

# 1 Fundamentals of Greenhouse Gas Emissions Management

## 1.1 Course Description

This course provides a foundational understanding of greenhouse gas (GHG) emissions management for the pipeline industry. It introduces the environmental impacts of GHGs and the driving forces behind their management, as well as the primary sources of emissions across industry. Learners will examine the core approaches for quantifying and reducing emissions and gain an understanding of the practical aspects of managing emissions through a phased management framework. Delivered online in a self-paced format, the course includes interactive elements and periodic self-assessments, offering flexibility for learners to progress at their own pace. By integrating operational, compliance, and financial viewpoints, this course highlights how emissions management supports organizational performance and long-term strategy.

**Format:** Online

**Duration:** ~3 hours

## 1.2 Learning Objectives

By the end of the course, participants should be able to:

- 1 Define greenhouse gases (GHGs), their environmental role, and the impacts of excess atmospheric GHGs.
- 2 Be aware of the regulations, codes, and standards that create requirements or offer guidance for managing GHG emissions.
- 3 Describe the three main sources of GHG emissions in the pipeline industry (i.e., combustion, vented, and fugitive), the activities that produce them, and their relative significance across industry.
- 4 Articulate and describe, at a high level, the four main methods for quantifying GHG emissions.
- 5 Recognize sources of uncertainty and ambiguity in GHG emissions management for the pipeline industry.
- 6 Describe a phased framework for GHG emissions management, covering the activities carried out in development, deployment, and maintenance of a GHG emissions management program.

## 1.3 Who Should Take This Course

The course is best suited for:

- Individuals with an engineering/technical background who are new to or are looking to become actively involved in greenhouse gas emissions-related sustainability functions
- Individuals who work with stakeholders in greenhouse gas emissions management, accounting, and/or reporting and need to have a clear but basic understanding of the relevant terms and concepts.

## 1.4 Course Topics

Main topic areas covered in this course include:

- Topic 1: Background – Greenhouse Gases and Their Impacts
  - GHGs
  - GHGs of Concern in the Pipeline Industry
  - Representations of GHGs and Emissions
  - Why Manage GHG Emissions

- Drivers for GHG Emissions Management
- Benefits of Managing Emissions
- Codes, Standards, and Industry Guidance
- Topic 2: Classifying, Quantifying, and Reducing GHG Emissions
  - Classifying GHG Emissions
  - Estimation and Measurement
  - Reduction Methods
- Topic 3: A Framework for GHG Emissions Management
  - Overview of the Management Framework
  - Phase 1: Set the Boundaries of the GHG Emissions Management Program
  - Phase 2: Establish the Base Year Inventory and Quantify Emissions
  - Phase 3: Develop a Detailed GHG Emissions Program
  - Phase 4: Implement the GHG Emissions Program