



# ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINE

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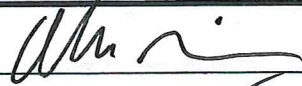

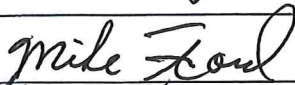

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## GREENHOUSE GAS INVENTORY PROTOCOL

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## OVERVIEW

The Hess Greenhouse Gas (GHG) Protocol (the Protocol):

- Identifies and describes the processes and methodologies Hess uses to calculate the Hess GHG inventory and ensure its reliability and validity.
- Establishes a set of acknowledged conventions and practices for the identification of GHG sources, and
- Establishes estimation methodologies for the quantification of GHG emissions that apply across business units.
- Supports the creation of a robust data collection system that ensures consistency, comparability and transparency in the GHG inventory.

The Protocol is also an effective communication tool to inform interested stakeholders, such as the investment community, regulators, and public interest groups, of Hess policies, practices, and methodologies for GHG data collection.

The Hess GHG Inventory Protocol is organized into the sections described in Table 1.

**Table 1. GHG Inventory Protocol Content**

Section	Summary
Overview, 1.0 Purpose and 2.0 Scope	Introduces the protocol and provides basic background on intent and purpose.
4.0 Accountabilities	Indicates the protocol review period.
3.0 Terms and Abbreviations	Glossary of key terms from the GHG Inventory Protocol.
5.0 GHG Inventory Principles	Describes the principles that form the foundation of Hess GHG inventory and reporting. The principles are based upon generally accepted financial and GHG accounting practices.
6.0 Organizational Boundaries	Describes how Hess identifies businesses and operations that are included in the inventory, and defines how GHG emissions are apportioned from partially owned assets and facilities with more than one owner.
7.0 Operational Boundaries	Identifies which GHG emissions sources and gases are included in the inventory.
8.0 Base Year and Adjustments	Identifies the Hess base year and the selection criteria employed to reach this decision. It also provides the rules by which adjustments to base year emissions are made.

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Section	Summary
9.0 GHG Emissions Quantification Methodologies	Details Hess GHG emissions quantification methodologies and systems.
10.0 Inventory Quality and Uncertainty	Focuses on inventory quality and uncertainty. Since inventory quality can be affected as data progresses from stack to report, this section identifies the steps Hess takes to improve its inventory quality by minimizing systemic and inherent uncertainty.
11.0 Reporting and Assurance	Addresses internal and external GHG emissions inventory reporting and approach to performing GHG inventory assurance.

The Hess GHG Inventory Protocol, consistent with best practices for inventory development, is derived from guidance provided by *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard* (Revised Edition), a collaborative effort of the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). WBCSD and WRI relied on a multi-stakeholder process that drew on the expertise of business, consultants, government, and non-government agencies to identify best practices regarding GHG inventory development.

In addition to the GHG Protocol, Hess relies upon guidance provided in the *Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions* (2nd Edition, May 2011) developed by IPIECA, the global oil and gas industry association for environmental and social issues, the American Petroleum Institute (API) and the International Association of Oil and Gas Producers (OGP). These guidelines are the result of a joint industry taskforce comprised of individuals representing petroleum industry leaders.

Hess' GHG Inventory Protocol also considers and reflects ideas contained in *ISO 14064-1:2006, Greenhouse gases – Part 1: Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals*.

Hess' GHG Inventory Protocol further refers to and relies upon the American Petroleum Institute's *Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry* (2009). This is a compendium of industry recognized GHG estimation methods for all oil and gas industry segments to enhance consistency in emissions estimation within the sector. The content of Hess GHG Inventory Protocol is compatible with and does not contradict the substance and intent of the above-mentioned guidance documents. The Hess GHG Inventory Protocol is, however, tailored to match Hess-specific operations and industry conditions.

These additional reference documents are considered by Hess when developing its GHG emissions inventory:

- *GHG Protocol Scope 2 Guidance* – An amendment to the *GHG Protocol Corporate Standard*.



- Increasingly value chain associated emissions have become a consideration in developing inventories. The Hess Protocol also considers the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard (September 2011)*. This Standard has been produced by WBCSD and WRI as a supplement to the GHG Protocol. In addition, Hess consults the IPIECA/API document *Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions Overview of Methodologies (June 2016)* for calculating Category 10, Processing of Sold Products, and Category 11, Use of Sold Products, which are new to this version of the Protocol.

## 1.0 PURPOSE

Hess Corporation develops an annual greenhouse gas (GHG) inventory of the GHG emissions associated with Hess' global operations. The Inventory has a two-fold purpose:

- Ensure internal consistency and comparability of GHG data; and
- Inform interested stakeholders of the methodologies and practices Hess uses to develop its GHG inventory.

The inventory supports and demonstrates the corporate commitment to meet the world's demand for energy in a way that protects the health and safety of stakeholders and respects the environment.

Hess also uses the GHG Inventory to:

- Understand the company's relationship to the issue of climate change;
- Develop strategies for managing GHG issues in the future, including participation in policy development and implementation of emissions controls on its operations;
- Report on environmental performance, both internally and externally; and
- Identify GHG emission risks and opportunities such as emissions trading.

The inventory is calculated by aggregating the GHG emissions, expressed as carbon dioxide equivalents (CO<sub>2</sub>e), associated with the sources included in the Hess GHG inventory. CO<sub>2</sub>e measures the global warming potential (GWP) of a greenhouse gas expressed in terms of the GWP of one unit of CO<sub>2</sub>.

Any GHG emissions sequestered in sinks or reservoirs are used to offset source emissions in the calculation of the inventory. Hess does not currently sequester carbon, so no sinks or reservoirs are included in the Hess GHG inventory.

## 2.0 SCOPE

This guideline applies to all Hess Exploration and Production (E&P) operations and facilities where Hess E&P is the operator or has operational control.



Some Hess assets have legal reporting requirements for GHG emissions. Regulatory reporting requirements and obligations are not addressed by this protocol. Reporting to regulatory regimes is the responsibility of the business units.

### 3.0 TERMS AND ABBREVIATIONS

For the purposes of this guideline, the following apply:

Term	Definition
Activity Data	Data on the magnitude of human activity resulting in emissions or removals taking place during a given period of time.
API Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry	A document developed by the American Petroleum Institute that is a compendium of industry recognized GHG estimation methods for all oil and gas industry segments. The compendium is intended to enhance consistency in emissions estimation within the sector.
Asset in Transition (AIT)	A typical Hess acquisition or divestiture. An acquisition AIT is designated as an AIT if, at the time of acquisition, its operating emissions after a period of planning and development are expected to be greater than 20% of the base year emissions. A divestiture AIT is an asset that was divested or spun off during the reporting year. (Refer to Section 8.0: Base Year and Adjustments.)
Base Year	A year corresponding to a set of GHG emissions data that represents typical operations. The emissions quantities associated with a base year inventory are the reference points against which future inventories are compared, especially with regard to emission reduction targets. (Refer to Section 8.0: Base Year and Adjustments.)
Boundaries	The definition of which emissions are included in a company's GHG inventory and report. Typical reporting boundary dimensions include organizational and operational boundaries. (Refer to Section 6.0: Organizational Boundaries.)
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	A metric used to compare the emissions from various greenhouse gases based upon their global warming potential.
Combustion Emissions	Emissions resulting from the stationary or mobile combustion of fuels. Stationary combustion emissions result from boilers, furnaces, burners, heaters, and stationary turbines and engines, as well as the combustion of wastes in incinerators and flares. Mobile combustion emissions result from fuels in ships, barges, trains, trucks, automobiles and aircraft. (Refer to Section 7.0: Operational Boundaries.)





Term	Definition
Contracted Services	Services performed by third parties that result in indirect emissions. (Refer to Section 7.0: Operational Boundaries.)
De minimis	The minimum threshold for which Scope 1 and Scope 2 emissions must be included in the GHG inventory. De minimis sources are sources that, when aggregated over the Reporting Unit, are less than 5% of the Reporting Unit's total GHG emissions and are less than 50,000 tonnes. The de minimis threshold for Scope 3 emissions is 5% of product use emissions. (Refer to Section 9.0: GHG Emissions Quantification Methodologies.)
Direct Emissions	Emissions from sources that are owned or controlled by the reporting entity. (Refer to Section 7.0: Operational Boundaries.)
Emission Factor	The average emission rate of a given GHG for a given source, relative to units of activity. (Refer to Section 9.0: GHG Emissions Quantification Methodologies.)
Emissions	The intentional or unintentional release of GHGs into the atmosphere. (Refer to Section 7.0: Operational Boundaries.)
Entity	A legally constituted business organization that owns or controls sources where GHGs are emitted. (Refer to Section 6.0: Organizational Boundaries.)
Environmental Management System	A continual cycle of planning, implementing, reviewing, and improving the processes and actions that an organization undertakes to meet its business and environmental goals. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Equity Share	The percentage of economic interest in or benefit derived from a partially or wholly owned operation. (Refer to Section 6.0: Organizational Boundaries.)
Equity Share Approach	An approach for setting organizational boundaries that aligns emissions with other corporate assets and related financial matters. According to this approach, an entity reports its proportion of total GHG emissions from a partially owned facility according to its percentage of economic interest in or the benefits it derives from the facility. (Refer to Section 6.0: Organizational Boundaries.)
Facility	Single installation, or set of installations, stationary or mobile, that can be defined within a single geographical boundary, organizational unit or production process. (Refer to Section 6.0: Organizational Boundaries.)
Fugitive Emissions	Unintentional releases of GHGs from joints, seals, packing, gaskets, or valves. (Refer to Section 7.0: Operational Boundaries.)
GHG Inventory	A list and associated quantities of an organization's GHG emission sources according to a set of acknowledged conventions using established estimation methodologies. (Refer to Overview.)



Term	Definition																
GHG Inventory Assurance	An objective, post-inventory assessment of the GHG Inventory structure, approach, and data. The assessment assesses whether the GHG Inventory was undertaken in adherence to the Hess GHG Inventory Protocol. This assessment also evaluates the accuracy and quality of the resulting GHG emissions data. (Refer to Section 11.0: Reporting and Assurance.)																
GHG Inventory Guidance	A guidance document that supports the GHG Inventory Protocol by providing more detailed procedures and specific instructions for Hess corporate and facility staff regarding Hess GHG Inventory responsibilities, including determining boundaries, adjusting the base year, quantifying emissions, and data collection and submission. (Refer to Overview.)																
GHG Inventory Protocol	A document that guides the Hess Corporation in the compilation of its GHG Inventory. The Protocol is intended to inform interested stakeholder groups of the corporation's policies, practices and methodologies for GHG data collection. This document explains "why" the company is compiling a GHG Inventory and identifies general conventions regarding its development. (Refer to Overview.)																
Global Warming Potential (GWP)	<p>A measure of how much heat a GHG traps in the atmosphere relative to CO<sub>2</sub>. A GWP is calculated over a specific time interval, commonly 100 years. The calculation of GWP takes into consideration the infrared absorbing characteristics of the gas and its lifetime in the atmosphere. (Refer to Section 9.0: GHG Emissions Quantification Methodologies.)</p> <table border="1"> <thead> <tr> <th>GHG</th> <th>1995 GWP AR-2 (IPCC Second Assessment Report): 100 years*</th> <th>2001 GWP AR-3 (IPCC Third Assessment Report): 100 years</th> <th>2007 GWP AR-4 (IPCC Fourth Assessment Report): 100 years</th> </tr> </thead> <tbody> <tr> <td>CO<sub>2</sub></td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>CH<sub>4</sub></td> <td>21</td> <td>23</td> <td>25</td> </tr> <tr> <td>N<sub>2</sub>O</td> <td>310</td> <td>296</td> <td>298</td> </tr> </tbody> </table> <p>* Hess uses these GWPs</p>	GHG	1995 GWP AR-2 (IPCC Second Assessment Report): 100 years*	2001 GWP AR-3 (IPCC Third Assessment Report): 100 years	2007 GWP AR-4 (IPCC Fourth Assessment Report): 100 years	CO <sub>2</sub>	1	1	1	CH <sub>4</sub>	21	23	25	N <sub>2</sub> O	310	296	298
GHG	1995 GWP AR-2 (IPCC Second Assessment Report): 100 years*	2001 GWP AR-3 (IPCC Third Assessment Report): 100 years	2007 GWP AR-4 (IPCC Fourth Assessment Report): 100 years														
CO <sub>2</sub>	1	1	1														
CH <sub>4</sub>	21	23	25														
N <sub>2</sub> O	310	296	298														
Greenhouse Gases (GHGs)	For the purposes of the Hess GHG Inventory Protocol, GHGs are the three gases listed in the Kyoto Protocol: carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), and nitrous oxide (N <sub>2</sub> O). (Refer to Section 7.0: Operational Boundaries.)																
Indirect Emissions	Emissions that are a consequence of the reporting company but occur from sources owned or controlled by another company. (Refer to Section 7.0: Operational Boundaries.)																

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Term	Definition
Inherent Uncertainty	A difference due to random error or the difference between a true amount and a quantified amount resulting from the quantification approach. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Insourcing	Activities performed by the entity that were previously performed by a third party, such as the production of raw materials, parts and supplies, and heat or electricity. (Refer to Section 8.0: Base Year and Adjustments.)
Inventory Quality	The general accuracy and consistency between an organization's actual GHG emissions and quantified GHG emissions. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
ISO 14064	A standard for the quantification, monitoring, reporting and verification of project and entity level greenhouse gases developed by the International Organization for Standardization (ISO), which is a network of national standards institutes from 147 countries. This standard is comprised of three parts. The first part specifies requirements for designing and developing organization or entity-level GHG inventories. The second part details requirements for quantifying, monitoring and reporting emission reductions and removal enhancements from GHG projects. The third part provides requirements and guidance for the conducting of GHG information validation and verification. (Refer to Overview.)
Material Misstatement	An error (for example from an oversight, omission, or miscalculation) that results in the reported quantity being significantly different from the true value. (Refer to Section 11.0: Reporting and Assurance.)
Materiality	The magnitude of an omission or misstatement of GHG information that makes it likely that the judgment of a reasonable person relying on the information would have been influenced by the omission or misstatement. (Refer to Section 11.0: Reporting and Assurance.)
Materiality Threshold	A level or percentage of the total emissions used by the verifier to determine whether an error or omission is a significant misstatement. (Refer to Section 11.0: Reporting and Assurance.)
May	Indicates an allowable course of action.
Normalization	The expression or reporting of emissions relative to some measure of output, e.g., tons of CO <sub>2</sub> -eq/barrels of crude oil produced. (Refer to Section 11.0: Reporting and Assurance.)
Operational Boundaries	The scope of the specific types of emission sources, generating direct and indirect emissions that an entity owns, controls, and includes in its GHG inventory and report. (Refer to Section 7.0: Operational Boundaries.)



Term	Definition
Operational Control	The authority to introduce and implement operational and environmental, health, and safety policies at an operation. (Refer to Section 6.0: Organizational Boundaries.)
Operational Control Approach	An approach for setting organizational boundaries that reflects an entity's management of its operations. According to this approach, an entity reports 100% of GHG emissions from operations, including partially owned facilities that are under its operating control. Furthermore, an entity does not report any emissions from partially owned facilities, which are not under its operating control. (Refer to Section 6.0: Organizational Boundaries.)
Organic Growth/Decline	Increases or decreases in GHG emissions as a result of changes in production output, product mix, plant closures, and the opening of new plants that come about through increases or decreases in business volume. (Refer to Section 8.0: Base Year and Adjustments.)
Organizational Boundaries	The scope of specific entities and facilities, either wholly owned or partially owned by the entity, included in the GHG inventory and report. (Refer to Section 6.0: Organizational Boundaries.)
Outsourcing	The contracting out of activities, such as the production of raw materials, parts and supplies, and heat or electricity, to third parties. (Refer to Section 8.0: Base Year and Adjustments.)
Partially-Owned Assets	Entities, facilities, and/or operations that are not wholly owned by the corporate entity. Partially owned assets may result from joint ventures, partnerships and other cooperative arrangements between separate entities. (Refer to Section 6.0: Organizational Boundaries.)
Partnership	A business owned by two or more separate entities. The responsibilities, obligations, and benefits of the partners are usually described in a contract or partnership agreement. (Refer to Section 6.0: Organizational Boundaries.)
Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions	A document developed by the International Petroleum Industry Environmental Conservation Association (IPIECA), the International Association of Oil and Gas Producers (OGP), and the American Petroleum Institute (API) that provides guidance for how greenhouse gas emissions should be accounted and reported for petroleum industry companies at the facility through the corporate level. (Refer to Overview.)
Primary Inventory Data	GHG source activity data submitted to the corporate entity for roll-up by individual facilities. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Process Emissions	GHG emissions that result from the physical or chemical processing of materials such as petroleum refining, or petrochemical production. Releases occur during normal operations from stacks, vents, and other focused discharges. (Refer to Section 7.0: Operational Boundaries.)



Term	Definition
Reporting Unit	A business, facility, or group of related facilities that reports emissions into the organization-wide GHG inventory. Hess' reporting units are listed in Hess' GHG Inventory Guidance.
Requirement	A condition mandatory for compliance with a standard, policy or other document.
Scope 1 Inventory	A reporting organization's direct GHG emissions. (Refer to Section 6.0: Organizational Boundaries.)
Scope 2 Inventory	A reporting organization's emissions associated with the generation of electricity, heating/ cooling, or steam purchased for own consumption. (Refer to Section 6.0: Organizational Boundaries.)
Scope 3 Inventory	A reporting organization's indirect emissions other than those covered in Scope 2. (Refer to Section 7.0: Operational Boundaries.)
Secondary Inventory Data	GHG emissions data and supporting documentation calculated at the corporate level from individual facilities. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Should	Used for recommendations; indicates other options are acceptable.
Sink	Any physical unit or process that stores GHGs; usually refers to forests and underground/deep sea reservoirs of CO <sub>2</sub> . (Refer to Overview.)
Subsidiary	A company that is controlled by its parent company and is maintained as a separate legal entity from the parent company. (Refer to Section 6.0: Organizational Boundaries.)
Systemic Uncertainty	Errors resulting from subjective choices in the inventory process and selection of calculation methodologies, such as simplifying assumptions and improper selection of emission factors. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
<i>The Corporate Value Chain (Scope 3) Accounting and Reporting Standard (September 2011)</i>	A standard produced by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) as a supplement to the <i>GHG Protocol</i> . (Refer to Overview.)



Term	Definition
<i>The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)</i>	A document developed by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) that provides standards and guidance for organizations preparing a GHG emissions inventory. It covers the accounting and reporting of six greenhouse gases covered by the Kyoto Protocol. (Refer to Overview.)
Uncertainty	The range around a reported value in which the true value can be expected to fall. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Uncertainty Assessment	An evaluation to identify major areas of uncertainty associated with a GHG Inventory. The assessment may identify quantitative or qualitative uncertainty. (Refer to Section 10.0: Inventory Quality and Uncertainty.)
Upstream Operations	Operations involving the exploration and production of oil and gas. (Refer to Section 7.0: Operational Boundaries.)
Value Chain Emissions	Value chain emissions are emissions resulting from upstream (e.g., supply chain) or downstream (e.g., customer use) activities associated with a company's operations but which are not performed by the company. (Refer to Section 9.0: GHG Emissions Quantification Methodologies.)

Abbreviation	Definition
API	American Petroleum Institute
CDP	Carbon Disclosure Project
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon Dioxide
E&P	Exploration and Production
EPA	Environmental Protection Agency
ETS	Emissions Trading Scheme
EU	European Union
IPCC	Intergovernmental Panel on Climate Change
IPIECA	International Petroleum Industry Environmental Conservation Association



Abbreviation	Definition
ISO	International Organization for Standardization
MRR	Mandatory Reporting Rule
N <sub>2</sub> O	Nitrous Oxide
OGP	International Association of Oil and Gas Producers
PRV	Pressure Relief Valve
SME	Subject Matter Expert
VCU	Vapor Combustion Unit
VRU	Vapor Recovery Unit
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

#### 4.0 ACCOUNTABILITIES

The Technical Authority (TA) will review and update this guideline at least every three calendar years or sooner if a change is required or otherwise considered appropriate.

#### 5.0 GHG INVENTORY PRINCIPLES

GHG accounting and reporting principles are established and relied upon to ensure an organization's inventory represents a true and fair account of its GHG emissions. They also support the collection and reporting of credible and unbiased GHG emissions. Adherence to these principles helps ensure that the inventories and the data that underlies them are free of material errors and capable of being relied and depended upon by users of the information.

##### 5.1 The Five Principles

Hess recognizes the importance of establishing underlying principles to govern the development and reporting of its GHG inventory and therefore has applied these generally accepted GHG accounting and reporting principles:

1. Relevance

To ensure the Inventory is relevant to internal and external users of the data, the Hess inventory includes all business units. This includes businesses in which Hess has an ownership stake unless the inventory states they are specifically excluded. Similarly, all operations by the business units are included unless specifically stated as being excluded.



## 2. Completeness

The Hess inventory includes all sources except those determined to be de minimis sources. De minimis sources are sources that, when aggregated over the Reporting Unit, are less than 5% of the Reporting Unit's total GHG emissions and are less than 50,000 tonnes. All sources are included for baseline inventory efforts. For later inventories, sources may be excluded from the inventory and reported as de minimis; unless changing circumstances make the source unlikely to maintain de minimis status. De minimis determinations are made at the business unit level.

## 3. Consistency

Hess discloses any material changes in sources or calculation methodologies for emissions to allow meaningful comparison of emissions over time. For material changes, previous year reports may be restated to allow for valid year-to-year comparisons.

## 4. Transparency

Hess documents assumptions, references, data, and calculations sufficient to ensure a competent third party could derive the same results if provided with the same source data. This ensures a documented inventory that can be verified.

## 5. Accuracy

Hess ensures the level of care in the collection of data is commensurate with the magnitude of the emissions associated with the source. This includes the use of flow calculations and/or properly maintained and calibrated monitoring and metering equipment used in the collection of data.

Adherence to these principles ensures that inventoried and reported data is free of significant errors and capable of being relied and depended upon by users of this information.

## 6.0 ORGANIZATIONAL BOUNDARIES

### 6.1 Introduction

Determining the boundary for an operation or facility is fairly straightforward when ownership or financial control and management or operational control is vested in the same company. However, when a company owns part of an asset, has financial control of, or operates an asset, determining which assets and operations belong within the organizational boundary is more challenging. In determining an organization's GHG boundaries, two methods for consolidation are generally used: operational control and equity share.

#### HESS GHG INVENTORY ORGANIZATIONAL BOUNDARIES IN BRIEF

Hess Corporation's organizational boundaries include GHG emissions data from all entities and facilities that are referenced in its annual financial and sustainability reports.

Hess uses both **operational control and equity share** to consolidate and report its GHG data on all entities and facilities included in its GHG inventory, as well as how to apportion (or consolidate) GHG emissions among the various partially-owned entities and facilities.





### 6.1.1 Operational Control

Under the control method of consolidation, a company reports 100% of the emissions from facilities and operations over which it has either **financial or operational control**, whether these are wholly owned or have multiple owners. No emissions are included for partially owned assets that the company does not control. Under the IPIECA Guidelines, this includes assets operated by the company and joint ventures where the company has the ability to determine management and board level operational decisions.

### 6.1.2 Equity Share

Under the equity share method of consolidation, a company reports GHG emissions according to its share of equity in partially and wholly owned facilities. Equity share is the percentage of economic interest in or benefit derived from a facility.

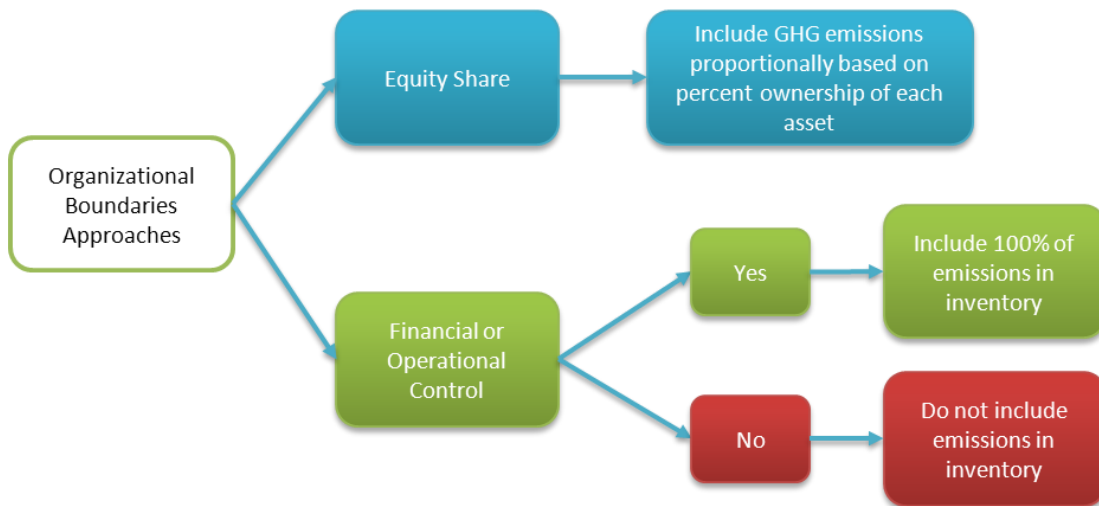
For assets that are 100% owned and operated, the control and equity share approaches both result in the inclusion of the same assets and emissions. For assets that involve shared ownership or control, the control and equity approach will result in the inclusion of different assets and emissions in the inventory.

There is no single accepted approach for voluntary or mandatory GHG reporting programs. Thus, organizations can have assets or groups of assets that are subject to different boundary approaches. If the organization chooses to use one methodology for its inventory reporting, either the control or equity basis, some assets may need to report under various regulatory or voluntary regimes using a different consolidation approach which can result in seemingly contradictory emissions being reported. Therefore, companies often opt to voluntarily calculate and report under both methodologies. This approach provides a clearer understanding of emissions. In these circumstances, companies identify the methodologies used and the resulting values.

## 6.2 Organizational Boundaries (Scope 1 and Scope 2)

The Hess GHG Inventory includes all fully owned and partially owned entities, including any associated facilities that are referenced either explicitly or implicitly, in the Hess Corporate Annual Report and other corporate reporting documents. To ensure that emissions for all of the activities in which Hess is directly involved are included in the inventory and to provide a better understanding of its emissions, Hess uses both operational control and equity share approaches to define its organizational boundary. Hess does not use financial control. The ultimate aim is to report all emissions data, from both operated and non-operated assets, in a consistent manner.

The term *lease* applies to situations in which the use of equipment or specific facilities is conveyed to or from Hess by a contract identifying a specified term and/or a specified rent. When Hess is a lessee of operational facilities or equipment (e.g., a Shorebase), emissions associated with leases are consolidated into the inventory as Scope 1/Scope 2 emissions consistent with the approaches of equity share and operational control. Emissions from leased office buildings are exceptions, since these emissions are considered in the Scope 3 category but are not currently included in Hess' GHG Inventory.



**Figure 1 . Determining Organizational Boundaries**

Hess recognizes that compiling comparable detailed inventories for those assets not under direct operational control can present a challenge. Hess endeavors to ensure consistency with this protocol to the extent that sufficient information and data allow; however, usually we only receive GHG emission totals from our non-operated assets and rely on that data since we do not have access to the underlying activity data. We do compare annual results and request explanations for any differences in annual results of more than 10%. Although Hess uses both methods, consolidation under each method occurs separately. Emission quantities resulting from each of the two consolidation approaches are not combined.

**6.2.1 Operational Control**

Traditionally, Hess has reported environmental data from entities or facilities based on managerial or operational control. Operational control implies that Hess is recognized as the operator of the facility. At other facilities, another entity may have operating responsibility and authority, and Hess interest is limited to financial matters. Consolidating by this methodology is consistent with historic corporate practices.

**6.2.2 Equity Share**

The equity share approach aligns Hess emissions with the rules that Hess already uses for corporate financial accounting. Consolidation by equity share includes GHG emissions data from all entities and facilities within the broad GHG inventory organizational boundary.

For a facility with multiple owners, the allocation of the total emissions of the facility that are associated with Hess is based on the equity percentage that Hess possesses in the facility.

**6.2.3 Inclusion of Assets in Transition – Recently Acquired Assets**

For newly acquired assets, Hess provides a reasonable time period before including the asset in transition (AIT) in the organizational boundary. This allows for the implementation of GHG data collection policies and procedures. In general, the AIT facility emissions will be included in the first full calendar year that operational GHG data are available. There may be some exceptions based on extraordinary circumstances.

#### 6.2.4 Inclusion of Assets in Transition – Recently Divested Assets

Hess reports partial data for the year in which the asset was divested, until the divestment date. The data may be reported with other assets in transition but separately from Hess' overall GHG inventory. There may be some exceptions based on extraordinary circumstances.

## 7.0 OPERATIONAL BOUNDARIES

### 7.1 Introduction

Operational boundaries in a GHG inventory refer to greenhouses gases accounted for in the entity's inventory, and the specific types of emission sources that an organization (as defined by the organizational boundary) possesses and includes in its inventory and report. Greenhouse gases are gases that act to cause global warming. Six gases in particular, known commonly as the Kyoto gases, are most commonly considered for inclusion in GHG inventories.

Entities have a variety of emissions sources that are categorized to provide a general framework for the organization of the inventory. This framework also facilitates the identification of appropriate quantification methodologies for emission sources, collection of data, as well as reporting of inventory results.

### 7.2 Direct and Indirect Emissions

A key distinction in setting operational boundaries is whether GHG emissions sources are categorized as direct emissions or indirect emissions.

#### 7.2.1 Direct Emissions

**Direct emissions**, also known as **Scope 1 emissions**, occur from sources in operations within the organizational boundary of the entity. Direct emissions are generated primarily by these activities:

- Operation of engines and turbines (drive pumps or compressors);
- Combustion in flares and incinerators;
- Production of electricity, heat, or steam;
- Physical or chemical process emissions such as gas processing, oil refining, and petrochemical manufacturing emissions;

#### HESS CORPORATION'S OPERATIONAL BOUNDARIES IN BRIEF

Hess operational boundaries consist of direct (Scope 1) GHG emissions from combustion, process, and fugitive sources within its organizational boundary. Hess operational boundary also includes indirect emissions: GHG emissions from energy generated by another entity (Scope 2) and specified value chain emissions (Scope 3).

The Hess GHG Inventory identifies emissions of these greenhouse gases:

- Carbon Dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous Oxide (N<sub>2</sub>O)

These three GHG compounds were selected because they are the most relevant to the oil and gas industry.

- Transportation in company-owned motor vehicles such as tank truck and oil tankers; and
- Fugitive losses from equipment leaks such as from gas pipeline systems.

**7.2.2 Indirect Emissions**

**Indirect emissions** are emissions that are a consequence of the operation of the reporting company but occur from sources owned or controlled by another entity.

Indirect emissions themselves are broken into two categories, Scope 2 and Scope 3. Both Scope 2 and Scope 3 emissions share the characteristics that are Scope 1 emissions of another entity. **Scope 2** emissions are indirect GHG emissions that occur from energy consumption, where the energy is generated by another entity. Examples are the emissions associated with the generation of purchased electricity, steam, heat, or cooling consumed by the entity. These emissions physically occur at the utility where the energy is being generated (e.g., power plant) and would be considered Scope 1 or direct emissions for the utility.

**Scope 3** emissions are indirect non-energy production related GHG emissions that occur as a consequence of activities of the entity, but originate from sources not owned or controlled by the entity. Scope 3 emissions occur within the value chain of the entity and are also known by that name. Value chain emissions are further categorized as upstream or downstream. Upstream refer to emissions associated with goods and services purchased by the entity; while downstream refers to emission associated with goods or services sold by the entity. Upstream emissions occur before purchase or receipt by the entity. Downstream emissions occur after sale or transfer of the goods or services by the entity.

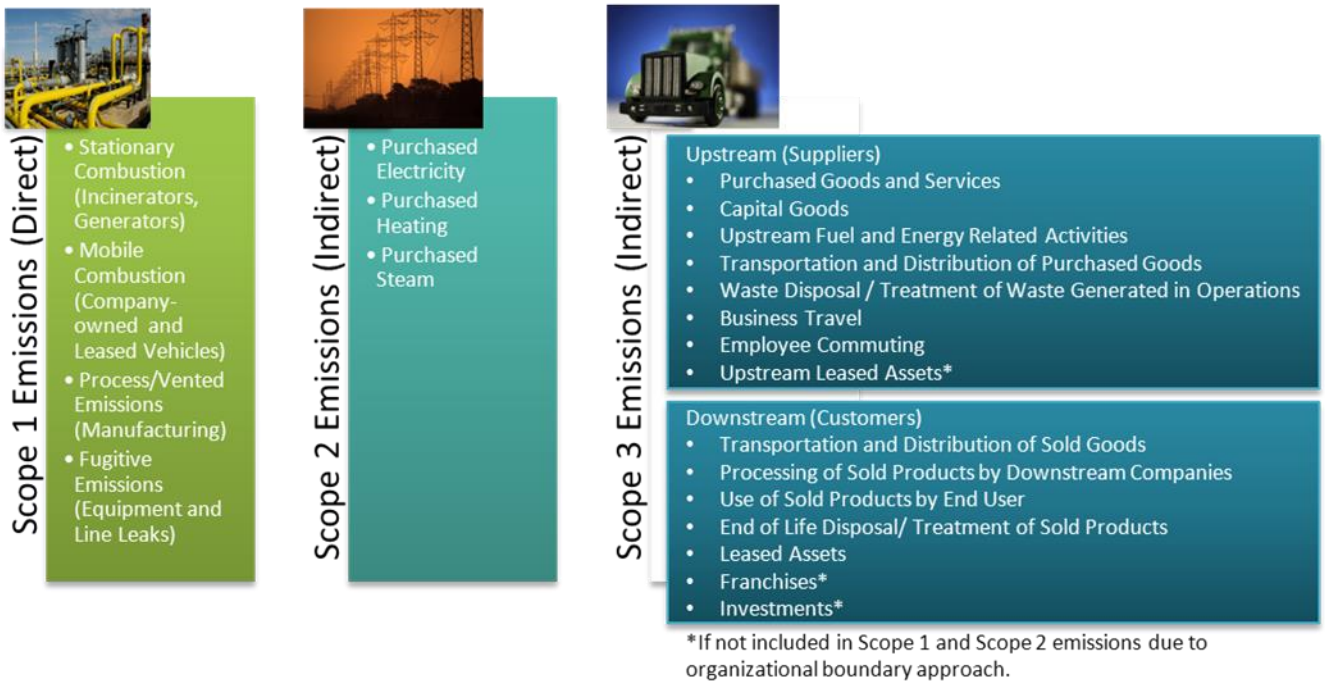


Figure 2. Operational Boundaries



Identification of both direct and indirect sources in the inventory is important for several reasons. Direct sources, because of ownership and/or control, must be included in an entity's inventory to ensure credibility, completeness, accuracy, and transparency. Inclusion of indirect (Scope 2 and Scope 3) emissions provides a more complete picture of an entity's total GHG emissions. Inclusion of Scope 3 emissions are based on materiality as well as the availability of reliable primary data and well-accepted methodology and emissions factors.

### 7.3 GHG Emissions Sources

Hess operational boundaries consist of *Direct Scope 1* greenhouse gas emissions from sources within the Hess organizational boundary and *Indirect Scope 2* greenhouse gas emissions from the generation by third parties of consumed electricity, heat and steam, as well as selected *Indirect Scope 3 greenhouse gas emissions* originating from the value chain. The following sections further define and describe direct and indirect emission sources as they apply to Hess.

#### 7.3.1 Scope 1 Routine Sources Sources

Hess operational boundaries primarily consist of all direct GHG emissions from sources within the Hess organizational boundary. Direct emissions are further classified into routine sources and non-routine sources. There are three categories of direct routine sources: stationary and mobile combustion, process, and fugitive.

- Stationary combustion sources typically include combustion from boilers/heaters/engines, turbines, as well as gas flaring. Emissions from distributed electricity generating equipment are also categorized as stationary combustion sources.
- Mobile combustion sources include fleet vehicles for moving personnel and equipment, bulk transportation, and corporate aviation.
- Process sources refer to releases of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions that result from the physical or chemical processing of materials. Releases occur during normal operations from stacks, vents, or other focused discharges. Hess exploration and production process sources typically include process vents from dehydration and gas sweetening. Other E&P process sources are venting from tanks and chemical injection pumps. Exploratory drilling and well testing also produce process source emissions. Venting occurs at storage facilities not only during loading and unloading operations but also from the storage tanks themselves. While these sources typically contain control devices such as a vapor recovery unit (VRU) or vapor combustion unit (VCU), there are still emissions associated with these activities.
- Fugitive sources refer to CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions that result from equipment leaks and other unintended emissions, as well as releases from open and/or unfocused discharges. Fugitive sources generally include leaks from equipment including pipelines, vents, pumps, pneumatic devices and compressors.

### 7.3.2 Scope 1 Non-Routine Sources

In addition to the routine source categories, direct emissions of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O result from non-routine sources (non-routine operations or unexpected situations). Any storage facility or pipeline may further have upset sources as the result of pipeline breaks. Examples include:

- Maintenance and turnaround operations may result in releases from equipment cleaning, repairs, replacements, and upgrades. An example is equipment depressurization (blowdown).
- Maintenance and turnaround sources in E&P include compressor starts; well workovers; and vessel, pipeline, and compressor blowdowns. Additional sources related to transportation and distribution include pigging operations and compressor station blowdowns.

Hess E&P sources include pressure relief valves (PRVs), surge tanks, and Emergency Shutdowns or Blowdowns. Specific E&P sources may include well tests. Upset sources that result from unplanned preventative and corrective actions related to emergency situations.

### 7.3.3 Scope 2 Consumed Third-Party Energy

Consumed third-party energy refers to the use of electricity, hydrogen, steam, or hot water generated by and acquired from a third party. As previously stated, when Hess explicitly pays for consumed third-party energy, associated emissions are included as Scope 2 indirect emissions.

Hess offices use electricity resulting in indirect emissions. In Hess' GHG inventory, only emissions from owned sources are included. Leased facilities are not included in the operational boundary.

### 7.3.4 Scope 3 GHG Value Chain Emissions

To assess our Scope 3 GHG emissions, we use the Petroleum Industry Guidance for Corporate Value Chain Accounting methodology. Scope 3 emissions are emissions generated from corporate value chain activities that are not accounted for and reported in our Scope 1 and 2 emissions. The Petroleum Industry Guidance is based on the World Resources Institute's and the World Business Council for Sustainable Development's GHG Protocol Scope 3 standard, which includes 15 categories of Scope 3 emissions. In general, Hess uses a materiality threshold of 5% of emissions associated with Category 11, Use of Sold Products, which represents the vast majority of Scope 3 emissions. Historically, only three of the Scope 3 emissions categories were material to Hess. Category 1, Purchased Good and Services contains emissions generated from refined petroleum products that we sold at our retail marketing business that was sold in 2014. Category 11, The Use of Sold Products accounts for the emissions from consumers' use of the end products of our oil and gas production (diesel and gasoline fuels and natural gas). It is expected that the only other material Scope 3 category is Category 10, Processing of Sold Products that accounts for the processing of crude oil by 3rd party petroleum refineries. Although not material, we track and report emissions associated with employee business travel.

### 7.3.5 Leases

Emissions associated with leases may be classified as Scope 1 or Scope 3, depending on the nature of the sources included in the lease. Emissions from leased equipment in which Hess maintains operational control, such as leased generators or vehicles, contribute Scope 1 direct emissions associated with engine combustion. Leased office space contributes emissions associated with consumed electricity. Hess does not pay for energy use at leased facilities and therefore does not include these emissions in our reporting.

In addition, in certain situations where Hess does not possess control but leased assets are associated with contracted services, emissions from such situations are included in Hess direct (Scope 1) inventory when Hess supplies or pays for the energy or fuel. For example, emissions from contracted trucking operations in which Hess supplies fuel as part of a contractual obligation are included as Scope 1 emissions.

## 8.0 BASE YEAR AND ADJUSTMENTS

### 8.1 Introduction to Base Year and Adjustments

The base year is a year corresponding to a set of GHG emissions data that represent typical operations. The base year inventory provides the reference points to which future inventories are compared. Corporate GHG targets are also commonly defined relative to base year emissions. The current base year for Hess is calendar year 2014.

### 8.2 Prior Base Year Selection and Considerations

The base year applies to Scopes 1 and 2 emissions only. No base year is established for Scope 3 value chain emissions.

Certain operations and facilities may be subject to a specific base year requirement of regulatory programs under which they operate (i.e., the European Union [EU] Emissions Trading Scheme [ETS] and others). In these cases, the relevant operations and/or facilities maintain the respective base year information for these programs in addition to the designated corporate base year.

### 8.3 Adjustment of Base Year Emissions

Hess Corporation is a dynamic organization. In the pursuit of growth, its structure and operations change to reflect both internal and external business drivers. Significant structural changes in the corporation could impair the comparability of GHG reports. Therefore,

#### HESS GHG INVENTORY BASE YEAR AND ADJUSTMENTS IN BRIEF

Base year emissions are adjusted in response to the following changes:

- Structural changes including acquisitions and divestitures that result in a 10% or greater change to overall emissions.
- Source ownership and control changes.
- Changes related to insourcing and outsourcing, if the operations related to these changes existed before the base year.
- Quantification methodology changes or data improvements that result in a 5% or greater change to overall emissions.
- Discovery of errors in the base year emissions that result in a 5% or greater change to the total.



adjustments to the base year may be adjusted in some cases but not in others. The following are descriptions of various circumstances and the corresponding impact (if any) to the base year emissions.

### 8.3.1 Organic Growth and Decline

Increasing or decreasing production and the opening and closure of facilities or operating units are a part of the organic growth and decline of the company and therefore are not considered reason to adjust the base year emission totals. Similarly, base year emissions are not adjusted in response to the shut downs of existing operating units or the start-ups of new operating units.

### 8.3.2 Structural Changes

In cases of acquisitions and divestitures and source ownership and control changes, Hess adjusts its base year emissions if the change exceeds 10% of the original base year emissions total. Consideration of structural changes when determining exceedance of the significance threshold is limited to operations that existed prior to the established base year.

The adjustment of the base year emissions in response to significant acquisitions may occur subsequent to the year in which the acquisition occurs. As discussed in the organizational boundary section, Hess may delay inclusion of new assets in the organizational boundaries of the Hess GHG inventory to allow for operational control change and data collection implementation. Assessment of the significance of the structural change of an acquisition and any associated base year emissions adjustment occurs in the year when the asset enters the inventory.

There are situations in which Hess does not delay the inclusion of acquired assets into its GHG inventory organizational boundaries due to the existence of appropriate processes and data. If such additions occur prior to August 1 in a particular year and are recognized as significant structural changes, Hess will make adjustments addressing the entire base year.

In addition, on rare occasions, Hess makes acquisitions that at the time of acquisition do not reflect the operations or the emissions that are expected during a typical year of its ownership. The size of the expected future emissions from these acquisitions relative to the Hess base year emissions has the potential to complicate inventory comparisons over time. To address this situation, when Hess determines that an acquisition of this type will produce emissions that are 20% of its base year emissions, Hess will designate these assets at the time of acquisition as Assets In Transition (AITs) for the purposes of its GHG Inventory. AITs will not be included in the inventory until operations and emissions reach expected capacity, and the base year emissions will be adjusted in response to this acquisition at the time of expected operations and incorporation into the organizational boundaries.

### 8.3.3 Insourcing and Outsourcing

Changes related to outsourcing and insourcing, or the transfer of the procurement of services or products from Hess or a third party to the other, may require Hess to adjust its base year emissions according to the following conventions:

- Hess base year emissions are adjusted if the insourced or outsourced operations related to these changes existed before the base year. If insourced or outsourced operations did



not exist prior to the established base year, these changes are related to organic growth and therefore no adjustments to base year emissions occur.

- Because Hess tracks both direct emissions as well as indirect emissions from third-party services, many outsourcing and insourcing changes do not alter the presence of emission sources within Hess GHG Inventory boundaries. Outsourcing and insourcing does change source ownership and control and therefore impacts direct and indirect emissions amounts that are separately reported. Accordingly, Hess adjusts its base year emissions by shifting emissions between these source categories, as appropriate. While this adjustment does not impact the overall inventory's base year emission total, it allows ongoing relevance and comparability of direct and indirect emission figures.

#### 8.3.4 Qualification Methodologies Changes and Data Improvement

Base year emissions are adjusted if the circumstances associated with the individual categories below result in a 5% change in the Hess GHG inventory base year emissions total:

- Changes in the quantification methodologies, or
- Improvement of inventory data.

#### 8.3.5 Discovery of Errors in the Base Year Emissions

Base year emissions are adjusted in response to the discovery of an error or cumulative errors in the base year emissions if correction of the discovered errors or cumulative errors results in a 5% change in the Hess GHG inventory base year emissions total.

## 9.0 GHG EMISSIONS QUANTIFICATION METHODOLOGIES

### 9.1 Introduction

Quantification methodologies are used to convert activity data, which is data indicating the magnitude of activity associated with the source, into emissions estimates. The methodologies are specific to source types (e.g., mobile combustion, highway vehicles, or purchased electricity). They specify the activity data used; the appropriate emission factor; and the formula applied to the emissions factor and activity data to calculate the emissions estimate. Various methodologies exist for calculating emissions.

#### HESS GHG INVENTORY EMISSIONS QUANTIFICATION IN BRIEF

Hess Corporation quantifies its GHG emissions using petroleum industry best practice methodologies.

Recognizing that preferred activity data may not be available, Hess defines three tiers of quantification approaches for particular emission sources, representing decreasing levels of certainty. Tier A is the designated preferred Hess approach. Operations and facilities are encouraged to upgrade to higher tiered approaches.

Hess uses global warming potentials of the IPCC's Second Assessment Report.

Hess rolls up its emissions from facilities and operations within its GHG management system.

Methodologies to arrive at source emissions can be calculated from different types of activity data. The activity data used, however, can affect the level of confidence that can be placed in the calculated emissions data. For example, fuel consumption by a vehicle is the preferred activity data to calculate the CO<sub>2</sub> emissions; however, vehicle mileage and engine efficiency provide better estimates when calculating CH<sub>4</sub> and N<sub>2</sub>O emissions. In the case in which a type of activity data is unavailable, such as vehicle mileage, an alternative less accurate methodology, such as fuel consumption, can be used to estimate CH<sub>4</sub> and N<sub>2</sub>O. Another key consideration in the methodology is the global warming potential (GWP) value used.

### 9.2 Data Collection and Quantification Methodologies

Hess calculates emissions using emission factors from the EPA Mandatory Reporting Rule (MRR). In the absence of emission factors in the MRR, we use other EPA emission factors or emission factors recognized as petroleum industry best practices such as set forth in the American Petroleum Institute (API) *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry (August 2009)*. To determine the most practical and accurate quantification method for Scope 3 emissions, Hess consults both the WBCSD/WRI *Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)* and the IPIECA/API document *Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions Overview of Methodologies (June 2016)*.

Hess uses the best quality of activity data available to calculate source emissions.

The Corporation recognizes though that the level of control, technical and environmental management capacity, and other considerations will affect what activity data is available. In recognition that availability and quality of activity data varies across the Corporation, Hess allows alternative methodology by source type to be used for the calculation of emissions. For

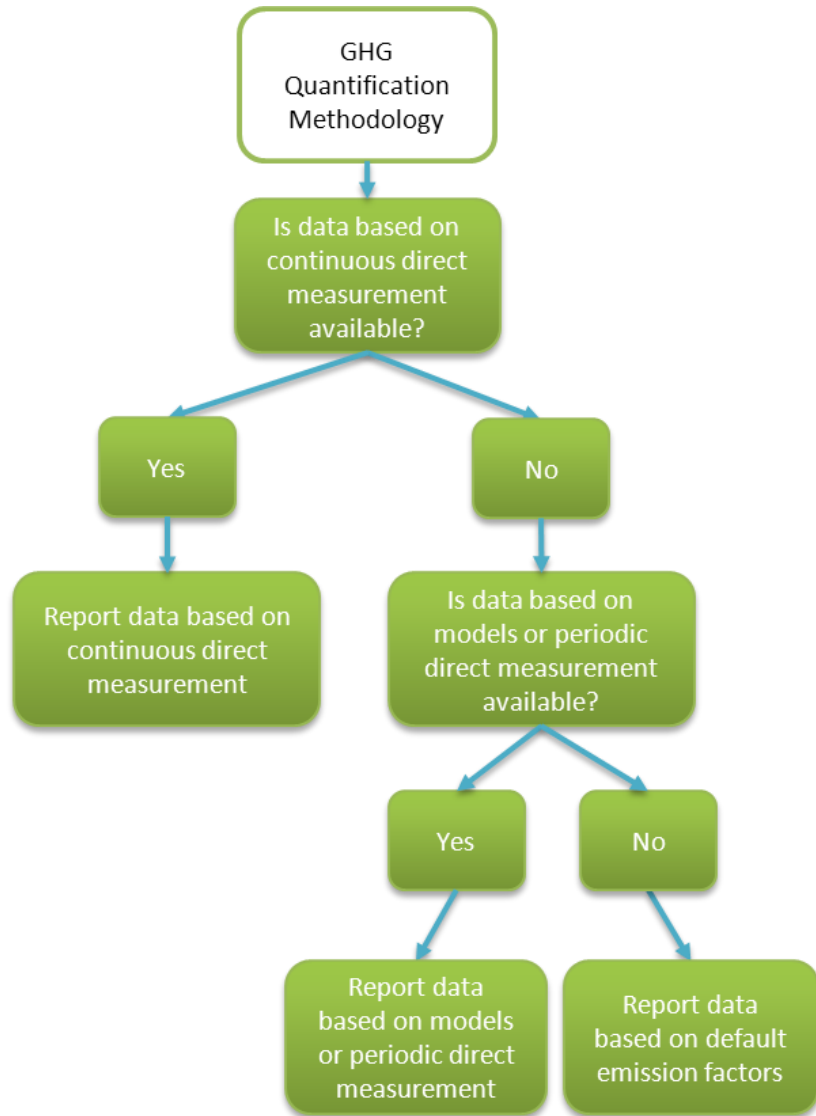


Figure 3. GHG Emissions Quantification Methodology Decision Tree

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each source type, up to three acceptable methodologies are identified. The alternate methodologies are used in order of preference according to the quality of the emissions data generated by the methodology. When submitting activity data for rollup into the corporate inventory, reporting units select the most accurate methodology available. The most accurate methodology utilizes actual activity and fuel composition data. If actual activity and composition data are unavailable, periodic direct measurement or models are used. In the event that these data are unavailable, default emission factors are employed. For our largest sources (fuel combustion and flaring), electronic flow data is captured monthly in the data warehouse and then reviewed and uploaded into the Enviance GHG calculation tool. The Enviance system facilitates reporting from all facilities.

### 9.2.1 Non-Operated Assets

For facilities and operations in which Hess does not have operational control (equity share organizational boundary approach), EHS Measurement and Reporting is responsible for obtaining the activity data or GHG emissions estimates from the operator. Data provided by the Operator is compared to the previous year submittal to identify significant discrepancy but is not independently validated by Hess.

In the case of operations or facilities without conforming activity data or in the case in which Hess does not have operational control and activity data cannot be obtained, the business units extrapolate emissions estimates from similar Hess operated facilities or by using average emission factors. Currently this approach is only used for non-operated production activity in North Dakota.

### 9.2.2 De Minimis Determination

De minimis determinations are made at the business unit level and facilitated by the Corporate EHS Reporting Group. For Scope 1 and Scope 2 emissions, individual emission source categories (combustion, fugitives, flares, tanks, vessel loading, mobile sources, etc.) in its completed base year inventory are reviewed against the de minimis threshold definition. A source category is considered de minimis when it meets both of these criteria:

1. The source category (or categories) when aggregated over the Reporting Unit are less than 5% of the Reporting Unit's total GHG emissions. This means that if there are 5 source categories to be excluded, each one must represent less than 5% and together the categories may not exceed 5%; and
2. The Reporting Unit's total excluded source category is less than 50,000 tonnes. This quantity limit was chosen as it represents approximately 1.0% of our corporate GHG emissions.

If a business unit emission category meets the de minimis test, the source may be excluded from the inventory in future years and reported as de minimis. Each year the Air Subject Matter Experts (SMEs) reviews the sources considered de minimis and obtains confirmation from the reporting unit that the source has not changed in a way that would no longer qualify it as de minimis. Examples of significant operational changes include rapid increase in operational activity, and installation of major new equipment.

### 9.2.3 Application of the Quantification Methodologies

Hess employs the Enviance emissions quantification system that rolls up emissions data from facilities and business units. This application allows flexibility in how it consolidates and reports GHG emissions and supports consistent use of selected quantification methodologies.

### 9.2.4 Value Chain Emissions Reporting

Reporting of value chain emissions is based primarily on the WRI/WBCSD Greenhouse Gas Protocol. Hess also refers to the IPIECA/API document *Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions Overview of Methodologies (June 2016)*. Hess has applied a materiality threshold of 5% of Category 11 emissions to determine the relevance of other Scope 3 categories, with the exception of employee business travel on commercial carriers, and has determined that the only other material category is Category 10, Processing of Sold Products.

Value chain emissions are emissions resulting from upstream (e.g., supply chain) or downstream (e.g., customer use) activities **associated** with a company's operations but which are **not performed** by the company.

## 9.3 GHG Global Warming Potentials

To convert inventory emissions from varied GHG to the common unit of carbon dioxide equivalents (CO<sub>2</sub>e), the Intergovernmental Panel on Climate Change (IPCC) identified 100-year GWPs in *Climate Change 1995: The Science of Climate Change*, also known as the *Second Assessment Report (AR-2)*. Changes to GWPs were made in the IPCC Third Assessment Report, *Climate Change 2001*, and Fourth Assessment Report, *Climate Change 2007: Synthesis Report (AR-4)*. Through the 2013 reporting year and the end of its 5-year Climate Change Strategy, Hess used the Second Assessment GWPs. This was because EPA's regulatory requirements and most of the existing national inventories, trading schemes, and Kyoto mechanisms referred to this document. However, Hess' 2014 and later GHG inventories will reflect the Fourth Assessment Report values. This is consistent with recent changes in US regulatory programs and international acceptance of the AR-4 values.

Table 2 . Global Warming Potentials Utilized by Hess

GHG	AR-2: Through Completion of Hess' 5-year Climate Change Strategy (2013)	AR-4: 2014 and After
CO <sub>2</sub>	1	1
CH <sub>4</sub>	21	25
N <sub>2</sub> O	310	298

### 9.4 Changes to Quantification Methodologies

Hess' largest GHG emissions sources are fuel combustion and flaring. Hess uses the GHG emission factors from EPA's Mandatory Reporting Rule and has a regulatory tracking tool that notifies the Air Subject Matter Experts (SME) if these factors are revised by EPA. If the factors are revised then the Air SMEs will work with Enviance to input the new factors into the Enviance GHG calculation tool. Enviance also notifies Hess when they become aware of any emission

factor revisions. The Air SMEs also monitor regulatory and industry emission factor activity and will work with Enviance to update emission factors as needed.

## 10.0 INVENTORY QUALITY AND UNCERTAINTY

### 10.1 Introduction

GHG Inventory quality refers to the general accuracy and consistency between an organization's actual GHG emissions and quantified GHG emissions. Since a GHG Inventory is a data product upon which a variety of stakeholders may rely, overall GHG emissions quality affects the confidence that these stakeholders can have in the final inventory. Quality and confidence have increased significance when the decisions or actions are related to issues of regulatory compliance or financial management, such as emissions trading.

The difference between actual and quantified GHG emissions results from uncertainty introduced during activity data collection, data management, emissions calculations, and reporting. Inventory quality is potentially impacted as data progresses from "stack" to report.

#### HESS GHG INVENTORY QUALITY AND UNCERTAINTY IN BRIEF

Inventory quality activities are undertaken as part of the Hess GHG management system. These include:

- Inventory process and systems,
- Methods,
- Responsibilities,
- Data, and
- Documentation.

Hess quantification methodology associates ranges of uncertainty to the tier of the source data that a facility submits.

Hess conducts third-party assurance of its annual sustainability report that includes a review of its GHG inventory.

Hess conducts an uncertainty assessment to identify the major areas of uncertainty associated with its GHG inventory.

All GHG inventories are subject to uncertainty, both inherent and systemic:

- Inherent uncertainty refers to random errors or the difference between a true amount and a quantified amount resulting from a quantification approach. Although inherent uncertainty can be minimized, it always exists.
- Systemic uncertainty refers to errors resulting from the inventory process. Systemic uncertainty can be minimized by careful inventory design and the implementation of quality assurance and control measures.

Methods to reduce and control uncertainty include use of:

- Best practice processes.



- Best practices emissions calculations and factors.
- Reviews and accuracy checks on activity data.
- Third-party assurance review.

Control is related to uncertainty. For assets and operations for which an organization does not have operational control (assets included in the equity share approach to boundaries), higher levels of uncertainty are introduced due to the limited ability of the organization to ensure the use of methods and practices to reduce and control uncertainty. Scope 3 emissions may also have higher levels of uncertainty due to the control issue.

## 10.2 Inventory Quality

Hess ensures inventory quality throughout the data collection, documentation, calculation and roll-up processes. Checks begin at the source of emissions and follow the data to its final aggregated form.

Specific actions regarding Hess inventory quality are applied to the following major components of its GHG management system:

- Inventory process and systems,
- Responsibilities,
- Methods,
- Data, and
- Documentation.

### 10.2.1 Inventory Process and Systems

The Hess GHG Inventory process is based upon recognized best practices including the WBCSD/WRI GHG Protocol and the IPIECA Guidelines. These reference documents compile the insights of a broad group of industry, environmental, and government experts and have adhered to guidance provided to implement quality-based inventory process and systems. Key to the inventory process and systems are the identification of the inventory principles, which provide direction to all aspects of the effort. Hess uses environmental management systems at many of its operated facilities.

### 10.2.2 Methods

Inventory methods include all technical aspects of conducting the GHG Inventory. The methods used in the Hess GHG Inventory have been chosen and effectively implemented to ensure quality results. The Hess GHG Inventory boundaries consider aspects of operational control and equity share to provide flexibility to choose whatever approach is recognized as best practice.

Hess has selected industry GHG emissions quantification methods prescribed by EPA's Mandatory Reporting Rule (MRR) as the primary approach where data is available. These



quantification methods are applied consistently to all facilities within the corporation's organizational boundaries.

### 10.2.3 Data

Throughout the GHG Inventory process, systems and methods create an environment that supports data quality. To ensure this, the GHG Inventory process includes data quality management at several points.

Inventory quantification methodologies use submitted activity data to estimate emissions for particular facility sources. Data collection processes and procedures are designed to maximize clarity and understanding of expectations and minimize errors in these efforts.

Hess conducts a variety of data checks of facility submitted data, including but not limited to:

- Periodic sampling of activity data during internal audits to confirm accuracy and quality.
- Different activity data for particular sources are cross-referenced.
- Comparison of previous years' data to current data to identify inconsistencies.

Hess also confirms that quantification methods are accurately performed in the following ways, including but not limited to:

- Review of the emission factors employed.
- Independent recalculation of sampled computations.

### 10.2.4 Documentation

Inventory documentation is key to inventory quality in terms of execution and assessment. Systems, processes, and methods are documented to ensure that the inventory is built on quality data. Such documentation, including records and work products, from the performance of inventory tasks allows for the review, confirmation, clarification, and verification that these tasks met quality expectations. The Enviance GHG calculation tool holds all of the calculation input and output data and can generate reports to assist in data review and verification.

Hess GHG Inventory documentation includes this GHG Inventory Protocol that provides an overview of the approach and the process. Previously mentioned references also provide additional clarification for inventory efforts. Finally, documentation related to Hess environmental management systems acts as an additional reference for both environmental management and quality assurance issues related to the inventory.

Detailed records of primary and secondary inventory data are maintained in addition to clear records of calculations and assumptions used in the generation of data and supporting text. This documentation is necessary to explain changes over time and forms part of the audit trail necessary for assurance.

### 10.2.5 Independent Assurance

In pursuit of quality data, Hess submits its GHG Inventory to assurance by an independent third party. Assurance is discussed in further detail in a subsequent section of this protocol.

### 10.3 Inventory Uncertainty

Although the Hess GHG Inventory is subject to uncertainty that cannot be eliminated, such uncertainty should be identified and managed. Quality control and assurance measures identified in the previous subsection are intended to address and minimize systemic and inherent uncertainty in the Hess GHG Inventory.

Hess also takes steps to specifically understand the uncertainty in its GHG Inventory:

- Facilities or Air SMEs identify the source of data when submitting inventory data for corporate rollup so that uncertainty can be assessed.
- Hess Air SMEs conduct assessments to identify the major areas of uncertainty associated with its GHG inventory.
- Hess provides information regarding uncertainty in its GHG inventory in the company's annual Carbon Disclosure Project (CDP) response.

## 11.0 REPORTING AND ASSURANCE

### 11.1 Reporting

#### 11.1.1 Introduction to Reporting

A GHG inventory report is a specialized document that summarizes relevant information drawn from the GHG inventory for different stakeholders of the report. In response to concerns from stakeholders related to environmental issues, many corporations publicly provide GHG emissions information. Specific parties that analyze public corporate GHG reports include stockholders, investment firms, environmental groups, government agencies, members of facility communities, and others

#### 11.1.2 Internal GHG Inventory Reporting Practices

Internal reporting of the GHG Inventory is provided to managers at the corporate, business unit, and facility level. In addition to summary tables provided to give internal users a quick overview of key information, these reports include information at a level of detail necessary to assist individuals with operational decisions related to GHG management.

#### 11.1.3 External Voluntary GHG Reporting Practices

Hess reports its GHG emissions, which are assured by an independent third party, as part of its annual corporate sustainability report.

#### HESS GHG REPORTING AND ASSURANCE IN BRIEF

Hess communicates the results of its GHG Inventory internally to managers via internal reporting and externally to its stakeholders as part of its annual sustainability report.

Hess conducts third party assurance of its annual sustainability report that includes review of the GHG Inventory. The level of assurance is set at limited. This Hess GHG Inventory Protocol acts as the standard against which assurance is performed.

The materiality threshold for a material misstatement of the Hess GHG Inventory is 5% of either direct emissions or indirect emissions totals, respectively.





In general, public reporting of the Hess GHG inventory, either in the annual corporate sustainability report, the annual CDP survey, or both, includes:

- A description of the organizational and operational boundaries;
- The approach to the consolidation of the inventory (by business unit, GHG type, scopes);
- The reporting period, base year, and adjustments to base year;
- Current year and previous year emissions data on both an operated and net equity basis;
- The methodologies used;
- Identification of material exclusions;
- Results of third-party assurance;
- Information on GHG projects and offsets;
- Context for emission changes including restatements, if any;
- Explanation of use of normalized data;
- Assessment of performance against benchmarks;
- Discussion of inventory quality and uncertainty;
- Other information sufficient to provide the reader the ability to interpret and understand the inventory.

Hess reports indirect emissions separate from its direct emissions, and specific direct and indirect emissions categories are also individually reported.

## 11.2 Reporting and Regulatory Requirements

The described reporting for the purposes of this protocol applies to the GHG Inventory of the entire Hess Corporation, as defined by its organizational boundaries. Certain operations and facilities may be subject to additional specific reporting requirements of regulatory programs under which they operate (i.e., the EU ETS and others). In these cases, relevant operations and/or facilities, with corporate support as necessary, submit the necessary reports to these programs. This protocol does not address this type of regulatory reporting.

## 11.3 Assurance

### 11.3.1 Introduction to Assurance

Assurance is a post-inventory assessment to determine if the GHG inventory adhered to specified standards regarding its structure and approach. Assurance also serves to assess the

accuracy and quality of resulting GHG emissions data. Though some organizations conduct self-assurance using internal auditors, GHG inventory assurance is most credible when conducted by independent third parties.

Assurance can be particularly relevant for organizations that are seeking early action protection from future regulations or participation in emissions trading. A verifier's opinion provides subsequent users of the GHG information, including the sellers and buyers of the emissions and reductions, an assurance of its reliability and quality.

GHG assurance includes a review of the inventory process and systems, and interviews with personnel having inventory responsibilities to identify areas where potential errors might be likely to occur (due to a lack of clear instructions or weak controls for example). Verifiers then focus on these risk areas and follow an audit trail by checking calculations and sampling input data sources to identify if errors actually exist.

Assurance considers the significance, or the "materiality," of any errors identified. Materiality in the context of assurance addresses the significance of omissions, errors, or other misstatements that are identified during the assurance assessment. Small random errors, particularly if easily corrected, are considered immaterial. Larger, multiple, or systemic errors are generally recognized as material and require corrective action. The materiality threshold is a level or percentage of the total emissions that assurers use to determine whether an error or omission is a significant misstatement.

Materiality is the magnitude of an omission or misstatement of GHG information that makes it likely that the judgment of a reasonable person relying on the information would have been influenced by the omission or misstatement.

The assurer provides either reasonable or limited assurance. For a reasonable level of assurance, the validator or verifier provides a reasonable, but not absolute, level of assurance that the responsible party's GHG assertion is materially correct. A limited level assurance is distinguishable from a reasonable level of assurance in that there is less emphasis on detailed testing of GHG data and information supplied to support the GHG assertion.

Though all verifications result in a report of the auditors' findings, most also include a statement, or opinion, summarizing the process and an overall assessment of the data, including any qualifications. Many organizations share this opinion with GHG Report users as evidence of inventory quality.

### 11.3.2 GHG Inventory Assurance

The Hess GHG Inventory assurance is guided by this Hess GHG Inventory Protocol.

- Approach and Process – The Hess GHG Inventory is verified by an independent third party on an annual basis. This GHG Inventory assurance may be undertaken as part of the wider corporate sustainability report verification and auditing efforts or as a separate engagement. The third-party independent assurance is performed according to appropriate standards. In addition, the competence and performance of the independent third party are determined according to appropriate standards.

- Scope and Standards – Hess defines and provides the assurance scope to its auditors during the contracting process. The verification of the Hess GHG Inventory uses this Protocol as the principal standard. Hess may also verify its GHG inventory against other appropriate standards, such as the *International Organization for Standardization (ISO) 14064-3:2006: Specification with guidance for the validation and verification of greenhouse gas assertions*.
- Materiality Threshold – The materiality threshold for a material misstatement of the Hess Scope 1 and Scope 2 GHG Inventory is 5% of the combined Scope 1 and Scope 2 emissions totals, respectively. The materiality threshold for a material misstatement of the Hess Scope 3 GHG Inventory is 5% of Category 11, Use of Sold Products emissions.
- Level of Assurance – The Hess inventory is verified to the limited level of assurance.

### 11.3.3 Verification Preparation

Hess ensures that it is prepared for verification, generally by:

- Understanding, in advance, the verification process and objectives, and
- Careful planning and deliberate execution of its GHG inventory.

Specific preparation entails:

- Selecting representative sites for source data reviews;
- Documenting the inventory process, systems, procedures, and methods;
- Defining and communicating inventory roles and responsibilities;
- Documenting inventory activities and retaining relevant records ensuring accessibility; and
- Recognizing the level of assurance and the materiality threshold of inventory results required by Hess.

### 11.3.4 Corrective Action

In the event that the assurance process identifies errors, omissions, or deficiencies in the Hess inventory, such as a material misstatement, or insufficient evidence to evaluate conformance, the corrective action is assigned to the party in Hess with responsibility for the activity subject to the corrective action, consistent with the role responsibilities assigned in the protocol.

## 12.0 REFERENCES

Table 3: Reference Documents lists the references that support this guideline:

**Table 3: Reference Documents**

Document Number	Document Title
	Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry (2009)
	Corporate Annual Report
	Corporate Value Chain (Scope 3) Accounting and Reporting Standard (September 2011)
	Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions Overview of Methodologies (June 2016)
	GHG Inventory Guidance
	GHG Protocol Scope 2 Guidance
	Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions (2nd Edition, May 2011)
	The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard (Revised Edition)
IPCC AR-2	Climate Change 1995: The Science of Climate Change (Second Assessment Report)
IPCC AR-3	Climate Change 2001 (Third Assessment Report)
IPCC AR-4	Climate Change 2007: Synthesis Report (Fourth Assessment Report)
ISO 14064-1:2006	Greenhouse gases – Part 1: Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals