

Chicago Climate Exchange



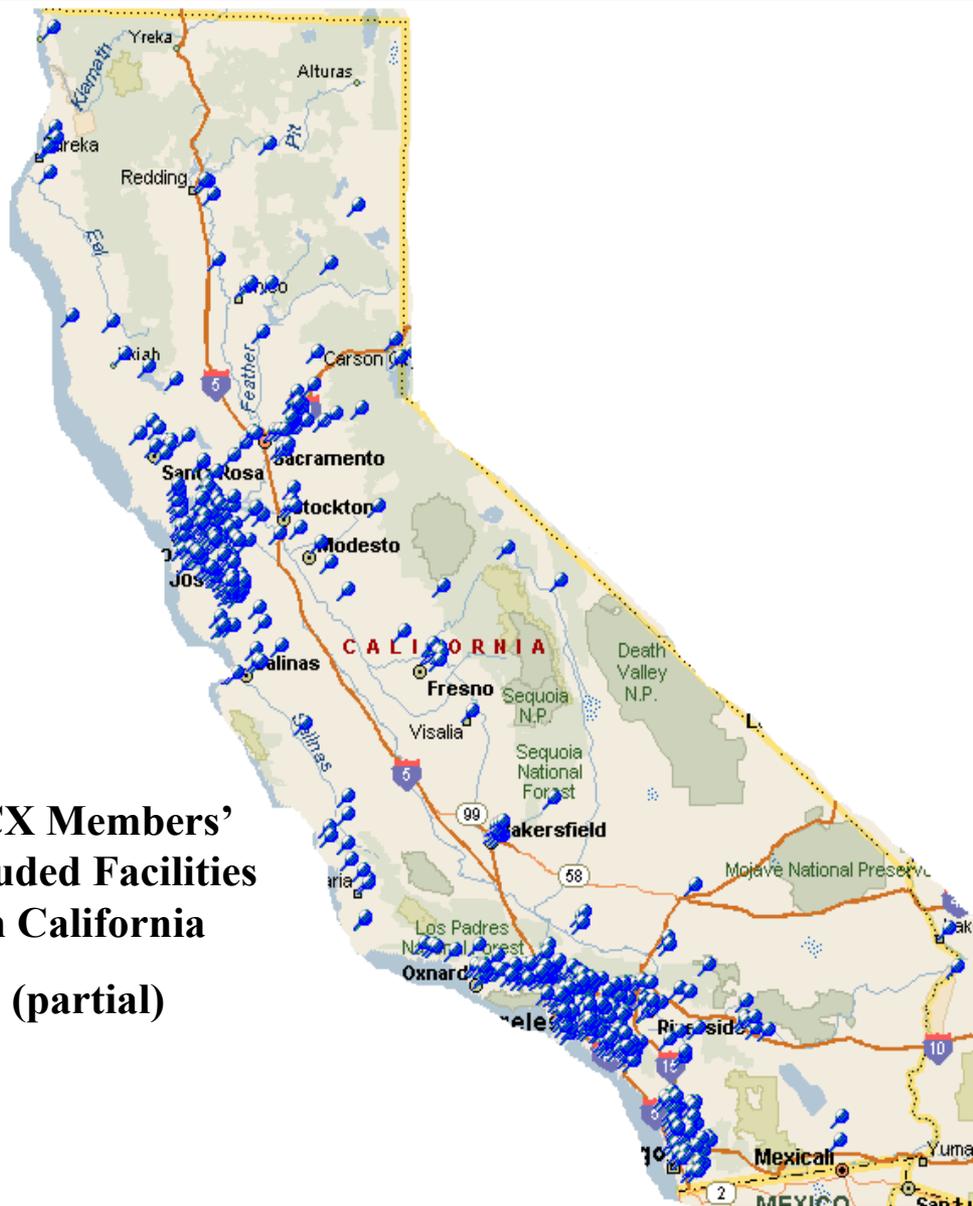
Michael J. Walsh, Ph.D.
Executive Vice President
Chicago Climate Exchange[®], Inc.
www.chicagoclimateexchange.com

CHICAGO CLIMATE EXCHANGE, INC.



CCX Members with Significant Presence in California

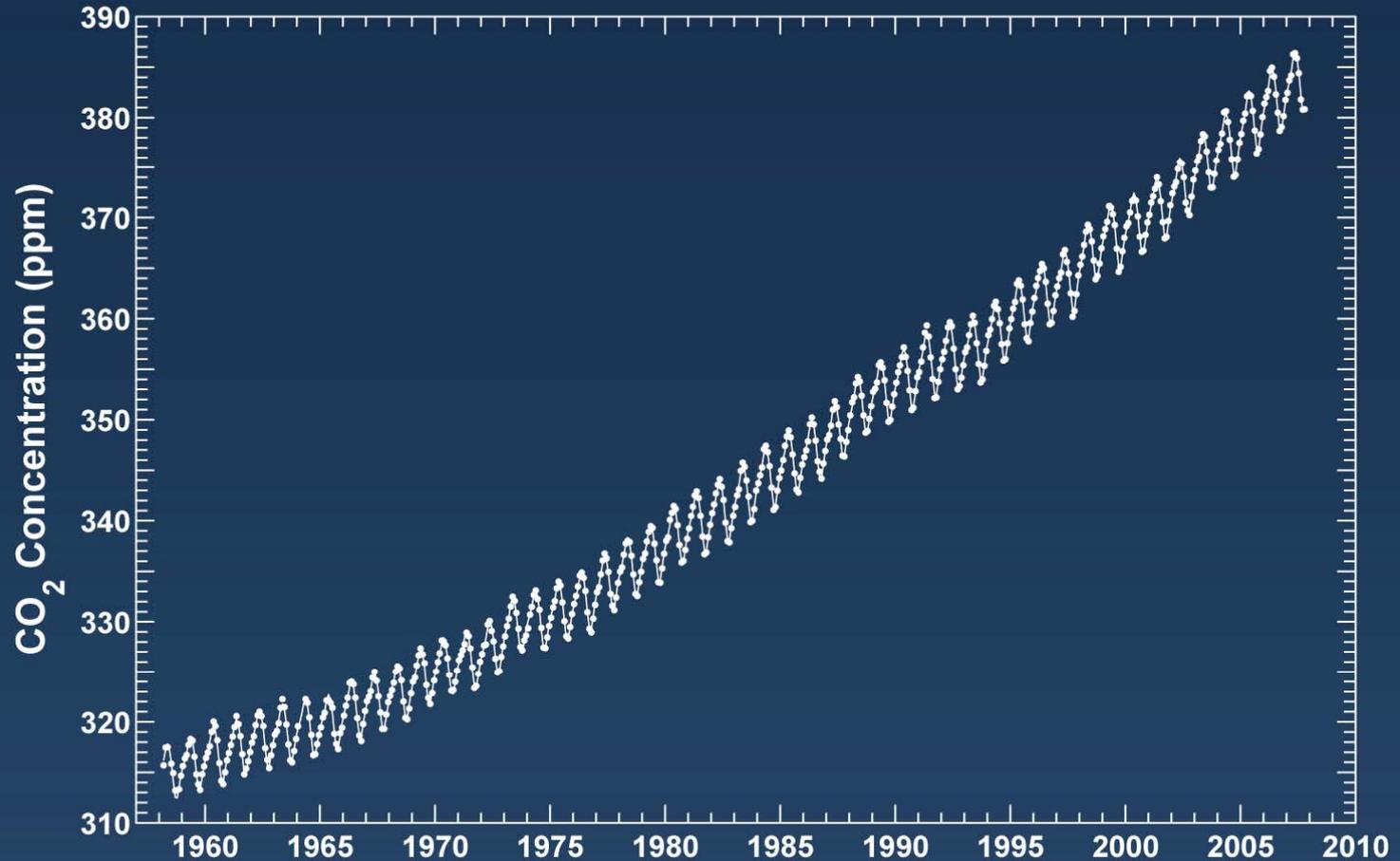
**CCX Members'
Included Facilities
in California
(partial)**



- **Amtrak**
- **Bank of America**
- **Baxter**
- **Bayer**
- **City of Berkeley**
- **Cargill**
- **Dow Corning**
- **IBM**
- **Intel**
- **Interface**
- **Jesuits of Santa Clara**
- **MeadWestvaco**
- **City of Oakland**
- **Presidio School of Mgmt.**
- **Rolls Royce**
- **Sacramento County**
- **Safeway**
- **San Joaquin Commuter Rail**
- **Smurfit-Stone**
- **SONY Electronics**
- **STMicroelectronics**
- **Temple-Inland**
- **United Technologies**
- **UC San Diego**
- **Waste Management**



Atmospheric CO₂ Concentrations: The Mauna Loa Record



“Lessons from Mauna Loa: On the value of continuous time series.”

Presentation by Ralph Keeling, Scripps Institution of Oceanography

50th Anniversary of the Global Co₂ Record, November 28-30, 2007 / Kona, Hawaii

CHICAGO CLIMATE EXCHANGE, INC.



**Getting Started With A Pilot:
The Rationale for A Limited-Scale Voluntary International
Greenhouse Gas Emissions Trading Program**

Testimony Presented by

**Dr. Richard L. Sandor
Chairman and Chief Executive Officer
Centre Financial Products Limited**

to the

**White House Conference on Climate Change
October 6, 1997**

and the

**U.S. Senate
Energy and Natural Resources Committee
September 30, 1997**



Schoolchildren buy and retire SO₂ allowances:
low transaction costs allow efficient outcomes



Chicago Board of Trade, March 1994

(Photo Source: *Mainichi Evening Eye*)

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Rationale for Emissions Trading

- Greenhouse gases mix and cause warming throughout the common global atmosphere
- Flexibility to meet a global problem: find least-cost means of reducing emissions anywhere in the world
- Clear and enforced emission limits
- Reduce cost to society of achieving specified emission limits: static efficiency at each point in time
- Harness capital markets to efficiently deploy new technologies
- Clear, market incentives to innovate: dynamic efficiency, improvement over time

Trillions of dollars will be spent in the coming decades to address climate change: Will we get the maximum environmental return on investment?



CCX: A Global Platform

- **Chicago Climate Exchange (CCX)**
Launched 2003 with 14 members, now 330+ members (US, CA, MX, BR, NZ, AU, CH)
- **European Climate Exchange (ECX)**
FSA-regulated futures market for European CO₂ Allowances
Launched April, 2005 – accounts for 80-90% of total exchange traded volume in the EU ETS
- **Chicago Climate Futures Exchange (CCFE)**
CFTC-regulated futures exchange for U.S. SO₂ and NO_x allowances
Launched in December 2004, world's first environmental derivatives exchange
- **Montreal Climate Exchange (MCeX)**
Joint venture with the Montreal Bourse
To host Canadian GHG trading, other environmental markets
- **New York Climate Exchange™ and Northeast Climate Exchange™**
Developing instruments for northeast Regional Greenhouse Gas Initiative (RGGI)
- **India Climate Exchange**
(In development)



What is Chicago Climate Exchange?

Chicago Climate Exchange (CCX[®]) is the world's first and North America's only voluntary, legally binding greenhouse gas reduction, audit, registration and trading program for emission sources and offset projects in North America, Brazil and globally.

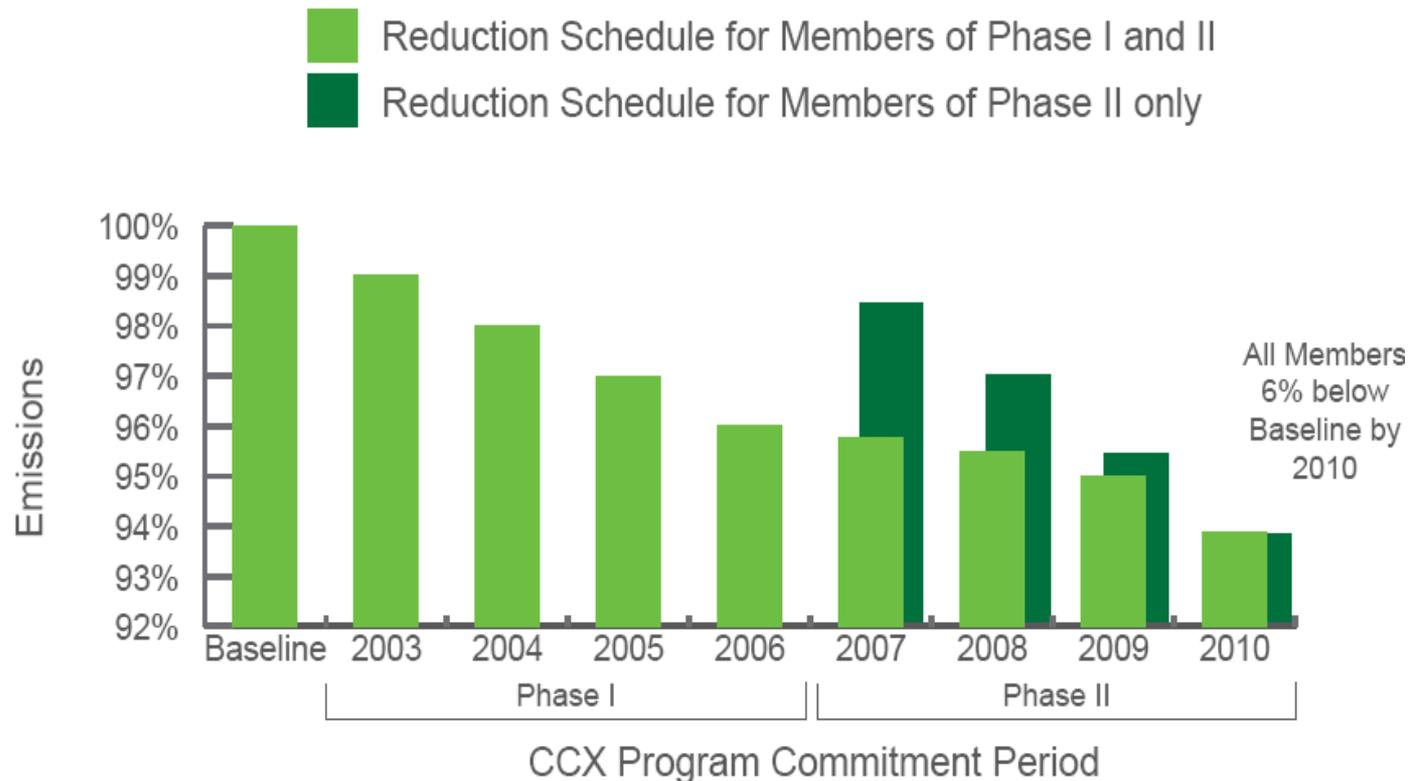


CCX Market Architecture (2003-2010)

Phase I: Members made legally binding commitments to reduce or trade 1% per year from 2003-2006, for a total of 4% below baseline.

Phase II: Members make a legally binding commitment to reduce to 6% below baseline by 2010.

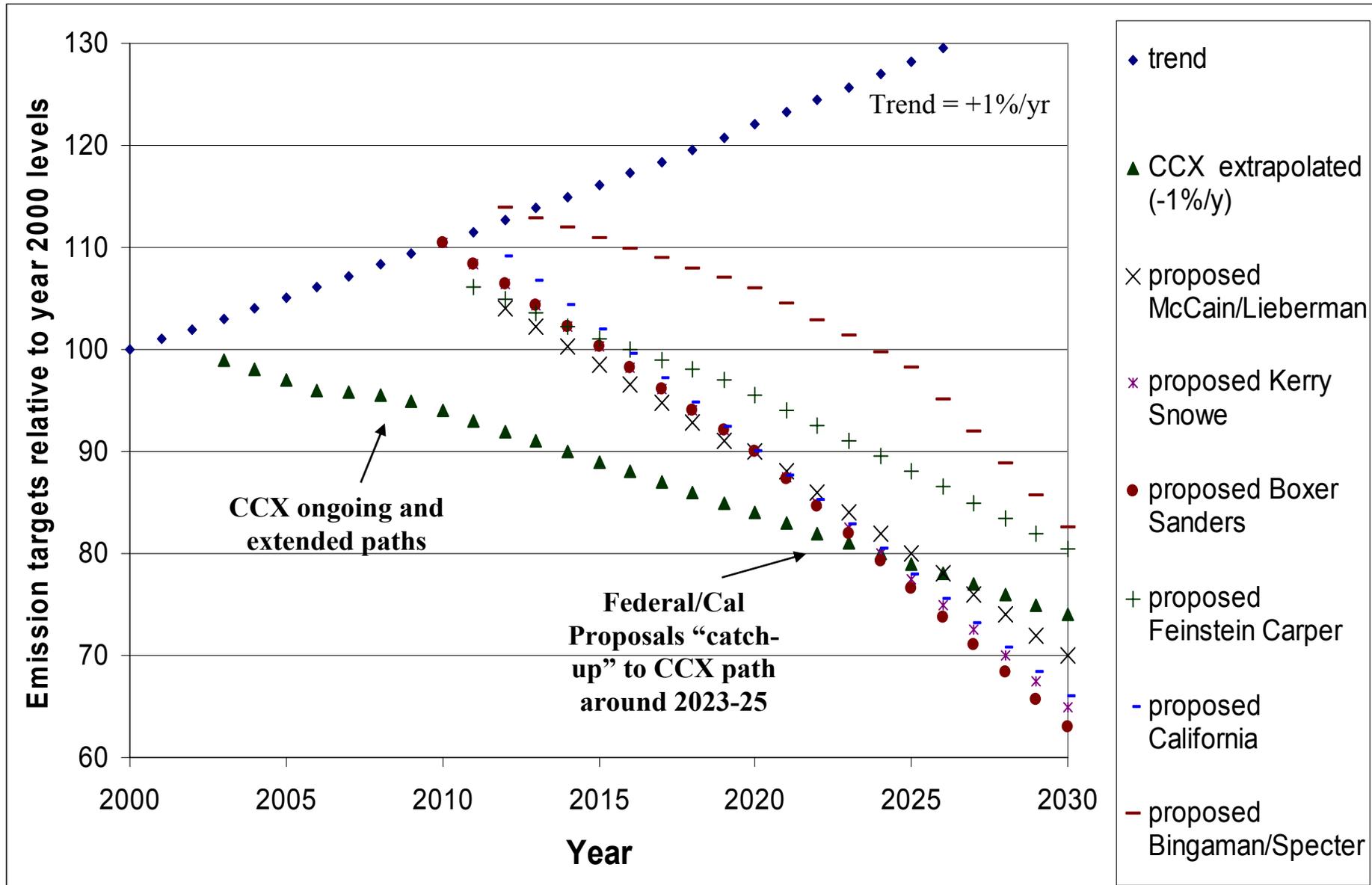
Baseline = Avg. emissions from 1998-2001, emissions in 2000 (Phase II)



CCX is synergistic with and complementary to all emerging policy, precludes none – whether state, regional, national, voluntary or mandatory.



GHG Reduction Targets: CCX, Proposed Legislation



CCX Membership (Over 400 - All Sectors)

Aerospace & Equipment

Rolls-Royce
United Technologies

Agricultural Products

Agrium U.S. Inc.
Cargill, Incorporated
Monsanto Company

Automotive

Ford Motor Company

Beverage Manufacturing

New Belgium Brewing

Chemicals

Dow Corning
DuPont
Rhodia Energy Brasil Ltda

Coal Mining

Jim Walter Resources, Inc.
PinnOak Resources LLC

Commercial Interiors

Knoll, Inc.
Steelcase Inc.

Counties & States

King County, Washington
Miami-Dade County, Florida
Sacramento County, California
State of Illinois
State of New Mexico

Diversified Manufacturing

Eastman Kodak Company

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.

Electric Power

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 Coop.
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



CCX Membership (Over 400 - All Sectors)

Ethanol Production

Corn Plus LLP

Financial Institutions

Bank of America Corporation

Food Processing

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

Forest Products

Abitibi-Consolidated
Aracruz Celulose S.A.
Cenibra Nipo Brasileira S.A.
International Paper
Klabin 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

Pharmaceuticals

Baxter International, Inc.

Recreation

Aspen Skiing Company

Retail

Safeway, Inc.

Technology

Freescale Semiconductor
IBM
Intel Corporation
STMicroelectronics

Transportation

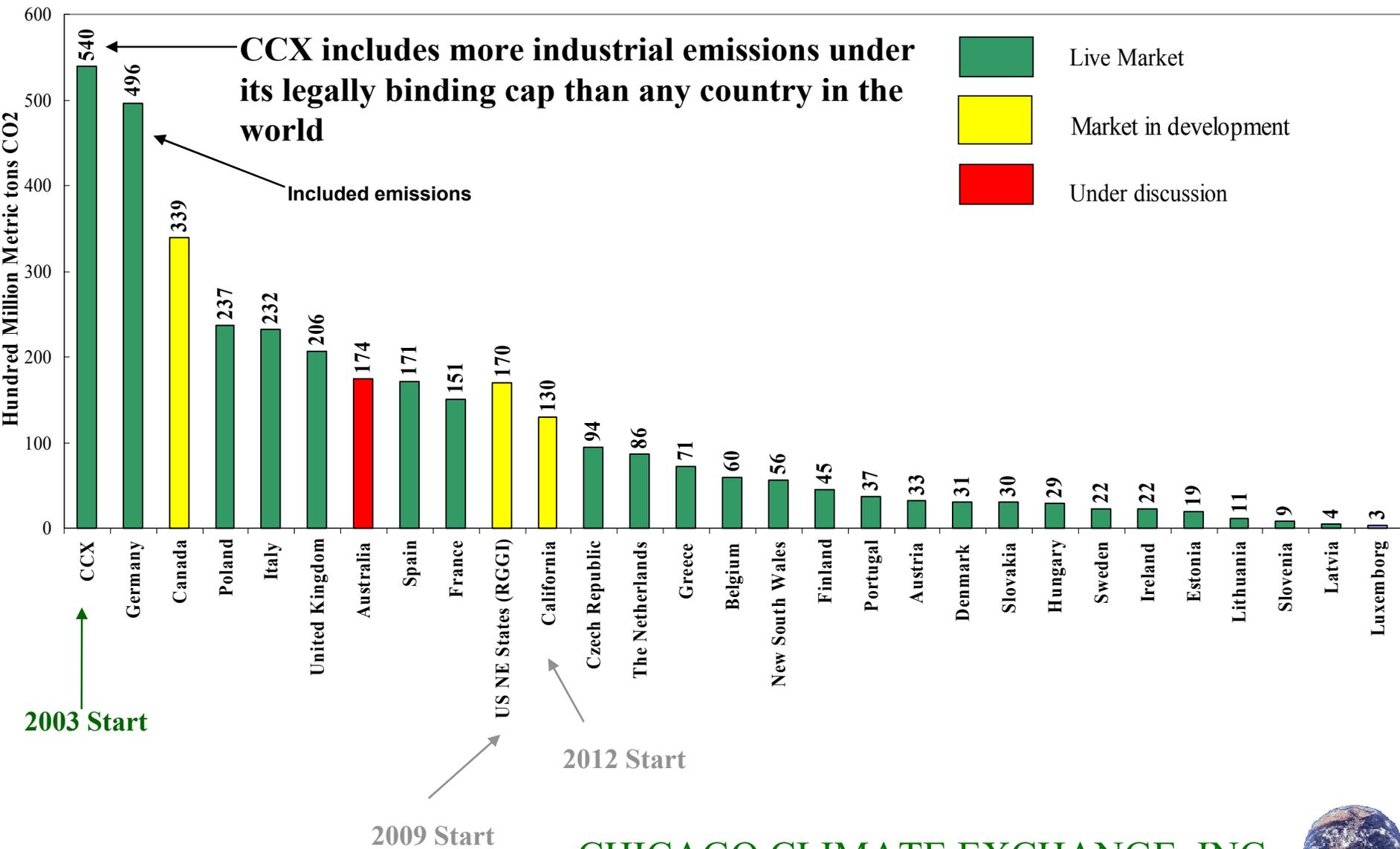
Amtrak
San Joaquin Regional Rail

University

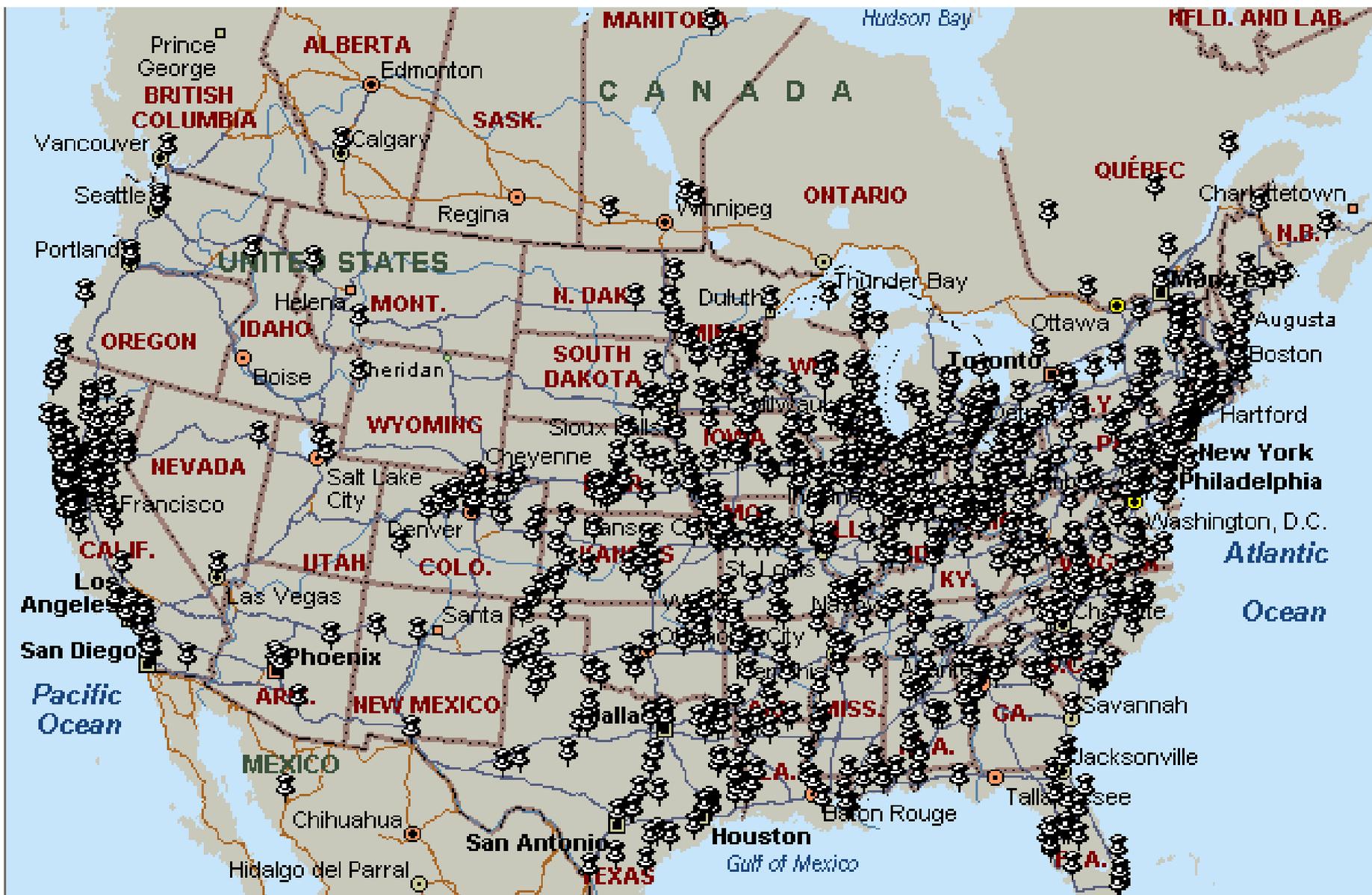
Hadlow College
Michigan State University
University of Idaho
University of Iowa
University of Minnesota
University of Oklahoma
Tufts University



Size of Live, Emerging, Possible GHG Markets as of September 2007



Chicago Climate Exchange Member Facilities (partial coverage)



Why Are So Many Businesses, Governments and Institutions Taking Direct Action via CCX Membership?

Practical and strategic drivers:

- Competitive advantages through leadership:
 - reduce greenhouse gas emissions in a rules-based, independently audited market system
 - obtain practical expertise through “hands-on” participation
 - build institutions: first-mover; global linkages
 - get ahead of disparate regulations, prepare for policy
 - reduce long-term mitigation costs
 - improve focus on energy efficiency, identify free savings
 - build carbon price into minds of operators and planners
 - trading profits, possible early action crediting
 - positioning in face of major growth in social investing
 - meet fiduciary commitments to shareholders and other stakeholders



Rationale For Business Leadership to Build the Carbon Market

“It's because by participating in the Chicago Climate Exchange, which really governs IBM's own business operations and our company's own carbon footprint, we are better able to understand the entire arena of creating an inventory of carbon emissions, accounting for them in an audit ready manner, presenting them to an exchange so they can be verified and considered to be tradable and how one does and doesn't make money on an exchange”

Wayne Balta

IBM

VP, Corporate Environmental Affairs

September 26, 2007



CCX Associate Members (sample)

Architecture/Planning

Mithun, Inc.

Brokerage Services

Amerex Energy

Consulting

Domani, LLC

Global Change Associates

Natural Capitalism, Inc.

RenewSource Development,
L.P.

Rocky Mountain Institute

Documentary Production

Cloverland, Inc.

Energy and Management Services

Orion Energy Systems Ltd

Sieben Energy Associates

Thermal Energy International

Engineering

Rumsey Engineers, Inc.

Vanasse Hangen Brustlin, Inc.

Financial Services

Access Industries, Inc.

MB Investments, LLC

Financing Agencies

Ohio Air Quality Development Authority

Green Power Marketers

Green Mountain Energy Company

Information Technology

Open Finance LLC

Intercontinental Exchange

Legal Services

Foley & Lardner, LLP

Sullivan & Cromwell, LLP

Non-Governmental Organizations

American Coal Ash Association

American Council on Renewable Energy

Delta Institute

Houston Advanced Research Center

Midwest Energy Efficiency Alliance

Private Colleges

Presidio School of Management

Risk Management

The Professional Risk
Managers' International
Association

Religious Organizations

Jesuit Community of Santa
Clara University

Renewable Energy

Airricity

Intergy

Reknewco, Ltd.

Retiring/Offsets

Carbonfund.org

Terrapass, Inc.

Social Investment

KLD Research & Analytics

Pax World

Technology

Millennium Cell

Polar Refrigerant Technology

Trade Associations

Confederation of British Industry



CCX Participant Members (sample)

Offset Aggregators

C-Green Aggregator, LLC
Delta Institute
Environmental Carbon Credit Pool,
LLC
Environmental Credit Corp.
First Capital Risk Management, LLC
Iowa Farm Bureau
National Carbon Offset Coalition
North Dakota's Farmers Union

Offset Providers

Beijing Shenwu Thermal Energy Trading
Hubei Sanhuan
Gallo Cattle
Granger Holdings
Intrepid Technologies, Inc.
Lugar Stock Farm
Precious Woods Holdings
Sexton Energy
Sustainable Forestry Management, Ltd.

Liquidity Providers

AGS Specialists, LLC
Amerex Energy
Breakwater Trading, LLC
Calyon Financial, Inc.
Cargill Power Markets, LLC
Eagle Market Makers, LLC
Evolution Markets, LLC
EXO Investments
FCT Europe, Ltd.
First New York Securities, LLC.
Friedberg Mercantile Group,
Ltd.

Galtere International Master
Fund, LP
GFI Securities, LLC
Goldenberg, Hehmeyer & Co.
Grand Slam Trading, Inc.
Grey K Environmental Fund, LP
Haley Capital Management
ICAP Energy, LLC
Kottke Associates, LLC
The League Corp.
Marquette Partners, LP
Natsource, LLC

Peregrine Financial Group
Rand Financial Services, Inc.
Serrino Trading Co.
Shatkin Arbor, Inc.
S.R. Energy, LLC
SwissRe Financial Products
Corp.
TEP Trading 2 Ltd.
TradeLink, LLC
Tradition Financial Services,
Ltd.
TransMarket Group, LLC



CCX[®] Comprehensive Market Structure

Member's Electronic Market Registry

You are logged in as nolanccx Logout

Select Organization: **CCX View Only Company** CHICAGO CLIMATE EXCHANGE Registry Position Summary Page v1.0.6

Chicago Climate Exchange Position Statement
Organization: CCX View Only Company as of Sun, Feb 15, 2004

Direct Emission Baseline: 0 metric tons CO2 equivalent (unaudited)

1. Total holdings of CCX Carbon Financial Instruments
(Exchange Allowances plus Offsets plus Early Action Credits, in hundred metric tons CO2)

Vintage:	2003	2004	2005	2006
Total CFI Holdings:	0	0	0	0

2. Exchanges Allowance holdings

Original Allocation of Exchange Allowances:	Item	Action	Vintage:	2003	2004	2005	2006
1% auction pool withholding		debit		0	0	0	0
bought in sept 2003 auction		credit		0	0	0	0
current holdings				0	0	0	0

3. Exchange Offset holdings

Holdings of exchange offsets:	Vintage:	2003	2004	2005	2006
		0	0	0	0

4. Exchange Early Action Credit holdings

Holdings of Exchange Early Action Credits:	Vintage:	2003	2004	2005	2006
		0	0	0	0

All Carbon Financial Instrument quantities are rounded to the nearest hundred metric tons CO2

Comprehensive Rules System

- Emitters: Standard baseline, multi-year allowance stream equal to reduction targets
- Offset Providers (project credits)
- Liquidity Providers
- Associate Members

Web-
accessible
secure
Electronic
Trading
Platform

ChicagoClimateExchange - mstern_ccx @ CCX View Only Company

View Admin Help Logout

Kill All Live Only Deal Reports

Orders Deals Greenhouse Gases

Strip	Sell	Qty	Bid	Offer	Qty	Buy	High	Low	Last	Volume	+ -	Pin
Vintage 2003				0.92	100							
Vintage 2004		5	0.90	0.93	59		0.93	0.91	0.92	196	-	
		20	0.80	0.97	30				0.93			
				0.98	10				0.91			
				0.99	10				0.92			
									0.93			
Vintage 2005				0.96	100		0.93	0.93	0.93	25	-	
				0.98	25							
Vintage 2006												

CCX CFI - Carbon Financial Instrument - Vintage 2005, 25 @ 0.93 (Jan 29, 2004 13:21:00 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.92 (Jan 29, 2004 13:19:33 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 18 @ 0.93 (Jan 29, 2004 11:47:44 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 5 @ 0.91 (Jan 29, 2004 11:23:54 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 100 @ 0.91 (Jan 29, 2004 10:07:54 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.92 (Jan 29, 2004 10:07:54 CST)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.93 (Jan 29, 2004 10:07:24 CST)

13:24:06 CST

CHICAGO CLIMATE EXCHANGE, INC.

CCX Operations and Governance

CCX Operations include:

Use of CEMs and WRI/WBCSD emission calculation methods

- CCX Registry: official holder, transfer mechanism for CCX Carbon Financial Instruments
- Trading platform integrated with Registry; all trades guaranteed
- FINRA (formerly NASD) provides market surveillance and emissions verification

CCX Governance:

Self-regulatory organization overseen by Committees comprised of Exchange Members, directors and staff

Committees include: Environmental Compliance, Forestry, Membership, Offsets, Trading and Market Operations



How CCX Rules Are Advancing Currently Available Mitigation Options As Identified by IPCC

Currently viable mitigation actions	Can be significantly stimulated through an emissions cap	Significantly stimulated <i>mainly via</i> project-based crediting	Requires cap <i>and</i> offset rules to optimize uptake	How addressed through CCX Rules?
Energy Supply Improved supply and distribution efficiency fuel switching nuclear power renewables, combined heat and power early applications of Carbon Capture and Storage	Yes <i>Yes</i> Yes <i>Yes</i> Yes		<i>Yes</i> <i>Yes</i> Yes	Cap <i>Cap + offsets</i> Cap <i>Cap + offsets</i> Not yet addressed√
Transport More efficient vehicles biofuels non-motorised transport (cycling, walking) land-use and transport planning	<i>Yes</i> <i>Yes</i> (maybe) (indirect role for carbon market?)		<i>Yes</i> <i>Yes</i> n.a. (possible role for offsets?)	<i>Cap + offsets</i> <i>Cap + offsets</i> n.a. Not yet addressed√
Buildings More efficient lighting + appliances + HVAC insulation alternative refrigerants, recycle/ <i>destruct</i> fluorinated gases <i>(NB: word “destruct” not in IPCC report)</i> passive and active solar design	<i>Yes</i> <i>Yes</i> <i>Yes</i> (indirect role for carbon market?)	<i>yes</i> <i>yes</i> <i>yes</i>	<i>yes</i> <i>Yes</i> <i>yes</i>	<i>Cap + offsets</i> <i>Cap + offsets</i> <i>Cap + offsets</i> (New CCX ODS destruction rule!)



How CCX Rules Are Advancing Currently Available Mitigation Options As Identified by IPCC

Currently viable mitigation actions	Can be significantly stimulated through an emissions cap	Significantly stimulated <i>mainly via</i> project-based crediting	Requires cap <i>and</i> offset rules to optimize uptake	How addressed through CCX Rules?
Industry end-use electrical equipment heat and power recovery material recycling/ substitution control of non-CO2 gas emissions process technologies	Yes Yes Yes Yes		Yes Yes Yes Yes	Cap + offsets Cap + offsets Cap + offsets Cap + offsets
Agriculture increase soil carbon via improved crop/grazing land mgmnt restore degraded lands improved rice cultivation livestock methane energy crops to replace fossil fuel improved energy efficiency	No No No No Yes (maybe)	Yes Yes Yes Yes (indirectly)	Yes Yes	Offsets Offsets Not addressed ✓ Offsets Cap + offsets Offsets/indirectly via conservation tillage incentives



How CCX Rules Are Advancing Currently Available Mitigation Options As Identified by IPCC

Currently viable mitigation actions	Can be significantly stimulated through an emissions cap	Significantly stimulated mainly via project-based crediting	Requires cap and offset rules to optimize uptake	How addressed through CCX Rules?
Forestry Afforestation; reforestation forest management reduced deforestation harvested wood product management forest products/bioenergy to replace fossil fuel use	No No No No Yes	Yes Yes Yes	<i>All four forestation management goals can be advanced via on net carbon flux crediting/debiting</i> Yes	Offsets + forest flux rules Offsets + forest flux rules Offsets+ Forest flux rules Cap + offsets
Waste Landfill methane recovery waste to energy waste water treatment recycling and waste minimization	No Yes No (indirect via cap)	Yes Yes	Yes (possible role for offsets)	Offsets Cap + offsets Offsets (indirect via cap)



CCX Offset Projects Enrolled: Examples

- Landfill methane: Waste Management (IN, TX), Others (PA, etc)
- Agricultural methane: Environmental Credit Corp., Premium Standard Farms (MN, WA, TX)
- Agricultural soils: Iowa Farm Bureau, Delta Institute (midwest), North Dakota Farmers Union, C-Green (Canada)
- Reforestation: Precious Woods (Costa Rica)
- Fuel switching: IdleAire (CA, TX)
- Coalmine methane *Minnesota dairy farmer receives first check from sale of CCX methane-destruction Offsets*
- Destruction of high GWP ozone depleting substances
 - Offsets equal to approximately 22 million metric tons CO₂ generated to date (11% of total reductions)



CCX Verifiers: Leaders in their Field

➤ **Agricultural Methane Capture and Combustion**

Agri-Waste Technology, Inc.
SES Inc.
TUV SUD Industrie Service GmbH

➤ **Forestry**

BVQi
Forecon Inc.
SGS
TUV SUD Industrie Service GmbH
Winrock International

➤ **Agricultural Soil Carbon Sequestration**

Agri-Waste Technology, Inc
Association of Illinois Soil and Water Conservation Districts
North Dakota Association of Soil Conservation Districts
SES Inc.
TUV SUD Industrie Service GmbH

➤ **Energy Efficiency**

Econergy Corporation International
Franklin Energy Services
ICF Consulting Canada Inc.
TUV SUD Industrie Service GmbH

➤ **Landfill Methane**

ARM Group Inc.
Det Norske Veritas (DNV)
Econergy Corporation International
First Environment Inc.
Richardson Smith Gardner and Associates, Inc
Kleinfelder
TUV SUD Industrie Service GmbH



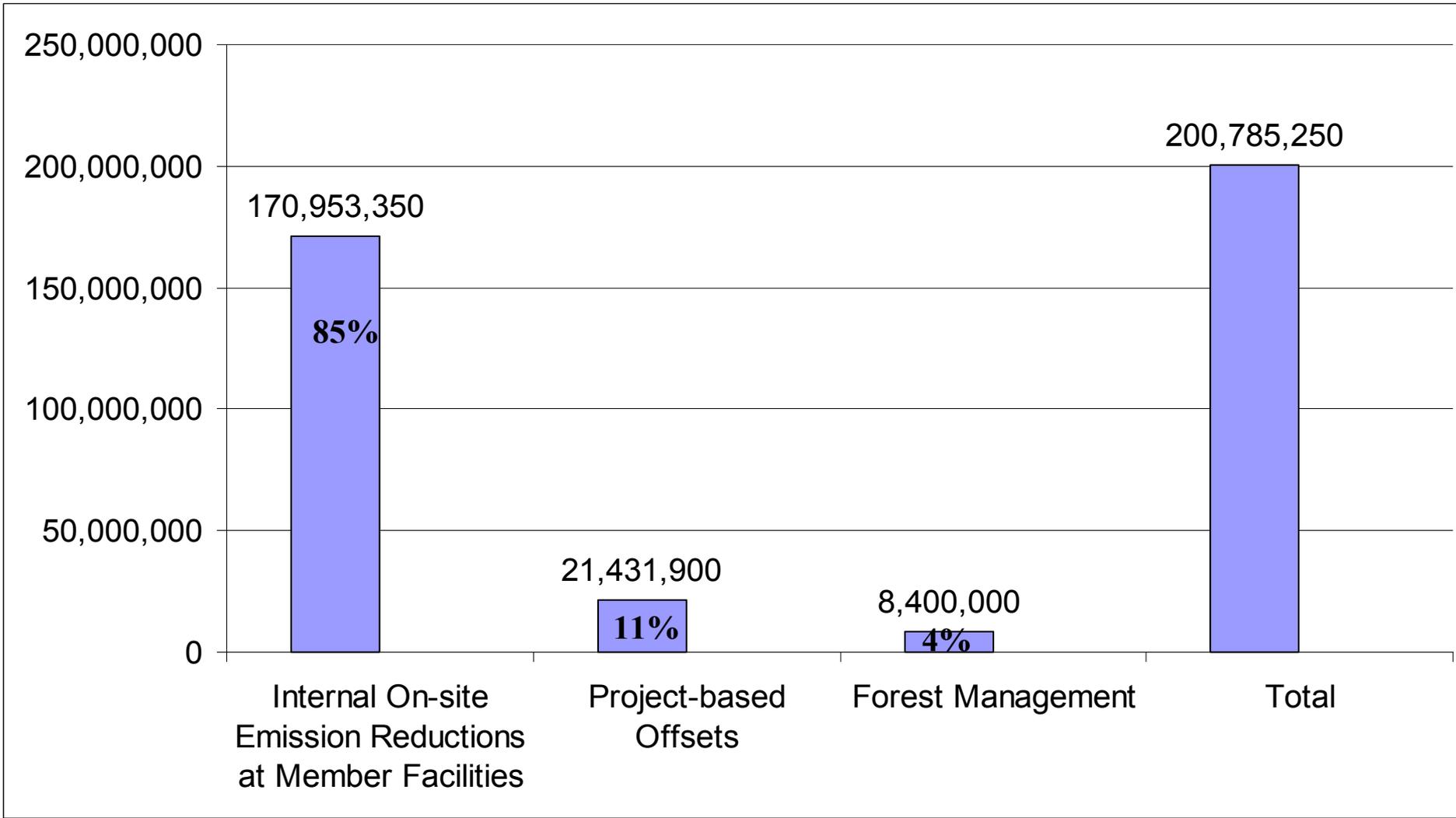
SGS is a world leading inspection, verification, testing and certification company, and is recognized as a global benchmark for quality and integrity. With more than 48'000 employees, SGS operates a network of over 1'000 offices and laboratories around the world.



DNV is a leading independent greenhouse gas verifier operating globally. Their GHG experts are used by international organizations, governments, and industry, delivering independent, third party services for climate change activities.



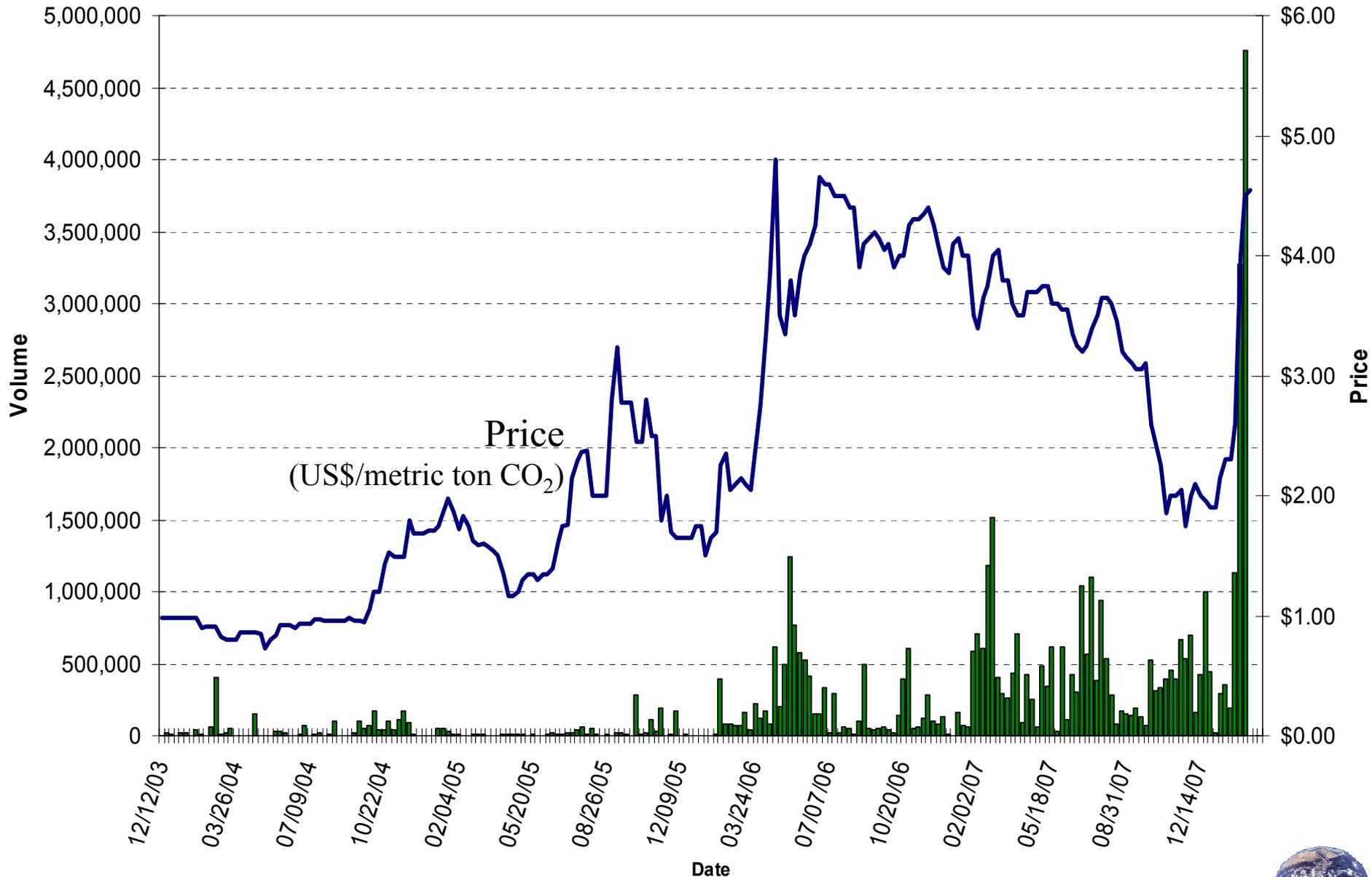
Emission Reductions and Project-based Offsets in CCA Years 2003 through 2006* (metric tons CO₂)



*As of 2-21-08. A portion of new member emission reductions are currently undergoing verification.



CCX Weekly Price & Volume



CHICAGO CLIMATE EXCHANGE, INC.



U.S. House of Representatives Purchases Emission Offsets Through CCX as Part of “Greening the Capitol” Initiative

Auction results Announced November 1, 2007

U.S. House acquired balanced portfolio of 30,000 metric tons CO₂ of verified U.S. domestic offset projects involving: agricultural methane, coalmine methane, landfill methane, agricultural soils, reforestation, renewable fuels*



**CCX Chairman & CEO, Dr. Richard L. Sandor; U.S. Representative Rahm Emanuel;
U.S. House of Representatives CAO Dan Beard; U.S. Representative Dan Lipinski;
U.S. Representative Mark Kirk**

* auction was oversubscribed with a weighted average clearing price of \$2.97 per ton

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Conclusions: big picture results from CCX[®]

- Large quantity of emission reductions realized and verified: members beat the goals
- Nearly all “currently viable” mitigation options reported by IPCC are reflected in CCX Rules
- *NO SHOWSTOPPERS TO IMPLEMENTATION OF A MULTI-SECTOR GHG CAP AND TRADE SYSTEM SUPPLEMENTED BY DIVERSE OFFSETS*
- Major pool of private and public sector talent engaged and doing GHG management
 - members, hundreds of experts focusing on energy efficiency and savings
 - other experts now deployed: auditors, verifiers, policymakers
- Thousands of individuals now far more informed on carbon management and trading
- Detailed rules and methods tested and refined
 - many second generation procedures now in place
 - hands-on experience for emissions and project verification experts
 - detailed expertise accumulated by members



Bi-Partisan Views on CCX

CCX represents an innovative market-based approach to solving our energy issues and improving air quality.

Chicago Mayor Richard M. Daley (D), Chicago, (September 30, 2003)

It's cold in Chicago today, but I'm thrilled to see that the new Chicago Climate Exchange is warming up for the next wave in environmental protection—and economic innovation. I want to congratulate the Exchange, which is the first comprehensive voluntary pilot program for domestic trading of greenhouse gases, on the announcement of its founding members. Their progress is great news for Chicago's economy and for America's environment.

US Senator Joseph Lieberman (D-CT) (January 2003)

As CCX approaches its first anniversary of continuous trading, it is apparent that members are raising their understanding of market-based carbon emissions management through hands-on experience. Through participation in CCX members are able to develop best practices that allow the activities of emissions data gathering, auditing, and trading to become simplified and standardized.

Gov. Christie Todd Whitman (R) , former Governor of New Jersey (December 2004)



Bi-Partisan Views on CCX

“The Chicago Climate Exchange is providing an innovative means of involving American businesses and citizens in the effort to protect the environment...I listed my farm in Indiana on the Chicago Climate Exchange to set an example for farmers and foresters in my state and throughout America...For example, the exchange mechanism could be utilized by turning unused farmland into tree farms that sequester carbon while providing farmers with extra money... In short, American farmers could become the vanguard in using market forces to the benefit of both the environment and the pocketbook...”

Senator Richard Lugar (R-IN), Chairman of Senate Foreign Relations Committee

“To deal directly with climate change, something we failed to do in the last energy bill, we should use a market-based strategy that gradually reduces harmful emissions in the most economical way.....Right here in Chicago, the Chicago Climate Exchange is already running a legally binding greenhouse gas trading system”

Senator Barack Obama (D-IL), April 3, 2006

“The CCX is leading the way toward a future in which reducing greenhouse gases could bring not only environmental rewards, but financial ones too.”

Al Gore, from *An Inconvenient Truth*, 2006 (book version).

“What would be wrong, at least on a theoretical basis, with taking what you have come up with by way of requirements for your (CCX) members and essentially mandating that everybody in the country comply with those?”

Senator Jeff Bingaman (D-NM), Chairman Senate Energy & Natural Resources Committee, April 4, 2006

