



## General

The ICIS Greenhouse Gas (GHG) Program provides a standardized framework for the measurement, reporting, and management of greenhouse gas emissions across organizational operations, product life cycles, and value chains. Developed under the International Climate Intelligence System (ICIS) and aligned with global protocols such as the GHG Protocol, ISO 14064, and the Paris Agreement objectives, the program supports consistent, credible, and science-based carbon accounting practices.

The program enables organizations to identify, quantify, and disclose emissions from Scope 1 (direct), Scope 2 (indirect from purchased energy), and Scope 3 (value chain) sources. It also guides the development of emission reduction strategies aligned with net-zero and science-based targets. With robust verification mechanisms and transparency requirements, the ICIS GHG Program enhances stakeholder confidence, regulatory compliance, and investor credibility.

By participating in the ICIS Greenhouse Gas Program, organizations can:

- Establish a verifiable GHG inventory in line with international standards.
- Track and benchmark emission performance across facilities, business units, or supply chains.
- Develop data-driven decarbonization plans to meet internal and external climate commitments.
- Strengthen ESG disclosures and support participation in climate-related financial reporting frameworks.

This program reinforces ICIS's broader mission to support environmentally responsible growth through actionable intelligence, verifiable standards, and global collaboration.

## Disclaimer for Greenhouse Gas (GHG) Program

This document is provided solely for informational purposes as part of the ICIS Greenhouse Gas Program. It does not constitute legal advice, regulatory guidance, or a guarantee of certification. While the content reflects international best practices and recognized GHG accounting frameworks, organizations must consult relevant laws, standards, and sector-specific regulations to ensure full compliance.

Program guidance, methodologies, and requirements may evolve to reflect new scientific insights, technological innovations, or international policy developments. ICIS assumes no liability for actions taken based on this material. For the latest requirements and official certification pathways, please refer to [www.climateintell.com](http://www.climateintell.com) or contact an authorized ICIS representative.

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## 1.0 INTRODUCTION AND PROGRAM OBJECTIVE

Greenhouse gases (GHGs) are atmospheric gases—such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O)—that trap heat and contribute to climate change. These gases vary in potency, with their impact measured using Global Warming Potential (GWP). While CO<sub>2</sub> is the baseline, gases like methane and certain fluorinated compounds can be many times more powerful in their warming effect.

As climate change intensifies, accurate GHG accounting has become critical for organizations worldwide. Measuring and reporting emissions enables companies to identify high-impact areas, reduce their carbon footprint, and meet growing regulatory and stakeholder expectations. Verification by third parties ensures data credibility and builds trust in reported claims.

The ICIS Greenhouse Gas Certification Program supports organizations in aligning with international standards such as ISO 14064 and the GHG Protocol. The program promotes standardized and transparent emissions reporting, helping organizations track progress, demonstrate climate leadership, and prepare for participation in carbon markets.

The program's core objectives include:

- Establishing consistent and accurate measurement methods
- Supporting transparent stakeholder reporting
- Enabling emission reduction planning and science-based target setting
- Ensuring compliance with regulatory frameworks
- Preparing organizations for carbon trading and offset mechanisms

By creating common metrics and reporting structures, ICIS enables cross-sector comparisons, informs policy development, and supports integration of climate data into financial and investment decisions. The program ultimately empowers organizations to take meaningful, verifiable climate action and contribute to a low-carbon global economy.

## 2.0 ICIS CERTIFICATION PROCESS

The ICIS Greenhouse Gas (GHG) Certification Program provides formal recognition to organizations that accurately measure, verify, and disclose their greenhouse gas emissions in alignment with ICIS program standards. Certification enhances the credibility of reported emissions data and demonstrates the organization's commitment to climate responsibility. To obtain ICIS GHG certification, organizations must follow a structured process: application, required documents, verification procedure, certification issuance, logo usage, and annual renewal.

### 2.1 Application

Organizations seeking certification must submit an application through [www.climateintell.com](http://www.climateintell.com).

Required application details include:

- Legal entity details and point of contact
- Organizational boundaries (sites, operations, scope covered)
- Reporting year and base year for emissions
- Signed declaration of compliance with ICIS certification principles

## 2.2 Required Documents

Applicants must provide the following:

- GHG inventory report for Scope 1, 2, and optionally Scope 3 emissions
- Description of data sources, calculation methods, and emission factors used
- Documentation of internal quality assurance procedures
- Third-party verification report (if available)
- Organizational chart and facility descriptions
- Data uncertainty and materiality assessments

## 2.3 Verification Procedure

ICIS conducts an initial review of the submitted documentation. A qualified third-party verifier, accredited by ICIS or its partner institutions, is assigned to:

- Review inventory data and methodology
- Conduct interviews or site visits (if required)
- Assess alignment with ISO 14064 and ICIS program rules
- Issue a verification opinion and recommendations

## 2.4 Certificate Issuance

Upon successful verification:

- ICIS issues a formal Certificate of Conformance, valid for one year
- The certified organization is listed in the ICIS public registry
- A certification letter and verification summary are shared

## 2.5 Logo Usage and Annual Renewal

Certified entities may use the ICIS GHG Certification logo in their sustainability reports, websites, and communications. Logo use must adhere to ICIS branding guidelines and not imply endorsement beyond the verified certification scope.

Certification must be renewed annually. Organizations are required to:

- Submit updated emissions data for the new reporting period
- Report significant changes in operations or boundaries
- Undergo re-verification if material changes are identified

# 3.0 REGULATORY CONTEXT

Understanding the regulatory environment is essential for organizations seeking greenhouse gas certification. National and international climate commitments, sector-specific rules, and evolving disclosure frameworks shape how emissions must be measured, managed, and reported.

## 3.1 International Agreements

The Paris Agreement, adopted under the UNFCCC, forms the global framework for climate action. It requires countries to submit and update Nationally Determined Contributions (NDCs) outlining emission reduction targets. These commitments increasingly translate into national policies and reporting obligations that affect organizational operations across regions.

### **3.2 Regional Carbon Regulations**

Several regions have implemented carbon pricing and emissions trading systems (ETS), such as the EU Emissions Trading System, California's Cap-and-Trade Program, and China's national ETS. These systems place financial value on emissions and often require companies to monitor and report data with third-party verification. Organizations operating in regulated sectors must ensure their GHG accounting aligns with applicable system requirements.

### **3.3 Sector Specific Compliance**

Certain sectors face tailored climate regulations. Aviation adheres to CORSIA standards, maritime to IMO emission rules, and heavy industries like cement, energy, and chemicals often have mandatory GHG reporting and reduction targets. Organizations must understand the specific rules governing their industry to ensure compliance and eligibility for ICIS certification.

### **3.4 Emerging Trends**

Climate regulation is rapidly expanding to include:

- Carbon border adjustments (taxing high-carbon imports)
- Mandatory climate risk disclosures
- Expanded carbon pricing and Scope 3 tracking requirements
- Integration into financial and ESG reporting systems

These trends increase the need for transparent, auditable carbon data at the organizational level.

### **3.5 ESG and Disclosure Frameworks**

Greenhouse gas reporting is increasingly embedded within ESG frameworks. Investors and regulators expect alignment with guidelines like the Task Force on Climate-related Financial Disclosures (TCFD) and similar standards. A strong GHG reporting program supports broader sustainability strategies and enhances credibility in ESG performance reporting.

## **4.0 ORGANIZATIONAL BOUNDARIES**

Defining clear organizational boundaries is a critical step in preparing a GHG inventory. The ICIS framework recognizes three standard approaches—Operational Control, Financial Control, and Equity Share—in alignment with global reporting standards. The selected approach must be applied consistently and documented for transparency and verification.

### **4.1 Operational Control Approach**

This is the preferred method under ICIS. Under this approach, an organization accounts for 100% of emissions from operations over which it has full authority to implement operational policies. It emphasizes the organization's ability to influence emissions through day-to-day management decisions.

Key considerations:

- Who holds authority to implement operating and environmental policies
- Whether emission reduction measures can be initiated and enforced
- How contractual terms define operational responsibilities

## 4.2 Financial Control Approach

This method accounts for emissions from operations over which the organization has the right to direct financial and operating policies, typically aligned with financial reporting standards. It applies when economic benefits and risks rest with the reporting entity.

Considerations include:

- Degree of financial oversight and consolidation
- Assessment of financial risks and returns
- Structure of lease agreements (capital vs. operational)

## 4.3 Equity Share Approach

Under this approach, emissions are reported based on the organization's percentage of ownership or economic interest in an entity. It is often used for joint ventures and partnerships and provides a financial ownership-based perspective of emissions.

## 4.4 Boundary Selection and Documentation

The choice of boundary approach should consider:

- Organizational structure and reporting goals
- Regulatory vs. voluntary disclosure requirements
- Industry practices and stakeholder expectations

Organizations must document:

- The selected boundary method and rationale
- Entities included and excluded
- Ownership percentages and control relationships

Consistency over time is critical to enable meaningful year-to-year comparison. Boundary documentation supports both internal tracking and third-party verification under ICIS certification requirements.

# 5.0 EMISSIONS SCOPE CLASSIFICATIONS

The ICIS framework categorizes greenhouse gas emissions into three scopes, consistent with internationally accepted protocols. This classification ensures consistent reporting, supports reduction strategies, and clarifies the origin of emissions across operations and the value chain.

## 5.1 Scope 1—Direct Emissions

Scope 1 includes emissions from sources that are owned or directly controlled by the organization.

These typically arise from:

- **Stationary combustion** (e.g., boilers, generators)
- **Mobile combustion** (e.g., fleet vehicles)
- **Process emissions** (e.g., industrial or chemical reactions)
- **Fugitive emissions** (e.g., refrigerant leaks, gas vents)

These emissions are under the organization's operational control and are a primary focus of reduction efforts.

## 5.2 Scope 2—Indirect Energy Emissions

Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, or cooling. While physically occurring at the energy provider's site, they are attributed to the consuming organization.

Two reporting methods are accepted:

- **Location-based:** Reflects average grid emission factors
- **Market-based:** Reflects emissions based on supplier-specific or contractual instruments

ICIS allows either method but recommends disclosing both where data is available.

## 5.3 Scope 3—Value Chain Emissions

Scope 3 includes all other indirect emissions from upstream and downstream activities not owned or controlled by the organization. These are often the largest portion of total emissions.

Examples include:

- **Upstream:** Purchased goods, business travel, fuel production, transport
- **Downstream:** Product use, waste disposal, leased assets, investments

Fifteen categories are defined by the GHG Protocol. ICIS encourages prioritizing high-impact categories and improving data quality over time.

## 5.4 Sectoral Emissions Profiles

Emissions profiles differ by industry:

- **Manufacturing:** High Scope 1 (process and fuel use)
- **Utilities:** Dominant Scope 1 (generation emissions)
- **Retail and service sectors:** Larger Scope 3 footprints (product use, supply chain)
- **Technology and finance:** High Scope 2 and Scope 3 (cloud services, travel, financed emissions)

Understanding your sector's typical footprint helps prioritize data collection and reduction strategies effectively.

# 6.0 MEASUREMENT METHODOLOGIES

Accurate GHG measurement is essential for certification under the ICIS framework. Organizations may use various recognized methods, depending on the source type, availability of data, and sector-specific requirements. The chosen methodology should be consistently applied and documented.

## 6.1 Direct Measurement

Direct measurement techniques, such as Continuous Emissions Monitoring Systems (CEMS) and portable gas analyzers, provide real-time data from large stationary sources (e.g., stacks, furnaces). While highly accurate, they require significant capital investment, technical oversight, and are generally suited to regulated or high-emitting operations.

## 6.2 Calculation Based Approach

The most widely used method involves applying emission factors to activity data:

Emissions = Activity Data × Emission Factor × Global Warming Potential (GWP)

- **Activity data:** Quantified input (e.g., fuel use, production output)
- **Emission factors:** From ICIS-approved databases, national inventories, or industry sources
- **GWP values:** As defined by the latest IPCC assessment

This approach is flexible, cost-effective, and suitable for most emissions sources.

## 6.3 Activity Data Quality

Reliable activity data is critical for inventory accuracy. Organizations should:

- Use primary data where available
- Establish regular collection intervals
- Implement quality assurance checks
- Maintain documentation of sources and assumptions

Where feasible, automated systems integrated with operational technologies enhance data quality and traceability.

## 6.4 Mass Balance Methods

Used mainly in process industries, mass balance tracks material inputs and outputs to estimate emissions based on conservation of mass. This method is appropriate when emissions factors are not available or direct monitoring is impractical. Detailed material flow tracking is required for reliable results.

## 6.5 Uncertainty Assessment

Uncertainty should be assessed and disclosed for all emissions estimates. Two primary sources are:

- **Scientific uncertainty:** Variability in emission processes
- **Estimation uncertainty:** Data gaps, assumptions, or methodology limitations

ICIS recommends quantifying uncertainty for significant sources using recognized statistical methods and prioritizing improvements where emissions are material or targeted for reduction.

# 7.0 DATA MANAGEMENT SYSTEMS

Accurate greenhouse gas reporting requires robust systems for collecting, managing, and retaining emissions data. The ICIS framework emphasizes traceability, data integrity, and consistent documentation to support third-party verification.

## 7.1 Emissions Data Platforms

A reliable data platform serves as the backbone of a GHG program. At minimum, it should support:

- Secure storage with access controls
- Transparent calculation using approved methods
- Audit trails and version tracking
- Configurable reporting formats compatible with ICIS requirements

Advanced systems may include automated data feeds, real-time dashboards, or integration with financial and sustainability reporting tools.

## **7.2 Integration with Environmental Systems**

Where possible, organizations should integrate GHG data management into existing environmental management systems (EMS), such as ISO 14001. This improves consistency, leverages established workflows, and supports broader sustainability governance.

Integration options include:

- Expanding EMS scope to cover GHGs
- Linking emissions tracking tools with compliance systems
- Using shared platforms for centralized environmental reporting

## **7.3 Quality Control Measures**

Data quality is critical for reliable inventories. Organizations should implement:

- Validation checks (e.g. range limits, unit consistency)
- Review protocols to detect anomalies or gaps
- Cross-verification between data sources
- Expert review of significant emissions entries

These procedures should be documented in a formal data quality management plan, with roles and responsibilities clearly assigned.

## **7.4 Documentation and Recordkeeping**

To meet ICIS verification standards, organizations must retain:

- Raw data inputs and calculation sheets
- Emission factors and methodologies
- Boundary justifications and inventory results
- QA/QC reviews and updates

Records should be maintained for at least seven years, in secure digital formats with access control and version tracking.

## **7.5 Cybersecurity and Data Protection**

As GHG data increasingly supports regulatory filings and investment decisions, organizations must ensure its confidentiality and integrity. Minimum protections include:

- Password-protected access and user authentication
- Encrypted storage and regular backups
- Activity logs and role-based approvals
- Regular system security audits

GHG data systems should meet the same security standards as other business-critical systems to ensure reliability and trustworthiness.

## 8.0 QUANTIFICATION TOOLS & RESOURCES

The ICIS framework supports a range of standardized tools and data resources to ensure accurate, transparent, and verifiable greenhouse gas quantification across sectors and emission sources.

### 8.1 Sector Specific Calculators

ICIS recognizes the use of sector-tailored emissions calculators that align with approved methodologies. For example:

- Power generation companies may apply the GHG Protocol Power Sector Tool to estimate emissions from various fuel types and grid mixes
- Manufacturing facilities can utilize the ICIS Manufacturing Emissions Calculator, which includes process-specific emission factors and supports complex production flows
- Transport operators may adopt fleet-specific tools such as the Transport Emissions Calculation Tool, which accounts for vehicle type, fuel use, and operational data
- Building operators may use the Building Energy and Carbon Calculator, which supports Scope 2 calculations using both location-based and market-based methods

Organizations should select tools based on operational relevance, regulatory alignment, and compatibility with ICIS reporting standards.

### 8.2 Default Emission Factors

The ICIS database of default emission factors provides standardized conversion values by source type, region, and technology. These factors are updated annually and must be referenced by source and year in GHG inventory documentation. When possible, organizations should:

- Use location- and technology-specific factors
- Document factor sources and version
- Apply factors consistently across similar activities

Custom emission factors may be developed when default values do not adequately reflect operational reality. Such factors require justification and supporting data.

### 8.3 Software Platform Guidance

Organizations may implement either spreadsheet-based tools or enterprise-level systems, provided they support ICIS requirements for traceability, documentation, and auditability. Common platform features include:

- Activity data import from business or control systems
- Emissions calculation using ICIS-approved methods
- Support for multi-user access and workflow approvals
- Exportable inventory and verification documentation

Examples of compatible platforms include Emissions Hub Enterprise, CarbonTrack Pro, and GHG Manager Suite. System selection should consider scalability, reporting needs, and IT integration.

### 8.4 Uncertainty Calculation Methods

Uncertainty analysis supports transparency in emissions reporting. ICIS recognizes several approaches, including:

- **IPCC Tiered Methods:** Combining statistical estimates with expert judgment
- **Monte Carlo Simulations:** Suitable for complex models with variable inputs
- **Error Propagation:** For combining uncertainties across emission categories

Organizations should apply more detailed analysis to high-impact emission sources and disclose the methods used in their verification documents.

## 9.0 VERIFICATION & ASSURANCE

Independent third-party verification is required for ICIS certification to ensure that reported emissions are accurate, complete, and compliant with accepted standards.

### 9.1 Internal Preparation

Before formal verification, organizations must compile their GHG inventory, document calculation methods, validate activity data, and conduct internal reviews. This preparation ensures that supporting evidence is complete and traceable across all emission scopes and sources.

### 9.2 Verifier Selection

Verification must be conducted by an accredited third-party body approved by ICIS or recognized accreditation systems. Verifiers must maintain independence and demonstrate sector-relevant expertise. Organizations should engage verifiers early in the reporting cycle to allow sufficient review time.

### 9.3 Verification Process

The verification process includes:

- Evaluation of GHG boundaries and accounting methods
- Sampling and testing of emissions data
- Review of data systems and internal controls
- Interviews with responsible personnel and optional site visits

The outcome is a formal verification statement that includes assurance level, material findings, and recommendations.

### 9.4 Addressing Discrepancies

If discrepancies are identified, organizations must take corrective action before certification is granted. Material errors require adjustment to the inventory, while smaller issues may be recorded as improvements. All corrections and resolutions should be documented and retained for audit purposes.

## 10.0 REPORTING REQUIREMENTS

ICIS requires organizations to submit structured and verifiable emissions reports that reflect standardized data, consistent boundaries, and approved methodologies.

### 10.1 Required Report Elements

<b>Reporting Element</b>	<b>Description</b>	<b>Requirement Level</b>
Organizational Information	Legal name, reporting period, contact details	Mandatory
Organizational Boundaries	Approach used, entities included/excluded	Mandatory
Reporting Boundaries	Scopes included, operational boundaries	Mandatory
Base Year Information	Base year selected, emissions, recalculation policy	Mandatory
Emissions Data	Scope 1, 2, and 3 emissions in metric tons CO <sub>2</sub> e	Mandatory
Emissions by Gas	Breakdown by individual greenhouse gases	Mandatory
Methodologies	Calculation approaches, emissions factors, GWPs	Mandatory
Exclusions	Sources excluded and justification	Mandatory
Uncertainty Assessment	Quantitative or qualitative assessment	Mandatory
Verification Statement	Third-party verification details and opinion	Mandatory
Emissions Intensity	Emissions per unit of output or activity	Optional
Reduction Targets	Established targets and progress	Optional
Reduction Initiatives	Description of mitigation activities	Optional
Offset Information	Details of purchased carbon offsets	Optional

## 10.2 Optional Enhanced Disclosure

Organizations are encouraged to go beyond minimum requirements by disclosing additional climate-related data. Enhanced disclosures may include:

- Emissions by facility or business unit
- Intensity metrics (e.g. per product/unit revenue)
- Historical emissions trends
- Full Scope 3 coverage
- Internal carbon pricing mechanisms
- Details of reduction strategies and impacts

These elements help demonstrate transparency, leadership, and alignment with international best practices.

### **10.3 Reporting Timelines**

To ensure timely verification and registry updates:

- A preliminary inventory must be submitted within 60 days of the reporting period's end
- A final verified report is due within 120 days

For calendar-year reporters, this typically means:

- Preliminary: by March 1
- Final: by April 30

Organizations using a fiscal year must follow the same 60/120-day rule.

### **10.4 Public Disclosure Practices**

While ICIS requires submission to its central registry, broader public disclosure is optional. If disclosed externally (e.g. sustainability reports, websites, investor filings), organizations should:

- Ensure consistency across channels
- Clearly define reporting boundaries
- Align messaging with the verified ICIS submission

### **10.5 Integration with Financial Reporting**

Where possible, GHG disclosures should align with financial reporting frameworks. This includes:

- Using consistent boundaries and base years
- Connecting emissions with performance indicators
- Preparing for emerging integrated reporting standards (e.g., ISSB, CDP, SASB)

Integrated reporting strengthens stakeholder trust and highlights climate-related business risks and opportunities.

## **11.0 EMISSIONS REDUCTION STRATEGIES**

Organizations certified under the ICIS program are encouraged to establish and disclose emissions reduction targets aligned with global climate goals.

### **11.1 Target Setting and Tracking**

Reduction targets should be based on a verified baseline year and specify clear boundaries. Both absolute emissions targets and intensity-based metrics (e.g., emissions per unit of production) are acceptable. Organizations should document their target year, reduction percentage, and applicable emission scopes.

Where possible, targets should align with international best practices, such as the 1.5°C ambition pathway, and be supported by internal reduction plans.

## 11.2 Emissions Reduction Measures

Implementation of reduction strategies may include energy efficiency upgrades, fuel switching, electrification, operational optimization, and engagement with suppliers. Progress should be tracked regularly and integrated into overall sustainability reporting.

## 11.3 Use of Carbon Offsets

Carbon offsets may be used to compensate for residual emissions that are not currently avoidable. Offset projects must meet established quality criteria including additionality, permanence, and third-party verification. ICIS recommends offsets be clearly disclosed and used to complement, not replace, internal reductions.

## 11.4 Renewable Energy Instruments

Organizations using renewable energy certificates (RECs) or guarantees of origin (GOs) for Scope 2 emissions must ensure that:

- Certificates are issued in approved registries
- Vintage year aligns with reporting year
- Environmental claims are exclusive and well-documented

Disclosure of quantity, type, and origin of certificates is required in the ICIS report.

## 12.0 IMPLEMENTATION INSIGHTS AND INNOVATION TRENDS

Organizations implementing GHG programs under the ICIS framework have demonstrated a variety of effective practices and innovations across sectors.

Manufacturers often begin with detailed energy mapping and process optimization, while commercial property operators adopt smart building systems and tenant engagement strategies to reduce emissions. In supply chains, effective programs include simplified data tools for suppliers, recognition systems, and phased capacity-building initiatives.

Across industries, successful programs typically:

- Set data-driven targets aligned with reduction potential
- Integrate carbon considerations into capital planning and procurement
- Use internal accountability structures to drive performance
- Focus on transparency and continuous improvement

Technological innovation also plays a key role. Organizations are increasingly leveraging:

- AI and machine learning to optimize high-emission processes
- IoT sensors for real-time emissions tracking
- Blockchain to enhance data transparency in complex supply chains
- Advanced analytics for identifying unexpected reduction opportunities

These strategies support both emissions performance and business efficiency, enabling organizations to align operational goals with climate commitments.

## 13.0 INTEGRATION WITH SUSTAINABILITY FRAMEWORKS

The ICIS GHG Program is designed to align with leading sustainability frameworks, enabling organizations to integrate verified emissions data across multiple disclosure and management systems.

### 13.1 ESG and Financial Reporting

GHG accounting forms the foundation of the environmental pillar of ESG reporting. ICIS-compliant inventories align with global frameworks such as:

- **GRI:** Scope- and gas-level emissions disclosure
- **SASB:** Industry-specific performance indicators
- **ISSB:** Climate risk and emissions integration

Ensuring consistency in organizational boundaries and methodologies enhances credibility and comparability.

### 13.2 TCFD and CDP Compatibility

ICIS methodology supports CDP reporting and the TCFD Metrics & Targets pillar. Organizations can use their verified ICIS inventory to:

- Report Scope 1, 2, and relevant Scope 3 emissions
- Support target setting and transition risk assessments
- Reduce duplication across sustainability disclosures

### 13.3 ISO 14001 Integration

Organizations with EMS frameworks (e.g., ISO 14001) can embed ICIS GHG procedures into their systems by:

- Including emissions in environmental aspects
- Aligning objectives and KPIs with GHG targets
- Documenting inventory procedures within EMS records

Where relevant, ICIS organizational inventories may be extended to product-level carbon footprints, using consistent allocation methodologies and life cycle boundaries.

## 14.0 APPENDICES

### 14.1 Appendix A—Glossary of Terms

<b>Term</b>	<b>Definition</b>
Activity Data	Quantitative measure of an activity that results in GHG emissions (e.g., liters of fuel consumed, kilowatt-hours of electricity used)
Base Year	Reference year for tracking emissions performance
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	Standard unit for comparing greenhouse gases based on GWP

Carbon Neutral	When total emissions are balanced by equivalent offsets or removals
Carbon Offset	Emission reductions used to compensate for emissions made elsewhere
GHG Protocol	Widely used international standard for emissions accounting
Emission Factor	Coefficient to convert activity data into GHG emissions.
Global Warming Potential (GWP)	Measure of how much a gas contributes to warming relative to CO <sub>2</sub>
Scope 1, 2, 3	Categories for direct and indirect emissions sources
ICIS Registry	Central database for recording GHG inventory data
Net Zero	Deep emission cuts with remaining emissions balanced by permanent removals
Science-Based Target	Emission reduction goal aligned with the Paris Agreement climate limits
Verification	Independent review of GHG data accuracy and compliance

Additional resources for understanding GHG terminology include the ICIS Technical Reference Library available at [www.climateintell.com/resources](http://www.climateintell.com/resources), the GHG Protocol glossary of terms, ISO 14064 standard definitions, and the UNFCCC glossary of climate change terms. Organizations are encouraged to develop internal glossaries that align with these authoritative sources while adding organization-specific terms relevant to their particular emissions profile and management approach.

## 14.2 Appendix B—Calculation Tools and Emission Factors

The tables below provide emission factors for common activities across different sectors. These factors should be applied to activity data to calculate the resulting GHG emissions using the general formula: Emissions (tCO<sub>2</sub>e) = Activity Data × Emission Factor × Global Warming Potential.

### Stationary Combustion Emission Factors (kg CO<sub>2</sub>e per unit)

Fuel Type	Unit	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
Natural Gas	MMBtu	53.06	0.001	0.0001	53.11
Propane	Gallon	5.72	0.003	0.0006	5.76
Diesel	Gallon	10.21	0.004	0.0001	10.29
Bituminous Coal	Short ton	2,325	0.25	0.035	2,343

### Mobile Combustion Emission Factors (kg CO<sub>2</sub>e per unit)

Vehicle/Fuel Type	Unit	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
Gasoline Passenger Car	Mile	0.335	0.00017	0.00033	0.344

Diesel Medium/Heavy Truck	Mile	1.455	0.00005	0.00048	1.600
Jet Fuel (Commercial)	Gallon	9.75	0.0006	0.0003	9.84

Electricity Grid Emission Factors (kg CO<sub>2</sub>e per MWh)

Country/Region	Emission Factor
United States (average)	417.2
European Union (average)	253.0
China (average)	609.8
India (average)	708.5

When applying these emission factors, organizations should use region-specific factors when available rather than national or global averages. Regular updates to emission factors are essential as grid electricity mixes change and technologies evolve. The ICIS Technical Reference Database at [www.climateintell.com/factors](http://www.climateintell.com/factors) provides quarterly updates to these factors based on the latest available data from national inventories and research institutions.

## 15.0 CONTACT AND SUPPORT INFORMATION

### 15.1 ICIS Helpdesk

For assistance with program implementation, reporting, or verification, contact the ICIS Helpdesk at [office@climateintell.com](mailto:office@climateintell.com). Support is available Monday to Friday, 8:00 AM – 8:00 PM (Eastern Time). Regional offices offer localized support in relevant time zones and languages.

### 15.2 Technical Support Resources

Organizations can access additional support through:

- **ICIS Expert Network** – Accredited consultants for customized implementation guidance
- **Technical Advisory Service** – Written responses to technical queries within five business days
- **Implementation Accelerator Program** – A structured package for first-time participants, including templates, step-by-step guides, and technical advisor check-ins

### 15.3 ICIS Learning Academy

To build in-house capabilities, the ICIS Learning Academy offers:

- Self-paced online modules
- Virtual instructor-led training
- ICIS Practitioner Certification for individual recognition
- Custom workshops for corporate teams, delivered by regional offices and tailored to industry-specific needs

## 16.0 DOCUMENT CONTROL & FUTURE UPDATES

The ICIS GHG Program is regularly updated to reflect current best practices and regulatory changes.

- **Current version:** 2.5 (Released January 2025)
- **Major updates:** Annually (January)
- **Minor revisions:** Quarterly

All change logs and revision histories are available at: [www.climateintell.com/revisions](http://www.climateintell.com/revisions)  
Organizations are notified of upcoming changes three months in advance via the ICIS Technical Update service

Planned 2025–2026 Updates will include:

- Revised guidance for biogenic emissions
- Expanded methodologies for carbon removals and sequestration
- Updated GWP values aligned with the latest IPCC report
- New sector-specific tools for emerging industries

To suggest improvements, use the feedback form at: [www.climateintell.com/feedback](http://www.climateintell.com/feedback)

## 17.0 CASE STUDIES IN CARBON FOOTPRINT REDUCTION

The ICIS Greenhouse Gas (GHG) Program provides a structured framework to help organizations measure, manage, and reduce their carbon footprint through standardized monitoring, reporting, and verification processes.

The program's core components include:

**Monitoring protocols** – Consistent and transparent measurement of emissions

**Reporting frameworks** – Aligned with international best practices

**Verification procedures** – Independent assurance of reported data

Benefits of Implementation:

- Improved regulatory compliance
- Stronger investor and stakeholder confidence
- Cost savings through operational efficiencies
- Access to carbon markets and alignment with science-based targets

Compliance Requirements:

- Annual emissions reports
- Transparent documentation of methods
- Third-party verification by ICIS-accredited bodies
- Timely reporting: Within 60 days of reporting period end (preliminary report) and within 120 days (final verified report)

The GHG Program supports organizations in achieving credible, data-driven climate action and contributing meaningfully to global decarbonization efforts.

## 18.0 CASE STUDIES IN CARBON FOOTPRINT REDUCTION

The ICIS Greenhouse Gas (GHG) Certification Program provides a structured, internationally aligned framework for organizations to quantify, report, and verify their greenhouse gas emissions. Built on ISO 14064 standards and aligned with global protocols, the program helps organizations enhance climate accountability, meet regulatory and investor expectations, and prepare for participation in carbon markets.

The program outlines clear methodologies for emissions measurement across Scopes 1, 2, and 3, sets standardized boundaries, and provides tools for uncertainty analysis, data management, and verification. It also integrates with key ESG and sustainability frameworks such as TCFD, CDP, and ISO 14001, enabling broader disclosure and strategic climate alignment.

A critical component of the program is the ICIS certification process, which guides organizations through application, data submission, third-party verification, certification issuance, and proper use of the ICIS Climate Label. This process ensures transparency, credibility, and comparability across industries and regions.

By following this certification protocol, organizations not only demonstrate environmental responsibility but also unlock business benefits such as operational efficiency, reduced compliance risks, and increased stakeholder trust. The program serves as both a compliance mechanism and a tool for long-term decarbonization planning.