



Impact Accounting for the Natural Gas Supply Chain: Guidance for Buyers

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Acronyms and Abbreviations

AIM: Advanced and Indirect Mitigation (AIM Platform)	RFP: request for proposal
AMI: Actions and Markets Instruments workstream (GHG Protocol)	RY: reporting year
CO ₂ : carbon dioxide	tCO ₂ e: tonnes of carbon dioxide equivalent
CO ₂ e: carbon-dioxide-equivalent	TCAT: Task Force for Corporate Action Transparency
EPA: Environmental Protection Agency (United States)	US: United States
EU: European Union	VRU: vapor recovery unit
GHG: greenhouse gas	WSP: WSP (global engineering and professional services firm)
GHGP: Greenhouse Gas Protocol	
LDAR: leak detection and repair	
MAARG: Mitigation Action Accounting and Reporting Guidance, V1.1 (Task Force for Corporate Action Transparency)	
OGMP: Oil and Gas Methane Partnership (United Nations Environment Programme)	

Introduction

With persistent and growing use of natural gas for electricity generation in the United States (US), climate advocates and leading energy buyers are increasingly looking at the natural gas supply chain as an opportunity for emissions mitigation.¹ RMI and WSP have published best practice guidance² for buyers of natural gas or electricity from natural gas-fired generation. Buyers may follow that guidance when applying traditional scope 3 allocational/inventory accounting to actions³ they take in their gas supply chains.

As a complement to attributional accounting guidance, Relae and Green Strategies have explored how consequential (or “impact”) accounting could be applied to buyer actions that lead to emissions mitigation interventions⁴ in the natural gas supply chain. Relae, in partnership with Green Strategies, has published quality criteria⁵ that give buyers guidance for assessing the overall quality and rigor of actions they might take in the natural gas supply chain and marketplace. Here, we provide a methodology for buyers to use when accounting for actions that enable the avoidance or reduction of greenhouse gas (GHG) emissions in the natural gas supply chain and when reporting those

¹ Emissions in scope for this guidance: greenhouse gas emissions that occur along the production, gathering and boosting, transmission and storage, and distribution segments of the natural gas supply chain. The natural gas supply chain produces carbon dioxide, methane, and nitrous oxide emissions. Future analyses should expand focus to oil and gas supply chains. For more discussion, see the [“Key Concepts for Natural Gas Supply Chain Transactions, Interventions, and Impact Accounting”](#) section.

² RMI and WSP. 2026. Lower Upstream Emissions Oil and Gas Accounting Framework.

³ The Advanced and Indirect Mitigation Platform uses the term “intervention;” the Task Force for Corporate Action Transparency uses the term “mitigation action;” the Greenhouse Gas Protocol’s Actions and Market Instruments workstream interchangeably uses the terms “action” and “intervention,” which it defines as “project, investment/financing, production/sale of products, purchase/consumption of products, or other intervention or activity that leads to changes in [greenhouse gas] emissions and removals (without regard to inventory boundary).” We more closely align with the Task Force for Corporate Action Transparency and use the term “action” to describe what a buyer did; “intervention” refers to the physical actions taken on the ground to address emissions. Buyer “actions” could be, for example, a procurement of lower-methane gas and/or of attribute instruments, or underwriting the costs of interventions to reduce emissions.

⁴ We use the term “intervention” to mean a physical and technological action taken in the natural gas supply chain that reduces or avoids emissions; we include a list of examples in the [Appendix](#) Table A2.

⁵ Relae and Green Strategies. Forthcoming 2026. Criteria for Impact-Based Actions in Lower-Emissions Natural Gas.

consequential impacts.⁶ These papers are informed by current and emerging guidance efforts and are intended to provide high-ambition companies a set of best practices to create, measure, and report the real-world emissions impacts of their actions and interventions.

Key Takeaways

- Impact (consequential) accounting differs fundamentally from attributional/inventory accounting: it measures the difference between a pre-intervention baseline and post-intervention emissions, rather than applying emission factors to volumes procured.
- This guidance lays out a seven-step methodology for buyers to credibly claim avoided or reduced methane emissions in the natural gas supply chain. It includes a worked example, applying the methodology to a buyer-supplier transaction to show how avoided emissions are quantified, attributed, and disclosed.
- The methodology draws on the approaches to impact accounting that are emerging from frameworks, including the Advanced and Indirect Mitigation (AIM) Platform and the Task Force for Corporate Action Transparency (TCAT), and what is known about the GHG Protocol’s (GHGP) Actions and Markets Instruments (AMI) workstream currently under development.

⁶ This guidance focuses on applying impact accounting to buyer actions in active gas supply chains. It is not focused on actions to reduce emissions from decommissioning low-production (“marginal”) wells or capping emissions from orphaned or abandoned wells that are not part of the active gas production system. Those emissions sources can be significant, and interventions (if not regulations) are needed to address them. Existing carbon credit methodologies have been developed to account for these actions.

How Impact Accounting Differs from Inventory Accounting

Attributional inventories are calculated by applying emission factors to the volume of used or procured goods and services. Attributional inventories can be reduced by using fewer goods or services or by making choices and procurements that allow the buyer to apply a lower emission factor to the quantity of products or services. Most corporate climate targets are based on achieving reductions to their attributional inventories.

Consequential or impact accounting is different from attributional accounting. Instead of applying differentiated emission factors to report a change in an inventory, impact accounting measures the actual changes in emissions to the atmosphere (emissions reduced or avoided) resulting from an intervention associated with an action taken by the claiming/reporting entity, using the following equation:

$$\text{Avoided/Reduced Emissions} = \text{Baseline Emissions Pre-Intervention} - \text{Emissions Post-Intervention}$$

Under current GHGP inventory accounting rules, buyers frequently struggle to identify specific sources of emissions in the upstream value chain that contribute to the reporting company's GHG inventory. It is also challenging to identify traceable actions that can achieve reductions in a buyer's scope 3 inventory. Attributional accounting does *not* address the question of the actual, quantitative change in real-world emissions associated with an intervention that results in a lower emissions factor. Impact accounting does.

Unlike attributional accounting, which is a relatively well understood and long-standing practice, impact accounting is less familiar to many buyers. Recent efforts have provided initial methodological and disclosure guidance for impact accounting, including impact statement reporting templates from the AIM Platform and TCAT. Through its AMI workstream, the GHGP will develop official guidance and reporting criteria for an impact statement/ledger, but that final guidance may not be available until 2028. In its recent Request for Information to inform this work, the GHGP states that an impact statement:

“[P]rovides a dedicated, structured statement for reporting on the impacts of actions taken by the reporting entity inside and outside its value chain (e.g., emissions avoided, reduced, or removed). . . . This statement uses consequential accounting methods that aim to quantify the global change in GHGs in the atmosphere resulting from a given action. The GHG impact statement does not provide a comprehensive assessment of a corporate

footprint but instead allows reporters to report the impact of activities that are quantified using consequential methods and therefore not reflected in the physical GHG inventory.”⁷

Both AIM and TCAT have developed detailed approaches and requirements for a company to report avoided, reduced, and removed emissions: TCAT’s *Mitigation Action Accounting and Reporting Guidance, V1.1* (MAARG)⁸ and AIM’s *AIM Platform Standard and Guidance V1.0*.⁹ The GHGP has signaled that it may follow the AIM and TCAT precedents.¹⁰ Previous efforts also have sought to inform the calculation of avoided and reduced emissions. These efforts include the GHGPs *Project Protocol*¹¹ and the World Business Council on Sustainable Development’s *Guidance*

⁷ Per TCAT, an impact statement is “designed to measure the mitigation outcomes associated with intentional mitigation actions, both inside and outside of company inventories and value chains. Impact accounting enables companies to evaluate the climate impact of their actions by comparing what occurred as a result of the action to what would have happened otherwise.”

⁸ Task Force for Corporate Action Transparency. 2026. *Mitigation Action Accounting and Reporting Guidance, V1.1*. [accessed 2026 Sep 14]. <https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>

⁹ The Advanced and Indirect Mitigation Platform. 2026. *Standard and Guidance*. [accessed 2026 Sep 14]. <https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform-Standard-and-Guidance-V1.0.pdf>

¹⁰ An impact ledger would be part of the GHGPs proposed multi-statement framework, which would include a physical inventory (using attributional rules), a contractual inventory (physical inventory adjusted by use of market instruments), and a ledger detailing other climate-positive company actions.

¹¹ Greenhouse Gas Protocol. 2005. *The GHG Protocol for Project Accounting*. [accessed 2026 Sep 14]. https://ghgprotocol.org/sites/default/files/standards/ghg_project_accounting.pdf

on Avoided Emissions v2.0: Drive Innovations and Scale Solutions Toward Net Zero.¹² Consequential methodologies for specific technologies are also available.^{13, 14}

This guidance considers the AIM and TCAT methodologies, as well as what is known about the AMI process, and recommends an approach for buyers seeking to apply impact accounting to interventions, investments, and procurements in the natural gas supply chain.¹⁵

¹² World Business Council on Sustainable Development. 2025. Guidance on Avoided Emissions v2.0: Drive Innovations and Scale Solutions Toward Net Zero. [accessed 2026 Sep 14]. <https://www.wbcsd.org/resources/guidance-on-avoided-emissions-helping-business-drive-innovations-and-scale-solutions-toward-net-zero/?submitted=true>

¹³ Konet E. 20206. A Consequential Methodology for Grid-Connected Energy Storage Systems. [accessed 2026 Sep 14]. <https://www.ess-consortium.org/home/#methodology>

¹⁴ WattTime. 2025. Measuring the Carbon Impact of Battery Energy Storage Systems. [accessed 2026 Sep 14]. <https://watttime.org/wp-content/uploads/2026/03/WattTime-Analysis-MeasuringTheCarbonImpactOfBatteryEnergyStorageSystems-202511-v260327.pdf>

¹⁵ There are differences in the AIM and TCAT methodologies, and we do not yet know where the GHGP will land on some key questions. The analyses of how these frameworks underpin the impact accounting methodology proposed in this paper are discussed in depth in the “[Analysis of Market and Emerging Frameworks Supporting This Impact Accounting and Reporting Methodology](#)” section below.

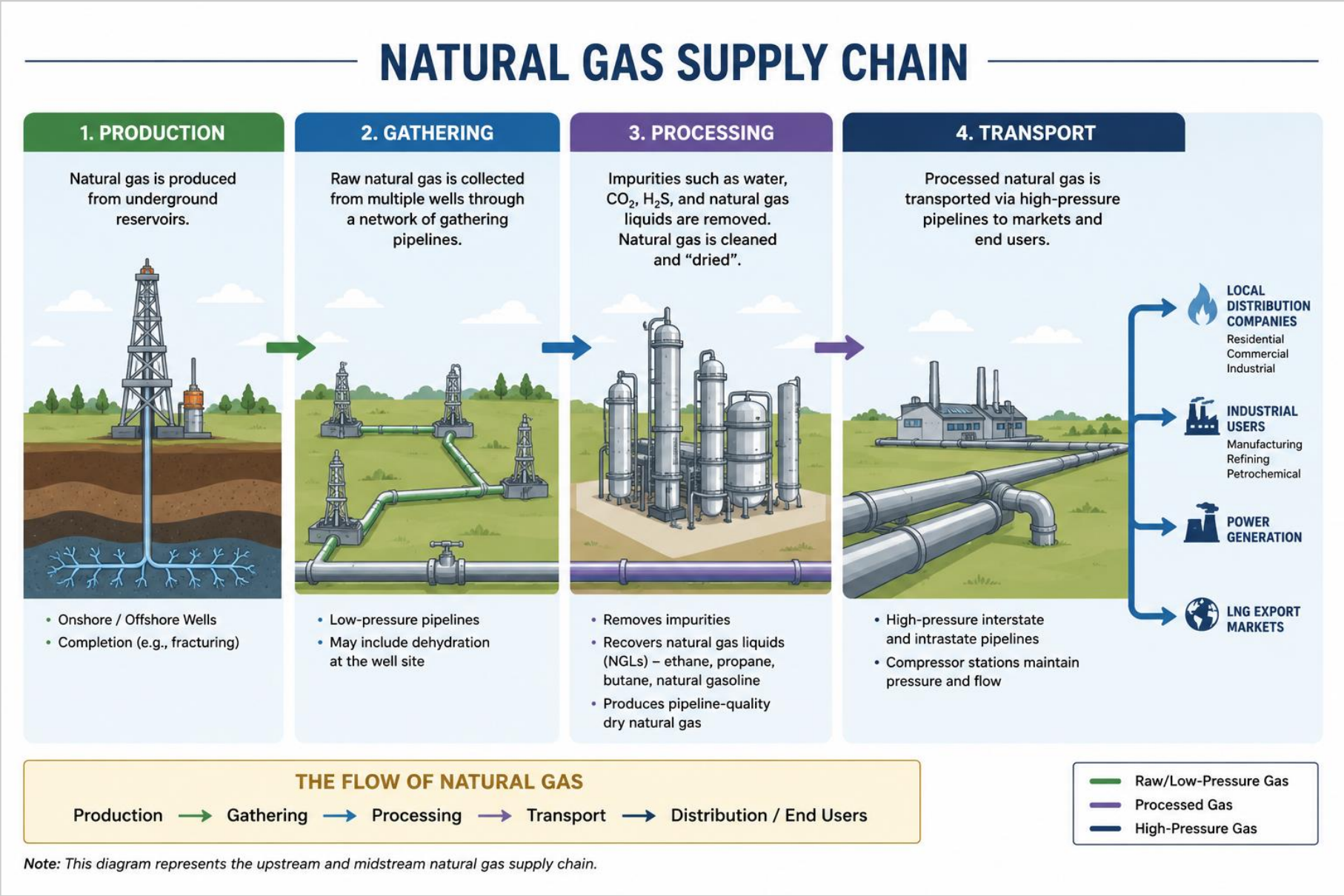


Figure 1. The natural gas supply chain from production to gathering, process, and transport through to distribution and end users. Source: Green Strategies/Relae.

Methodology to Calculate and Report Impact from Actions in Upstream Natural Gas Supply Chains

This guidance provides buyers with a step-by-step methodology for applying impact accounting and reporting to actions in the natural gas supply chain (**figure 1**). While it is a buyer's responsibility to ensure that each step of the methodology is completed, the actual division of responsibilities in undertaking the various steps needed for impact calculation and reporting may vary between the buyer and the supplier or another upstream natural gas sector actor.

Step 1: Identify and Undertake an Action

Impact statements record emissions avoided, reduced, or removed that are attributable to a reporting entity's actions. To be eligible to report in an impact statement, a buyer's action must lead to reduced or avoided emissions in a natural gas supply chain. See "[Actions that Qualify for Reporting in Impact Statements](#)" section for more details.

Examples of an action that could underpin an impact claim include:

- Procuring or securing an offtake agreement for lower-emission upstream natural gas
- Procuring or securing an offtake agreement for lower-emission upstream attribute instruments
- Underwriting the costs of an intervention that reduces emissions

Step 1A (Optional): Demonstrate Action Occurs Inside Buyer’s Supply Chain, or Has Association With It

Buyers may wish to demonstrate that an action they took results in an intervention within the boundaries of their specific supply chains or that an action has an association to their supply chain. This guidance offers steps for buyers wishing to demonstrate such actions and adopts the RMI/WSP approach¹⁶ for demonstrating that interventions have a physical association or an alternative association to a specific natural gas supply chain. This approach follows the AIM Platform’s guidance, which applies to actions across economic sectors.¹⁷

The RMI/WSP approach discusses how a buyer may demonstrate that an action achieves value chain association using one of the following approaches (see “[Establishing Association of Action to a Buyer’s Supply Chain](#)” below for further explanation):

- Physical association with traceability (e.g., segregated supply, physically traceable mass balance supply)
- Association through bundled contractual arrangements (e.g., physical relationship exists but without full traceability)
- Basin-oriented and regional value-chain association

Step 2: Calculate Pre- and Post- Intervention Emissions

In an impact statement, a buyer reports the quantity of avoided or reduced emissions that it achieves by its action. To quantify that emissions impact, a buyer must calculate the emissions that would have occurred under a baseline scenario without the intervention enabled by its action and the emissions level post intervention. The emissions impact is the difference, and is reported as follows:

¹⁶ RMI and WSP. 2026. Lower Upstream Emissions Oil and Gas Accounting Framework.

¹⁷ TCAT offers distinct impact statements for a buyer to report emissions impact depending on whether the intervention fell within the boundaries of a buyer’s inventory or has association. The GHGP’s AMI workstream indicates that it will likely have impact statement reporting provisions for interventions that fall inside and outside a buyer’s supply chain.

- *Emissions from Source* = Emissions (i.e. tonnes of carbon-dioxide-equivalent (CO₂e)) from processes or equipment that releases GHG emissions to the atmosphere either intentionally or unintentionally, intermittently or persistently.¹⁸
- A buyer shall define and describe a baseline reference scenario that describes GHG emissions levels prior to an intervention and what emissions levels would have been in the absence of intervention(s). The burden of doing those analyses need not fall on the buyer; a buyer’s supplier or intervention project developer can provide baseline emissions calculations subject to independent verification requirements.

Pre-Intervention Source Emissions (tCO₂e) = Source Emissions in baseline year (BY) (*Emissions*_{SOURCE-BY}).

- A buyer shall demonstrate a post-intervention emissions profile.

Post-Intervention Emissions (tCO₂e) = Source Emissions following an intervention to avoid or reduce emissions in a buyer’s reporting year (RY) (*Emissions*_{SOURCE-RY})

- This allows the buyer to calculate emissions impact.

*Avoided/Reduced Emissions*_{RY} (tCO₂e) = *Emissions*_{SOURCE-BY} - *Emissions*_{SOURCE-RY}

Step 3: Demonstrate Use of Accepted Methane Emissions Measurement Methodology to Quantify Baseline and Post-Intervention Emissions¹⁹

Methane emissions from natural gas production have historically been inconsistently and imprecisely reported due to several factors, including frequent reliance on assumptions and the use of estimated averages for specific sources of methane emissions. Recently, the Oil and Gas Methane Partnership (OGMP) has directed natural gas producers to shift away from assumptions and proxies and measure the emission levels across their assets. In recognition of emerging best practice for methane emission measurement, buyers shall:²⁰

¹⁸ This definition mirrors the Oil and Gas Methane Partnership (OGMP) definition of methane emissions source.

¹⁹ See TCAT’s MAARG Criteria for Measurable mitigation activities (Criteria 1A-1C); AIM encourages use of a methodology that is “broadly accepted, up-to-date, third-party reviewed or developed with a multi-stakeholder process, and publicly available.”

²⁰ See the “General Criteria for Measuring Pre- and Post-Intervention Methane Emissions” section of this document for a detailed discussion of measurement and reporting standards.

- Ensure that pre-intervention methane emissions are measured at the source level of a given asset in the gas production supply chain where interventions will occur. A buyer shall ensure that methane emissions measurement is consistent with the provisions of OGMP’s Level 4 measurement and reporting and should pursue the use of a third-party methodology for source-level methane emission measurement, such as GTI Energy’s Veritas protocol. While Level 4 measurement and reporting should be used to establish pre (and post) intervention methane emissions, a buyer should encourage OGMP’s Level 5 facility-wide emission measurement and reporting.²¹
- Ensure that the same, equivalent, or more stringent methods are used for post-intervention methane emissions measurement as was used for pre-intervention measurement. Emissions measurement shall occur each year post-intervention and for each reporting year that a buyer claims avoided or reduced emissions via an impact statement.
- Identify any potential sources of measurement uncertainty and demonstrate how conservativeness was employed.

Step 4: Establish Attribution

Impact statement reporting requires a buyer to demonstrate an action’s role in enabling interventions that reduced or avoided emissions. As described by TCAT, the question is: “Did or will the reporting company play a role in initiating, funding, enabling, or otherwise incentivizing the mitigation?”²²

Buyers shall document that:

²¹ Level 5 measurement involves measuring emissions on a facility-level or site-level basis, often with different techniques and tools than were involved in Level 4 measurement, and comparing facility-level measurements with source-level Level 4 measurements to identify any differences and reconcile them. Level 5 measurement is not a substitute for Level 4 measurement but can serve to confirm Level 4 measurement.

²² Task Force on Corporate Action Transparency. 2026. Table 2, Mitigation Action Accounting and Reporting Guidance, V1.1. [accessed 2026 Sep 15].
<https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>

- The buyer had a role in initiating, funding, enabling, or otherwise incentivizing the intervention.
- The buyer can demonstrate, via contract or otherwise, that it has a clear and exclusive right to the avoided or reduced emissions claimed and the absence of any double counting.²³

Step 5: Demonstrate Additionality

The credibility of a claim is based on the difference between the baseline and post-intervention emissions and depends in part on an additionality test: evidence and analysis that the emissions avoidance or reduction was unlikely to have occurred without the action. TCAT requires actions to pass at least three additionality tests (i.e., regulatory, timing, and one of financial, common practice, barrier analysis), whereas AIM requires only a regulatory additionality test.^{24, 25} A buyer shall:

- Conduct a *regulatory test* and demonstrate that a project’s avoided or reduced emissions are in addition to the requirements of any current legal or regulatory requirement.
- Apply a *timing test* and confirm with a natural gas supplier that an intervention was not already in the process of being deployed or already planned as part of a normal cycle of equipment replacement or upgrades.
- Apply at least one of the following tests:²⁶

²³ While there is no controlling definition, in the GHG accounting context, double counting occurs when the same emissions attribute is claimed by more than one party in the same scope or counted twice by a single party in a single inventory. Double counting has its roots in attributional accounting but little history as applied to consequential accounting. How exactly it should be applied in a multi-statement reporting framework that includes attributional statements and impact reports is a question beyond the scope of this paper.

²⁴ The Advanced and Indirect Mitigation Platform. 2026. Section 5.4, AIM Platform Standard and Guidance V1.0. [accessed 2026 Sep 15]. https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform_Standard-and-Guidance_V1.0.pdf

²⁵ Task Force on Corporate Action Transparency. 2026. Table 2, Mitigation Action Accounting and Reporting Guidance, V1.1. [accessed 2026 Sep 15]. <https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>

²⁶ See the “[Baseline Scenario and Additionality Criteria](#)” section for a discussion of these tests. Applying a financial additionality test in the upstream natural gas context requires a sector-specific analysis. If too broadly applied, the “common practice” test could leave significant emissions unaddressed. Application of these tests can be very fact-specific.

- *Financial test*: An analysis of the financial attractiveness of undertaking a given intervention with and without the financial payments or financial incentive provided by a buyer; if the financial return of undertaking a given intervention fails to meet a given threshold of financial attractiveness without the buyer's payments or incentives, the buyer's transaction passes the financial test.
- *Common practice test*: An analysis that considers how widely deployed a given intervention to reduce methane emissions is across the natural gas supply chain; if a buyer's transaction enables interventions that are not typically or widely utilized in the industry, the buyer's transaction passes the common practice test.
- *Barrier test*: An analysis of whether a relatively significant technological, institutional, or market barrier prevents a natural gas producer from undertaking interventions to reduce emissions; a buyer's action can pass a barrier test by demonstrating how it overcomes a given barrier.

Step 6: Obtain Third-Party Verification of Measured Emissions

TCAT and AIM require the verification of emissions outcomes from buyer actions in impact statement reporting.^{27, 28}

In addition, certain existing differentiated natural gas certifications have adopted independent, third-party verification of methane intensity data. Given that third-party verification is emerging best practice, a buyer shall:

- Ensure a project has third-party verification of methane emissions, pre-intervention and post-intervention. If purchasing differentiated natural gas and/or differentiated gas certificates, a buyer may also wish to have methane intensity verified by a third-party.
- Ensure the entity providing verification services is independent from the project and its interested parties and has demonstrated experience in verifying emissions from oil and gas projects.

²⁷ The Advanced and Indirect Mitigation Platform. 2026. Section 5.2, AIM Platform Standard and Guidance V1.0. [accessed 2026 Sep 15].

https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform_Standard-and-Guidance_V1.0.pdf

²⁸ Task Force on Corporate Action Transparency. 2026. Table 2, Mitigation Action Accounting and Reporting Guidance, V1.1. [accessed 2026 Sep 15].

<https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>

Step 7: Report Avoided and/or Reduced Emissions and Disclose Additional Information About Interventions

A buyer shall use the following equations to estimate avoided and reduced emissions that occur due to actions per reporting year:

Avoided/Reduced Emissions_{RY} (tCO₂e) = Emissions_{SOURCE-BY} - Emissions_{SOURCE-RY}

In addition to reporting a quantity of avoided or reduced emissions, TCAT and AIM require that certain information about an action be disclosed and generally encourage disclosing additional information in the interest of transparency.^{29, 30} A buyer shall:

- Disclose in which segments of the natural gas supply chain emissions its actions occurred and the specific sources of emissions there were addressed by those actions.
- Disclose other information, such as:
 - The owner(s) of the infrastructure/asset(s) where interventions took place.
 - Methods of emissions mitigation, such as:
 - New and/or strengthened leak detection and repair
 - Enhanced containment and/or reduced flaring during well completion
 - Upgrades or improvements to existing equipment
 - Replacement of equipment with lower-emissions equipment (e.g., electric compressors for gas-powered compressors, non-pneumatic valves)

²⁹ The Advanced and Indirect Mitigation Platform. 2026. Section 5.3.1, AIM Platform Standard and Guidance V1.0. [accessed 2026 Sep 15]. https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform_Standard-and-Guidance_V1.0.pdf

³⁰ Task Force on Corporate Action Transparency. 2026. Table 16, Mitigation Action Accounting and Reporting Guidance, V1.1. [accessed 2026 Sep 15]. <https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>

- Expected lifespan of interventions (i.e., new equipment is expected to operate for a given number of years, after which a buyer will cease reporting avoided or reduced emissions from a given intervention)

The methodology outlined above can be summarized as a step-by-step decision-making process for evaluating whether an action qualifies for impact reporting (**figure 2**).

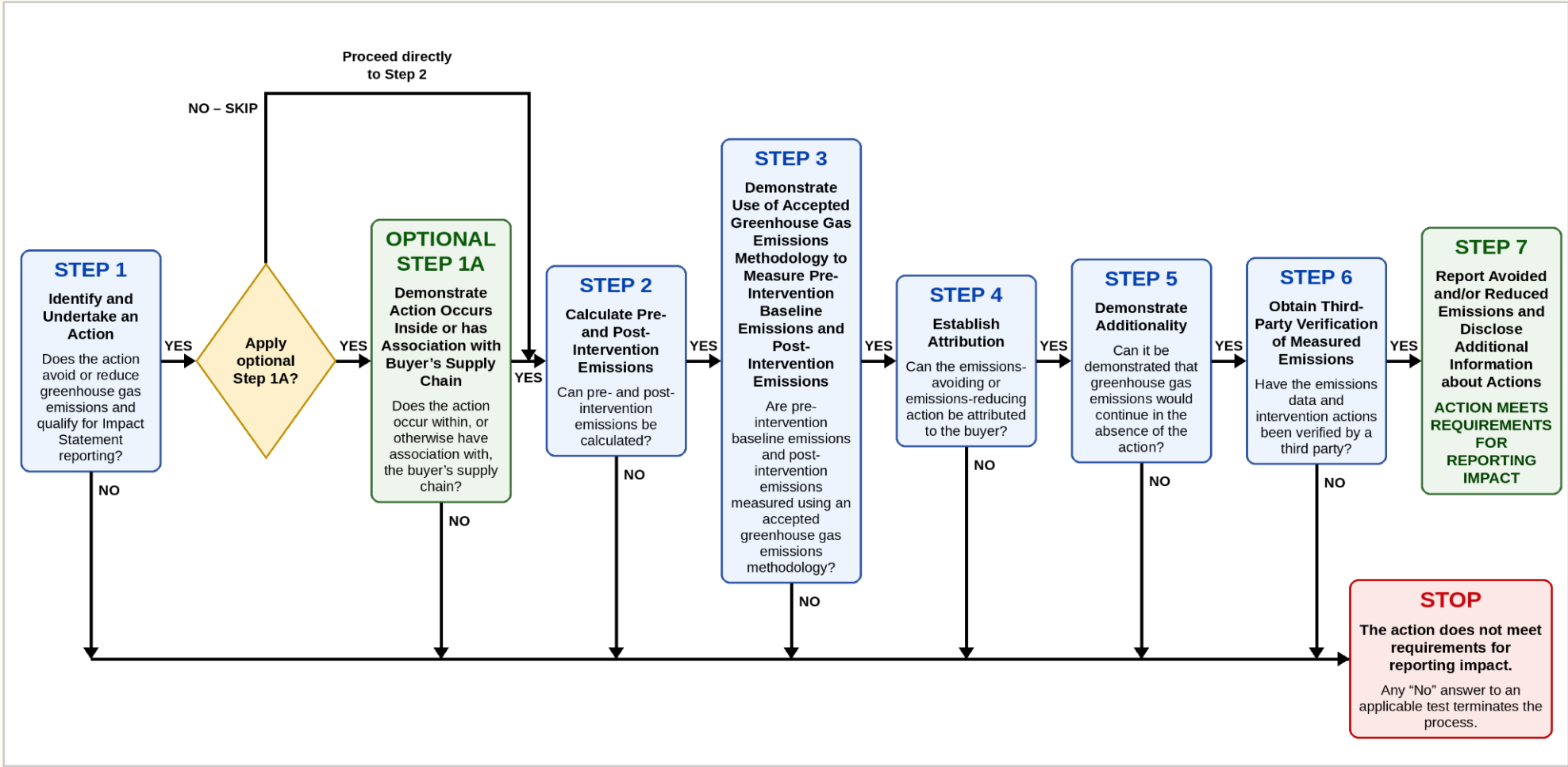


Figure 2. Decision tree for applying the buyer impact accounting methodology described in Steps 1–7 of this document. Source: Relae and Green Strategies.

Applying Methodology to A Buyer Transaction

This section applies the methodology outlined above to an example. In this example, a buyer engages a supplier to deploy emissions reduction interventions. The estimates of emissions reduction are purely hypothetical.

EXAMPLE CASE

Buyer A issues a request for proposal (RFP) for lower-emissions natural gas and its associated attributes. Buyer A specifies that it will only sign an offtake agreement with a supplier that undertakes interventions to reduce emissions. Gas Supplier B successfully wins the RFP and, as part of an agreement with Buyer A, Supplier B undertakes several interventions to reduce emissions:

- Eliminate fugitive methane emission leaks from wellhead equipment
- Replace natural gas-driven pneumatic devices responsible for methane emissions with electric drive equivalent
- Deploy Light Detection and Ranging (LiDAR) detection equipment that enables higher-resolution detection of methane emission leakage

Step 1: Identify and Undertake an Action

Buyer A confirms that the interventions undertaken by Supplier B reduce and/or avoid sources of methane emissions. Consistent with this guidance, Buyer A discloses that the interventions occurred in the production segment of the Supplier B’s operations.

Step 1A (Optional): Demonstrate Action Occurs Inside Buyer’s Supply Chain, or Has Association With It

Buyer A elects not to establish an association to its own supply chain.³¹

³¹ If Buyer A’s action is outside its supply chain and cannot demonstrate one of the eligible associations, it cannot make an inventory adjustment.

Step 2: Calculate Pre- and Post- Intervention Emissions

Buyer A engages Supplier B to develop a baseline reference scenario that estimates what emissions levels would be over time in the absence of each intervention. Buyer A describes how Supplier B has historically not controlled methane emissions from production equipment and has not previously used advanced methane leak detection equipment. Supplier B had no prior plans to replace pneumatic devices and would have continued to operate the equipment for at least 10 years into the future. Without the interventions undertaken at the request of Buyer A, Supplier B's emissions would have continued unabated into the foreseeable future.

Supplier B estimates that fugitive leaks from wellhead equipment produced methane emissions equal to 5,000 tonnes CO₂e per year, while natural gas-driven pneumatic devices produced methane emissions equal to 5,000 tonnes CO₂e per year. After Supplier B eliminates fugitive leaks, deploys LiDAR to identify any future leaks that will be mitigated quickly, and replaces its natural gas-driven pneumatic devices with electric drive equipment, Supplier B estimates these sources will produce 1,000 tonnes CO₂e of methane emissions per year. The switch from a gas-driven pneumatic device to an electric-drive option also produced a modest decrease in net carbon emissions, which Supplier B estimates to be 100 tonnes CO₂e per year.

Step 3: Demonstrate Use of Accepted Methane Emissions Measurement Methodology to Quantify Baseline and Post-Intervention Emissions

- Per contract terms with Buyer A, Supplier B measures pre-intervention emissions using top-down and bottom-up methods and uses GTI Energy's Veritas Upstream Emissions Protocol.³² Supplier B measures pre-intervention methane emissions as 10,000 tonnes CO₂e per year from its production site equipment.
- Supplier B uses the same Veritas Protocol to confirm post-intervention emissions.
- Supplier B identifies sources of uncertainty and demonstrates how conservativeness was employed in providing methane emissions measurement data to Buyer A. Supplier B references the Veritas Protocol's assumptions for uncertainty and conservativeness in estimating methane emissions levels.

³² See "[General Criteria for Measuring Pre- and Post-Intervention Methane Emissions](#)" section for more information.

Step 4: Establish Attribution

- Buyer A points to its contract with Supplier B to purchase differentiated gas and its attributes. In this case, Supplier B attests that the demand signal from Buyer A, or from a group of buyers including Buyer A, was a significant factor in its decision to make the intervention.³³
- Buyer A and Supplier B specify under contract that Buyer A has a clear and exclusive right to the emissions benefits claimed. Via registry or pursuant to contract, Buyer A can attest to no double counting of those avoided emissions.

Step 5: Demonstrate Additionality

- Buyer A applies a regulatory additionality test and confirms that Supplier B's interventions were not required by any applicable government law or mandate.
- Buyer A confirms with Supplier B that interventions were not already being deployed by Supplier B nor had interventions been planned by Supplier B as part of future equipment replacement or upgrades.
- Buyer A applies a barrier test and determines that Supplier B faced a split incentive issue in not previously pursuing interventions to limit methane emissions

Step 6: Obtain Third-Party Verification of Measured Emissions

- Buyer A and/or Supplier B employ a third-party verifier to confirm pre-intervention and post-intervention emissions levels.
- Buyer A is satisfied that the selected verifier is independent of Supplier B and has demonstrated experience in verifying emissions from oil and gas projects.

³³ Again, GHGP has not issued its guidance and neither TCAT nor AIM directly address differentiated gas. This formulation of attribution is notional but reasonable.

Step 7: Report Avoided and/or Reduced Emissions and Disclose Additional Information About Interventions

- Buyer A reports 9,100 tonnes of avoided CO₂e per reporting year.
- Buyer A discloses that its contract with Supplier B enabled interventions to reduce methane emissions in the production segment of the gas value chain.
- Buyer A also discloses the following information that the interventions took place at Supplier B's production sites in the Appalachian Basin. Buyer A discloses that the new pneumatic devices have an expected service lifespan of 15 years and that Supplier B will monitor the permanence of leak repairs through LiDAR detection.

Key Concepts for Natural Gas Supply Chain Transactions, Interventions, and Impact Accounting

An action that yields an attributional inventory reduction for a buyer does not necessarily also provide the basis for calculating avoided or reduced emissions using impact accounting, and vice versa. A buyer could secure a differentiated emissions factor to apply to its upstream scope 3 emissions related to natural gas use without also creating the basis for doing an impact accounting calculation, such as by securing a lower emissions rate via contractual agreements or by purchasing a low-emissions gas certificate from within its supply chain that conveys a lower emissions rate. Inventory accounting rules do not *require* that such a transaction also meet the criteria for impact accounting, such as a verified and quantitative measurement of changes in emissions to the atmosphere, additionality, or attribution of an emissions change to the actions of the buyer. Similarly, an action that meets the criteria for impact accounting and secures the buyer's right to claim all of the quantitative emissions benefits from that action would not necessarily also provide a differentiated emissions factor for that natural gas that can be used to reduce the buyer's scope 3 inventory.

Impact statement reporting does not necessarily impose a geographic boundary on where a buyer can pursue actions to reduce methane emissions, nor does it otherwise require a buyer to demonstrate that interventions occurred within its specific natural gas supply chain. The essential purpose of attributional (or inventory)

accounting is to establish the emissions attributable to a company’s business activities, and that is done by multiplying quantities (e.g., electricity consumed) by emissions rates. In the upstream (scope 3) natural gas context, that is done by applying an emissions rate to an amount of gas procured or associated with its actual energy consumption, with that emissions rate representing the emissions intensity of the natural gas supply chain that is applicable to the buyer’s purchases and energy use. Consequential (or impact) accounting asks a different question: What were the quantitative changes in real-world emissions that are attributable to a company’s actions? Two identical company actions (one inside a company’s value chain and one outside a company’s value chain) that result in the same avoided or reduced emissions (measured and verified by impact accounting methods) provide identical benefits to the climate.^{34, 35} AIM’s guidance is specific to interventions that address sources of emissions found within the boundaries of a buyer’s GHG inventory or interventions that otherwise demonstrate a level of association with the inventory. TCAT’s guidance covers interventions that fall inside and outside of a buyer’s GHG inventory. Early evidence suggests that AMI is likely to be more aligned with the TCAT approach.³⁶ Certainly a buyer *could* choose to focus its actions within its supply chain.

Differentiated natural gas certificates typically reflect methane, not carbon dioxide, emissions intensity; options to reduce carbon emissions across the natural gas supply chain are feasible. Existing differentiated natural gas certificates do not convey information about the carbon intensity of upstream natural gas production. While methane emissions have been a priority given their higher global warming potential, there are numerous ways that oil and gas producers can reduce emissions. This report focuses on methane emissions, but it should be

³⁴ The company making the intervention outside of its supply chain, however, could not make any claim about a change to the emissions from its own natural gas procurement or energy use.

³⁵ The policy argument for not creating a geographic limitation on actions to create impact can be seen in an upstream natural gas hypothetical: if a buyer’s natural gas supply chain is wholly in a low-emissions basin (e.g., Appalachia) there may be few physical or economically rational additional measures available to further reduce emissions. Instead of doing nothing, however, that buyer could choose to take an action in a high-emissions basin outside of their supply chain where there are more significant emissions reduction opportunities. Again, such an action would not change in inventory but could produce significant climate benefits that could be disclosed in an impact statement.

³⁶ In its AMI white paper, the GHGP explains that the “GHG impact statement provides a dedicated, structured statement for reporting on the impacts of actions taken by the reporting company inside and outside its value chain (e.g., emissions avoided, reduced, or removed). It applies to actions such as projects, interventions, investments, production/sale of products, and purchase/consumption of products.”

possible to also quantify carbon emissions reductions from interventions. In some cases, it may be possible for an intervention to simultaneously reduce methane and carbon emissions; for example, by replacing equipment like a gas-powered compressor engine with an electric alternative. Other interventions may focus exclusively on carbon; for example, deploying carbon capture equipment at a natural gas processing facility.

Analysis of Market and Emerging Frameworks Supporting This Impact Accounting and Reporting Methodology

Actions that Qualify for Reporting in Impact Statements

AIM, AMI, and TCAT

The AIM Standard, the GHGP's AMI white paper, and TCAT's MAARG methodology³⁷ broadly agree that actions that avoid or reduce emissions or remove GHGs from the atmosphere are eligible for inclusion in the impact statement. In addition to involving emission avoidance, reduction, or removal, AIM and TCAT have each outlined specific criteria that a reporting company must meet to report via impact statement.

- The AIM Standard provides “intervention quality requirements” for actions that a company is eligible to report via impact statement. These requirements direct a buyer to ensure that the intervention conveys an accurate emissions outcome, mitigates negative social and environmental risks, demonstrates regulatory surplus, mitigates double counting risks, and delivers timely information.

³⁷ This paper will refer to impact statement criteria as outlined in the AIM Standard Version 1.0 (April 2026) (https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform_Standard-and-Guidance_V1.0.pdf) and TCAT's MAARG methodology Version 1.1, June 2026) (<https://static1.squarespace.com/static/68a20cd6b956195465ffa4c9/t/6a28b6a74927e61b34d49f73/1781053095834/2026+MAARG+v1.1+FINAL.pdf>); when referencing GHGP AMI's approach to impact statement reporting, this paper refers to AMI's December 2025 white paper (<https://ghgprotocol.org/sites/default/files/2025-12/AMI-Phase1-WhitePaperDraft-ISB%20Review-v2.1.pdf>)

AIM provides a decision tree to help companies determine if an action should be reported in the contractual inventory or an impact statement.³⁸ AIM’s decision tree asks a company to first consider the metric of an intervention’s emissions outcome: either the change in emissions intensity or tonnes avoided or reduced. AIM directs companies to report interventions measured in tonnes via an impact statement and gives further steps outlining how a buyer can match tonnes avoided or reduced by interventions against tonnes of emissions in the buyer’s scope 3 inventory.

- TCAT states only qualifying “mitigation actions” are eligible to be reported through an impact statement and that a given action must meet criteria for being “measurable, verifiable, additional, and attributable.” If an action does not meet these criteria but otherwise falls within the boundaries of a company’s inventory, the action can qualify as an “inventory adjustment” and enable a company to reduce its physical inventory or contractual inventory.
- While not final guidance, the GHGP’s AMI white paper states that a company reporting through an impact statement will likely have to assess and/or incorporate “additionality, credible baselines, permanence, mitigate leakage, unique issuance and claiming, monitoring, independent validation and verification.”

Applying Impact Statement Reporting Criteria To Upstream Natural Gas Interventions

Natural gas producers can pursue a range of interventions to avoid or reduce GHG emissions along different segments of the entire natural gas supply chain that would be eligible for inclusion in an impact statement.³⁹ Under certain methane-specific interventions, a producer could adopt strategies to increase the visibility of potential methane leaks and reduce risks of leaks. Natural gas producers typically maintain protocols for Leak Detection and Repair (LDAR) that specify the frequency and protocols for finding and quickly mitigating leaks. A natural gas

³⁸ If measured via intensity data and matched to a good or service in a company’s value chain, a company may use the “product matching” methodology and adjust its contractual inventory based on differences in emissions intensity resulting from an intervention. If the impact of an intervention is tracked in tonnes, AIM directs the reporting company to use an “emissions matching” method and report avoided or reduced tonnes via an impact statement. An action that leads to emissions reduced, avoided, or removed compared to a project or intervention baseline is reported via the impact statement and in units of reduced tonnes of CO₂e.

³⁹ See [Appendix](#).

producer could potentially increase the stringency of its existing LDAR program, or it could also adopt technologies that increase the granularity of methane detection or frequency of methane detection. Other interventions involve upgrading or replacing equipment that may be responsible for methane emissions when operated or when taken offline (resulting in methane being vented). A study by ICF indicates that methane slip, which is the release of methane during the combustion of fuel by compressor engines and turbines, is the largest overall source of methane emissions from a sample of US producers.⁴⁰ ICF also finds that blowdowns, which are the release of methane during periods of maintenance, testing, and safety for equipment such as compressors, pipelines, and scrubbers, are also a major source of methane emissions. ICF’s study provides cost estimates of potential interventions to reduce methane emissions through LDAR and equipment upgrades or replacement.

Establishing Association of Action to a Buyer’s Supply Chain

AIM, AMI, and TCAT

Existing attributional accounting rules for scope 3 inventories often complicate a buyer’s ability to indicate inventory reductions from interventions that they pursue in their supply chain. Current rules require that buyers have adequate visibility into their supply chains to identify specific suppliers. For complex supply chains such as the upstream natural gas supply chain, it is often difficult for buyers to establish full traceability.

Impact statement reporting does not necessarily require buyers to demonstrate the traceability of their interventions to specific suppliers. For example, TCAT has provisions for reporting the impact of interventions that fall outside the boundaries of a GHG inventory and the GHGP, through its AMI process, has suggested that it will develop provisions to cover interventions outside of GHG inventory boundaries as well. In contrast, AIM’s guidance focuses on enabling buyer interventions within the boundaries of their GHG inventory. In recognition of buyer challenges with visibility and traceability, AIM’s guidance offers buyers the ability to demonstrate that an action has some level of association with a value chain (i.e., actions outside the boundaries of an inventory or that demonstrate no level of association are not covered by the AIM Standard).

⁴⁰ ICF International. 2026. Marginal Abatement Cost for Methane Emissions Reductions among ONE Future Members in the US Natural Gas Supply Chain. [accessed 2026 Sep 14]. <https://onefuture.us/wp-content/uploads/2026/04/ONE-Future-Report-Release-Apr-14-2026.pdf>

- AIM offers several tests through which a buyer can demonstrate that interventions have association with its value chain.⁴¹ For example, a buyer can pursue interventions with known suppliers and customers, or a buyer can pursue an intervention in the same geographic region where its sourcing occurs even if the company does not know its specific supplier.
- The GHGP’s memo accompanying its AMI Request for Information indicates that it would incorporate actions that fall inside or outside a company’s inventory boundary.⁴²
- TCAT’s guidance is inclusive of interventions that occur both inside and outside the boundaries of a company’s inventory. TCAT provides separate impact statement options (e.g., the Inventory Impact Mitigation Statement, the Sector Impact Mitigation Statement, and the Global Impact Mitigation Statement) that indicate the degree to which a company’s intervention relates to its GHG inventory boundaries.⁴³

Applying Impact Statement Reporting Criteria To Upstream Natural Gas Actions

Due the complexity and number of intermediaries in the upstream natural gas supply chain, a downstream gas user may not be able to easily demonstrate where a given volume of gas originates or have the ability to demonstrate that

⁴¹ AIM has two association tests: Basic Association and Further Association. For Basic Association, an intervention addresses an emissions source in the company’s physical value chain (AIM further distinguishes between “components” and “subcomponents” within a physical inventory: a component is a good or service that a company purchases directly, while a subcomponent is an intermediate good or service that are inputs to components). Further Association can be demonstrated using one of three ways: (1) the Supplier/Customer method, in which a company signs a contract with a supplier or customer to host an intervention; (2) the Sourcing or Use Region Method, in which a company demonstrates that an intervention is occurring in the same sourcing or use region as a component or subcomponent; or (3) the Critical Sector Method, in which a company demonstrates that an intervention occurred in an economic sector deemed critical for decarbonization.

⁴² Greenhouse Gas Protocol. 2026. Actions and Market Instruments: Phase 1 Progress Update White Paper. [accessed 2026 Sep 14.] <https://ghgprotocol.org/sites/default/files/2026-03/AMI-Phase1-WhitePaper-RFI.pdf>

⁴³ TCAT directs companies to use the Inventory Impact Mitigation Statement when using consequential accounting to quantify the impact of an intervention that falls within the boundaries of its GHG inventory. If a company cannot demonstrate that an intervention falls within these boundaries, it can: (1) report via the Sector Impact Mitigation Statement if an intervention addresses the type of emissions sources that are found within its inventory boundaries or (2) report via the Global Impact Mitigation Statement if an intervention cannot otherwise be reported via Inventory or Sector statement.

a given action occurs within the boundaries of its GHG inventory.⁴⁴ To help buyers with limited visibility into the natural gas supply chain, RMI/WSP have developed guidance for attributional accounting. Buyers may use this guidance to demonstrate that their transactions and interventions have either a physical association to their specific natural gas supply chain (potentially satisfying current scope 3 rules) or an alternative association to their value chains. Buyers who choose to limit their actions to their value chains could follow RMI/WSP’s approach to indicate that their actions reported via an impact statement established association with their value chain.

Options under RMI/WSP’s approach include:

- *Physical association:* A buyer demonstrates the physical traceability of differentiated gas supply from production to consumption either through:
 - *Segregated supply:* Differentiated supply delivered through a dedicated, non-commingled system with end-to-end physical traceability.
 - *Physically traceable mass balance supply:* Differentiated supply delivered through a commingled system with documented chain-of-custody and physically traceable attribute allocation.
- *Association through commingled bundled supply:* Differentiated supply and emissions attributes transferred together through bundled contractual arrangements within a connected supply system. In this instance, RMI/WSP explain that a buyer cannot demonstrate physical traceability of a natural gas supply in a commingled system but purchases bundled supply and attributes from a known supplier.
- *Basin-oriented association:* A buyer receives emissions attributes that are physically separated from supply but otherwise demonstrates that natural gas production and its gas consumption occur within the same basin-oriented region. RMI/WSP provide criteria to establish the basin-oriented link between supply and consumption.

⁴⁴ A downstream gas user likely buys gas from a utility or retail supplier, which may purchase gas from one or multiple producers or intermediaries (which also may buy from one or producers) in the upstream supply chain.

- *Regional value chain association:* There is neither *physical association* nor a *basin-oriented association*, but a buyer can still demonstrate a broader regional geographic association between emissions attributes and its value chain using the AIM Platform’s Criteria for Further Association.

Attribution to Buyer

AIM, AMI, and TCAT

Impact statement reporting requires documentation of actions and the role the reporting entity played in enabling interventions.⁴⁵ AIM and TCAT highly recommend the use of instruments that are issued and tracked through a registry to ensure that only one entity can make a claim of impact.

- AIM indicates that a buyer shall use a “system of record” that “defines and transparently discloses key data and assumptions, reflects intervention assurance, ensures unique records, and utilizes a chain of custody model when intervention outcomes are quantified per unit of product.” Note that this intervention outcome per unit of product is mutually exclusive from the carbon intensity of that product. AIM provides a list of all information that a system of record shall provide.⁴⁶
- TCAT indicates that a buyer should: (1) demonstrate its role in initiating, funding, enabling, or otherwise incentivizing action; (2) have clear legal rights and/or document ownership to report the emissions outcome; and (3) ensure clear documentation and no double counting of its action, potentially with a registry.⁴⁷

⁴⁵ Guidance for attributing interventions to buyers is still evolving and has not necessarily addressed a range of scenarios; for example, a supplier that undertakes interventions in anticipation of future buyer demand, or a buyer or group of buyers that signal their demand preferences to the marketplace to drive changes in supplier behavior.

⁴⁶ The Advanced and Indirect Mitigation Platform. 2026. Section 5.3.1, AIM Platform Standard and Guidance V1.0. [accessed 2026 Sep 15]. https://aimplatform.org/wp-content/uploads/2026/04/AIM-Platform_Standard-and-Guidance_V1.0.pdf

⁴⁷ In the low emissions gas context, it is not clear exactly what “initiating, funding, enabling, or otherwise incentivizing action” means. For example, it is likely unnecessary for the buyer to demonstrate that its demand signal alone led to an intervention (e.g. several buyers could issue demand signals).

Applying Attribution Tests To Upstream Natural Gas Production and Differentiated Gas

Buyers can meet criteria for attribution by executing one or multiple transaction options:

- Buyer provides direct capital or concessional finance for the intervention (e.g., the buyer funds the deployment of an intervention in the natural gas supply chain to reduce methane emissions).
- Buyer executes a contractual off-take agreement with a gas supplier for differentiated gas and/or differentiated gas certificates, and the supplier undertakes interventions to reduce methane emissions as part of (or in connection to) that agreement.

As highlighted above, there is no widely-used type of instrument that could readily convey avoided or reduced emissions arising from interventions in the natural gas supply chain; existing differentiated gas certificates only convey lower-emission methane attributes.

Buyers shall coordinate with the upstream actor to secure the exclusive and unique rights to claim part or all of the avoided or reduced emissions by contract. These avoided or reduced emissions shall not be reported in the buyer's physical GHG inventory, including any existing scopes in the GHG Protocol Corporate Standard. Again, the buyer need not operate within the natural gas supply chain to procure the claim on avoided or reduced emissions. Avoided or reduced emissions are not quantified at the product level, so they need not attach to the differentiated gas product.

Baseline Scenario and Additionality Criteria

AIM, AMI, and TCAT

AIM, AMI, and TCAT all emphasize the need to define a credible baseline scenario that describes the state of emissions prior to an intervention and how likely changes in emissions would be in the absence of the intervention. As the GHGP states, “the selection of a baseline scenario always involves uncertainty because it represents a hypothetical scenario for what would have happened without the project. The project reduction is calculated as the

difference between the baseline and project emissions.” The baseline scenario helps a buyer in demonstrating that its actions are additional and results in emissions changes that may not have otherwise occurred.⁴⁸

AIM, AMI, and TCAT differ in whether and how they require additionality tests (**table 1**). To help establish a consistent and replicable process for calculating a baseline, AIM and TCAT require the application of additionality tests. AIM and TCAT require a regulatory test, while TCAT also requires a timing test and the use of one additional test: (1) investment/financial test, (2) barrier analysis, or (3) common practice test. The GHGP’s work on consequential accounting through AMI, and its public consultation for consequential accounting for the electricity sector, suggest that it will also adopt requirements for additionality.

Table 1. Comparison of additionality tests required or under consideration across the AIM Platform, GHGP AMI workstream, and TCAT

	AIM	GHGP AMI	TCAT
Regulatory test	Yes	To be determined. The GHGP’s recent public consultations suggest that it is likely to adopt at least one test to demonstrate additionality for impact statement reporting.	Yes
Timing test	No		Yes
Investment/financial test	No		Yes, the action should pass at least one of these three tests.
Barrier test	No		
Common practice test	No		

Source: Green Strategies analysis.

⁴⁸ The GHGP’s Corporate Standard defines additionality as “whether the project has resulted in emission reductions or removals in addition to what would have happened in the absence of the project.”

Additionality tests cover a range of kinds of additionality, as defined below:

- *Regulatory test:* Any action should be in addition to what was already required by law.
- *Timing test:* As described in its public consultation process for consequential accounting in the power sector, the GHGP states: “This test focuses on whether the incentive (such as credits, [power purchase agreements], or certificates) influenced the decision to build or operate the project. If the project was already planned or under construction before the incentive was available, then it fails this test. The goal is to demonstrate that the mechanism played a decisive role in project initiation.” TCAT’s version of the timing test asks “Was the intent to generate mitigation outcomes documented by the activity issuer before the activity started?” TCAT also asks that evidence be provided documenting that an entity factored in a buyer’s action before undertaking an intervention or undertook it as a direct result of the buyer’s action (i.e., the entity was not already planning to do the interventions as part of its normal course of business).
- *Investment analysis/Financial analysis test:* As defined by the GHGP, “This test compares the project’s expected return (e.g., internal rate of return (IRR), net present value (NPV), payback period) against a threshold level of financial attractiveness. If the project would not have been pursued without the additional revenue stream, it passes the test. In practice, this often involves proving that the incentive shifted the project from financially unattractive to viable.” TCAT indicates that investment analysis answers the question: “Is the mitigation outcome the result of an activity that would not be financially attractive without revenues or benefits linked to mitigation outcomes?” It further says that a suitable financial indicator “shows that the activity does not meet the required financial benchmark without mitigation-related revenues or benefits.” The guidance we provide here does not require an investment/financial test to show that an intervention would be unprofitable without the incentive; such a threshold could eliminate many methane abatement projects that are profitable but not as financially attractive as other options for capital deployment.
- *Barrier analysis/test:* As defined by the GHGP, “This test requires demonstration that significant barriers, such as technological, institutional, or market, would have prevented the project from moving forward. Examples include lack of financing, limited access to technology, or unfavorable policy environments. The additionality claim rests on showing that the incentive directly helped overcome these barriers.” TCAT’s version of barrier analysis also includes the option to assess financial and institutional barriers. TCAT further

specifies that institutional barriers include scenarios in which “the party making the capital investment does not directly capture the cost savings or efficiency benefits (split incentive)” and that financial barriers include scenarios in which “commercial financing for project type was not available due to perceived technology or market risks.”

- *Common practice test:* As defined by the GHGP, “This test benchmarks the project against others in the same region and sector. If similar projects are already widely implemented without incentives, then the project is considered ‘business as usual’ and not additional. The idea is to avoid crediting actions that have become mainstream.”⁴⁹

Applying Baseline And Additionality Criteria To Upstream Natural Gas Production and Differentiated Gas

The baseline reference scenario for actions in the natural gas supply chain is based on demonstrating which sources of emissions, at specific assets or segments of the supply chain, would have continued in the absence of interventions to limit or entirely eliminate them.⁵⁰ For example, if certain emissions are likely to be addressed by routine maintenance or replacement of aging equipment, then perhaps they should not be included in the baseline

⁴⁹ Depending on how this test is applied, its climate value could be dubious. It could mean not mitigating actual methane emissions because those emissions “should already have been addressed” when the fact is they have not been addressed and continue to harm the climate. This test is most likely to be an issue in the case of smaller and less capitalized producers who are less likely to implement emissions mitigation efforts on their own. While bad actors should not be “rewarded” for their under-performance, the emissions at stake could be significant. This will require context-specific considerations for buyers.

⁵⁰ The GHGP’s Project Protocol provides guidance on establishing a baseline scenario based on the “continuation of current activities,” which could include assessing the end of a given piece of equipment’s useful lifetime and/or assessing market or regulatory changes that could necessitate a practice change.

reference scenario. In practice, this might be very difficult to demonstrate.^{51, 52} Applying individual additionality tests can help in defining the baseline scenario.

In applying a regulatory test, a buyer should carefully consider recent developments at the US federal and state level, and potentially at the international level given the pending finalization of European Union (EU) methane rules. At the US federal level, there is no federal policy that requires reduction in methane emissions from domestic oil and gas production.⁵³ At the state level, certain states (e.g., California, Colorado, New Mexico)⁵⁴ have adopted requirements for US gas producers to limit methane emissions, while other states have adopted restrictions on the venting or flaring of methane or requirements to phase out certain equipment that could emit methane. In those locations, a given intervention may not pass a regulatory test or a common practice test. At the international level, the EU is in the process of finalizing requirements for limiting methane emissions from the production of gas that is imported to the EU. These regulations could influence whether US producers take new steps to limit methane for gas that could be exported. However, only about 25% of US gas is currently exported, so approximately 75% of total production would not be affected. It is not clear whether just the existence of a standard for exported gas should be considered the regulatory standard for the entire industry, and the stringency and scope of the EU's approach is not

⁵¹ An existing methodology for generating carbon credits from implementing more rigorous LDAR (AM0023, initially developed under the Clean Development Mechanism) suggests excluding certain types of methane emissions from a reference scenario, including those likely to be identified and mitigated through conventional LDAR, those likely to be mitigated through simple remediation steps like tightening or re-greasing, and those that result from a failure to perform scheduled maintenance or equipment replacement.

⁵² United Nations Framework Convention on Climate Change. 2011. Approved baseline and monitoring methodology AM0023. [accessed 2026 Sep 156]. <https://cdm.unfccc.int/UserManagement/FileStorage/LV8NU1GYWTK06COJPDIXQ35FR2MA47>

⁵³ The Trump Administration has suspended a Waste Emissions Charge established by the Inflation Reduction Act of 2022 until 2034.

⁵⁴ California, Colorado, and New Mexico have set targets for oil and gas producers in their states to reduce methane emissions. In California, the state has set a target across industries to reduce methane emissions by 40% below 2013 levels by 2030. In Colorado, producers must reduce emissions by 60% of 2005 levels by 2030. In New Mexico, producers must capture 98% of natural gas across upstream and midstream segments of the value chain.

yet certain.⁵⁵ It might be fair to say that any intervention that achieves reductions in methane intensity, which fall below the EU's requirement for a given supply chain segment would qualify.

Given that TCAT provides options (and the GHGP has not decided what additionality tests it may require), the guidance provided here requires interventions to pass a regulatory additionality test and one additional test but gives a buyer flexibility in deciding which additional test (or tests) it will apply. As highlighted above, numerous technologies and strategies to reduce or avoid methane emissions exist, and the cost of various interventions varies. Many US producers have not yet adopted emission reducing technologies and strategies without regulation in place. This is because demand for differentiated gas has yet to create a price premium that would cover the costs of undertaking or investing in new methane emission strategies or equipment. This suggests that many actions could pass a common practice test.

A strict financial additionality test could be challenging to apply in the differentiated gas context. Many options to reduce methane emissions may be relatively low-cost. Mitigating methane leaks reduces losses in production volumes and results in higher revenue for a producer. However, there are other economically rational reasons that an asset owner may *not* invest in mitigation, such as higher returns on other uses of capital, insufficient payback for investments in a mature production site, split incentives among players across the supply chain, under-capitalization

⁵⁵ For example, the EU's rules could mandate that imports must meet a given methane emissions intensity threshold at a given segment of a supply chain, rather than the entire supply chain. Under one scheme, the EU could permit importers to source unbundled lower-emission differentiated gas certificates from any location in the US. Given the relative supply of lower-emission attributes, this may not create a strong incentive for US producers to take new steps to limit methane.

of smaller producers, and marginal economics for small producing wells. These factors could make an investment in mitigation more costly than other uses of capital.^{56, 57}

General Criteria for Measuring Pre- and Post-Intervention Methane Emissions

AIM, AMI, and TCAT

AIM and TCAT outline expectations for measuring an emissions baseline and changes in emissions from that baseline.⁵⁸ Both highly encourage the use of third-party, publicly accepted methodologies.

- AIM encourages use of a methodology that is “broadly accepted, up-to-date, third-party reviewed or developed with a multi-stakeholder process, and publicly available.”⁵⁹
- Under its requirement that mitigation actions be “measurable,” TCAT asks whether it is possible to quantify emissions from a given activity; whether a publicly available methodology was used and whether the methodology incorporates “conservative and transparent”⁶⁰ assumptions, inputs, and emission factors; and whether a causal link can be drawn between interventions and emissions reductions.

Consistent with AIM and TCAT impact statement reporting of avoided or reduced emissions, a project-based accounting baseline is appropriate for interventions where natural gas supply-chain actors undertake actions to reduce or avoid methane emissions. A project-based accounting baseline would reflect the level of emissions prior to

⁵⁶ In a 2025 analysis, Aldy et al. found “significant potential for low-cost methane abatement in the [oil and gas] sector in the United States and elsewhere, although claims of widespread negative abatement cost opportunities should be taken with a grain of salt. We also find that the potential for low-cost abatement is not without limit. Whereas it appears that cutting methane emissions in half would be relatively inexpensive, a sharp uptick in marginal abatement cost may occur when reductions exceed 60 to 80 percent below baseline levels. This threshold may change over time with technological advances in remote sensing, which can reduce abatement costs at various levels of ambition.”

⁵⁷ Aldy JE, Reinhardt F, Stavins R. 2025. Methane Abatement Costs in the Oil and Gas Industry: Survey and Synthesis | The Belfer Center for Science and International Affairs; [accessed 2026 Sept 15]. <https://www.belfercenter.org/research-analysis/methane-abatement-costs-oil-and-gas-industry-survey-and-synthesis>

⁵⁸ Again, we do not yet know what approach the GHGP will take.

⁵⁹ The AIM Standard provides a list of methodologies for certain technologies and/or commodities but not for differentiated gas.

⁶⁰ TCAT’s Mitigation Action Test Criteria explains that a company should define and transparently disclose “key data and assumptions.”

the intervention. Neither AIM nor TCAT provide prescriptive guidance on setting a project-based accounting baseline, but resources such as the GHGP’s Project Protocol provide requirements and guidance for baseline setting.⁶¹ These requirements include defining a baseline scenario that qualitatively describes a counterfactual in the absence of the intervention, separately quantifies an emissions baseline level, and demonstrates how emissions change.

Applying Measurement Criteria To Calculate Pre- And Post-Intervention Methane Emissions Levels In The Upstream Natural Gas Supply Chain

There are existing methodologies for quantitatively measuring the methane emissions from specific sources within a given segment of a natural gas supply chain. The leading standards for emissions measurement and reporting in the oil and gas sector come from Oil and Gas Methane Partnership (OGMP). OGMP’s Level 4 measurement and reporting standard applies to emissions from specific sources and specific equipment within a given facility. The OGMP framework emphasizes a shift away from using generic emissions factors (until recently, these were typically used by producers to estimate emissions), in favor of direct measurement of emissions from individual sources.⁶² To meet OGMP requirements, GTI Energy’s Veritas^{63, 64} protocols offer a methodology for direct measurement of specific sources. Veritas provides a standard method for “identifying and categorizing emissions sources, establishing an initial inventory and expected distribution of emissions, selecting measurement technologies, collecting measurements, analyzing the results, reconciling the measurements with the initial inventory, and estimating annual

⁶¹ The GHGP proposes a project accounting approach to estimate emissions impact from natural gas supply chain interventions, since interventions are likely to target emissions from existing assets. Other consequential approaches have been developed to estimate the emissions impact of interventions in other sectors, such as deploying new clean electricity generation capacity. These approaches, which use marginal emissions calculations, may eventually be applicable to natural gas supply-chain interventions especially as more data becomes available about how gas production fluctuates in response to changes in supply and demand.

⁶² United Nations Environment Programme. 2025.. Oil and Gas Methane Partnership 2.0 - Starter’s Guide. [accessed 2026 Sep 15]. <https://www.ogmpartnership.org/sites/default/files/resources/2025-04/OGMP%202.0%20Starters%20Guide.pdf>

⁶³ GTI Energy and Veritas have formed a partnership with OGMP that enables companies participating in OGMP to meet OGMP disclosure requirements using Veritas’s measurement protocols. GTI Energy developed the Veritas protocols through a stakeholder process that has included representatives from NGOs and industry.

⁶⁴ GTI Veritas. 2026. Accelerating Efforts to Reduce Global Methane Emissions. [accessed 2026 Sep 15]. <https://veritas.gti.energy/>

emissions with uncertainty quantification.”⁶⁵ The Veritas methodology provides a granular and standardized approach to estimating the emissions from individual sources that potential interventions can address. A buyer should require OGMP Level 4 pre- and post-intervention measurements of the targeted emissions source.

OGMP’s Level 5 measurement and reporting standard applies at the facility-level. To meet OGMP’s Level 5 measurement and reporting requirements, a gas supplier uses a mix of bottom-up, source-level (Level 4) measurement and top-down measurement (i.e., site or facility-level emissions measurement) approaches to identify emissions. OGMP Level 5 directs an entity to reconcile its bottom-up and top-down measurements to compare and refine emissions estimates. For specific assets and sources, operators must use detection and measurement technologies that they deem to be most applicable based on their facility’s specific characteristics. For top-down approaches, satellites, airborne spectrometers, drones, continuous monitoring, and optical gas imaging all provide site-level measurement. A buyer should encourage a supplier to conduct OGMP Level 5 measurement and reporting for the entire facility and reconcile that against the Level 4 pre- and post-intervention, source-level emissions.⁶⁶

Third-Party Verification and Assurance

AIM, AMI, and TCAT

AIM and TCAT share roughly similar guidance that requires third-party verification and auditing of interventions that reduce emissions. AIM explains that emissions outcomes must be assessed by auditors against a relevant standard or methodology. AIM explains that public standards and methodologies for emissions reduction, avoidance, and removal typically specify auditing procedures and frequency, level of assurance, and qualifications or accreditation and independence of auditors. TCAT’s criteria for verification include third-party verification that a recognized standard was used to measure reduction; the use of auditable input data or independently verifiable logs; monitoring

⁶⁵ Veritas. 2024. Source-Level Measurement and Reconciliation Protocol. [accessed 2026 Sep 15]. https://sagticmsprod01.blob.core.windows.net/gti-cms-prod/2024-02/Veritas_Source_Level_Measurement_and_Reconciliation_Protocol_Upstream%20v1.pdf

⁶⁶ For most interventions, it is likely that returning captured methane to the system just increases gas throughput. But a buyer should confirm that the downstream infrastructure can accommodate the additional gas and that it is not, for example, flared off somewhere in the system because of constraints.

procedures that follow best practice or a verification methodology; and the recording or registration of an emissions outcome within a recognized registry.

Applying Verification and Assurance Requirements To Upstream Natural Gas Production and Differentiated Gas

Third-party verification of emissions intensity is emerging as a best practice in the differentiated natural gas market (e.g., OGMP does not have a firm requirement for third-party verification but may evolve to incorporate one; MiQ's differentiated gas certificate program requires third-party verification). A verifier of methane intensity for differentiated gas could use similar verification steps to confirm the pre-intervention level of methane emissions and the post-intervention level of emissions at specific gas production assets. For example, MiQ's certification for differentiated gas requires third-party verification against the publicly available MiQ standard. In addition, MiQ requires auditors to meet criteria for independence and transparency and demonstrate proven expertise in methane emissions measurement, calculation, and monitoring in the oil and gas sector.⁶⁷

⁶⁷ MiQ. 2026. What is the MiQ Standard for Third Party Auditors. [accessed 2026 Sep 15]. <https://miq.org/what-is-the-miq-standard2/for-third-party-auditors/>

Appendix

Comparing Physical Inventories, Contractual Inventories, and Impact Statements

The table below catalogs physical interventions available to reduce methane emissions across the natural gas supply chain (table A1).

Table A1. Comparing physical inventories, contractual inventories, and impact statements

	Today’s attributional scope 3 inventory/potential physical inventory	Potential contractual inventory for scope 3	Impact statement
Primary metric	Tonnes via emissions factors	Tonnes via emissions factors	Avoided, reduced, or removed emissions
Disclosure format	Inventory	Inventory	Impact statement
Calculation step	[emissions factor x quantity] Match gas use as indicated in scope 1 and scope 2 to emissions factor, which is either: (1) supplier-specific or (2) industry average. Current industry average is a United States (US) national average and not specific to a US basin.	[emissions factor x quantity] Match gas use as indicated in physical inventory for scope 1 and scope 2 to emissions factor, which can be: (1) from energy attribute certificate (EAC), (2) supplier specific, or (3) industry average.	Avoided emissions = project’s baseline emissions – project’s emissions post-intervention
Allows use of market instruments such as differentiated gas certificates	No, though could help establish traceability	Yes	To be determined: It is possible in theory to convey avoided emission via instrument.
Requires additionality	No, though company may have own requirement	The Advanced and Indirect Mitigation Platform (AIM) requires regulatory additionality. The Taskforce for Corporate Action Transparency (TCAT) “inventory adjustment” does not require additionality (a company may also have its own requirement).	Yes, under AIM and TCAT, a buyer must apply at least one additionality test.

Example Interventions to Mitigate Emissions in Natural Gas Supply Chain

Table A2 lists selected interventions across the upstream and midstream segments. This list is illustrative rather than exhaustive. These interventions are included to show the types of activity these criteria are designed to address, and they do not constitute a list of qualifying activities. Action integrity depends on project-specific factors, including the asset and its operating history, the applicable regulatory baseline, the measurement approach in place, and the local operating and community context. Each intervention must therefore be evaluated on a project-specific basis against the criteria in this report. This table should not be viewed as an exhaustive list of all potential interventions, but rather a summary of example interventions included in the literature reviewed. This information was compiled from the sources listed below the table.

Table A2. Example interventions

Category	Interventions	Notes
Pneumatic Devices	Replace gas-driven pneumatic controllers (with instrument air or electric solenoids & servos) and gas-driven pneumatic chemical injection and glycol pumps	Addresses known vented emissions; may require new onsite power
Electrification with grid or renewable electricity	Replace gas or diesel generators, pumps, compressors & drives with electric motor(s), fired heaters with electric heater	Addresses substantial combustion CO ₂ emissions and small quantities of uncombusted methane
Compressor rod packing and seals	Replace reciprocating compressor rod packing systems; retrofit wet seals to dry seals; retrofit wet seals with degassing recovery systems; capture and recompress dry seal vented gas and other compressor process vented gas	Addresses known vented emissions; packing degrades over time; replacement interval drives abatement potential
Vapor recovery and flare routing	Install vapor recovery units; reroute tank vents to flare; reroute dehydrator vents to flare	Addresses known vented emissions; converts methane to CO ₂ ; net benefit depends on flare efficiency/effectiveness
Tank management	Inspect and repair tank hatches and pressure relief valves	Faulty/failed hatches and valves are identified as the root cause of intermittent super-emitter events.
Glycol dehydrators	Optimize glycol dehydrator operation and sizing	Applies only to sites that are non-optimized
Acid gas removal CCS	Upgrade acid gas removal systems; CO ₂ capture on acid gas removal systems	Addresses known vented emissions; especially substantial GHG abatement opportunity in fields with high CO ₂ concentration in produced gas

Category	Interventions	Notes
Lift and liquids unloading	Install plunger lift systems in gas wells; mechanical pumping for liquids unloading	Addresses episodic venting associated with liquids unloading during well clean-ups
Well completions	Green well completions	Achieves near total capture during fracturing and well completion
Flare improvements	Implement portable flaring during completions & workovers; install electric flare ignition devices; install automated air/fuel control on flares	Addresses episodic venting, unlit or malfunctioning flares, and minimizes incomplete combustion at flares
Blowdown management	Capture gas during compressor blowdown; pump down pipeline before maintenance; implement sleeve repair instead of pipeline replacement; redesign blowdown systems and alter emergency shutdown practices	Addresses known episodic venting during compressor shutdowns, pipeline maintenance, etc.
Leak Detection and Repair (LDAR)	Continuous, monthly, quarterly, or annual monitoring and inspection coupled to responsive repair capability	Higher frequency inspections result in greater estimated emissions reduction
Marginal wells	Decommission orphaned, marginal, depleted, and/or high-leakage wells and assets	Addresses outsized leaks, but incurs substantial revenue impacts; decouples value chain association upon implementation

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