



Greenhouse Gas Emissions Accounting for Common Carrier Energy Infrastructure

This Program 201 and Program 261 back-pocket-insight (BPI) summarizes a recent [EPRI technical update report](#) that explores existing greenhouse gas (GHG) accounting and reporting guidance for entities that own “common carrier energy infrastructure,” such as electricity transmission and distribution (T&D) systems and natural gas pipelines. This is the fourth BPI in a series designed to help electric companies and others conduct comprehensive GHG emissions accounting. It is based on 2021 research completed by P201.¹

Common Carrier Infrastructure

The term “common carrier” here refers to a company that owns the transportation or transmission infrastructure, such as natural gas pipelines and electricity transmission and distribution (T&D) systems but importantly does not own the natural gas or the electricity being transported.

GHG Emission Accounting

Electric companies and combined electric and natural gas utilities, and their value chain partners, emit GHGs from a wide range of activities.

Several existing GHG accounting standards and approaches provide guidance to electric companies^{2, 3} on how to do credible GHG accounting and reporting. Unfortunately, these standards do not adequately address the reporting of GHG emissions by owners common carrier energy infrastructure. This has led to conflicting interpretations and a lack of consistency in GHG inventories across common carrier companies and entities that include common carrier subsidiaries.

GHG Emissions Scopes

The [first BPI](#) introduced GHG emissions “scopes.” Direct emissions, referred to as “scope 1,” result from company activities that physically release (or remove) GHGs to the atmosphere, such as burning natural gas to generate power.

Indirect emissions are classified either as scope 2 or scope 3; they result from company-related activities but are not directly emitted by the company.

Scope 2 emissions account for emissions from the generation of electricity, heat, steam, and cooling that is purchased or acquired (i.e., brought into the organization boundary of the reporting company). For electric companies, scope 2 emissions also may include GHG emissions associated with T&D system “line losses” (discussed further below).

Scope 3 emissions are all other indirect emissions not included in scope 2. Scope 3 emissions are classified into upstream or downstream activities that comprise an entity’s *value chain*. The prevailing guidance for value chain accounting for corporate GHG inventories is the Corporate Value Chain (Scope 3) Standard by the GHG Protocol.

The [second BPI](#) describes how electric companies can account for their indirect Scope 2 greenhouse gas (GHG) emissions as part of a corporate GHG emissions inventory.

The [third BPI](#) describes how corporate electricity customers have focused in recent years on procuring renewable energy (RE) and renewable energy credits (RECs) to claim a reduction of their reported Scope 2 greenhouse gas (GHG) emissions.

GHG Accounting for T&D Line Losses

When electricity (MWh) is transmitted from generation facilities through T&D systems to grid-connected end users, a portion of the electrical energy generated is consumed to overcome resistance in the lines, referred to as “T&D line losses.” This type of scope 2 emission source is unique to electric companies that own and operate T&D systems. An electric company may categorize the associated indirect emissions as scope 2 or scope 3 emissions depending on who owns and/or operates the T&D system. Typically, in the United States, T&D line losses are between three and seven percent (3-7%) of the total amount of electrical energy transmitted and/or distributed across a power system.

For power companies that both generate power and are responsible for providing energy to meet end-use load, scope 2 emissions do not include T&D line losses because these indirect emissions typically are included within the company’s reported scope 1 direct emissions associated with stationary combustion. T&D companies that only own and operate T&D equipment (aka “wires only” companies) account for the indirect GHG emissions associated with T&D line losses as scope 2 emissions.

The GHG Protocol provides guidance and information for the accounting of emission sources occurring in the value chain of T&D line owners in cases where the owners or operators of a T&D system do not generate the electricity. However, the guidance remains unclear for accounting for indirect emissions associated with all electricity flowing through their systems, including electricity that is not purchased or sold to another entity.

¹Greenhouse Gas Emissions Accounting for Common Carrier Energy Infrastructure: Electricity Transmission and Distribution Systems and Natural Gas Pipelines. EPRI, Palo Alto, CA: 2024. [3002029197](#).

²See [WRI/WBSCD Revised Corporate Standard \(2004\)](#), [WRI/WBSCD GHG Protocol Scope 2 Guidance \(2015\)](#), and [WRI/WBSCD GHG Protocol Scope 2 Guidance \(2015\)](#).

³ See [The Climate Registry \(TCR\) General Reporting Protocol \(GRP\) v3 \(2019\)](#) and [TCR Electric Power Sector Protocol \(2009\)](#).



Under the Scope 3 Standard, electric T&D entities that generate, or purchase electricity report the GHG emissions associated with purchased electricity sold to end users under Scope 3, Category 3 (fuel- and energy-related emissions), Activity D. However, for owners of common-carrier T&D systems that do not own the electricity being transmitted through their systems, the GHG protocol standards are ambiguous regarding how to account for electricity that is transmitted via the common carrier infrastructure.

While the Scope 3 Standard does not specifically address electric power only transmitted through T&D lines (and not generated, purchased, or sold) by the reporting organization, the GHG Protocol’s Scope 2 Guidance – which supersedes the Scope 3 Standard – directs that a “utility/energy distributor” to account for emissions from fuel production and power generation (i.e., upstream emissions) under scope 3, and T&D losses under scope 2. Though the term “energy distributor” is not explicitly defined, one may infer this term refers to entities that own and maintain T&D systems but do not generate or purchase electricity. Alternatively, the guidance may be using “energy distributor” as an umbrella term for entities transacting energy on behalf of end users.

This ambiguity can result in significantly different emission profiles for a T&D company that generates or purchases electricity compared to one that is not involved in either of these activities. As shown in Table 1, both a T&D company acting as an *energy distributor* and one acting as a *wires-only* company would report scope 2 T&D line losses equal to 337,500 mt CO₂e in this example. The energy distributor also would report scope 3, category 3 emissions equal to 7,962,500 mt CO₂e, while the wires-only entity only would report scope 3, category 3 emissions of 36,000 mt CO₂e.

Table 1. Comparing Emissions for an Example Energy Distributor and a Wires-Only T&D Company

GHG Emissions	Energy Distributor	Wires Only Entity
Scope 2 (T&D line losses)	$7,500,000^1 \times 0.045^2 =$ 337,500 mt CO ₂ e	$7,500,000 \times 0.045 =$ 337,500 mt CO ₂ e
Scope 3, category 3:	$7,500,000 - 337,500^3$ $+ 800,000^4 =$ 7,962,500 mt CO ₂ e	$800,000 \times (4.5\%) =$ 36,000 mt CO ₂ e
Assumptions:		
1. Emissions from upstream power generation (e.g., natural gas combustion) flowing through company-owned T&D lines = 7,500,000 mt CO ₂ e.		
2. 4.5% T&D system line loss factor.		
3. Line loss emissions associated with upstream electricity generation are subtracted from 7,500,000 mt CO ₂ to avoid double counting.		
4. Upstream fuel production (e.g., natural gas) associated with electricity flowing through owned lines = 800,000 mt CO ₂ e.		

The ambiguity of the existing guidance for accounting for T&D related emissions is a contentious topic and is being considered in the ongoing GHG Protocol review process.⁴

Natural Gas Common Carrier Pipelines

The GHG Protocol does not provide specific guidance on the treatment of indirect emission sources occurring in the value chain of natural gas pipeline owners where the owner does not own or control the natural gas flowing through their systems.

Absent specific guidance, the existing guidance for electric T&D systems can be interpreted as analogous to natural gas pipelines since both types of infrastructure operate as common carriers and distribute undifferentiated energy commodities.

Although the Scope 3 Standard delineates that downstream emissions also include indirect emissions from products that are distributed but not sold, the standard is not clear whether distributed products apply to products not owned or produced by the reporting company. For upstream indirect emissions, the language is inflexible and restricts reporting of indirect emissions to purchased or acquired goods and services and does not clarify whether these upstream emissions also should include emissions from distributed products that are not purchased or acquired (i.e., owned), or consumed by the reporting company.

Accounting for and reporting emissions associated with products that are distributed but not sold, such as natural gas and electricity transported via common carrier infrastructure, presents challenges for owners of this type of infrastructure because the available GHG accounting guidance for addressing this situation is not definitive. To address this lack of guidance, natural gas common carriers may want to consider three options for GHG reporting:

1. Common carriers can establish their reporting boundaries to include all electricity and natural gas the company transports and delivers within its value chain.
2. Alternatively, common carriers can provide GHG-related information about their operations under the Scope 3 Standard’s guidance for optional reporting.
3. Common carriers can report energy related GHG performance metrics representing emissions per unit of output (e.g., CO₂e/MWh).

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⁴ This process is underway now. The GHGP plans to complete revisions to its GHG accounting protocols in late 2025 or early 2026.