

# Accessing the US Carbon Market

*Opportunities for Waste Water Treatment Facilities*



Delta Institute

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# about us

Mission: Improve Environmental Quality and Promote Community Economic Development in the Great Lakes Region

## Programs:

- Pollution Prevention & Energy Efficiency
  - Policy development, technical assistance, green design, implementation financing
- Brownfield Redevelopment
  - Financing, land assembly, site control, remediation
- Sustainability & Community Development
  - Sustainable purchasing, organic food systems, environmental training
- Emissions Trading Markets
  - Creating community benefits through aggregation and trading of carbon offset credits on the Chicago Climate Exchange



# emissions trading markets

Origin – 1990 Amendments to Clean Air Act

Environmental Problem - Acid Rain

Solution – Cap-and-Trade mechanism to regular sulfur dioxide emissions from power plants

Cap-and-Trade Basics:

- Government caps the level of SO<sub>2</sub> emissions and distributes permits in one-ton increments for its release
- Each power plant must have enough permits to cover annual emissions
- Power plants that cannot cover annual emissions must either reduce emissions or buy surplus permits from other sources
- The government reduces the cap frequently, increasing the value of a permit
- Over time, becomes more economical to reduce emissions than to continue buying permits

Results:

- 1980 – emissions at 17.5 million tons
- 2010 – cap set at 8.95 millions tons
- Market price - \$535/ton



Data Courtesy of EvolutionMarkets.com

# Chicago Climate Exchange (CCX®)

- Voluntary, private, member-based, cap-and-trade market for the reduction of greenhouse gases
- Self-regulated market with legally binding emission reduction targets
- Cap is the member's average annual emissions from 1998-2001
- Phase 1 Members – 4% reduction by 2006; 6% by 2010
- Phase 2 Members – 6% by 2010

The Delta Institute is an Associate Member and Registered Aggregator on the Chicago Climate Exchange

- Over 400 Members
  - Ford, Dow Chemical, DTE Energy, DuPont, Eastman Kodak, Waste Management, Cargill, International Paper, Michigan State University, City of Chicago, State of New Mexico
- Emission Reduction Results
  - 2003 – 32,806,900 mT (9.0%)
  - 2004 – 42,711,000 mT (12.1%)
  - 2005 – 32,540,200 mT (9.7%)
  - 2006 – 20,819,600 mT (5.9%)



# Chicago Climate Exchange Members

## **Aerospace & Equipment**

Rolls-Royce  
United Technologies

## **Automotive**

Ford Motor Company

## **Beverage Manufacturing**

New Belgium Brewing Company

## **Chemicals**

Dow Corning  
DuPont  
Rhodia Energy Brasil Ltda

## **Coal Mining**

Jim Walter Resources, Inc.  
PinnOak Resources LLC

## **Commercial Interiors**

Knoll, Inc.  
Steelcase Inc.

## **Counties**

King County, Washington  
Miami-Dade County, Florida  
Sacramento County, California

## **Diversified Manufacturing**

Eastman Kodak Company

## **Electric Power Generation**

AGL Hydro Partnership  
Allegheny Energy Inc.  
Alliant Energy  
American Electric Power  
American Municipal Power-Ohio  
Associated Electric Cooperative, Inc.  
Avista Corporation  
Central Vermont Public Service  
DTE Energy Inc

Duquesne Light Company  
Green Mountain Power  
Hoosier Energy Rural Electric Cooperative, Inc.  
Manitoba Hydro  
NRG Power Marketing Inc.  
Puget Sound Energy, Inc.  
Reliant Energy Services Inc.  
TECO Energy, Inc.

## **Electronics**

Motorola, Inc.  
Sony Electronics Inc.  
Square D/Schneider Electric N.A.

## **Environmental Services**

Atlantic County Utilities Authority  
Lancaster County Solid Waste Management Authority  
Veolia Environmental Services North America Corp  
Wasatch Integrated Waste Management Authority  
Waste Management, Inc.

## **Ethanol Production**

Corn Plus LLP

## **Financial Institutions**

Bank of America Corporation

## **Food and Agricultural Products**

**& Services**  
Agrium U.S. Inc.  
Cargill, Incorporated  
Monsanto Company

## **Food Processing**

Meister Cheese Co. LLC  
Premium Standard Farms  
Smithfield Foods, Inc.

## **Forest Products**

Abitibi-Consolidated  
Aracruz Celulose S.A.  
Arcelor Mittal Florestas Ltda  
Cenibra Nipo Brasileira S.A.  
International Paper  
Klabi S.A.  
Masisa S.A.  
MeadWestvaco Corp.  
Neenah Paper Incorporated  
Stora Enso North America  
Suzano Papel E Celulose SA  
Tembec Industries Inc.  
Temple-Inland Inc

## **Manufacturing**

Bayer Corporation  
Interface, Inc.  
Ozinga Bros., Inc.  
Smurfit-Stone

## **Municipalities**

City of Aspen  
City of Berkeley  
City of Boulder  
City of Chicago  
City of Oakland  
City of Melbourne, Australia  
City of Portland

## **Petrochemicals**

Petroflex Industria e Comercio SA

## **Pharmaceuticals**

Baxter International, Inc.

## **Recreation**

Aspen Skiing Company

## **Retail**

Safeway, Inc.

## **States**

State of Illinois  
State of New Mexico

## **Steam Heat**

Concord Steam Corporation

## **Steel**

Roanoke Electric Steel Corp.

## **Technology**

Freescale Semiconductor  
IBM  
Intel Corporation  
STMicroelectronics

## **Transportation**

Amtrak  
San Joaquin Regional Rail Commission

## **University**

Hadlow College  
Michigan State University  
University of Idaho  
University of Iowa  
University of Minnesota  
University of Oklahoma  
Tufts University

# Why Do Companies Join CCX®?

## **Be Prepared: Mitigate Risk** (fiscal, operational, regulatory, reputational)

- Address evolving liability (regulatory, shareholder, rating agencies, physical)
- Position company strategically to comply with federal regulation
- Demonstrate concrete action to investor research, shareholders, insurance and rating agencies

## **Maximize Financial Opportunities**

- Understand carbon price and future price impacts
- Develop and gain experience with protocols of cap-and-trade
- Build credit reserve for future needs
- Maximize pre-existing investments in new technology

## **Preserve Early Action**

- Third party standardized audit unique to CCX for reference and record (NASD)
- Enter into legally-binding commitment to maximize credibility of environmental initiative

## **Influence Design and Policy**

- Influence design of mandatory programs (e.g. grandfather vs. auction, rate recovery, etc.)
- Speak from experience, gain credibility on issues of what works and what does not
- Join a global entity to meet a global challenge
- Be ready for any GHG mitigation mandate

Source: Chicago Climate Exchange

# Earning Carbon Offset Credits

- 1. Agricultural Methane Destruction**
  - 21 metric tons for every 1 ton of methane destroyed
- 2. Agricultural Soil Carbon Sequestration**
  - 0.2 – 0.6 metric tons per acre for continuous conservation tillage
  - 1.0 metric tons per acre for continuous grasses
- 3. Energy Efficiency and Fuel Switching**
  - Credits based on the displacement of CO<sub>2</sub> emissions from fossil fuel sources
- 4. Afforestation Carbon Sequestration**
  - 1 - 3 metric tons per acre, depending on age and species
- 5. Sustainably Managed Forest Carbon Sequestration**
  - 3 – 5 metric tons per acre, depending on forest cover type, age and soils
- 6. Landfill & Coal Mine Methane Destruction**
  - 18.25 metric tons for every 1 ton of methane destroyed
- 7. Renewable Energy Generation**
  - 0.4 metric tons per megawatt hour
- 8. Rangeland Soil Carbon Sequestration**
  - 0.12 – 0.52 metric tons per acre
- 9. Ozone Depleting Substance Destruction**
  - Credits based on global warming potential of ozone depleting substance destroyed, less 25%

# Methane Digester Program Specs

**There are no specific protocols for waste water treatment facilities  
– CCX would consider these facilities on a case-by-case basis**

1. Eligible Project must be surplus to U.S. regulation and activated after January 1, 1999
  - Eligible project must not be required to collect methane by law
2. Qualifying projects may earn credits for years 2003-2010
  - Retroactive credits for older projects
3. Offsets would likely be issued at a rate of 21 metric tons CO<sub>2</sub> per ton of methane combusted
4. Might have to establish baseline of existing bio-solids management practices
5. Must demonstrate clear ownership rights of the environmental attributes
6. All projects must be independently verified by approved, third-party, CCX verifier

# Methane Digester Program Specs

7. Offsets are issued at a rate equal to the lesser of the metered amount and a default methane emissions rate
  - Many digesters increase methane production, allowing for digesters to produce more methane than would be normally created in their absence
  - CCX only awards credits for methane destruction below what would have been emitted in the absence of the system
8. Entities that have significant direct GHG emissions, must join CCX as a member and commit to the reduction schedule before they can register offset projects
  - CCX may require a municipality to become a member and commit to an emissions reduction schedule

# Anaerobic Digester Requirements

## 1. Eligible Systems

- Covered anaerobic digesters
- Complete-mix
- Plug-flow
- Covered lagoons



## 2. Bio-gas flow meters and control devices must be installed

## 3. Recordkeeping is crucial

- Type of flow meter
- Results of installation and tabulation
- Monthly calculations of flow rates, hours in use
- Calculation of methane concentration

# Benefits of Methane Digesters

1. Selling energy to third party or using energy on-site does not preclude project from receiving carbon credits, provided the project owner has retained ownership of GHG rights
2. Methane collection projects that include electricity generation may also qualify for Emission Offset Credits from Renewable Energy based on displaced emissions
  - 0.4 mT per megawatt hour
  - Project owners must demonstrate ownership of environmental attributes
  - Can't earn credits to meet local or state obligations, i.e. renewable portfolio standards
  - To prevent double counting, owner must surrender any Renewable Energy Credits (RECs) earned by the project
3. New Income Source
  - Carbon credits, renewable energy credits
  - Electricity sales
4. Reward for sustainable practices
5. Improved environmental quality
  - Reduce odors



# Benefits of Methane Digesters

1. Methane projects are highly desirable!!!
2. Benefits are easily quantified and permanent, if projects are adequately documented and verified
3. Environmental benefits could be used in multiple trading schemes
  - Chicago Climate Exchange
  - Regional Greenhouse Gas Initiative – RGGI
  - California Trading Program
4. Of all the agricultural offset opportunities, methane projects will most certainly be allowed in the future regulated market

# climate change legislation

## America's Climate and Energy Security Act – S.2191

- Sponsored by Senator Lieberman (I-CT) & Warner (R-VA)
- Targets & Timetables
  - Cut US GHG emissions to 1990 levels by 2020; 70% below current levels by 2050
- Important Provisions
  - “Carbon Market Efficiency Board” oversees market to prevent volatility; tariffs on goods from high-emitting countries; allowance allocation: 18% auctioned in 2012, increasing to 73% in 2036 and thereafter, 20% of auction proceeds reserved for low-income consumers.

This bill has passed Senate Committee and will likely receive a vote before the full Senate in 2008

# the future of carbon trading

## Possible legislative components:

- Economy-wide, cap-and-trade market with allowances for offsets
- Initial distribution of allowances via auctions – polluter pays system
  - Creates revenue recycling, with monies applied to new technology, energy efficiency, etc
- Mandatory energy efficiency goals for utilities
- Increased fuel economy standards
- Mandatory use of renewable energy & bio-based fuels
- Incentives for technological innovation
- Consumer tax incentives

## Future developments:

- CCX scheduled to end in 2010, although may be extended to 2012
- CCX is positioning itself to be the trading platform in a regulated system
- Likely future scenario:
  - Government administers the carbon market
  - CCX serves as trading platforms
- Uncertainty lies in the details!!
  - CCX standards, California standards

# contact us



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