Testimony before the Subcommittee on Energy and the Environment

Committee on Science and Technology
United States House of Representatives

Hearing Entitled:
"How Do We Know What We Are Emitting? Monitoring, Reporting and Verification of Greenhouse Gas Emissions"

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Good morning Chairman Baird and distinguished members of the Subcommittee. Thank you for the opportunity to testify before you today.

As an organization that is committed to consistent, accurate and transparent reporting and verification of greenhouse gas (GHG) emissions, The Climate Registry (The Registry) is pleased to brief the Subcommittee on these important topics today.

In my testimony, I will:

- Provide an overview of The Registry and its voluntary GHG reporting program,
- Explain how The Registry is working to support mandatory GHG reporting programs at the state/provincial, regional, and federal levels,
- Discuss challenges to obtaining quality emissions data, and
- Provide recommendations for research that could make tracking and reporting of GHG emissions easier.

1. Overview

The Climate Registry is a non-profit organization, created in a collaborative effort by North American states, provinces, territories and Native Sovereign Nations. The Registry is governed by a Board of Directors which today consists of representatives from 41 U.S. states and the District of Columbia, 12 Canadian provinces and territories, six Mexican states, and four Native Sovereign Nations. (See Appendix A – Map of The Climate Registry's Board of Directors)

The Registry's mission is to set consistent and transparent standards to calculate, verify, and publicly report GHG emissions into a single North American registry. The Registry supports both voluntary and mandatory reporting programs and provides comprehensive, accurate data to promote the reduction of GHG emissions.

To date, the Registry has more than 320 members—representing large Fortune 500 companies, electric utilities, municipalities, colleges and universities, government agencies and small businesses. The Registry provides its members with a series of tools to help them successfully prepare their GHG inventories This includes: trainings, informational webinars, reporting and verification tips, a support hotline, and access to

our web-based user-friendly on-line reporting tool, the Climate Registry Information System (CRIS).

1.1. Evolution of The Registry:

The evolution of The Registry is an interesting, important, and unique one. Individual states began to take progressive action themselves to help mitigate the negative impacts of climate change several years ago. As states became increasingly interested in developing voluntary GHG reporting programs to track GHG emissions at the corporate level, they realized the opportunity to collaborate with one another to create a single unified GHG registry to serve all of North America. By working together they could create a centralized repository of high quality, accurate, transparent, and consistently verified GHG emissions inventories for the public.

2. The Registry's Voluntary GHG Reporting Program:

The Registry's voluntary GHG reporting program is a rigorous initiative that provides companies, governments, and organizations with the tools and technical guidance necessary to establish an accurate entity-wide inventory of their GHG emissions.

The Registry's voluntary GHG reporting program is based on two important and related international standards:

- World Resources Institute/World Business Council for Sustainable Development Corporate Greenhouse Gas Protocol[1], which was the first to document key principles and concepts for corporate GHG accounting, and

- International Organization for Standardization (ISO) standard for GHG accounting (ISO 14064-1)[2]

These "standards" are compatible and complementary, and have become the foundation for GHG accounting globally. Both standards are written at a conceptual level and do not provide all of the necessary prescription for multiple organizations to compile comparable emissions inventories.

As a result, a number of organizations developed "GHG accounting protocols" based on these international standards to document specific reporting rules and requirements to ensure that the resulting GHG data would be consistent and comparable across organizations. The California Climate Action Registry (the California Registry) was one of the first organizations in the U.S. to translate the international standards into specific program protocols.

The California Registry's rigorous reporting and verification protocols became the basis for The Registry's protocols. Through a public stakeholder process, The Registry

[1] World Business Council for Sustainable Development (WBCSD)/World Resources Institute (WRI). Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard, April 2004

[2] 14064-1:2006, Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

expanded and improved the California Registry's protocols to be applicable throughout North America[3].

The California Registry is now transitioning to become the Climate Action Reserve, and will soon change its focus from entity level inventory reporting to emission reduction projects. The Climate Registry's voluntary GHG program will continue to serve as the premier voluntary registry in North America.

2.1 Key Components to the Voluntary Reporting Program

The goal of The Registry's voluntary reporting program is to provide high quality, consistent GHG emissions data to its Members and the public. This "corporate-wide" or "entity-wide" approach to emissions reporting provides organizations with a comprehensive understanding of their GHG emissions sources and the total impact their operations have on the climate.

Corporations, organizations, and government agencies all voluntarily choose to join the Registry's program. By doing so, these organizations become Registry "Members" and commit to annually report and verify their emissions footprint for North America.

Members join The Registry for multiple reasons, but primarily because they are interested in:

- A cost effective means to track/manage GHG emissions
- Access to software and technical support
- Documenting their early actions
- Preparing for mandatory state/federal reporting
- Educating employees on GHG emissions
- Gaining recognition as a global environmental leader
- Having a voice in the development of GHG policies

By joining The Registry Members agree to report the following:

- "Entity-wide" or "corporate-wide" emissions across North America at the facility level;
- Emissions of all six internationally-recognized GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride) – the six "Kyoto Gases"
- All direct emissions--stationary combustion, mobile combustion, process and fugitive emissions (Scope 1)
- All indirect emissions from purchased electricity, steam, heating or cooling (Scope 2); and
- Emission on a calendar year basis

[3] The California Registry requires organizations to report their GHG emissions within the State of California.

Additionally, Members are able to attach optional information (Scope 3 emissions, management plans, emission reduction goals) to their annual emission report in CRIS.

The Registry requires all emission reports to be third-party verified annually. Once The Registry reviews and accepts verified emission reports, The Registry makes the reports available to the public via CRIS.

2.2 The General Reporting Protocol

The basis of The Registry's voluntary reporting program is its General Reporting Protocol (GRP), which assembles international GHG accounting best practices into a user friendly document. Please refer to: http://www.theclimateregistry.org/downloads/GRP.pdf to view a copy of the protocol.

The Registry's GRP was developed through an open public process with input from businesses, environmental organizations, academics and GHG protocol experts and interested members of the public. The Registry intends to continue to refine the GRP over time in order to add clarity and specificity and incorporate new developments in GHG science and accounting methodologies.

The GRP contains policy guidance and GHG calculation methodologies for major emission sources for most operations (stationary combustion, mobile combustion, basic fugitive emissions, indirect emissions). Given the wide spectrum of process emissions that result from different industries, The Registry plans to develop industry specific protocols to provide further guidance to various industries[4]. Calculation methodologies for process emission from several key industries are included in Appendix E of the GRP.

The guidance in the GRP is rooted in the following GHG accounting principles:

- Relevance
- Completeness
- Consistency
- Transparency
- Accuracy

As a result, Registry Members' annual emission reports contain meaningful information to help organizations better understand their GHG emissions. Since you cannot manage what you do not measure, this is a critical first step in reducing GHG emissions.

[4] The Registry released two new draft protocols for a 30-day public comment period on February 23, 2009: the Electric Sector Protocol and the Local Government Operations Protocol. Copies of the draft protocols and additional information can be found on: www.theclimateregistry.org. The Registry is also currently working with the Western Regional Air Partnership to develop a protocol for the oil and gas exploration and production sector. This protocol will likely be released for public comment later in 2009.

The following program design elements help The Registry ensure the accuracy and consistency of its GHG emission reports:

- Defined reporting scope (boundaries)
- Defined quantification methodologies
- Transparent data quality "Tiers"
- Automated calculation and reporting tools
- Rigorous third-party verification program

Defined Reporting Boundaries

In order to ensure consistent GHG data, the Registry requires Members to define the following boundaries:

- Geographic Boundaries: Members must report their North American emissions, and are encouraged to report their worldwide emissions.

- Organizational Boundaries: Members must identify the legal entity that is responsible for reporting, and must also determine an emissions consolidation method (control and equity share or control only)

- Operational Boundaries: Members must report their Direct (Scope 1) and Indirect (Scope 2) emissions. Additional indirect emissions (Scope 3) are optional.

Defining these boundaries transparently helps to ensure that end users understand the scope and content of the emission reports.

Defined Quantification Methodologies

Once sufficient boundaries are defined, Members can quantify their GHG emissions. In many instances the Registry provides multiple quantification methodologies for a single source of emissions. In this case, Members may choose which quantification methodology makes the most sense for their operations. The Registry approves the use of all of the listed quantification methodologies contained in the GRP for its voluntary program. The Registry allows for both calculation-based quantification and measurement-based quantification of emissions.

Transparent Data Quality Tiers

The Registry uses a tiered quantification system to rank emission quantification methodologies according to their level of accuracy. In this system, "Tier A" designates the preferred, or most accurate, approach for a given emissions source; "Tier B" represents an alternative second-best approach; and "Tier C" represents the least accurate, but still acceptable approach. In some instances, The Registry defines multiple approaches to the same tier (A1, A2, etc.). The Registry encourages Members to use the highest tier possible for all emission sources.

Automatic Calculation and Reporting

To ensure Members consistently and accurately quantify their emissions, The Registry developed sophisticated emission calculation tools in its CRIS application. Members enter their raw activity data (gallons of fuel use, kWh of electricity consumed, etc.), select the appropriate built in calculation methodology in the system, and the tool automatically calculates the relevant GHG emissions. This tool eliminates calculation errors in the reporting process, and facilitates reporting for Members. In addition, CRIS contains built in quality assurance checks that flag potential or existing problems with a Member's emission report.

2.3 The General Verification Protocol

The most important aspect of ensuring the consistency and accuracy of data in The Registry's voluntary reporting program is its rigorous verification program. Verification is the systematic, independent, and documented process for the evaluation of a Member's emission report against agreed upon verification criteria. This process is similar to an audit of financial statements—it is an external attestation to the quality and accuracy of the reported emissions.

Third-party verification is necessary to provide confidence to users (state regulatory agencies, native sovereign nation authorities, investors, suppliers, customers, local governments, the public, etc) that the emissions data submitted to the Registry represents a faithful, true and fair account of emissions—free of material misstatements and conforming to the Registry's accounting and reporting rules.

Third-party verification is becoming widely accepted for ensuring accurate emissions data, and has been relied upon by several GHG regulatory programs, including the European Union's Emissions Trading System (EU ETS) and the United Kingdom's GHG Emissions Trading System.

The Registry's General Verification Protocol (GVP) contains the verification criteria, policies and procedures that Verification Bodies must comply with when conducting verification activities for Registry Members. (Please visit our website to view the GVP: http://www.theclimateregistry.org/downloads/GVP.pdf.)

The Registry's verification program is based on the international standard for GHG verification (ISO 14064-3[5]), which outlines the following key principles of verification:

- Independence
- Ethical Conduct
- Fair Presentation
- Due Professional Care

Verification Bodies must demonstrate and embody the above criteria to successfully review and assess GHG emission reports. A Verification Body is a firm that consists of technically competent and independent personnel (Verifiers) who are

[5] ISO 14064-3:2006, Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions.

knowledgeable about GHG emissions inventories, management systems, and data and information auditing.

Since the credibility of a Member's emission report is attested to by a Verification Body, it is crucial that the Verification Body provide an objective review of the emissions report. To ensure that no organizational, personal, or case-specific conflicts exist between a Verification Body and a Member, The Registry developed a rigorous Conflict of Interest (COI) process.

Verification Bodies must complete a case-specific COI assessment prior to conducting any verification activities for a Member. In some instances, where potential or real conflicts do exist, Verification Bodies must take steps to mitigate high COIs before the Registry will allow verification activities to proceed. Any Verification Body that determines that its risk for COI is anything other than low may not provide verification services to that Member. The Registry prohibits Verification Bodies from providing GHG verification services for any Member for which the Verification Body has provided GHG consultancy services, regardless of the point in time that these services occurred.

Four additional concepts play a key role in shaping The Registry's verification program:

1. Risk Based Approach to Verification: Given the impossibility of assessing and confirming the accuracy of every piece of GHG information in an emissions report, The Registry adopted ISO 14064-3's risk based approach to verification. This approach directs Verification Bodies to focus their attention on those data systems, processes, emissions sources and calculations that pose the greatest risk of generating a material misstatement.

2. Materiality: Verification Bodies use the concept of materiality to determine if omitted or misstated GHG emissions will lead to significant misrepresentation of a Member's emissions, thereby influencing conclusions or decisions made on the basis of those emissions. Therefore, a material misstatement is one where the error could affect the decisions of intended users of the emissions report.

   The Registry defines the materiality threshold for its voluntary program at five percent (for both understatements and overstatements) of a Member's direct (Scope 1) and indirect (Scope 2) emissions. The Registry requires Verification Bodies to assess the accuracy of a Member's direct and indirect emissions separately. Therefore, a Member's direct and indirect emissions must both be deemed as accurate (within five percent) for a Verification Body to issue a positive Verification Statement.

3. Level of Assurance: The level of assurance a Verification Body attaches to its verification findings dictates the relative degree of confidence the Verification Body has in its assessment of the reported data. The Registry requires its Verification Bodies to provide a reasonable level of assurance that an emission report is materially correct. A reasonable

level of assurance is considered to be the highest possible level of confidence; absolute assurance is not attainable because of factors such as the use of judgment and inherent limitations of control.

4. Inherent Uncertainty: For purposes of its voluntary reporting program, The Registry defines inherent uncertainty as the uncertainty associated with 1) the inexact nature of calculating GHG emissions (metering equipment, emission factors, etc.) [6]

The Registry does not include inherent uncertainty in a Verification Body's assessment of materiality. Therefore, for The Registry's voluntary program, when determining the accuracy of an emissions report, a Verification Body must focus their attention on the completeness of the emissions inventory, the use of appropriate calculation methods, the mathematical accuracy of the calculations, and a Member's adherence to The Registry's programmatic requirements.

Core Verification Activities

In order to attest to the accuracy of an emissions report, a Verification Body must complete the following five core verification activities:

1. Assess conformance with The Registry's reporting and verification requirements
2. Assess the completeness of the emission report
3. Perform a risk assessment based on a review of information systems and controls
4. Develop a sampling plan (identify records to be reviewed and facilities to be visited)
5. Evaluate the GHG emissions, information systems and controls against The Registry's criteria (five percent materiality threshold)

Verification Documentation

At the end of the verification process, a Verification Body must produce two documents: 1) a Verification Report that summarizes their verification activities and findings, and 2) a Verification Statement that attests to the Member's compliance with the Registry's reporting and verification requirements.

2.4 Accreditation Program

To ensure the competence of the Verification Bodies in The Registry's program, The Registry adopted the international standard for accrediting GHG Verification Bodies (ISO 14065[7]) and further defined specific Registry requirements in additional to this

[6] Inherent uncertainty also applies to the inexact nature of the calculations associated with the Registry's permitted use of simplified estimation methods (for up to five percent of a Member's emissions).

[7] ISO 14065-2007, Greenhouse gas - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition.

standard. Through this process, Verification Bodies must demonstrate that they are independent, impartial, and competent to conduct GHG verifications.

The Registry's Guidance on Accreditation (GoA) describes the details of The Registry's accreditation requirements. It is located on The Registry's website: http://www.theclimateregistry.org/downloads/GoA.pdf.

Since ISO standards are implemented by national Accreditation Bodies, The Registry plans to partner with each of the three national Accreditation Bodies in North America[8] to carry out its accreditation program. The American National Standards Institute (ANSI), the national Accreditation Body in the U.S., is the first Accreditation Body to partner with The Registry.

Through this partnership, ANSI manages a rigorous review of all interested Verification Bodies in an effort to assess each firm's independence, impartiality and competence. This process includes a review of a Verification Body's internal management systems, an assessment of the competency of their staff, and an onsite assessment of a Verification Body's ability to successfully complete the verification activities required by the Registry.

ISO 14065 details a series of requirements that Verification Bodies must meet to become accredited to the standard. The standard includes requirements for demonstrating:

- Impartiality
- Competency
- Deployment and Management of Personnel
- Communications and Records Retention
- Verification processes
- Appeals and complaint processes, and
- Management system requirements

In addition to the requirements above, Verification Bodies interested in conducting verifications for Members of The Registry must also demonstrate their ability to meet twelve additional accreditation criteria set forth by The Registry. The Registry participates in ANSI's review process and additionally "recognizes" the ANSI-accredited Verification Bodies deemed competent to conduct verification activities for The Registry.

Only ANSI-accredited, Registry-recognized Verification Bodies are permitted to provide verification services to Registry Members.

3. The Registry's Support of Mandatory GHG Reporting Programs

Thus far, my testimony has focused on The Registry's voluntary reporting program, however, The Registry's mission indicates that it supports both voluntary and mandatory GHG reporting programs. While The Registry does not have the authority to develop or

[8] The North American Accreditation Bodies consist of the American National Standards Institute (ANSI) in the US, the Standards Council of Canada (SCC) in Canada, and Entidad Mexicana de Accreditación (EMA) in Mexico.

implement mandatory reporting programs, it is uniquely positioned to leverage its GHG accounting expertise to assist states (and provinces) to best implement and manage their own mandatory GHG programs.

The Registry aims to accomplish the following through its support of mandatory GHG reporting programs:

- Streamline and centralize the reporting process for regulated parties;
- Assist jurisdictions to standardize approaches to calculate, report, and verify emissions;
- Provide jurisdictions with a turn-key, low cost solution for implementing data collection and management of GHG programs;
- Facilitate the transfer of data from mandatory programs to the Registry's voluntary program; and
- Leverage the investment that The Registry has made in the Climate Registry Information System (CRIS)

Many of the jurisdictions comprising The Registry's Board of Directors have adopted, or are in the process of adopting, mandatory GHG reporting requirements, either individually or as part of regional GHG initiatives.

The Registry assists these jurisdictions in implementing their mandatory GHG programs by:

- Providing assistance to promote consistency (where applicable) with The Registry's protocols
- Developing tools for jurisdictions to understand the options available to develop accreditation & verification programs
- Offering two technical support options via CRIS
    - The Common Framework for Mandatory GHG Reporting
    - Data Transfer

Utilizing The Registry's web-based reporting platform, CRIS, as a foundation, The Registry is developing a "Common Framework" for mandatory GHG reporting. The Common Framework consists of the CRIS application plus additional GHG reporting infrastructure components necessary to support most mandatory reporting programs. While the Common Framework ensures that multiple jurisdictions will share many of the same reporting requirements, it also allows jurisdictions to customize the application to meet their specific jurisdiction's needs.

The beauty of this concept is that multiple jurisdictions will have similar mandatory GHG data collection systems located on one server, but each jurisdiction will maintain confidential access to their own data (agency staff can only view the data submitted to their state). Therefore, regulated parties may enter emissions data for multiple mandatory GHG reporting programs through a common IT interface, thereby significantly reducing their reporting burden.

Through the Common Framework, The Registry offers jurisdictions with mandatory GHG reporting programs the benefits of a cost-sharing opportunity with other jurisdictions and economies of scale resulting from shared system approach, while also minimizing the

reporting burden for organizations with operations in multiple jurisdictions and encouraging voluntary reporting. .

The Registry's second technical support option, Data Transfer, will permit states to transfer mandatory GHG data from their own GHG database systems to the Registry's voluntary program and other regional GHG programs.

Currently, The Registry is working on a pilot project with the State of Nevada to support its mandatory reporting program and is working with over twenty jurisdictions to develop the Common Framework for potential use across North America.

3.1 Regional GHG Initiatives

Two significant regional GHG initiatives are currently in development in the U.S.: The Western Climate Initiative (WCI) and the Midwest Greenhouse Gas Reduction Accord (MGGRA), both of which include multiple U.S. states and Canadian provinces working together to achieve regional GHG reduction goals through mandatory GHG reporting and cap and trade programs. The Registry is working with both initiatives to ensure as much consistency of GHG emissions as possible. In addition, both initiatives have indicated that they intend to use The Registry's IT infrastructure to serve as their common data repository.

3.2 Relationship to Federal GHG Reporting Programs

The FY2008 Consolidated Appropriations Act included language requiring the U.S. Environmental Protection Agency (U.S. EPA) to promulgate a rule to "require mandatory reporting of GHG emissions above appropriate thresholds in all sectors of the economy." The draft rule was due in September 2008 and the final rule is due by June 2009. We understand that U.S. EPA has developed a draft rule which has not yet been publicly released.

The Registry's Board of Directors recently adopted a federal policy position statement (Appendix B) to articulate the role it is seeking for The Registry in the context of a federal GHG reporting program. In their statement, the Board of Directors expressed their desire that future federal climate programs recognize the states, provinces and Native Sovereign Nations for taking early policy actions, including creating The Registry.

The Board stated that The Registry should be viewed as a model and a resource to support a federal GHG registry. It further asserted that federal mandatory GHG reporting rules should utilize the systems and infrastructure already put in place through the states and The Registry. By securing a role for The Registry in a federal GHG reporting regime, the Board seeks to ensure GHG data consistency across North America, reduce the reporting burden on the regulated community, reduce administrative costs, avoid duplication and recognize the efforts of companies who have chosen to rigorously report and reduce their emissions early.

The Board strongly endorsed that federal GHG reporting and regulatory programs should partner with The Registry as a cost-effective central repository or clearinghouse for reporting and/or tracking emissions and should preserve states' abilities to continue to be innovators and leaders on climate policy.

4. Challenges to Obtaining Emissions Data

The Subcommittee specifically asked me to speak to the challenges that Members face when reporting their emissions to The Registry. Members primarily face two types of challenges: 1) organizational challenges, and 2) scientific uncertainty.

Organizational challenges generally result from a lack of data collection systems specifically designed for GHG data collection. Since GHGs have not been regulated before, many organizations do not have management systems in place to monitor and track these emissions. It can take time to develop such systems, which has delayed some Members' ability to report.

Additionally, compiling a corporate emissions footprint requires an organization to collect GHG emissions information from all of its sources. Some of an organization's sources may constitute a small percentage of their emissions inventory, but they are still important to identify and include in an entity-wide inventory. This challenge may not be as great for mandatory reporting programs that use a traditional regulatory approach to collect data from sources with emissions above a certain threshold, as the reporting of smaller sources is not required.

Scientific uncertainty presents additional challenges to obtaining high quality data. Measurement and/or calculation methodologies for certain sources of emissions either do not exist, or contain a high degree of uncertainty. Several major areas of scientific uncertainty are:

- Fugitive emissions of methane (from landfills wastewater treatment plants, flaring, and other sources)
- Fugitive emissions of refrigerants
- Out of date emission factors
- Unknown carbon content of materials

Appendix C contains a list of calculation methodologies with high uncertainty that could be improved with additional scientific research and technological developments.

It is important to note that this scientific and inherent uncertainty is a critical consideration for mandatory GHG programs that seek to implement a cap and trade component to their program. Under such a program, since GHG emission reductions equate to a financial commodity, it is critical to the integrity of the carbon market that the emissions are quantified with acceptable accuracy. While this may vary from program to program, both the WCI and the EU-ETS have generally found that uncertainty of plus or minus five percent is acceptable for their cap and trade programs.

As a result, cap and trade programs will likely be constrained to only include emission sources with calculation methods that contain an acceptable level of uncertainty. The more research and development that can be directed to eliminate or reduce the uncertainty of large emission sources, the more robust a cap and trade program will be.

5. Recommendations to promote more accurate GHG reporting

The Subcommittee specifically asked me to provide recommendations that will promote more accurate GHG accounting verification and reporting, but before I do, I want to stress the fact that it is possible for organizations to accurately account for, report, and verify GHG emissions today.

While scientific certainty does need to be improved in specialized sectors, most organizations are capable of accounting for their major GHG emission sources (stationary combustion, mobile combustion, indirect emissions, etc.). Significant progress has been made to develop best practices for reporting, and organizations no longer feel daunted by the process---as is evidenced by the over 300 Members who have joined The Registry's voluntary program in less than a year.

Given that reduced scientific uncertainty would help increase organizations' ability to accurately report GHG emissions, opportunities exist to improve accuracy in GHG reporting by:

- Updating emission factors in a timely fashion (EPA, EIA, DOE, etc.)
- Conducting comprehensive surveys GHG emission information to produce better emission factors and quantification methods
- Developing more industry-specific protocols
- Funding the development of improving measurement technology
    - Remote sensing
    - Laser methane gas detector monitoring of emissions from landfills
- Incentivizing the use of existing measurement technology

6. Conclusion

To conclude, The Climate Registry was created to help organizations answer the very question posed by this hearing, "How do we know what we're emitting?" The Registry took great care in designing its reporting, accreditation, and verification programs to ensure that GHG emission reports are comprehensive, accurate, consistent, and transparent, such that they are meaningful not only to the organizations themselves, but to the public and policy makers as well.

The Registry was created by states, provinces and Native Sovereign Nations to be a model for a federal registry and to establish a single unified registry across North America. To date, The Registry has developed robust reporting and verification protocols, established clear and specific calculation methodologies, and has created a comprehensive GHG database application that is capable of supporting both voluntary and mandatory GHG reporting initiatives.

Time is of the essence when it comes to mitigating the negative impacts of climate change. Currently, given the leadership of individual jurisdictions, the U.S. is well positioned to work across state and federal jurisdictional lines to begin to tackle climate change in a new and collaborative way, and The Registry is uniquely positioned to help. We look forward to partnering with the Federal government to serve a larger role in supporting national and international programs.

Thank you again for the opportunity to present this testimony. I would be happy to answer any questions that you may have.

Appendix A: Map of The Climate Registry Board of Directors

Appendix B: The Climate Registry's Federal GHG Policy Statement

The Climate Registry

Action Item #4

Resolution 01.14.09 – 4

THE CLIMATE REGISTRY BOARD OF DIRECTORS ADOPTS THE FOLLOWING POSITION REGARDING FEDERAL GHG PROGRAMS AND THE ROLE OF THE CLIMATE REGISTRY

BACKGROUND

The Climate Registry is a not-for-profit organization governed by 40 U.S. states, 12 Canadian provinces and territories, 6 Mexican states and 4 Native Sovereign Nations. The goal of the states, provinces and nations in creating The Climate Registry is to set consistent and transparent standards for the accounting, verification and public reporting of greenhouse gas emissions throughout North America in a single unified registry. Today, The Climate Registry supports both voluntary and mandatory GHG reporting programs, provides high quality meaningful information to reduce greenhouse gas emissions, ensures consistency with international standards and embodies the highest levels of environmental integrity.

Through many actions, from the creation of The Climate Registry to RPS standards to California auto emissions policies to regional GHG cap-and-trade programs, states and provinces have been the leaders in addressing climate change.

THE ROLE OF THE CLIMATE REGISTRY IN FEDERAL CLIMATE PROGRAMS

While The Climate Registry has taken no official position on the need for federal reporting programs, both the U.S. and Canada have embarked on federal rulemaking to require GHG reporting. Given that reality, The Registry believes all federal climate programs should recognize states, provinces and Native Sovereign Nations for early policy action, and should seek to create an international system. The Climate Registry should be viewed as a model and a resource to support national greenhouse gas registries. Federal mandatory GHG reporting rules should utilize the systems and infrastructure already in place and continue to provide a role for the states and The Registry in the collection and management of GHG data. This will ensure consistency across North America, reduce the reporting burden on the regulated community, reduce administrative costs, and recognize the efforts of companies that have chosen to rigorously report and reduce their emissions early. A North American approach should recognize the importance of reporter convenience and aim to avoid duplication.

Specifically, The Climate Registry Board of Directors strongly endorses that any federal GHG reporting and regulatory program in North America should partner with The Climate Registry as a cost effective central repository or clearinghouse for reporting and/or tracking GHG data.

At a minimum, every federal GHG reporting program must:

1) utilize GHG calculation and accounting methodologies that are consistent with The Climate Registry's standards

2) allow states, provinces and Native Sovereign Nations to collect data for federal program requirements

3) maintain state, provincial, and sovereign nations' ability to require reporting to their respective jurisdictions or directly to The Registry, for emissions reporting that is above or beyond, but not inconsistent with, federal requirements

The Climate Registry encourages EPA, Environment Canada, and Semarnat to work in partnership with each other, states, provinces and Native Sovereign Nations on GHG reporting as well as on broader climate policies and programs.

These measures would support strong federal actions while preserving the ability of states and provinces to maintain their role as innovators and leaders on climate change policy and directly monitor progress in achieving GHG reductions.

Appendix C: List of GHG Calculation Methodologies with High Uncertainty

Areas of Uncertainty in GHG Emission Accounting	
Cement	
	Plant-specific weight fractions in clinker from each kiln of: CaO, MgO, uncalcined CaO, uncalcined MgO
	Weight fraction of carbonate CO2 in the CKD
	Weight fraction of carbonate CO2 in the raw material
	Total organic carbon contents of raw materials.
	Quantity of clinker produced
	Quantity of CKD discarded
	Quantity of raw materials consumed (i.e. limestone, sand, shale, iron oxide, and alumina)
Lime Manufacturing	
	Weight fractions:
	Plant-specific weight fractions in quick lime from each kiln of: CaO, MgO, uncalcined CaO, uncalcined MgO
	Plant-specific weight fractions in lime kiln dust (LKD) from each kiln of: CaO, MgO, uncalcined CaO, uncalcined MgO
	Quantity of quick lime produced
	Quantity of LKD discarded
	Quantity of raw materials consumed (i.e., limestone, dolomite, aragonite, chalk, coral, marble, and shell)
Iron and Steel Manufacturing	
	Carbon Content of By-products: blast furnace gas, coke oven gas, coal tar, light oil, coke breeze, sinter off gas
	Carbon Content of Carbon electrodes
	Direct reduced iron inputs: natural gas, coke breeze, metallurgical coke
	Energy used in direct reduced iron production (i.e., from natural gas, coke breeze, metallurgical coke)
	Quantity of coke production inputs (i.e., coking coal, blast furnace gas, other process materials)
	Quantity of coke produced
	Quantity of other coke production outputs (i.e., coke oven gas, other by-products)
	Quantity of iron and steel production inputs (i.e., coke, coke oven by-products, directly injected coal, limestone, dolomite, carbon electrodes, other carbonaceous and process material, coke oven gas)
	Quantity of steel produced
	Quantity of iron produced (not converted to steel)
	Quantity of blast furnace gas produced
	Quantity of sinter production inputs (i.e., coke breeze, coke oven gas, blast furnace gas, other process materials) and outputs (i.e., sinter off gas)
Electronics (Semiconductor) Manufacturing	
	Fraction of gas remaining in shipping contained (i.e., heel)
	Mass of individual gas species fed into individual processes
	Use rate (i.e., fraction destroyed or transformed) of each gas species/process
	Fraction of each gas species/process fed into process with emission control technology

	Fraction of gas destroyed by emission control technology
	By-product emission factor for amount of $CF_4/C_2F_6/CHF_3/ C_3F_8$ created for each gas species/process
Lead Production	
	Carbon contents of reducing agents: blast furnace gas, charcoal, coal, coal tar, coke, coke oven gas, coking coal, electric arc furnace (EAF) carbon electrodes, EAF charge carbon, fuel oil, gas coke, natural gas petroleum coke
	Quantity of reducing agents (i.e., blast furnace gas, charcoal, coal, coal tar, coke, coke oven gas, coking coal, electric arc furnace [EAF] carbon electrodes, EAF charge carbon, fuel oil, gas coke, natural gas petroleum coke)
Soda Ash Manufacturing	
	Carbon content of Ore, Sodium Carbonate-rich Brine and Soda Ash
	Waste material (i.e., collected kiln dust)
	Quantity of soda ash produced
	Quantity of waste material
	Quantity of raw materials consumed (i.e., trona ore, nacholite ore, sodium carbonate-rich brine)
Adipic Acid Manufacturing	
	Destruction factor
	Chemical composition of feedstock (i.e., cyclohexanone, cyclohexanol)
Aluminum Manufacturing	
	Quantity of materials consumed (i.e., paste, carbon, anodes, coke, recovered tar, coke dust)
	Quantity of aluminum produced
	Binder content in paste
	Pitch content in anodes
	Volatile content in coke
	Smelter-specific operating parameters (i.e., current efficiency, anode effect frequency, anode effect duration, anode effect over-voltage)
Ferroalloy Production	
	Carbon content of Ore, Finished Product and Non-product outgoing stream
	Volatiles in individual reducing agents
	Quantity of inputs (i.e., ore, individual reducing agents, individual slag-forming materials)
	Mass fractions in Fixed Carbon, Volatiles and Ash
HCFC-22 Production	
	Concentration of HFC-23 in vented gas stream
	Gas stream mass flow rate
	Current process operating rate used as proxy
	Duration of atmospheric venting (not to a destruction system)
	Quantity of HFC-23 recovered for use as a chemical feedstock
	Concentration of HFC-23 in product reactor
	Mass of HCFC-22 produced at specific concentrations of HFC-23
Coal Mines	
	Mine-specific methane measurements from ventilation air and/or degasification systems
	CH4 from coal mining and coal storage
Natural Gas Production, Transmission and Distribution (Direct Venting and Fugitive Emissions)	
	Transmission Dehydrator Venting Emissions Factors for Methane
	Transmission Gas-assisted Glycol (Kimray) Pumps Vented Emission Factors for Methane
	Storage Station Venting Emission Factors for Methane

	Storage Gas-assisted Glycol (Kimray) Pumps Vented Emission Factors for Methane
	Maintenance/Upsets Vented Gas Emission Factors for Methane
	Gas-driven M&R Station Control Loop Emission Factors for Methane
	M&R Station Blowdowns Emission Factors for Methane
	Storage Station Venting Emission Factors for Methane
	Storage Gas-assisted Glycol (Kimray) Pumps Vented Emission Factors
	Pipeline Blowdowns Emission Factors for Methane
	Gas-driven Pneumatic Devices Emission Factors for Methane
	Chemical Injection Pumps Emission Factors for Methane
	Compression Station Control Loop Emission Factors for Methane
	Maintenance & Upset Emission Factors for Methane
	Pipeline Dig-ins Emissions Factors for Methane
	M&R Station Blowdown Emission Factors for Methane
	M&R Station Odorizer & Gas Sampling Vents Emission Factors for Methane
	M&R Station Pneumatic Devices Emission Factors for Methane
Stationary Combustion	
	CH4 and N20 from units with CEMS
Solid Waste Management (Landfills)	
	Fugitive CH4 emissions
	Quantity of landfill gas produced
	Composting
Wastewater Treatment	
	CH4 and N2O emissions
Transportation	
	Emissions from Aviation
	Emissions from Marine Vessels