking systems

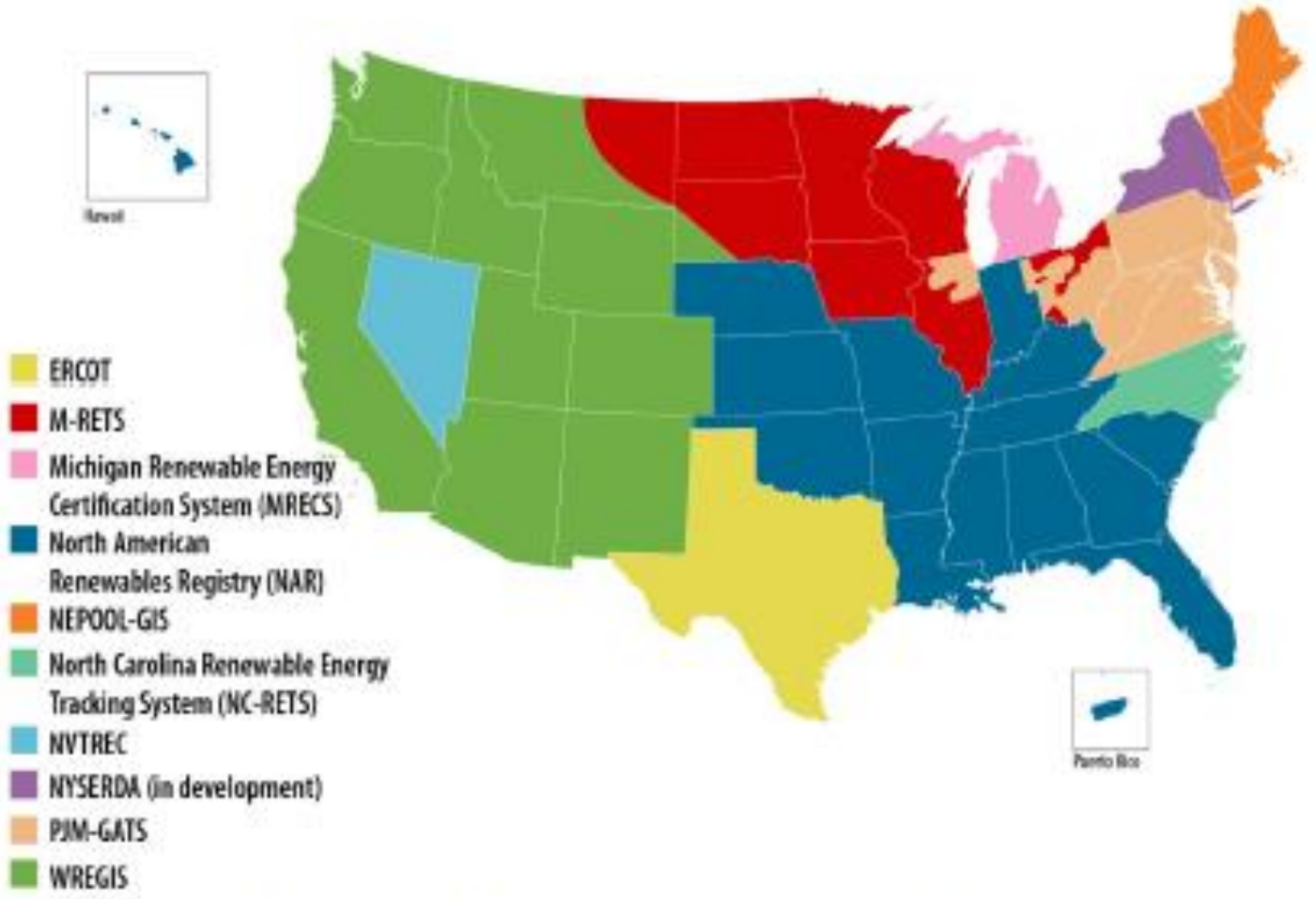

Figure 3. Renewable energy tracking systems in the United States

Source: Updated from ETNNA 2011
Note: NAR covers states and provinces not covered by a NYSE Blue tracking system

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Certificates without attributes

- Possible to have certificates that do not convey attributes or information for consumer claims
- Can be designed to fulfil only regulatory, tax, or supply-quota requirements
- Thus, possible to have multiple instruments from a single MWh

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Frequently Asked Question

What's the difference between an energy attribute certificate and an offset credit?

	Energy attribute certificates	Offsets
What it conveys	Represents attributes from energy generation (e.g. tons CO2e/MWh)	Represents tons avoided emissions
Purpose	For suppliers and consumers to characterize their electricity consumption	Quantify avoided or reduced emissions from a project.
Market	Country-specific or regional	Global
Scope Application	Only applicable to electricity emissions (s2 or 3)	Can be used to offset emissions from any scope
Additionality	Not required, but many companies aim to use certificates from new RE projects that they helped happen.	Required

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Learning objectives

- The purpose of scope 2 accounting
- Why two scope 2 accounting methods were codified
- What types of emission factors can be used for each method
- Why Quality Criteria and a residual mix are required for the market-based method

For further reading, see:

GHG Protocol Scope 2 Guidance Chapter 2: Business Goals and Chapter 4: Scope 2 Accounting Methods

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Business Goals

- Identify and understand the risks and opportunities associated with emissions from purchased and consumed electricity
- Identify internal GHG reduction opportunities, set reduction targets, and track performance
- Engage energy suppliers and partners in GHG management
- Enhance stakeholder information and corporate reputation through transparent public reporting

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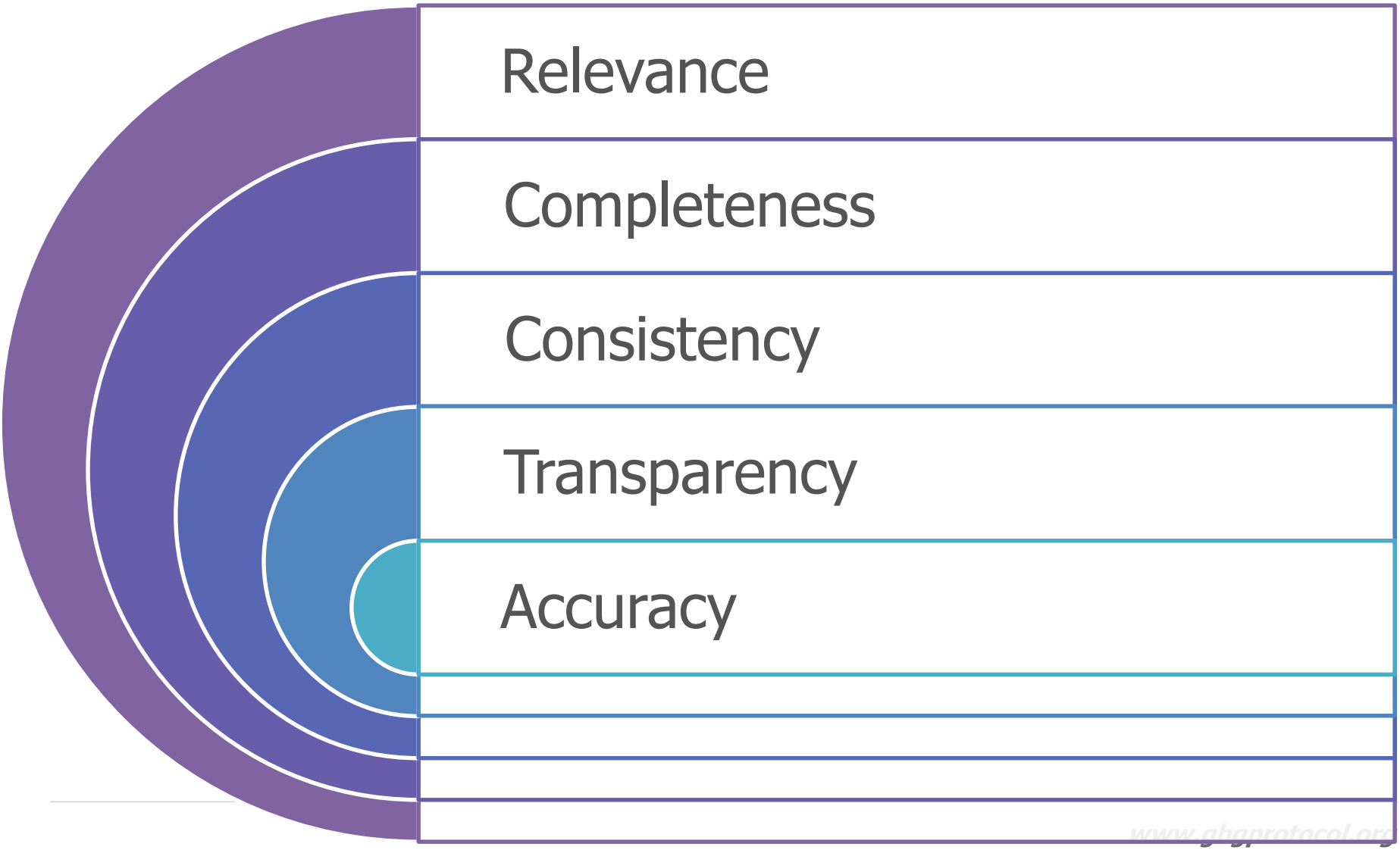

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How do I calculate scope 2 emissions?

Scope 2 Emissions	=	Activity Data	x	Emission Factor
		MWh		mt CO2e/ MWh

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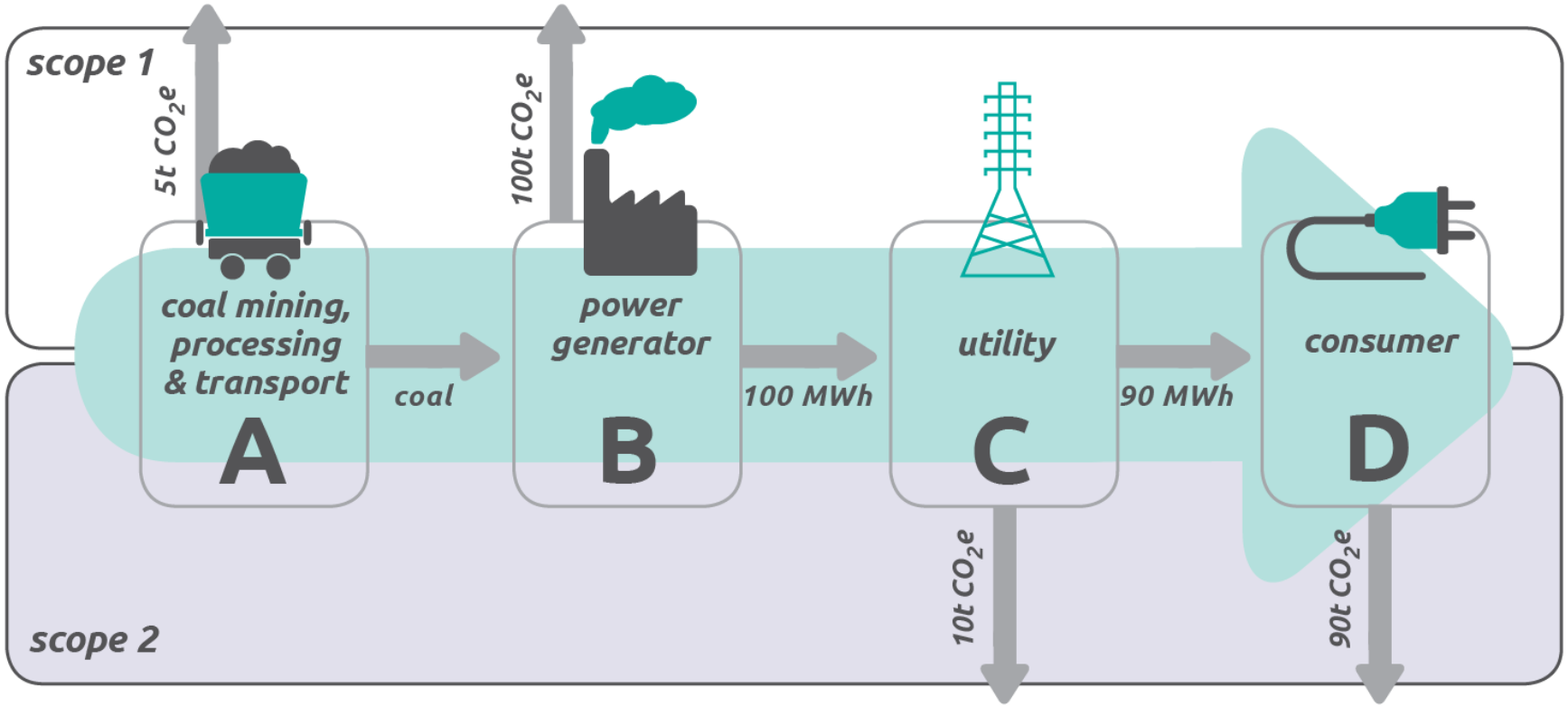
Emissions across an electricity value chain



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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?

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Scope 2 Guidance solution

1. Give name to the two different methodologies underlying these distinct data types: **location-based method** and **market-based method**

2. Identify the emission factor types and examples for each method, from most precise/accurate to least: **emission factor hierarchies**

3. Elaborate the rules of contractual accounting so companies know whether information is reliable, credible: **Scope 2 Quality Criteria**

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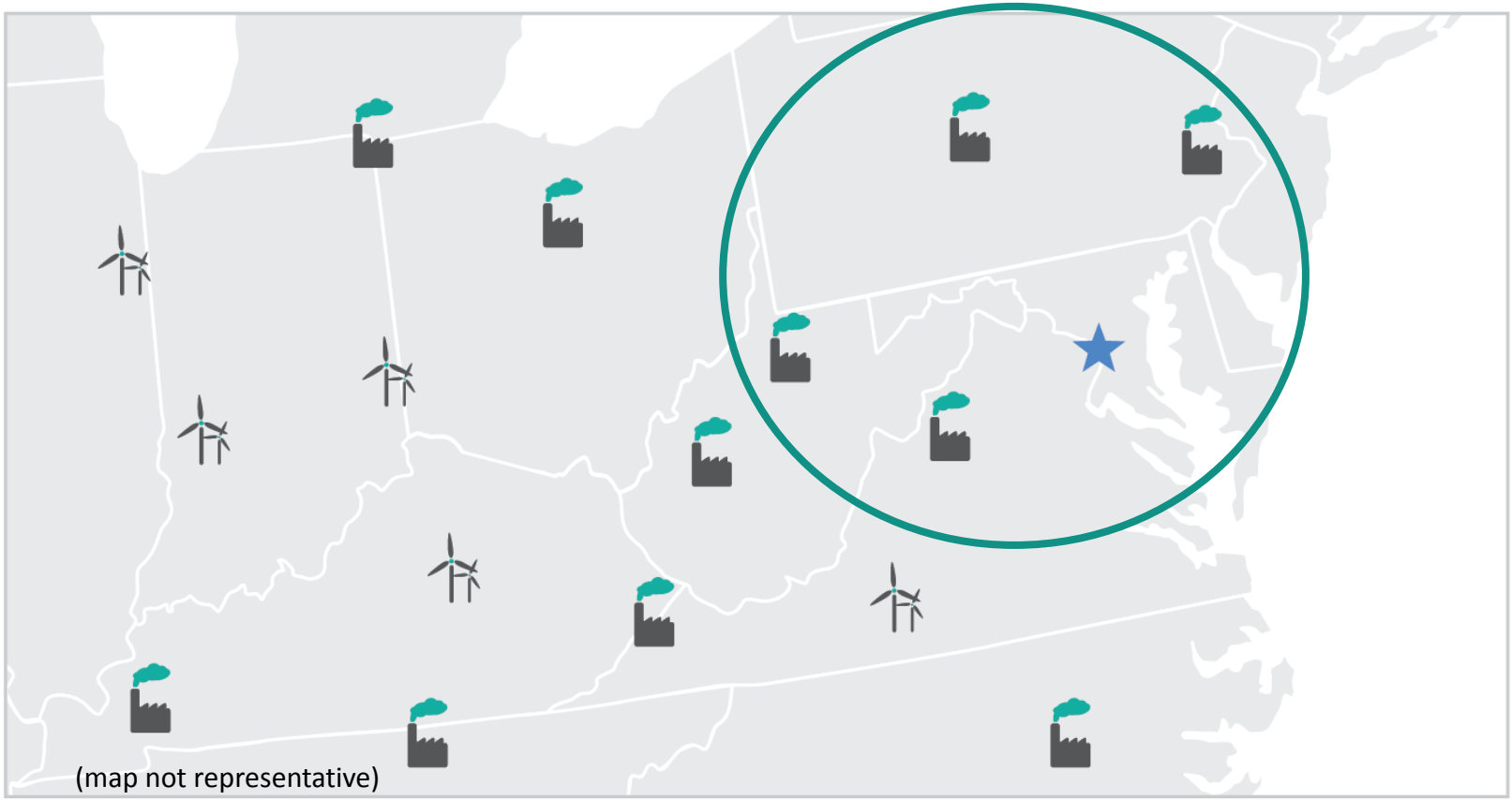
Location-based method: A method to quantify scope 2 GHG emissions based on average energy generation emission factors for defined geographic locations, including local, sub-national or national boundaries.



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Location-based method emission factor hierarchy

1. Regional or sub-national emission factors
Example: eGRID (US)

2. National energy production emission factors
Example: International Energy Agency

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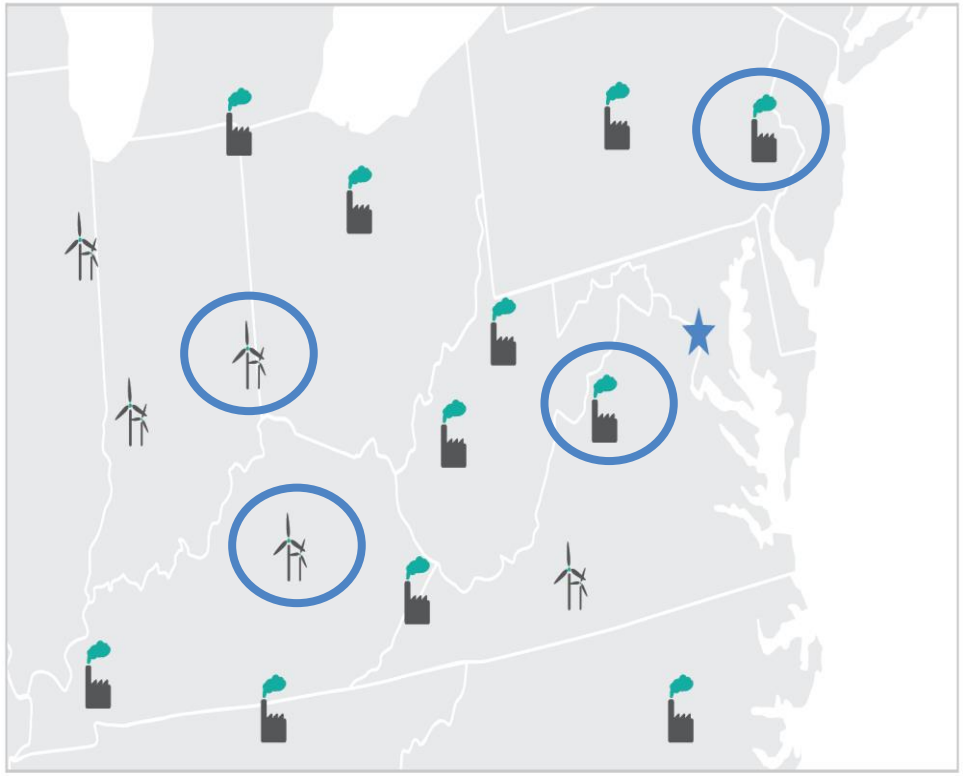
Market-based method: A method to quantify the scope 2 GHG emissions of a reporter based on GHG emissions emitted by the generators from which the reporter contractually purchases electricity bundled with contractual instruments, or contractual instruments on their own.



(map not representative)

Market-based method emission factor hierarchy

1. Electricity attribute certificates or equivalent instruments

2. Contracts for electricity, such as PPAs

3. Supplier/Utility emission rates

4. Residual mix (sub-national or national) Only in EU, coming soon to U.S.

5. Other grid-average emission factors (sub-national or national) *see location-based data*

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Frequently Asked Question

Why does unbundled accounting work?

- Already "unbundled" from electricity generation at the point of issuance
- Deregulated markets in particular already have clear separation between generation and supply – all transactions involve contracts
- Accounting purpose in market-based method is to show procurement decisions and signaling demand for low-carbon energy, not estimate what local generators are supplying local load (that's location-based)
- Caveat: *Effectiveness* of certificate labeling or voluntary programs at driving change in generation supply is a different question. (See Guidance Chapter 11).
  - Overall higher likelihood of impact with tracking systems, integration into supplier disclosure, and consumer awareness.

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Scope 2 Quality Criteria (for market-based method)

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

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Communicating the methods

Location-based: *These are the emissions from the energy mix on the grids where we operate. The electricity grid is physically bound, and our consumption is linked to those local grids.*

Market-based: *Where we have options in terms of energy product or supplier, these are the emissions associated with our procurement choices in the market.*

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Frequently Asked Question

Why does the Guidance require dual reporting?

- Distinguishes changes in choices vs. changes in grid emissions intensity
- Provides for a more complete assessment of the GHG impact, risks and opportunities associated with energy purchasing and consumption.
- Provides transparency for stakeholders
- Improves comparability across operations (on location-based method) where the company's GHG inventory includes operations in markets *without* contractual instruments.
- Facilitates participation in programs with different reporting requirements.

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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