

Carbon Management

Econergy International was an early pioneer in the carbon arena and is a global leader in Carbon Management. We work with corporations; electric utilities; and national, regional, and local governments worldwide to quantify their carbon emissions and find the **most cost-effective means to reduce those emissions**. We call our carbon management process **SAVE³**:

SAVE³ PROCESS SAVE ENERGY, SAVE CARBON, SAVE MONEY

DEVELOP CARBON FOOTPRINT (EMISSIONS INVENTORY)

- Quantify client's carbon footprint and identify sources of carbon emissions.
- For corporate clients, the Inventory is typically company-wide, but can be limited to a portion of operations, such as a single facility, region or division.
- For government clients, the Inventory is typically economy-wide, but can be limited to an individual sector such as transportation or industry, or to government operations

DESIGN CUSTOMIZED EMISSIONS TRACKING TOOLS *(see visuals on page 4)*

- Inventory Maintenance System
 - Emissions Tracking System
- } Provide both the means to track emissions and the data to analyze mitigation strategies

PERFORM TECHNICAL AND FINANCIAL ANALYSES OF EMISSIONS MITIGATION STRATEGIES

- Analyze data from the Carbon Inventory and other client-specific factors (operations, organization, region, resources, etc) to identify and evaluate the most realistic and cost-effective Emissions Mitigation Strategies. *(see visuals on page 4)*

ESTABLISH EMISSIONS REDUCTION TARGET

- Use results of Technical and Financial Analyses to set an aggressive yet achievable Emissions Reduction Target.

DESIGN COMPREHENSIVE CARBON MANAGEMENT PLAN (CLIMATE ACTION PLAN)

- Craft a specific plan to achieve the Emissions Reduction Target.
- Recommend proven, cost-effective energy efficiency and renewable energy strategies, fuel-switching measures, and industrial process improvements that can significantly reduce both carbon emissions and operating costs.
- For corporate clients, the Plan outlines specific strategies to reduce emissions to targeted levels for single facilities, regional, and corporate-wide operations.
- For government clients, the Plan outlines specific policies and actions to reduce economy-wide emissions to targeted levels.

DESIGN POLICIES AND PROGRAMS TO IMPLEMENT THE PLAN

- Develop policy initiatives to institutionalize carbon management practices.
- Develop programs to drive these emission reduction policies.
- Develop funding mechanisms and budgets to successfully execute the program. Evaluate the regional, socio-economic and political realities to make realistic recommendations.

IMPLEMENT POLICIES AND PROGRAMS

CARBON MANAGEMENT PROCESS

SAVE³

CARBON FOOTPRINT

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CUSTOMIZED EMISSIONS TRACKING TOOLS

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TECHNICAL AND FINANCIAL ANALYSES OF EMISSIONS MITIGATION STRATEGIES

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EMISSIONS REDUCTION TARGET

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COMPREHENSIVE CARBON MANAGEMENT PLAN

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POLICY AND PROGRAM DESIGN

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IMPLEMENTATION

SAVE ENERGY SAVE CARBON SAVE MONEY

ECONERGY'S CARBON MANAGEMENT TRACK RECORD

International Carbon Trading & Policy Development

Carbon Fund Design

Methodology Design

U.S. Carbon Trading & Policy Development

Carbon Management Planning

- Founders attended the Rio Summit in 1992 and participated in the discussions that built the framework for the Kyoto Protocol.
- Proposed to the World Bank the concept of a carbon fund and conducted a feasibility study that led to the creation of World Bank's Prototype Carbon Fund, one of the world's largest buyers of carbon offsets.
- Wrote the first methodology submitted to the Executive Board of the Kyoto Protocol's Clean Development Mechanism (CDM).
- Based on a US Lawrence Berkeley National Laboratory concept, Econergy invented the Lambda Factor calculation which became a requirement under the CDM for any project that is connected to a grid with hydroelectricity in the generating mix.
- The director of Econergy's Carbon Markets division was a key pioneer of the US carbon markets during his tenure at The Climate Trust.
- Designed a Carbon Management Plan for the City of Boulder, Colorado which led to the first carbon tax in the USA, a special assessment on electricity consumed by Boulder's citizens and businesses.

SELECT CLIENTS

CORPORATIONS

- U.S. EPA Climate Leaders Program – working with over 50 major U.S. corporations including:
 - Bank of America
 - Citigroup
 - Dell
 - Sun Microsystems
 - Target
 - United Technologies
 - Raytheon
 - Johnson Controls
 - Cummins
- General Dynamics, USA
- Votorantim, Brazil (pulp and paper mills)
- Imerys, France (minerals)
- Petrobras Energía, Argentina (oil & gas, chemicals)

ELECTRIC UTILITIES

- Iberdrola (2nd largest electric utility in Spain)
- Termoelectrica (Romania's national electric and district heating utility)
- Ahmedabad Electric Company (one of India's largest electric utilities)

REGIONAL AND LOCAL GOVERNMENTS

- Region of Castilla y Leon, Spain
- Boulder County, Colorado, USA
- City of Allentown, Pennsylvania, USA

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SAMPLE CARBON MANAGEMENT TOOLS

- Home
- Muni & Source
- Print
- Municipality

Type	Inventory	-x
Municipality	Boulder	-x
Year	2003	-x

Sum of Emissions (tCO2e)	Total	Percent of Total
Sector	-x	-x
Residential	326,710	19%
Commercial	749,389	43%
Industrial	296,447	17%
Street Lighting	6,779	0%
Transportation	353,553	20%
Agriculture	0	0%
Waste	48,886	3%
Industrial Process	0	0%
Offsets	-50,653	-3%
Grand Total	1,731,112	103%

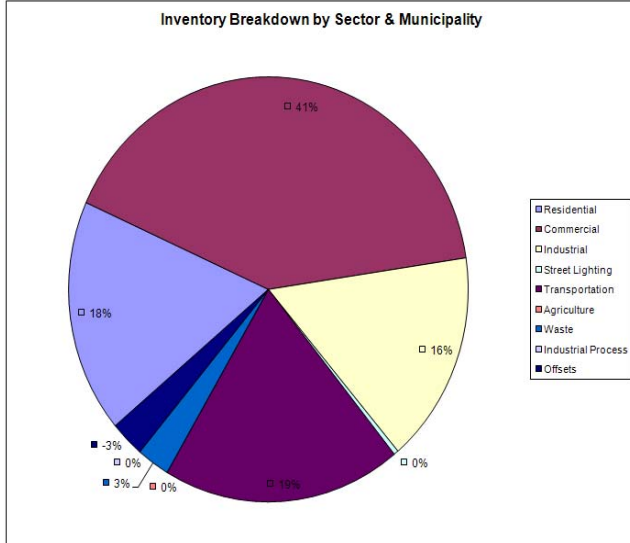
Municipality & Sector Summary

-- The "Municipality & Sector Summary" provides an interactive table and pie chart to numerically and graphically illustrates the GHG inventory, for a selected year, disaggregated by municipality and sector.

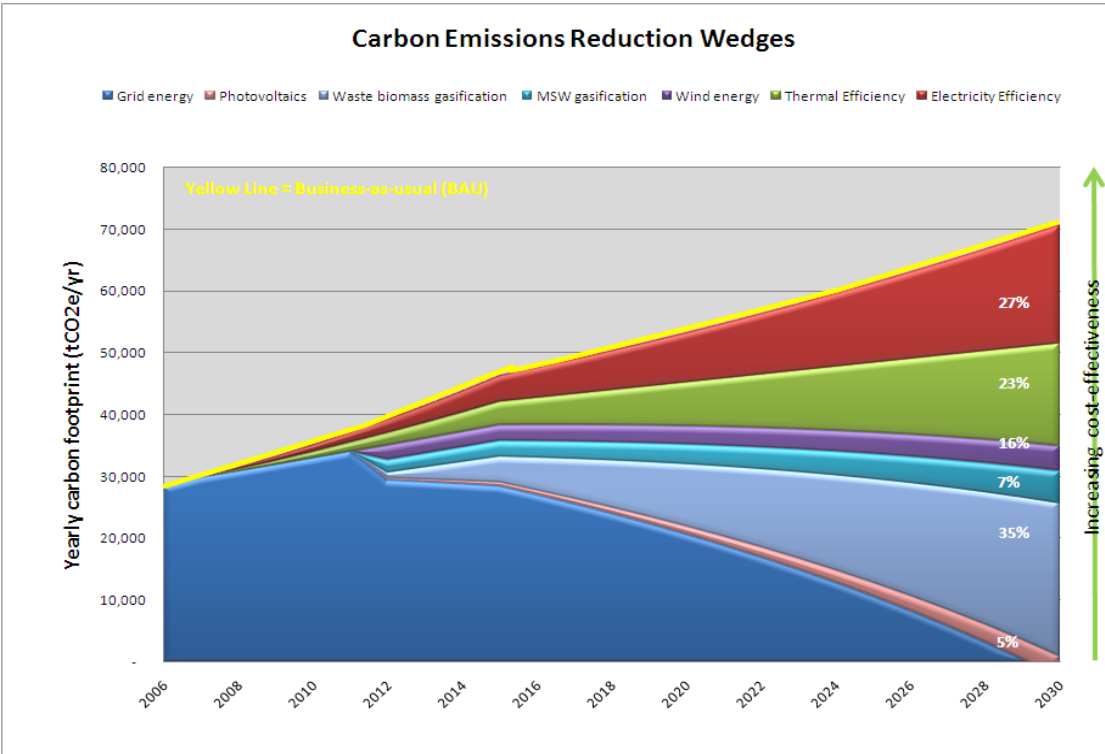
-- The user can select any year from the "Year" pull down menu located at the top of the table.

-- The user can select any municipality from the "Municipality" pull down menu.

In order to select Boulder County, the user should select "(all)" from the "Municipality" pull down menu.



- Inventory Maintenance System:**
- ✓ The Carbon Inventory can be parsed by municipality, economic sector, region, operational unit, emissions source, division, year, etc
 - ✓ Pull-down menus allow the user to select the desired data parsing
 - ✓ Provides interactive tables, graphs, and charts to illustrate the Carbon Inventory.
 - ✓ Accepts multiple years of data so that the user can make year-to-year comparisons and future projections of carbon emissions.



- The Carbon Wedge:**
- ✓ Shows a client's Business-As-Usual emissions trajectory and the aggregated impact of cost-effective emissions mitigation strategies.
 - ✓ Wedges depict strategies that have passed Marginal Abatement Cost (MAC) prioritization
 - ✓ Client can see and easily evaluate the best mitigation strategy



EXAMPLE CARBON MANAGEMENT PROJECTS

<p>BOULDER COUNTY, COLORADO, USA</p> <p>----</p> <p>CARBON INVENTORY</p> <p>EMISSIONS TRACKING TOOLS</p> <p>CARBON MANAGEMENT PLAN</p> <p>EMISSIONS MITIGATION PROGRAM IMPLEMENTATION</p>	<p>Phase I</p> <ul style="list-style-type: none"> Completed an economy-wide Carbon Inventory of the emissions for the industrial, transportation, commercial buildings, residential buildings, agriculture, and solid waste sectors. Developed an electronic Inventory Maintenance System tool to provide a user-friendly method to track county-wide emissions on an annual basis. Used the Inventory results to perform detailed Technical and Financial Analyses of a variety of carbon emissions mitigation strategies within each sector of the County's economy. Developed a comprehensive Carbon Management Plan that recommends specific strategies the County can pursue to achieve its goal of economy-wide compliance with the Kyoto Treaty. <p>Phase II</p> <ul style="list-style-type: none"> Performed deeper Technical and Financial Analyses on 36 prospective carbon management programs. Estimated implementation costs and cost savings, and calculated Marginal Abatement Costs to prioritize program concepts. Quantified the aggregated impact the targeted programs would have on economy-wide emissions. <p>Phase III</p> <ul style="list-style-type: none"> Will assist Boulder County to implement selected, cost-effective Carbon Management programs. Activities will include design, implementation, and management of a program to measure the performance of plug-in hybrid-electric vehicles, install retail ethanol fuel dispensaries throughout the county, and promote ethanol fuel usage among county motorists.
<p>REGIONAL GOVERNMENT OF CASTILLA Y LEON, SPAIN</p> <p>----</p> <p>ECONOMY-WIDE INVENTORY</p> <p>ESTABLISH EMISSIONS REDUCTION TARGETS</p> <p>CARBON MANAGEMENT PLAN</p>	<ul style="list-style-type: none"> Developed Carbon Inventories, performed Technical and Financial Analysis of emissions mitigation measures, and performed macroeconomic analyses of several recommended mitigation measures for the electric power, cement, pulp & paper, and livestock sectors. Developed an economy-wide Carbon Inventory for the region in order to provide a framework for a comprehensive Carbon Management Plan for Castilla y Leon. Economy-wide analysis also provided a framework for strategic economic development initiatives. The Plan recommended the development of a wind turbine manufacturing industry, a wind energy services industry, and a biofuels industry.
<p>PETROBRAS ENERGÍA, ARGENTINA</p> <p>----</p> <p>CARBON INVENTORY</p> <p>CARBON MANAGEMENT PLAN</p>	<ul style="list-style-type: none"> Conducted a comprehensive Carbon Inventory and identified attractive emissions reduction opportunities for the third-largest energy industrial group in South America. Identified more than 30 projects in the company's subsidiary groups, including oil and gas exploration, production and transportation; fertilizer and petrochemical manufacturing; and electric power generation, transmission and distribution.
<p>GENERAL DYNAMICS, GLOBAL</p> <p>----</p> <p>CARBON INVENTORY</p> <p>EMISSIONS TRACKING TOOLS</p> <p>CARBON MANAGEMENT PLAN</p> <p>EMISSIONS MITIGATION PROGRAM IMPLEMENTATION</p>	<ul style="list-style-type: none"> Currently developing a comprehensive Carbon Inventory for two of General Dynamics' business units as a pilot project. Developing an advanced Inventory Maintenance System tool to aggregate the data and calculate carbon emissions. Writing an Inventory Management Plan to document data sources and procedures used to develop the inventory. IMP provides continuity over time so General Dynamics can itself update the Inventory in the future despite the inevitable turnover of personnel. Following the pilot project, Eenergy will expand the Inventory to the entire corporation, identify opportunities to reduce emissions, design a comprehensive Carbon Management Plan, and help General Dynamics to implement the Plan.



FOR MORE INFORMATION, PLEASE CONTACT:

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