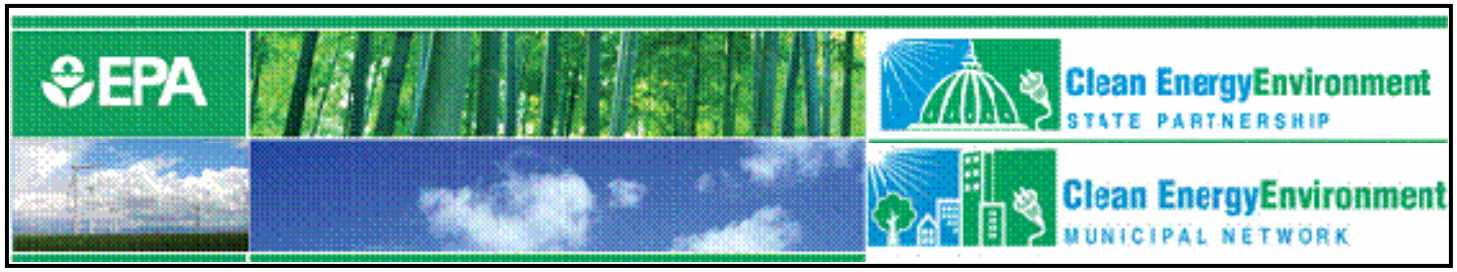


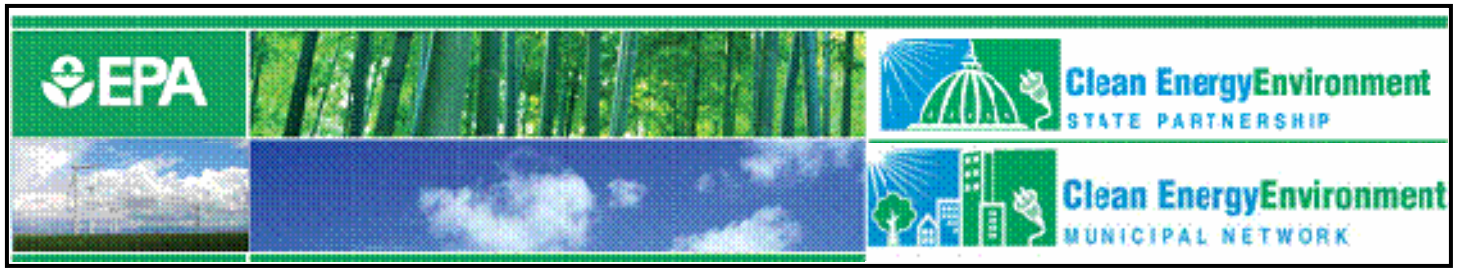
Greenhouse Gas Inventory 101

Session 1: Creating an Inventory

October 11, 2007

Andrea Denny, EPA & Anne Choate, ICF

ICF INTERNATIONAL

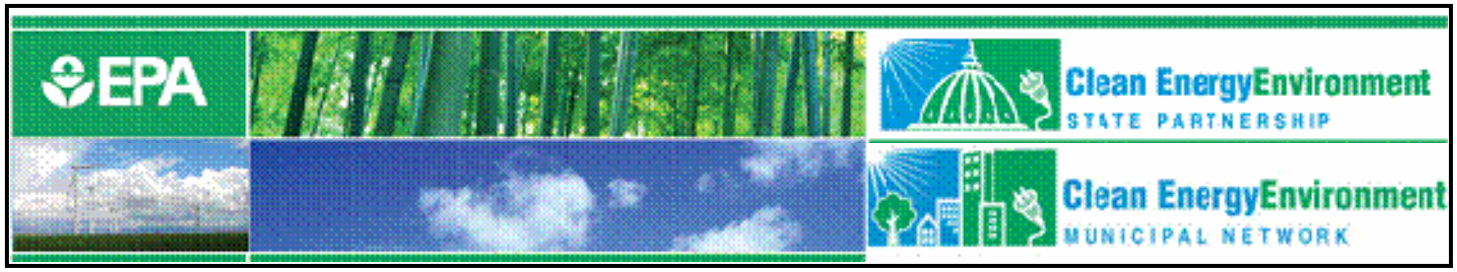


Welcome and background

- Clean Energy Environment Programs
  - Promote cost-effective clean energy strategies that achieve environmental, energy, public health and economic benefits
    - Clean Energy Environment State Program
    - Clean Energy Environment Municipal Network

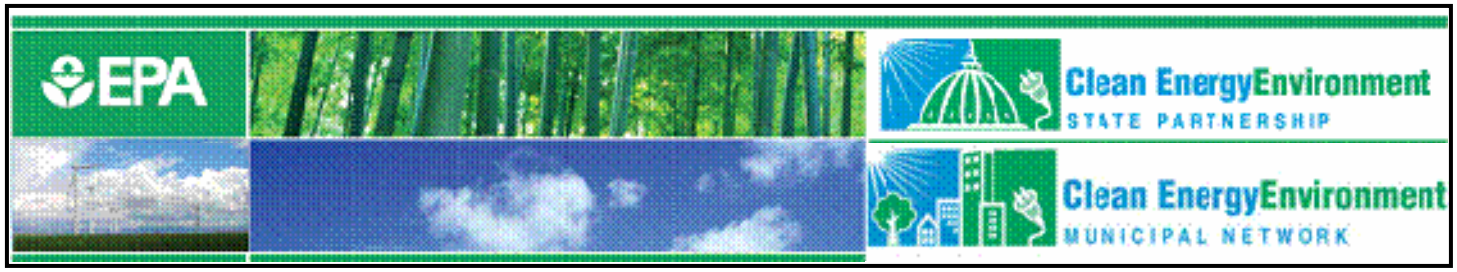
      www.epa.gov/cleanenergy/stateandlocal

  Additional inventory expertise on the phone today
  - ICLEI — US EPA Climate Leaders — Energy Star
  - USCM — US EPA National Inventory



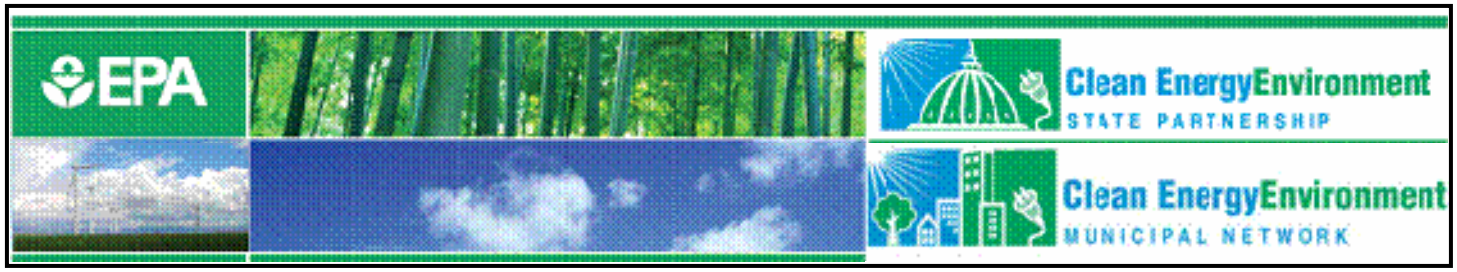
Logistics

- Phone lines are muted to control background noise.
- Please use question/comment box to submit your questions, we will consolidate questions and ask them during the Q&A session.
- Please use color indicators to show if you are confused or need the presenter to slow down. We will keep an eye on this during the presentation.
- We will notify participants of where the recording will be online once it is available.
- Feedback after the training is welcomed, please email denny.andrea@epa.gov with questions or comments.



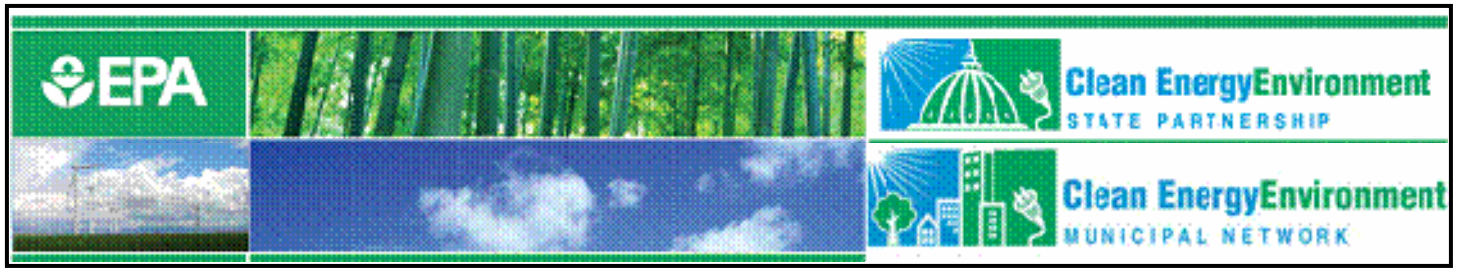
Session 1

- Audience:
  - Regional, state, and local government representatives.
- Goal:
  - Clarify and review fundamental issues related to inventory development.



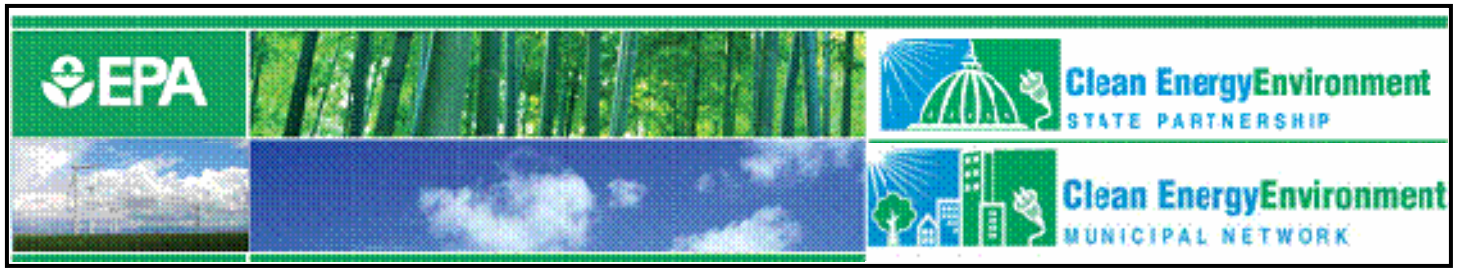
Outline

- Purpose of inventory.
- Inventory vs. registry.
- Setting boundaries.
- Scope.
- Quantification approach.
- Setting a baseline.
- Engaging stakeholders.
- Certification.
- Inventory results in context.
- Timelines and level of effort.



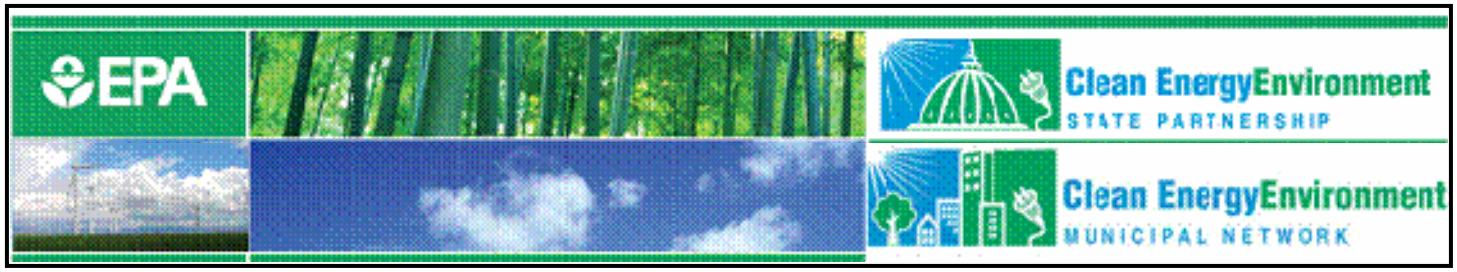
Why prepare an inventory?

- To identify the greatest sources of GHG emissions within your geographic region.
- To understand emission trends.
- To quantify the benefits of specific activities that result in GHG emissions.
- To provide a basis for developing an action plan.
- To track progress at reducing emissions.
- To set goals and targets for future reductions.



What kind of inventory?

- Multi-state.
- State.
- Regional. (e.g., MPO, COG, RPA)
- Local. (e.g., cities participating in the Mayor's Climate Protection Agreement)
- Corporate.
  - Entity-level.
  - Project-level.

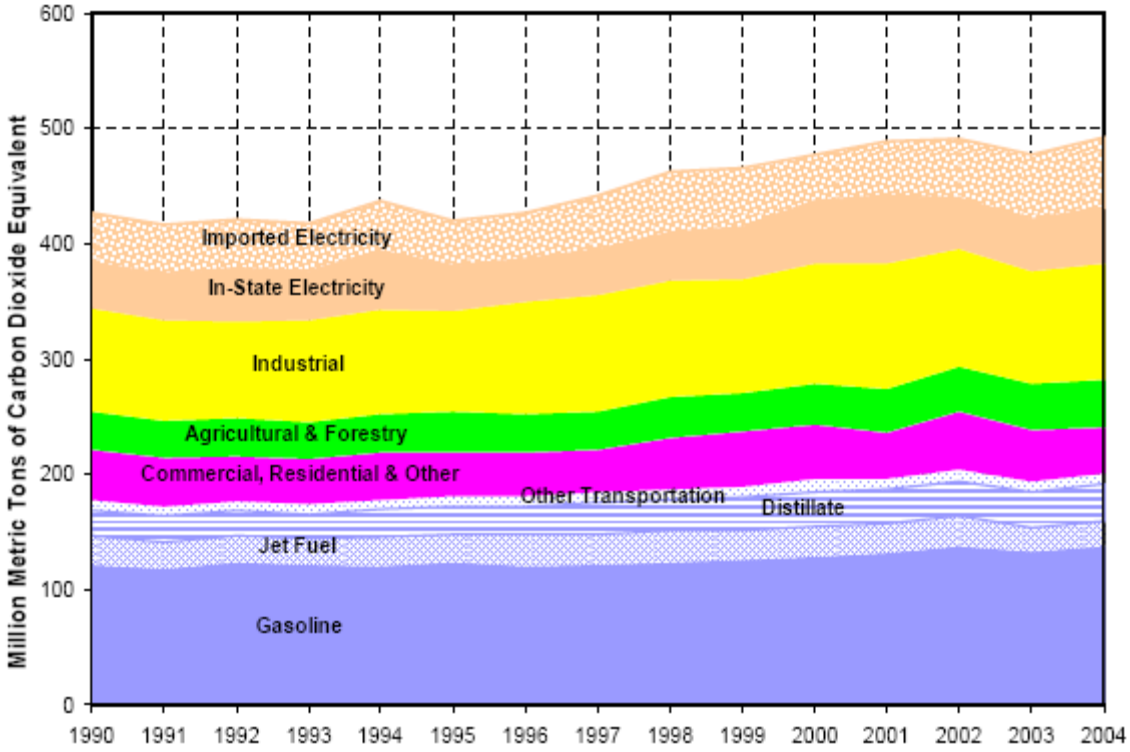


Inventory vs. registry

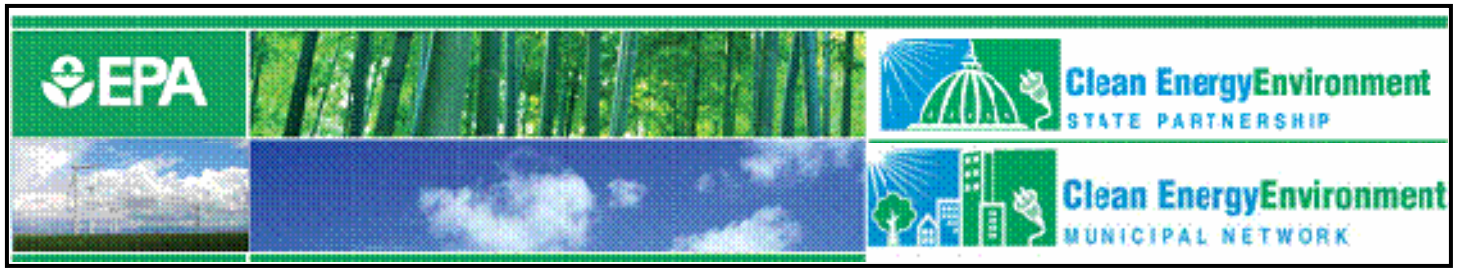
- Inventory.
  - Accounts for GHG's emitted and removed from the atmosphere over a specific timeframe .
  - Transparent and easily reproducible.
  - Follows established accounting guidance. (e.g., IPCC, EIIP, WRI/WBCSD)
- Example: California GHG Inventory.
  - 5 Sources. (electric power, transportation, industrial, ag & forestry, and other)
  - 1990-2004.

Inventories quantify the magnitude of emissions by source and by gas

California's Gross GHG Emissions Trends

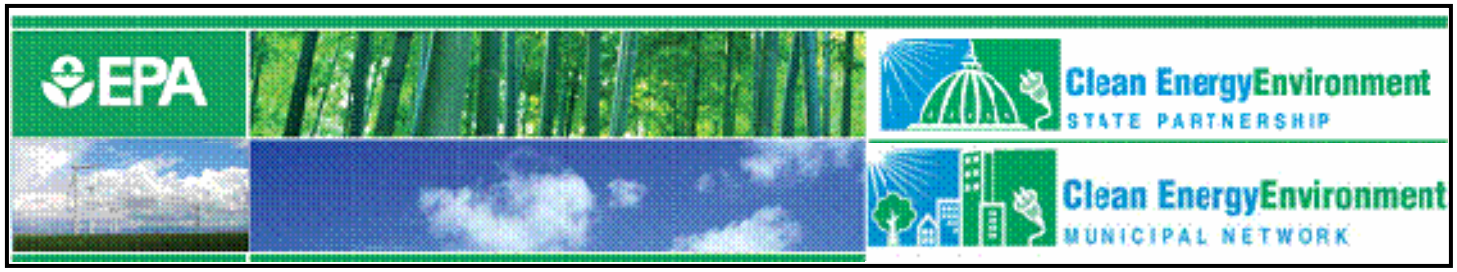


Source: CEC 2006



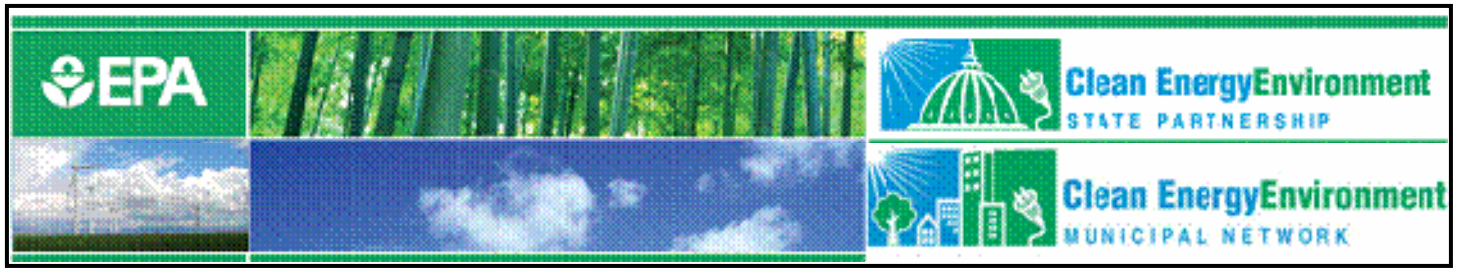
Inventory vs. registry

- Registry.
  - An organized collection of inventories.
  - Records GHG emissions or emission reductions.
  - Scope. (which GHGs, which emissions)
  - Timing. (annual, periodic, one time)
  - Voluntary or mandatory.
  - Reporting level. (project or entity-level)
  - Degree of verification. (none, self, or 3rd party)
- Example: California Climate Action Registry
  - 301 total registry members.
  - Each member conducts/submits an inventory.



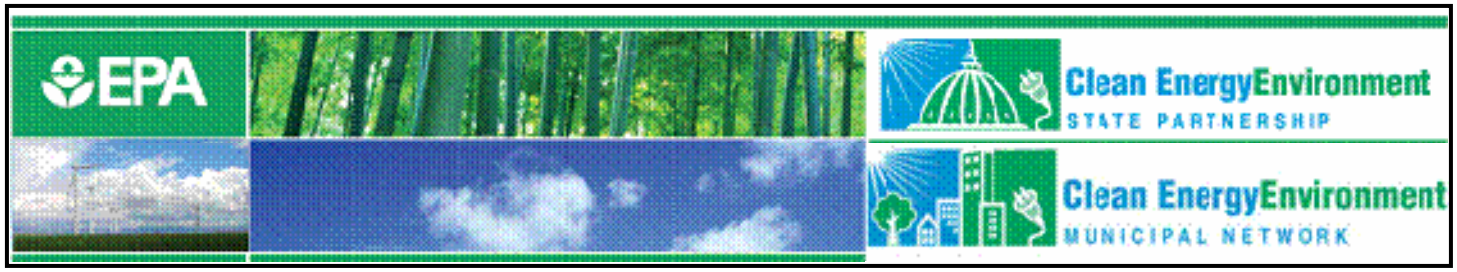
Registry purpose drives design

Information Reported	Purposes			
	Inventory	Recognition	Limits	Credits
Emissions	yes	yes		
Comprehensive Emissions	yes	yes		
Comprehensive Emissions relative to Baseline	yes	yes	yes	yes
Emissions Reduction		yes		yes



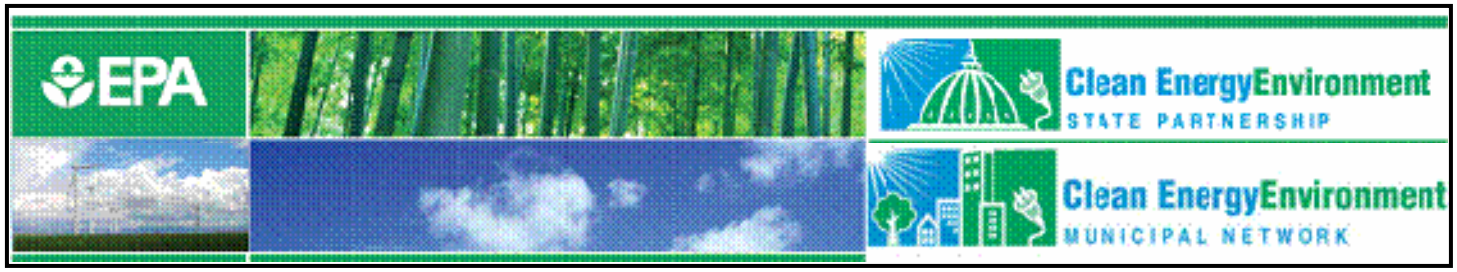
Physical and organizational boundaries

- Those within a certain geographic region.
  - the state of California.
- Those within a certain entity's control.
  - municipal operations in King County.
- Those associated with a particular project.



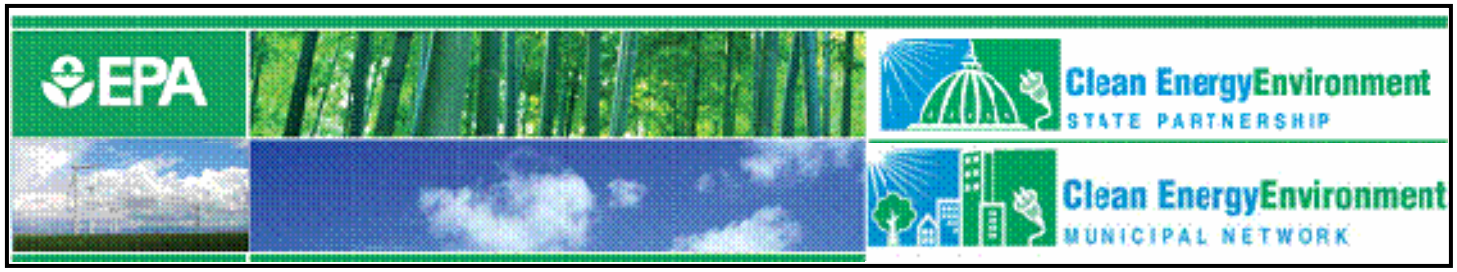
Operational boundaries

- Choosing appropriate end-use sectors.
  - Municipal.
  - Commercial.
  - Industrial.
  - Residential.
- Direct v. indirect emissions.
  - Generated vs. imported electricity.
  - Waste management vs. exported waste.
  - Product use and supply chain-related emissions.



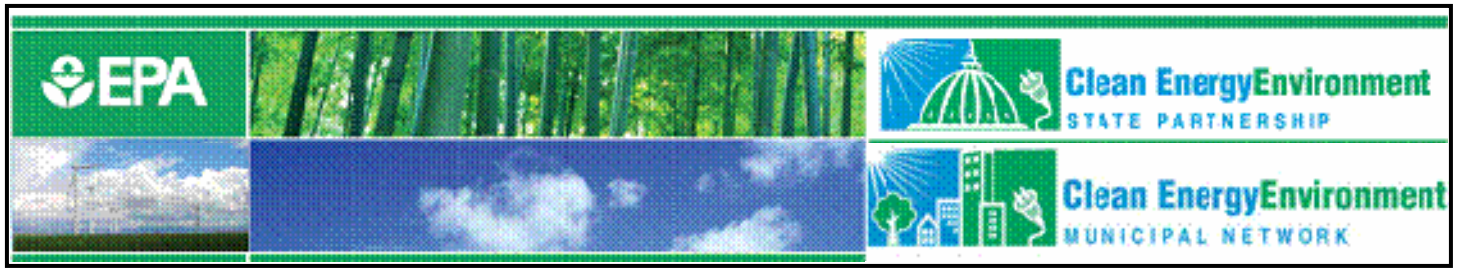
Scope: Which sources should be included?

- Energy.
  - Energy Industries.
  - Transport.
  - Manufacturing Industries and Construction.
- Industrial Processes.
- Solvent and Other Product Use.
- Agriculture.
  - Enteric Fermentation.
  - Manure Management.
- Land-Use Change and Forestry.
  - N_2O from Fertilizer Application.
- Waste.
  - Wastewater Handling.
  - Solid Waste Disposal.



Scope: Which GHGs are included?

	National (IPCC)	States (EIIP)	Cities for Climate Protection (CCP)
CO_2	yes	yes	yes
N_2O	yes	yes	yes
CH_4	yes	yes	yes
PFCs	yes	yes	
HFCs	yes	yes	
SF_6		yes	

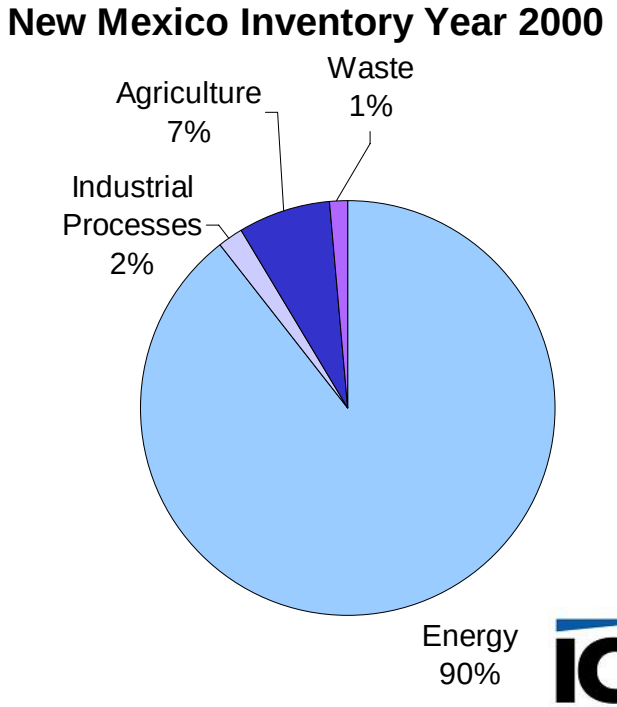


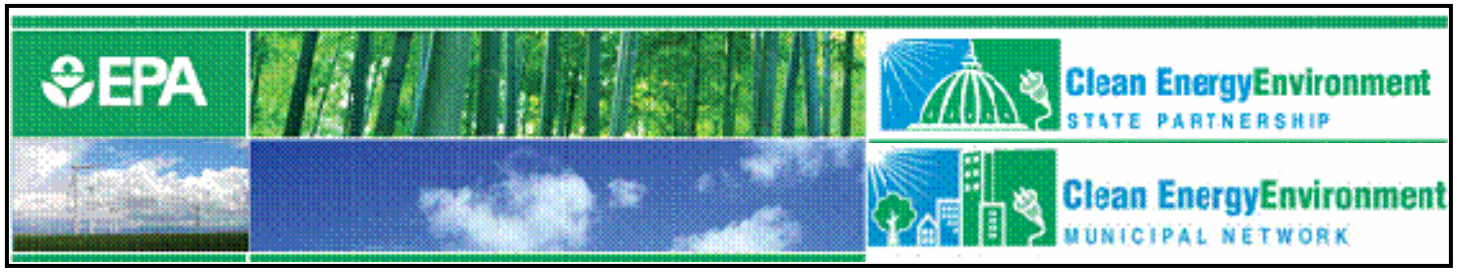
Quantification approach

- Top-down.
  - Data compiled by some agency or office that attempts to provide information (e.g., fuel consumption) for specific geographic areas. (e.g., EIA's State Energy Data Report)
- Bottom-up.
  - Data representing end use information, pulled from utility bills or other locally provided sources of information.

80/20 rule

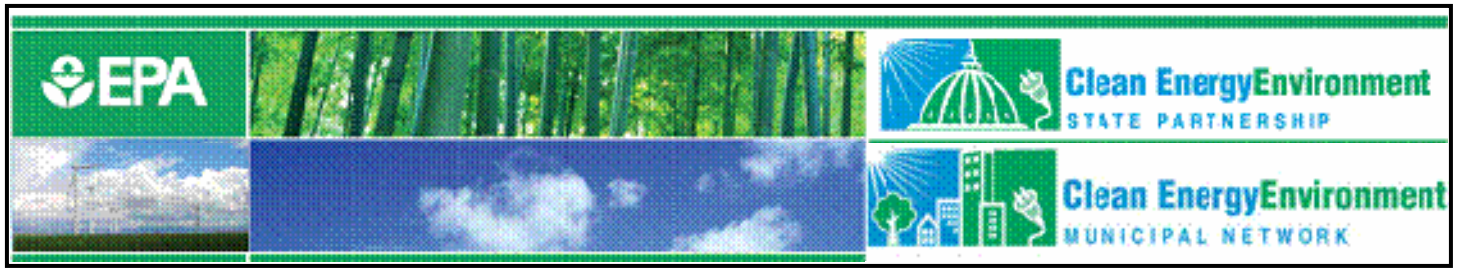
- Focus efforts on the "most important" sources.
- Sometimes only 20% of the effort is needed to quantify 80% of emissions.
- Focus on:
  - Energy use.
  - Transportation.





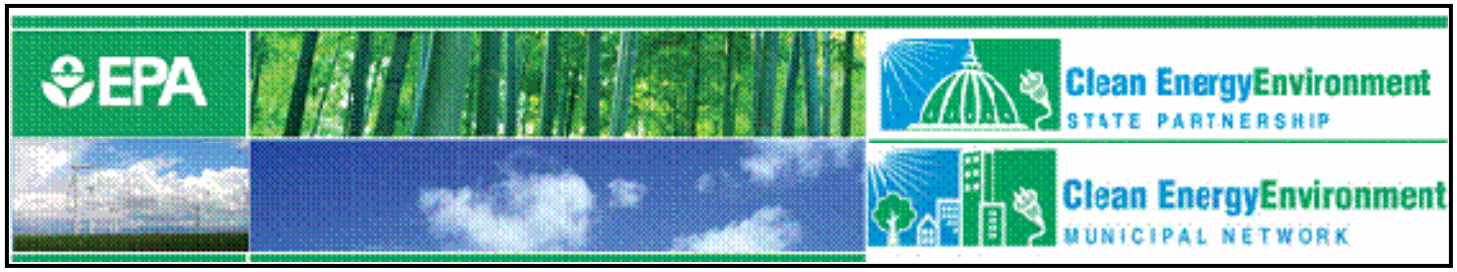
Setting a baseline

- Think it through!
  - How will baseline data be used.
  - Are there anomalies present in the baseline. (uncharacteristically high or low emissions)
  - How will regulatory or voluntary efforts proposed or in progress affect baseline and/or future emissions.
  - Will the baseline be compatible with baselines being used elsewhere.
- Level of disaggregation .
- Data availability.



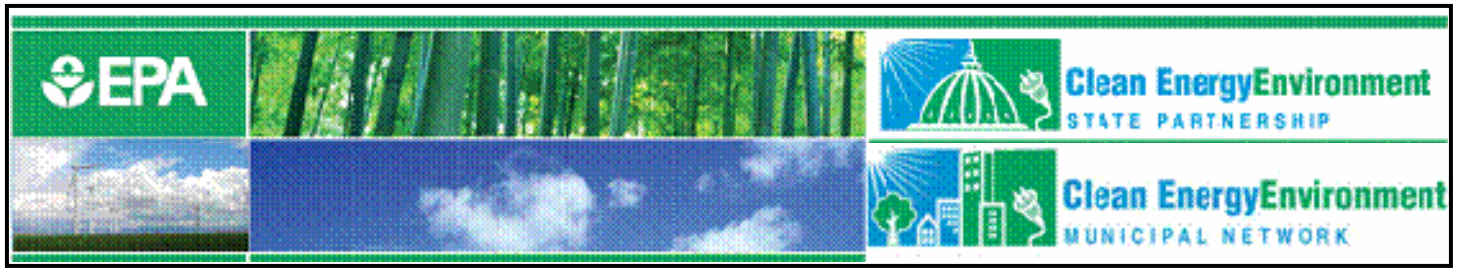
Engaging stakeholders

- Who is involved in establishing the baseline?
- How can they contribute?
  - Data, resources, outreach.
- How do you engage stakeholders?
  - Determine baseline year for projects, identify baseline and alternative technologies/practices.



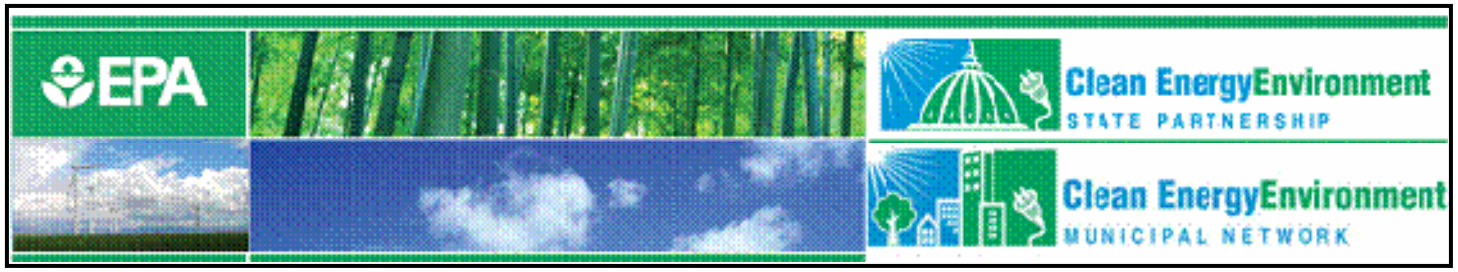
Inventory methods and tools

	Methods	Tools
National	2006 IPCC Guidelines for National Greenhouse Gas Inventories	U.S. Inventory
State	EPA State Inventory Tool EIIP Guidance	State Inventory Tool (EPA)
Local	ICLEI Cities for Climate Protection (CCP) Guidance and Software	Clean Air and Climate Protection Software (STAPPA/ALAPCO, ICLEI and the EPA) Portfolio Manager (EPA)
Corporate	WRI/WBCSD	GHG Emission Calculation Tools Climate Leaders (EPA)



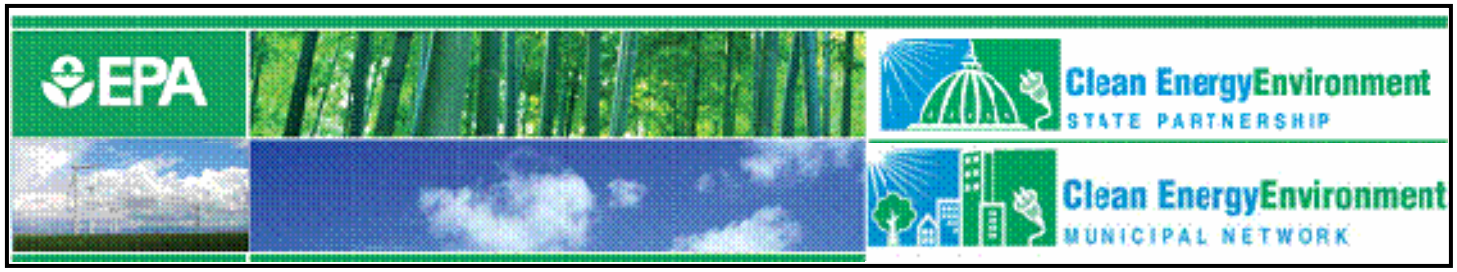
Data issues

- Availability.
  - 1990 data is difficult to obtain.
- Quality.
  - Bottom-up v. top-down.
  - How is it collected.
  - Is it verified.
- Scale.
  - Entity-level, state-level, national-level.



GHG inventory certification

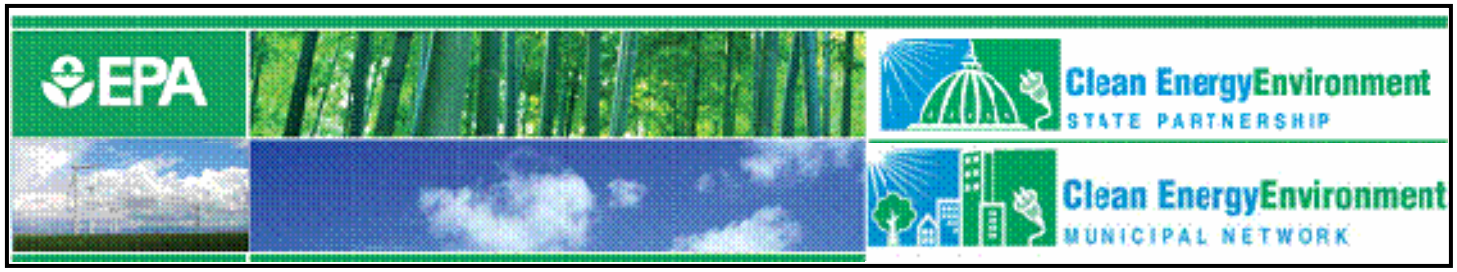
- Certification: 3rd party review of methodology and underlying data.
- Purpose.
  - Ensure the inventory is of a high quality, that it is complete, consistent, accurate, and transparent.
- Certification protocols.
  - California Climate Action Registry *General Reporting Protocol*, version 2.2 (March 2007).
  - ISO 14064-1 (inventory) and 14064-3 (verification) standards .
  - Environmental Resources Trust, Inc.'s Corporate Greenhouse Gas Verification Guideline (CGVG).



Inventory results in context

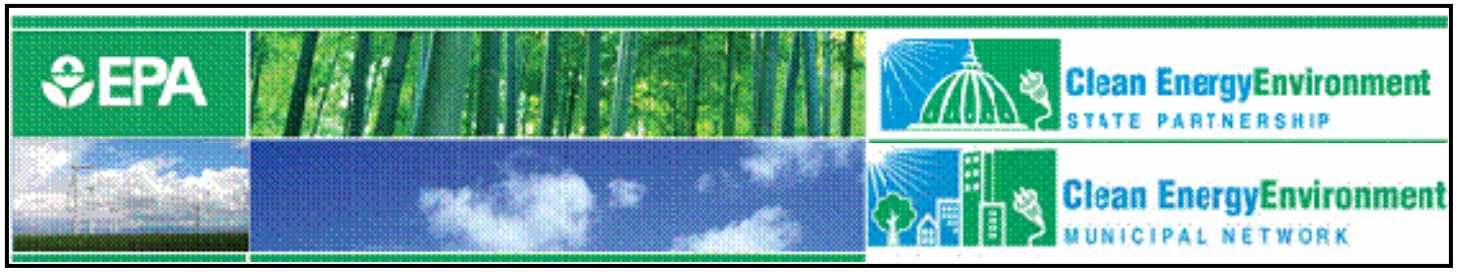
- Comparison to other state or local governments.
  - State summaries available on EPA website:

    http://www.epa.gov/climatechange/emissions/state_ghginventories.html
- Order of magnitude checks.
- Climate Analysis Indicator Tool. (CAIT)



Timelines and level of effort

- Timeline dependent on:
  - Data availability and vintage.
  - Reporting requirements.
  - Reduction commitments.
- Level of effort dependant on:
  - Resources. (human, and economic)
  - Data availability.
  - Level of detail. (number of gases, number of sources, level of disaggregation)
  - Data provided by key participants in region, state, and locality.
  - Adoption of 80/20 rule.



Additional resources

Greenhouse Gas Inventory Basic Information:

- http://epa.gov/climatechange/emissions/index.html#inv

California Climate Action Registry:

- http://www.climateregistry.org/ABOUTUS/

CCAR Protocol

- http://www.climateregistry.org/docs/PROTOCOLS/GRP%20V2-March2007_web.pdf

Clean Air and Climate Protection Software (CACP)

- http://www.cacpsoftware.org/

Climate Analysis Indicators Tool (WRI)

- http://cait.wri.org/

Greenhouse Gas Management Institute

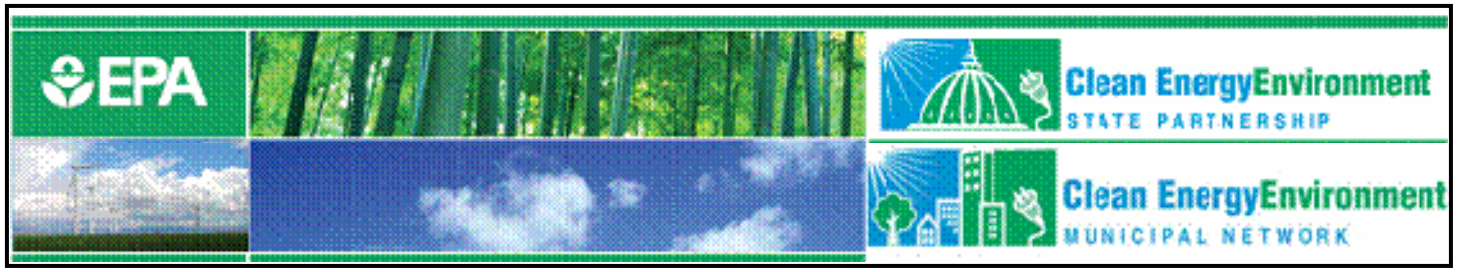
- www.ghgnetwork.org

Portfolio Manager

- http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

United Nations Framework Convention on Climate Change

- http://unfccc.int/2860.php



Coming up…

•**Second Session: Translating Inventory Results into Action**

2:00 – 3:30 PM

November 6, 2007

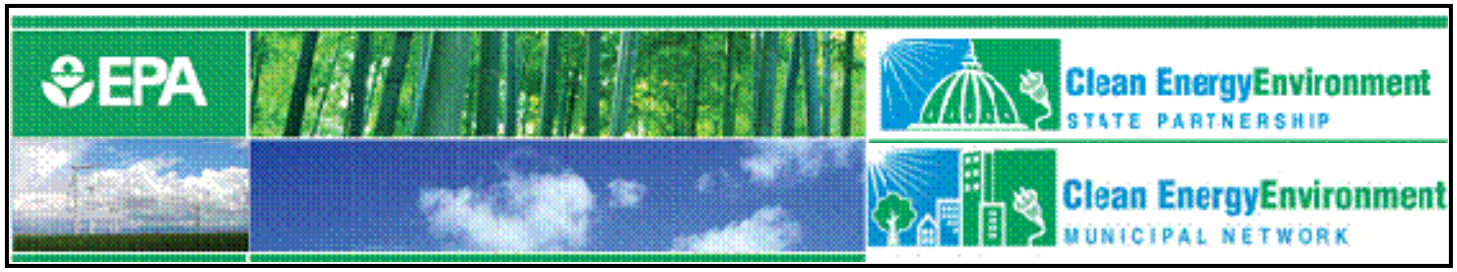
Topics will include describing the various uses of GHG Inventories including benchmarking, tracking progress over time, major source identification, target setting, exploring mitigation options, and action planning.

•**Third Session: State Inventory Tool (SIT) Training Session**

November, 2007; Date and time to be determined

EPA's State Inventory Tool is an interactive Excel-based suite of tools that assists with the development of a state-level greenhouse gas emission inventory. This detailed training for the SIT modules includes implementation of state data to assess GHG emissions by source and sector.

To register for these sessions, e-mail: **Inventory101@icfi.com**



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