

Overview of the California Registry

Denver, Colorado

July 17, 2006

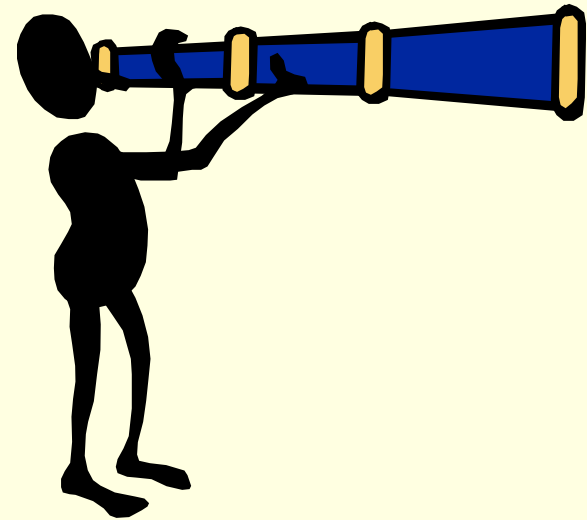


Overview



- Introduction to the Registry and its members
- Registry Program:
 - Reporting Requirements
 - Reporting Tools
 - General Reporting Protocol
 - Power/Utility Reporting Protocol
 - CARROT
- Overview of Certification
- The Registry and mandatory reporting

Introduction to the Registry



California Climate Action Registry



- Established as a business initiative
- Nonprofit organization created by state legislation
 - Board represents business, government, NGOs
 - Voluntary
- Operations began September 2001
- Official launch October 2002
 - **23 members**

Goals of the Registry



- Help companies and organizations establish GHG emissions inventories and baselines against which any future GHG emission reduction requirements may be applied.
- Encourage voluntary actions to:
 - Increase energy efficiency
 - Decrease GHG emissions

Baseline Protection



The State “commits to use its best efforts to ensure that organizations that establish greenhouse gas emissions baselines and register emissions results... receive appropriate consideration under any future international, federal, or state regulatory scheme.”

Registry's Relationship to State



- **California Energy Commission (CEC)**
 - SB 1771 and 527:
 - Provide technical guidance to Registry for reporting, metrics, approve technical assistance providers
 - Approve certifiers and oversee certification activities
 - Assist with public review of Registry Protocols
- **Air Resources Board (CARB)**
 - AB 1493: develop guidance for GHG emissions from mobile sources
- **Department of Forestry (CDF)**
 - SB 812: Develop guidance for reporting GHG emission reduction projects
 - Emphasis on CA forest conservation and management

How much data is certified?



- 162 million metric tons CO₂e certified
 - Calendar Years 2000 – 2004
- About half is from outside of California

Registry Members



Air Districts

Bay Area AQMD
Mojave Desert AQMD
Sacramento Metro AQMD
South Coast AQMD

Cities

City of Chula Vista
City of Los Angeles
City of Palo Alto
City of Sacramento
City and County of San Francisco
City of Santa Monica
City of West Hollywood

Education

Los Angeles Community College District
University of California, Davis
University of California, San Diego
University of California, Santa Barbara

Electric Power

AES
Calpine Corporation
Mirant
Reliant Energy
West Coast Power

Federal Government

United States Air Force, Space and Missile Command

80 members total

Registry Members



Forestry

California Department of Forests
Collins Pine Company
The Conservation Fund
Van Eck Foundation

Food Processing

Clif Bar & Co.

Health Care

Catholic Healthcare West
Genentech
Guidant

Investor-Owned Utilities

Pacific Gas and Electric
PacifiCorp
San Diego Gas & Electric
Southern California Edison
Southern California Gas Company

Manufacturing

Bentley Prince Street
Cenveo Anderson Lithograph
Clipper Windpower
Corning Incorporated
Eastman Kodak
Hewlett-Packard

Mining

Rio Tinto Borax

Registry Members



Non-Profit Organizations

Energy Foundation
Environmental Defense
Natural Resources Defense Council
Pacific Forest Trust
The Climate Trust
Union of Concerned Scientists

Oil/Gas

BP
Shell Oil Company

Ports

Port of Los Angeles

Public Utilities

Austin Energy
Anaheim Public Utilities
Burbank Water and Power
East Bay Municipal Utility District
Glendale Water & Power
Los Angeles Department of Water and Power
Northern California Power Agency
Pasadena Water & Power
Platte River Power Authority
Riverside Public Utilities
Sacramento Municipal Utility District
Silicon Valley Power

Registry Members



Services

Ace Technologies
AgCert
Better World Group
Constructive Technologies Group
Enviance
Environmental Software Providers
ICF Consulting
Science Applications International Corporation

State Government

California Energy Commission
California Environmental Protection Agency
California Public Employees Retirement System

State Government (*cont'd*)

California Public Utilities Commission
California State Teachers Retirement System

Solid Waste

Waste Management, Inc.

Transportation

AC Transit

Telecommunications

AT&T
QUALCOMM
Verizon

What are the business benefits of joining?



- Protection for early action
- Prepare for trading
- Access to CARROT
- Build environmental reputation
- Protection from shareholder resolutions
- Be a part of the policy dialogue
- Use of “Climate Action Leader” logo





“Our participation in the Registry helps me do my job better. I regularly get inquiries about Edison’s GHG emissions—from management, the press and from our customers. With the Registry’s rigorous protocols and certification, I’m ready with accurate and detailed information.”

Howard Gollay, Southern California Edison

What does it cost?



- Membership fee
- Certification
- Internal costs

Annual Three Step Process

1. **Calculate** GHG emissions according to the Registry protocols
 - CO₂ first 3 years, then all 6 Kyoto gases (CH₄, N₂O, HFCs, PFCs, SF₆)
 - Direct stationary, mobile, process and fugitive emissions
 - Indirect emissions from energy purchases
 - Does not include emissions from product use
2. **Report** GHG emissions data through CARROT
3. **Certify** emissions inventory results using Registry-approved certifiers
 - Certified data is publicly reported through www.climateregistry.org

General Reporting Protocol



- Operational handbook for reporting
 - Based on international standard, World Resources Institute/World Business Council for Sustainable Development *GHG Protocol*
- Organic document that incorporates new knowledge
 - Current version at www.climateregistry.org/PROTOCOLS
- Recognized as a “gold standard” for reporting

Industry-Specific Protocols



- Cement
- Electric power generation, transmission & distribution
- Forestry
 - Biological and non-biological emissions
 - Forest management projects
 - Afforestation
 - Conservation
- In development:
 - Oil and gas production
 - Natural gas transmission and distribution
 - Agriculture
 - Solid waste

Available at www.climateregistry.org/PROTOCOLS

Certification Protocols



- *Certifier's* guidance for assessing compliance with Registry reporting requirements
 - Companion document to the General Reporting Protocol and industry protocols
 - Outlines certification process and certification activities
 - Useful reference for participants

- Organic document
 - Available at www.climateregistry.org/PROTOCOLS
 - To be updated Summer/Fall 2006

Member Services



- New member orientation sessions
- CARROT training & technical support
- Internship facilitation

- Newsletter
- Annual conference
- Best practices workshops and field trips
- Policy conference calls and science seminars

- Annual awards for environmental leadership
- Promotion of members in news media

Registry Program Overview

Program Overview



Make reporting decisions	First year only
Develop Information tracking systems	First year only
CALCULATE emissions	Annually (January-April)
REPORT emissions using CARROT	Annually (May-August)
CERTIFY emissions report	Annually (September-December)

Reporting Decisions



Year 1:

1. What is the *geographic scope* of reporting?
2. What *GHGs* to report?
3. How do you track *ownership*?
4. How will you use *CARROT*? – to track GHGs at a source, facility or entity level?
5. Will you specify a *baseline*?

Each Year:

6. *HR Decisions* -- who is going to do the work?
7. *Workflow* – planning for deadlines

Reporting Decision 1: *Geographic Scope*



1. All California emissions
2. All US emissions (w/CA broken out)
3. All Worldwide emissions
 - US emissions (w/CA broken out) – certified & publicly reported
 - International emissions - optional

Reporting Decision 2: *GHGs*



CO₂

HFCs

CH₄

PFCs

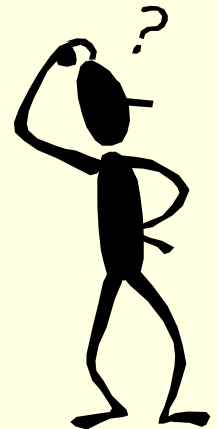
N₂O

SF₆

- Years 1-3: At least CO₂
 - Can be CO₂ + any other gas(es)
- Years 4+: All 6 Kyoto Gases

What is *de minimis*?

- Intent: alleviate administrative burden of accounting for a relatively insignificant amount of emissions
- Optional to report emissions below de minimis threshold (<5% of total emissions)
 - From one or more sources
 - From one or more gases
 - Combination of sources and gases
- Required to report **at least** 95% of total emissions when summed across all sources



100% = Direct + Indirect + De Minimis (<5%)

What is *de minimis*? (example)

Source	CO ₂ Emissions (metric tons)	CH ₄ Emissions (metric tons CO ₂ e)	Total Source Emissions (metric tons CO ₂ e)
Source 1	39,900	100	40,000
Source 2	29,900	100	30,000
Source 3	19,900	100	20,000
Source 4	3,000	7,000	10,000
Total			100,000
De Minimis Threshold			5,000
De minimis emissions = 3,300			
Reported emissions = 96,700			

Candidates for *de minimis*?



- Mobile sources, especially non-CO₂ gases
- Fuel storage (coal piles)
- HFCs (HVAC systems)

Reporting Decision 3: *Ownership*

3. Equity Share and/or Management Control?

■ Equity Share

- Report share of organization's emissions proportional to ownership
 - Must disclose other owners in report

■ Management Control

- Report 100% of the organization's emissions, when own >50%

- Use method standard for industry
- Use same method for all sources

Ownership (example)

Participant	Facility	Management Control Reporting Requirements	Equity Share Reporting Requirements
Company A	55% ownership	100%	55%
Company B	30% ownership	0%	30%

Reporting Decision 4: *Using CARROT*

4. Entity or Facility Data in CARROT

- **Entity:** an organization in its entirety
(corporation, city or county, non-profit organization, etc.)
 - Entity-level reporting is *required*
 - Must report the entire organization's total emissions

-OR-

- **Facility:** sub-entity – report emissions of site, business unit (manufacturing plant, department, etc.)
 - Facility-level reporting encouraged
 - Facility emissions must equal entity emissions (must report all sub-entities)

Reporting Decision 5: *Baseline*



- Optional
- Must re-adjust baseline when cumulative changes reach 10% due to:
 - Structural Changes to Entity
 - Mergers and Acquisitions
 - Divestitures
 - Outsourcing
 - Insourcing
 - Shift of Emission Sources
 - Improved GHG Accounting Methodologies
- Direct emissions baseline year may be different than indirect emissions baseline

Reporting Decision 6: *HR – Who does what?*



- Primary Contact:
 - EHS staff

- Additional resources:
 - Facility Manager
 - Energy Manager
 - Accounting Department
 - Fleet Manager

Reporting Decision 7: *Workflow*



■ Registry Deadlines:

- Reporting Deadline: August 31 (Data year + 1)
- Certification Deadline: December 31 (Data year + 1)

EX: 2005 Emissions

Reported by **Aug. 31, 2006**

Certified by **Dec. 31, 2006**

■ Other Reporting Rules:

- Report for each year of participation (no breaks in reporting)
- Can report from present back to 1990

Calculating Emissions

Required Sources

- Direct Emissions from:
 - Mobile Sources
 - Stationary Sources
 - Process Emissions
 - Fugitive Emissions

- Indirect Emissions from:
 - Electricity purchased and consumed
 - Purchased Co-Generation, Imported Steam, and District Heating and Cooling

Calculating GHG Emissions:

Annual Consumption x Emission Factor = Annual Emissions



Direct Emissions: Stationary Combustion



- Non-mobile sources emitting GHGs from fuel consumption
 - Boilers, turbines, Internal combustion engines, flares, etc.

- Two methods:
 - Must report using same method each year
 1. Measurement
 - *Recommended if CEMS required under 40 CFR Part 75*
 2. Fuel Use calculation



Direct Emissions: Stationary Combustion



- Method 1: **Measurement-based methodology (CEMs)**
 1. Specify configuration:
 - CO₂ CEMS or O₂ CEMS
 2. Subtract any biomass CO₂ from CEMS total CO₂
 - If MSW, calculate CO₂ from combustion of fossil fuel origin waste (e.g., plastic, rubber)

Example:

Step 1: Calculate biomass CO₂

1,000,000 MMBtu x 90.94 kg CO₂/MMBtu = 90,940 metric tons CO₂

Step 2: Subtract biomass CO₂ from CEMs CO₂

8,000,000 tons – 90,940 tons CO₂ = 7,909,060 metric tons CO₂



Direct Emissions: Stationary Combustion



Method 2: Fuel use

1. Obtain fuel use data
 - On-site measurement OR
 - Annual mass balance
2. Select Emission Factor (using higher heating value (HHV))
 1. Periodic source testing OR
 2. Equipment manufacturer data OR
 3. Default emission factors
3. Calculate emissions by fuel:
 - Annual consumption x emissions factor = CO₂ or CO₂e emissions

Example:

9,460,000 MMBtu x 93.51 kg CO₂/MMBtu = 84,604.6 metric tons CO₂



Direct Emissions: Mobile Combustion



- Non-fixed sources
 - autos, motorcycles, boats, airplanes, etc.
- Method 1: **Annual Fuel Consumption**
(CO₂)
 - Identify total annual fuel consumption by fuel type.
 - Select appropriate CO₂ factor
 - Fuel consumption x emission factor = Total CO₂ emissions
 - Easiest to calculate mobile combustion emissions using this method

Example:

10,000 gallons x 8.78 kg CO₂/gallon = 87.81 metric tons CO₂



Direct Emissions: Mobile Combustion



- Method 2: **Annual mileage** for CO₂

For each vehicle:

- Identify vehicle type, fuel, model year and annual mileage to find average fuel efficiency (www.fueleconomy.gov)
- Miles x (45% x city fuel efficiency)(55% x hwy fuel efficiency)
- Annual gallons x emission factor = Total CO₂



Direct Emissions: Mobile Combustion



- Method 2: **Annual mileage** for **CH₄**, **N₂O**
 - For each vehicle, identify the appropriate emission factor:
 - Select vehicle type
 - Select model year
 - Annual mileage x emission factor = Total CH₄ or N₂O emissions
 - Convert to CO₂e emissions

- Good candidate for *de minimis*?

Direct Emissions: Process Emissions Specific to Participant



- Emissions from chemical or physical processes other than combustion
 - SO₂ scrubbers
 - Hydrogen production
 - IGCC
 - Industry-specific processes?
- CEMs may capture CO₂ from the processes
 - Report process CO₂ distinct from stationary combustion CO₂
- GRP provides references for some calculations
- Certifier uses professional judgment to assess if methodologies/emission factors appropriate

EXAMPLE:

Process Emissions from SO₂ Scrubbers

- Mass balance calculation
 1. Determine annual usage of sorbent (CaCO₃)
 2. Determine ratio of molecular weight of CO₂ to sorbent
 3. Calculate annual usage and convert to metric tons

Example:

$$10,000 \text{ tons CaCO}_3 \times .44 \times 0.907 = 3,991 \text{ metric tons CO}_2$$

Direct Emissions: Fugitive



- Majority of fugitive emissions are specific to industrial sectors or processes
 - Guidance for CH₄ emissions from natural gas pipelines in development
- 1. GRP: guidance for *estimating* fugitive emissions from **refrigeration systems** and **fire suppression equipment**
- 2. PUP: calculating fugitive SF₆ from electricity T&D

Annual releases x emission factor = Total emissions



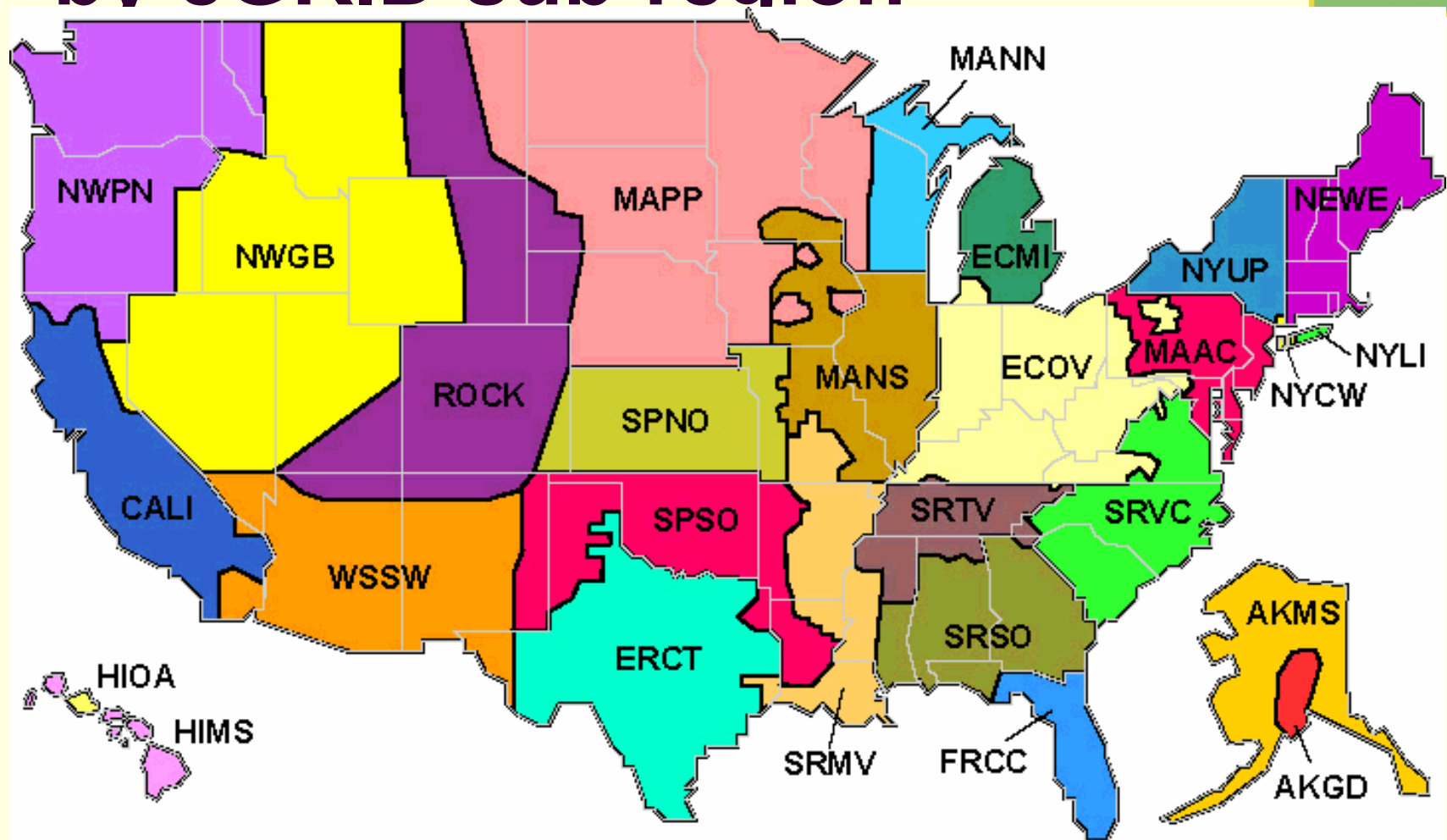
Indirect Emissions: Electricity Use

1. Determine annual electricity usage that is purchased and consumed
2. Apply electricity emission factor
 1. CO₂ - eGRID subregion – see next slide
 2. CH₄, N₂O – EIA state specific
3. Calculate total annual emissions (metric tons)
4. Convert non-CO₂ gases to CO₂ equivalent
5. Total all CO₂ and non-CO₂ gases

Example:

$$50,000 \text{ kWh} \times 0.805 \text{ lbs CO}_2/\text{kWh} = 15.04 \text{ metric tons CO}_2$$

Electricity emission factors (CO₂) by eGRID sub-region



Metrics



- Optional to report normalized emissions performance
 - AKA emissions efficiency metrics
 - AKA carbon intensity metrics

- Consider:
 - Total Energy (lbs CO₂/Joule)
 - Production (lbs CO₂/unit of product shipped)

Metrics – Selected Power/Utility Reporters



(lbs CO₂/MWh) from Electricity

	<u>Deliveries</u>	<u>Generation</u>	<u>Fossil Generation</u>
Calpine	n.a.	650	905
LADWP	1365	1562	1831
PacifiCorp	1811	2020	2172
SCE	679	719	1999
SDG&E	614	n.a.	n.a.
SMUD	769	639	982

Optional Reporting

- Employee travel
- Commuting
- Product use
- Waste transport
- Product Transport
- Product disposal

Also:

- *Other environmental programs
- *Emissions reduction goals
- *Emission reduction projects

Reporting Emissions

■ CARROT: Climate Action Registry Reporting Online Tool



- Version 1.0 = Launched October 2002
- Version 2.0 = Released April 18, 2005
- Version 3.0 = beta testing Fall 2006; release Early 2007

CARROT



- REPORT: Annual inventory must be reported through CARROT
 - Secure, encrypted workspace
 - Each Participant manages their own users:
 - Administrator – all access
 - User – one or more facilities
 - Reviewer – read-only access
 - Certifier – read-only access, submit electronic opinion
- CALCULATE: Many calculations can be done in CARROT
- CERTIFY:
 - Standardizes/lowers certification cost
 - Certifiers view all data once authorized by Participant (after data submitted for certification)
 - Public Users access certified emission reports
- ADMINISTRATION: Registry creates new accounts, accepts data⁵³

CARROT FAQs



- 162 mmt CO₂e certified (2000-2004)
- 80 reporting entities
 - 62+ 2005 inventories in progress
- >200 users

- “CARROT Inside” World Economic Forum’s Global GHG Register

Key Features for CARROT Version 3.0



- Bulk data transfer & data exchange
- Multi-gas calculation tools
- Industry-specific reporting requirements
 - Power generation, transmission & distribution
 - Forest entities and projects
- Improved reports & analytical tools

Certifying Emissions

Certification Overview



- What is Certification?
 - Independent review of reported emissions
- Why is it Important?
 - Ensures reported emissions adhere to the reporting requirements and achieve a minimum quality standard (95% accuracy)
- Who is a Certifier?
 - Accredited by both the State of CA and the Registry as qualified to assess a participant's reported emissions

Core Certification Activities



1. Identify Emission Sources
 2. Review Management Systems & Methodologies
 3. Verify Emission Estimates
- Certification can be a three-year cycle
 - Where same certifier used for 3 consecutive years, and
 - Where operations/emissions do not change significantly

Certification Process



- 1. Participants:** calculate and report; select certifier
- 2. Certifiers:** conduct certification activities
 - COI determination
 - CEC notification
 - Prepare report for participant; opinion for Registry
- 3. Registry:** review, accept and store data
- 4. State:** oversee certification activities (CEC), and consider data



Timeline: Certification Process

Reporting Deadline	August 31st
Select Certifier	September (2 weeks)
COI Determination	September (2 weeks)
Finalize contract	October (2 weeks)
Notification of certification activities	October (2 weeks)
Certification Activities	November/December (2-6 weeks)
Certification Deadline	December 31st

Value of Certification



- External review identifies inconsistencies
 - Better accounting of energy usage
 - Identify energy inefficiencies
- Gold standard in market
- Bears public scrutiny
- Consideration in case of future regulation

Registry Resources



- Protocols
 - General Reporting/Certification Protocols
 - Cement Protocols
 - Power/Utility Protocols
 - Forestry Protocols
- CARROT User's guide
- Case studies
- Reporting Worksheets
- Certification Prep workshops

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