

Overview of CCX[®]

Chicago Climate Exchange



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NWHA
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How do we reduce CO₂ Emissions

Policy Choice:

- Cap and Trade, Tax or Regulation

Actions:

- Lower carbon fuel: natural gas, Non - CO₂ or CO₂ neutral fuel
- More efficient fuel use: MPG, lighting, insulation
- Methane capture/combustion
- Abatement devices, alternative chemicals
- Carbon sequestration:
 - reforestation, carbon accumulation
 - agricultural soils, geologic
- ***How to orchestrate these to maximize benefits per dollar?***



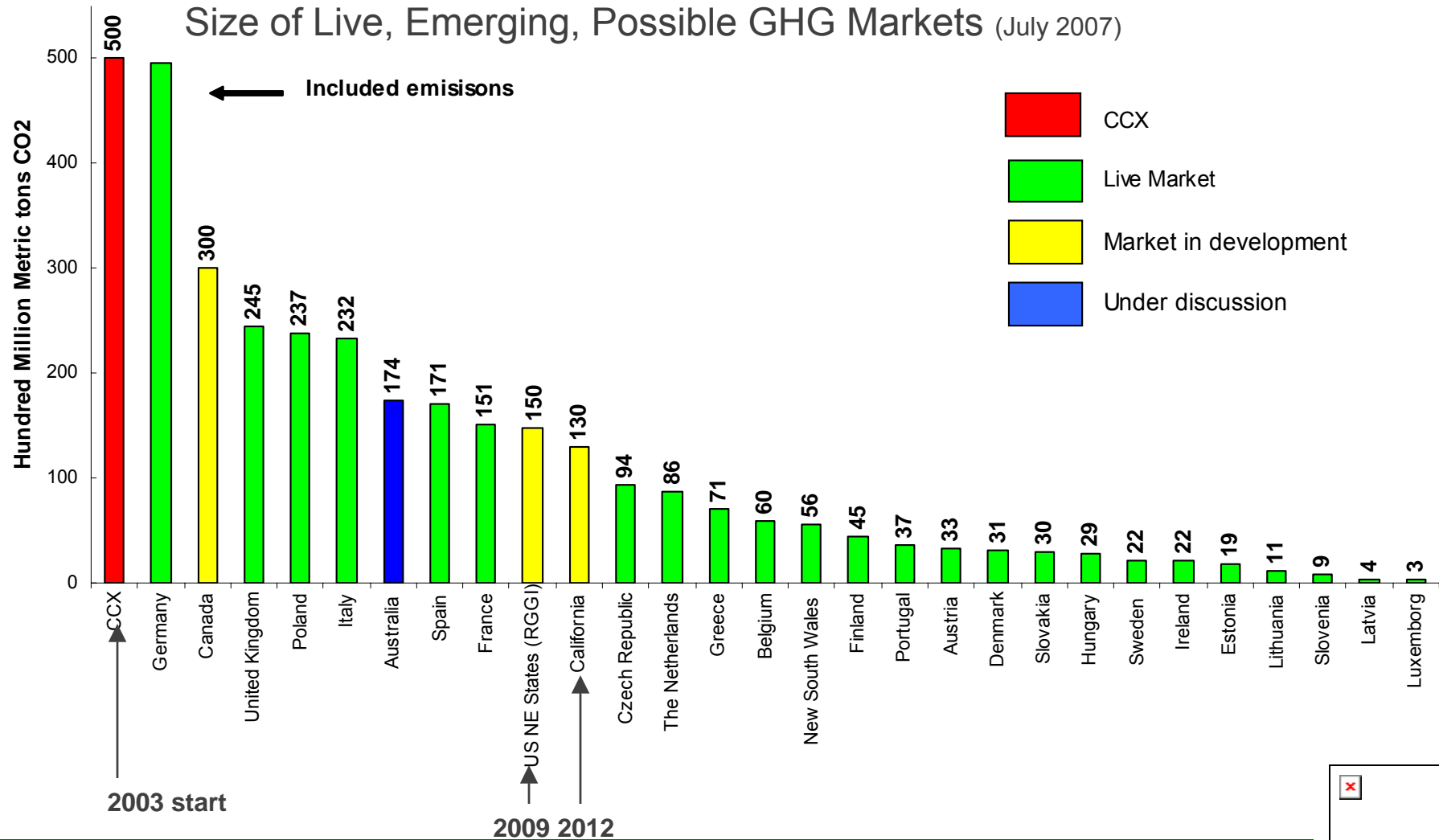
What is Chicago Climate Exchange?

A premier and unique financial institution designed to advance business, environmental and social goals.

Chicago Climate Exchange (CCX) is the world's first and North America's only active voluntary, legally binding integrated trading system to reduce emissions of all six greenhouse gases, with offset worldwide.



CCX, Second Largest Live Carbon Market



CCX 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
Sacramento County, California

Diversified Manufacturing

Eastman Kodak Company

Electric Power Generation

AGL Hydro Partnership
American Electric Power
American Municipal Power-Ohio
Associated Electric Cooperative, Inc.
Central Vermont Public Service
DTE Energy Inc
Duquesne Light Company
Green Mountain Power

Manitoba Hydro
NRG Power Marketing Inc.
Puget Sound Energy, 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
Wasatch Integrated Waste
Management Authority
Waste Management, Inc.

Food and Agricultural Products & Services

Agrium U.S. Inc.
Cargill, Incorporated

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
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

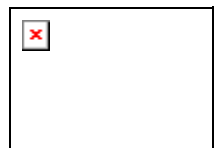
Freescale Semiconductor
IBM
Intel Corporation
STMicroelectronics

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



CCX Membership

▶ Participant Members

- **Offset Provider:** Owner of an Offset Project that registers and sells Offsets on its own behalf.
- **Offset Aggregator:** Entity that serves as the administrative representative, on behalf of Offset Project owners, of multiple Offset-generating projects.
- **Liquidity Provider:** Entity or individual who trades on CCX for purposes other than complying with the emissions reduction schedule, such as market makers and proprietary trading groups.

Selected Offset Aggregators

3 Phases Energy Services
Carbon Farmers
Cargill, Inc
CO2 Australia Limited
Delta Institute
Econergy
Ecosecurities
Environmental Credit Carbon Pool
Environmental Credit Corp.
First Capitol Risk Management
Intrepid Technologies, Inc.
Iowa Farm Bureau
Kentucky Corn Growers Assoc.
National Carbon Offset Coalition
North Dakota Farmers Union
Rice Dairy LLC
Standard Carbon
Xi'an Zhongyang Electric Co.

Selected Offset Providers

Arreon Carbon UK Ltd.
Beijing Shenwu Thermal Energy
CO2 Australia
Ecosecurities
Energy Trading Co
Commonwealth Resource Management Corp.
Chelan County PUD
Gallo Cattle Company
Hubei Sanhuan Development Corporation
Lugar Stock Farm
Precious Woods Holdings
RCM International LLC
Sexton Energy LLC
Sustainable Forestry Management, Ltd.
Vessels Coal Gas Inc.
Weber County

Selected Liquidity Providers

Arreon Carbon
Amerex Energy
Black River Clean Energy
Breakwater Trading
Calyon Financial, Inc.
Cargill Power Markets
Evolution Markets
FCT Europe Ltd.
First New York Securities LLC.
Goldenberg, Hehmeyer & Co.
Haley Capital Management
JP Morgan Ventures Energy
Lehman Brother Commodity
Marquette Partners
Natsource LLC
Peregrine Financial Group
Rand Financial Services, Inc.
Shatkin Arbor, Inc.
Swiss Re Financial Products Corp.
Tradelink

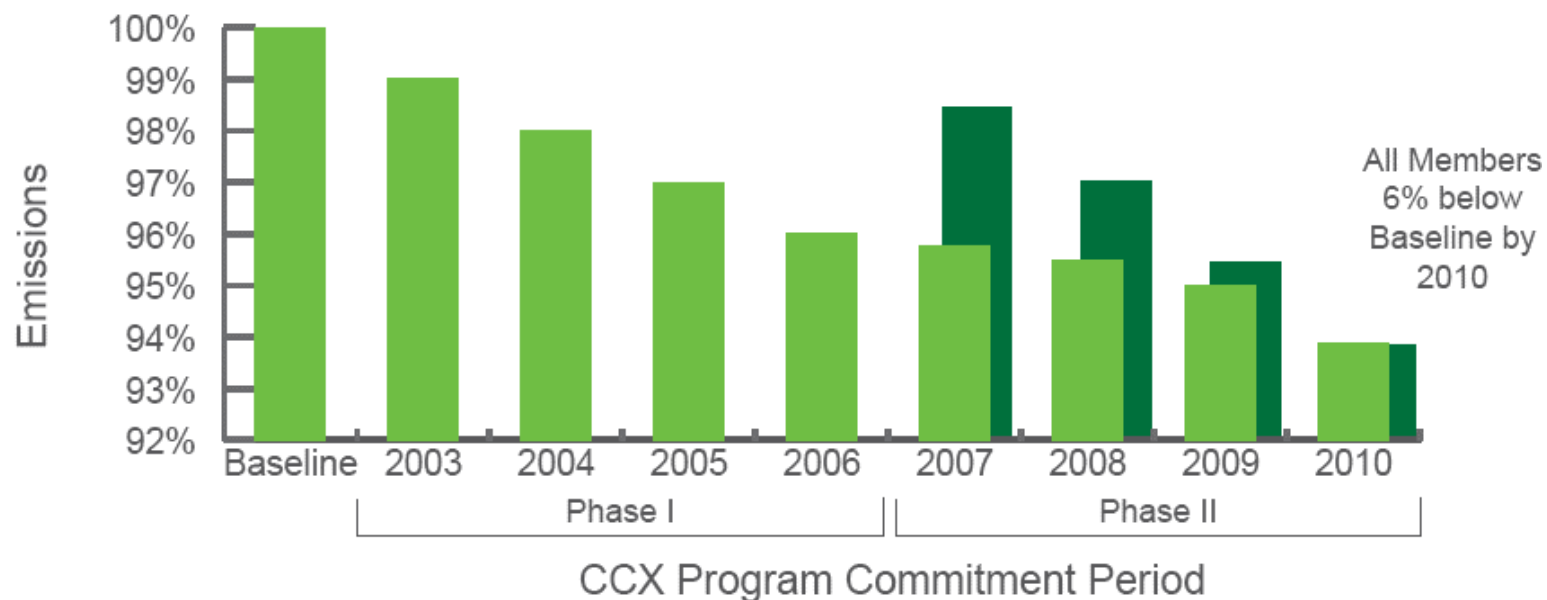
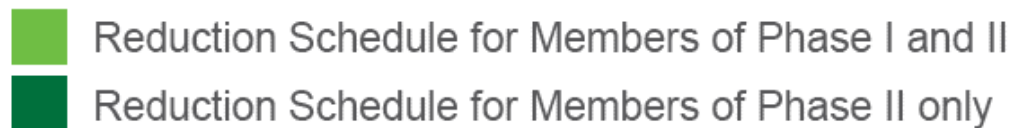


CCX Market Architecture

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

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

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



CCX Emission Offsets

Purpose:

- Low cost mitigation option
- Participation from sectors not amenable to cap and trade

Eligibility:

- Beyond regulation, rare, recent
- Verifiable: eligibility, quantities, ownership
- Avoid perverse incentives
- No cherry picking – emitters must take entity-wide reductions

Target Actions with Major Mitigation Potential:

- Non-CO2 gasses: low-cost, multi-benefit
- Agriculture: soils hold 183 years of global CO2 emissions
- Forestation: forests hold 75 years of global CO2 emissions
- Advance broader societal goals: sustainable agriculture and forestry, energy efficiency, renewable

General provisions:

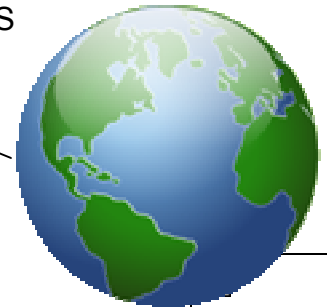
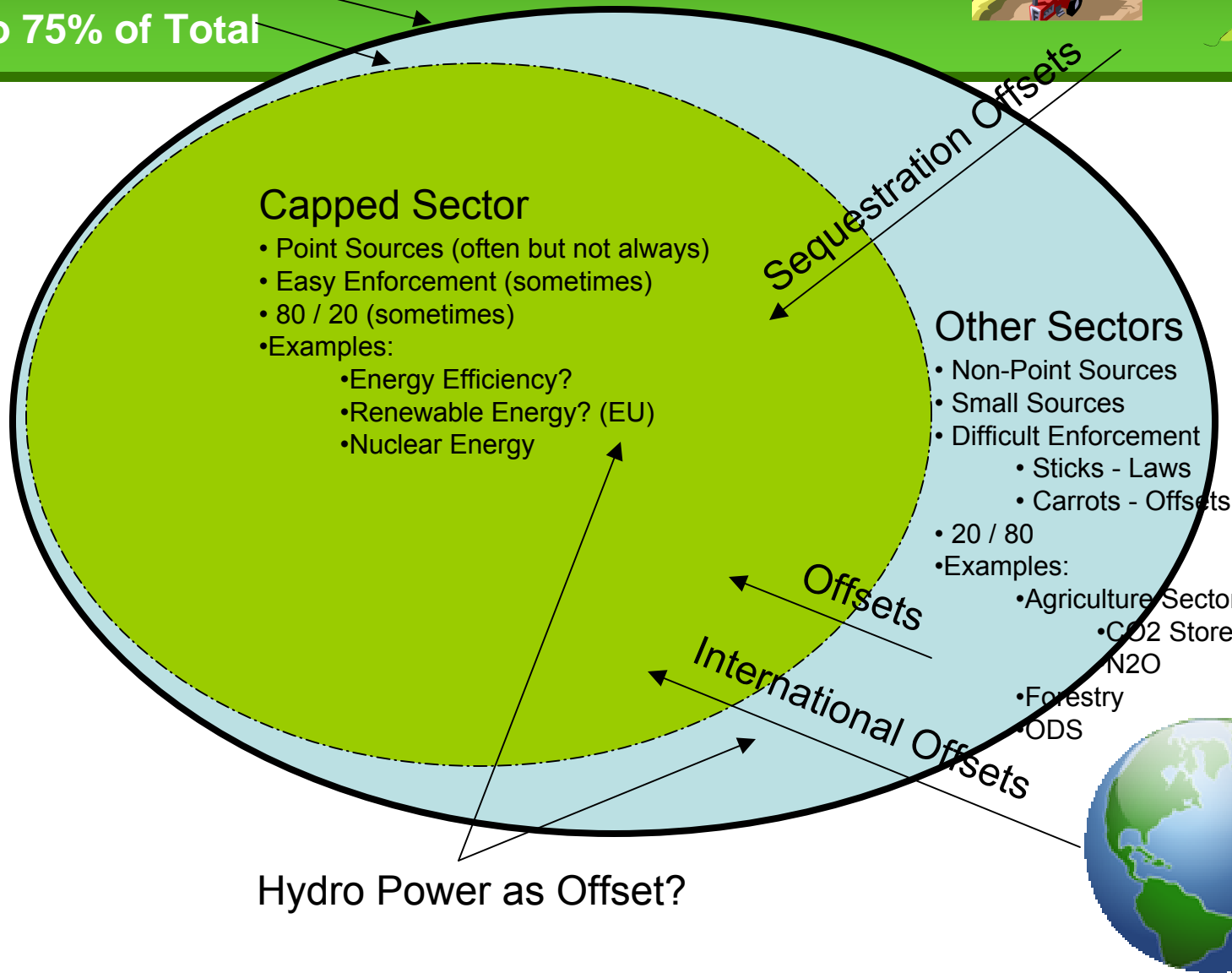
- Conservative crediting
- Reserve pools for sequestration assurance

NB: Only the planet is carbon (source) neutral!



Offsets in a Capped System

7.1 billion tons (U.S.2004)
50% to 75% of Total



CCX Emission Offset Types

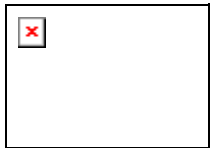
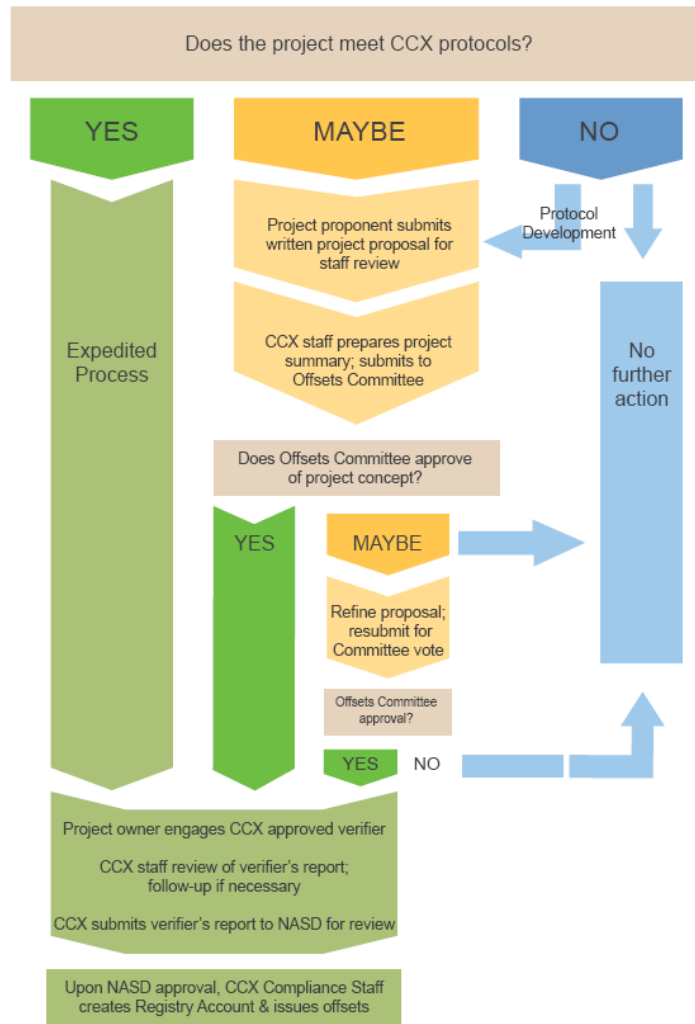
Verified offset projects sequester or eliminate GHGs to earn CFI contracts sold on CCX electronic platform to CCX Membership.

Current pre-defined offset categories:

- Methane destruction: Landfills, agricultural operations and coal mines
- Carbon sequestration: forests, soils (conservation tillage, grassland planting, rangeland management)
- Ozone depleting substance destruction
- Renewable energy
- Others case by case



Offset Registration Process



Renewable Energy

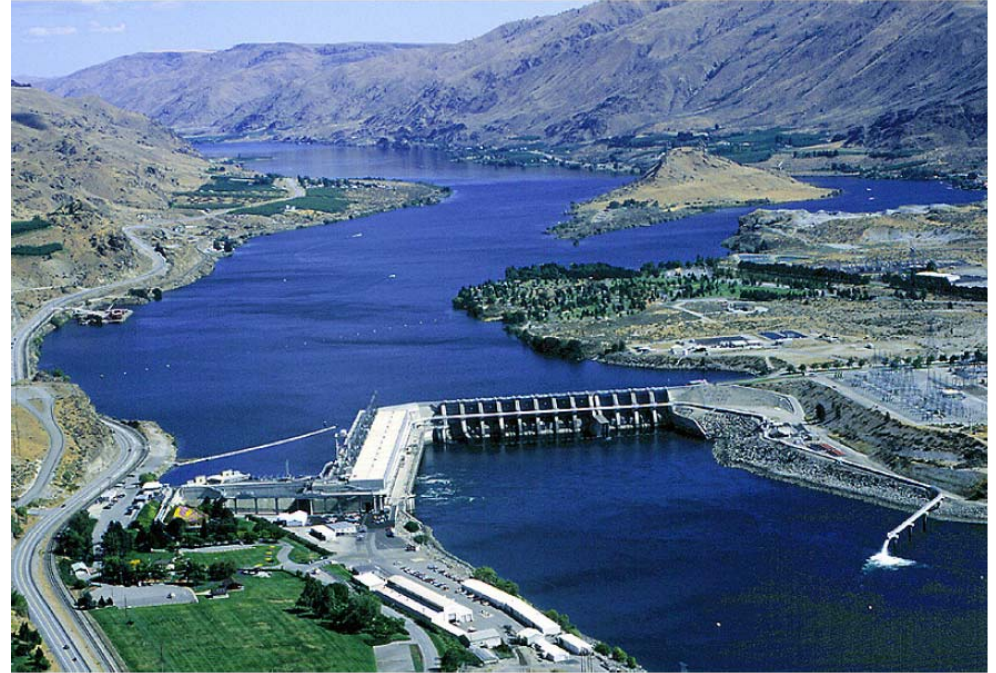
- Projects operational on/after Jan 1, 1999
- Offsets issued at 0.4 metric tons per MWh
 - @\$4 per ton CO₂ = \$1.6 per MWh
- Energy must be:
 - Not sold as “green” or “renewable” etc.
 - Not counted to state of federal program
 - Not sold to a CCX Member Electricity Generator



Chelan PUD Rocky Reach Project

Chelan PUD Rocky Reach Project

- Columbia River
- Chelan Cty, WA
- 1,299.6 MW
- Constructed in 1961
- 131 ft high
- Average annual output about 6,000,000 MWh
- Project: Fish By-Pass and Efficiency Upgrade
- Proposed in June 2007 – Registered December 2007 (6 months)



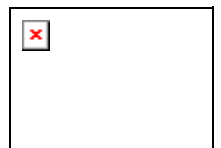
Chelan PUD Rocky Reach Project

- **Fish By-Pass:**

- Developed a Habitat Conservation Plan (“HCP”) to achieve “no net impact” (“NNI”) on salmon and steelhead under the Endangered Species Act
- HCP had previously only been applied to land species
- Allowed Chelan to spill less water (i.e. more MWh)
- Achieve greater fish survival (which was the goal of spilling)

- **Baseline and Project Scenario**

- Baseline: 40% of river volume spilled
- Project: up to 25% of river volume spilled
- Net: at least 15% more water available for generation
NNI impact on migratory fish
- Crediting: offsets for avoided emissions elsewhere on the electric grid at 0.4 mt/mwh based on net output adjusted for efficiency project and incremental load



Chelan PUD Rocky Reach Project

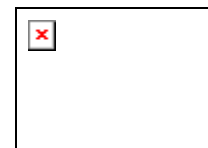
- **Efficiency Upgrade:**
 - Upgrade of turbines and generators post 1998
- **Baseline and Project Scenario**
 - Baseline: no upgrade
 - Project: Turbines: increased capacity by ~0.91% (~10MW)
Generators: increased overall capacity by ~0.44% (~5MW)
 - Net: about 15MW of incremental generation capacity available
 - Crediting: offsets for avoided emissions elsewhere on the electric grid at 0.4 mt/mwh for incremental generation



What is the Precedent and What is Eligible?

- Distinct “best in class” action undertaken after 1998
 - Simultaneously optimal outcomes for emissions and fish habitat
 - If management and efficiency investments are undertaken together, then project may be eligible

- Would efficiency upgrade on its own have been approved?



Conclusion

- Carbon market is here and its big!
 - Current annual value in EU is \$60 billion USD
- Hydro is part of solution
- Overcome the small vs. large scale stereotype
- Internationally: Issues of environmental/social process appears to limit full scale participation and not emissions reductions



CCX[®] Comprehensive Market Structure

Electronic Market Registry

Comprehensive Rules System

You are logged in as nrlarkccx
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. Exchange Allowance holdings

Item	Original Allocation of Exchange Allowances:	Action	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:	2003	2004	2005	2006
	0	0	0	0

4. Exchange Early Action Credit holdings

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

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

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

Web-accessible
Electronic
Trading
Platform

ChicagoClimateExchange - mstern_ccx @ CCX View Only Company

View Admin Help Logout

Kill All Update All Live Only Trade Bids Trade All Trade Orders 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				0.91			
									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, 16 @ 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