

Carbon Markets & Policy

An Overview of Carbon Markets & Climate Policy

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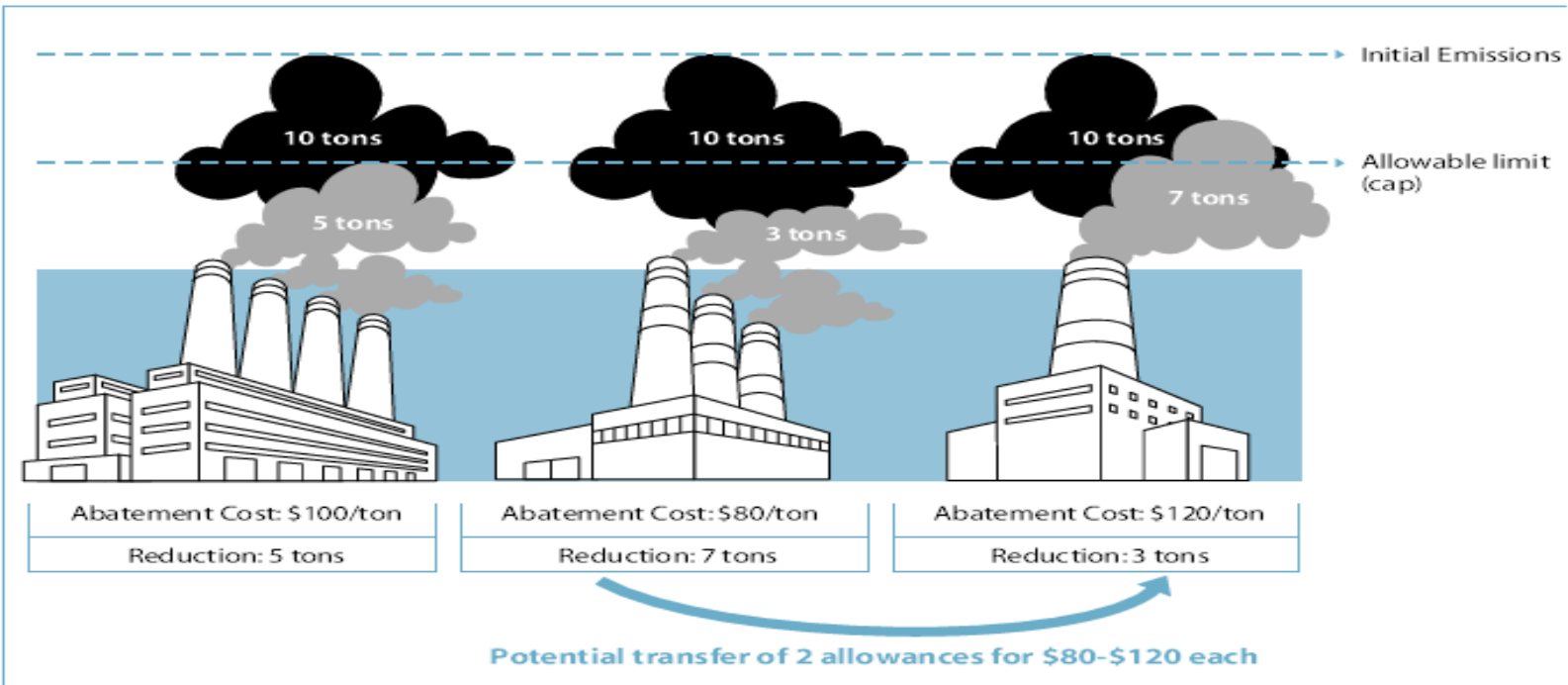
Agenda

- **Intro To The Carbon Markets**
 - Cap and Trade System Overview
 - Elements of Cap and Trade Programs
 - **Offset Projects – Credit Origination & Trading**
 - Carbon Credit Origination Process
 - Sourcing and Trading Basics
 - Offset Standards/Registries
 - **Policy & Legislative Initiatives**
 - International Programs
 - Federal Legislation
 - State Legislation
 - Regional Initiatives
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What is a Cap-and-Trade Program?

- ▶ A “cap” is placed on emissions from “covered sources”
- ▶ Covered sources must surrender “credits” equal to emissions in the compliance period
 - A “credit” can either be an “allowance” or an “offset”
 - Allowances – allocated to covered sources
 - Offsets – come from projects in uncovered sectors (i.e. outside the “cap”)
- ▶ Covered sources can design their own compliance strategy:
 - Reduce emissions to the cap
 - Reduce below cap and sell unused allowances to others
 - Purchase allowances and/or offsets and emit above the cap
- ▶ Emitters and other project developers can create offset credits to be used, banked or traded on an exchange

Cost Minimization With Trading



Cost: \$500

Cost: \$560 minus
 $\$160 - \$240 =$
 $\$320 - \400
 (vs. \$400 fixed)


Cost: \$360 plus
 $\$160 - \$240 =$
 $\$520 - \600
 (vs. \$600 fixed)

BOTH
PARTIES
BENEFIT


Source: US EPA

What Is A “Carbon Credit”?

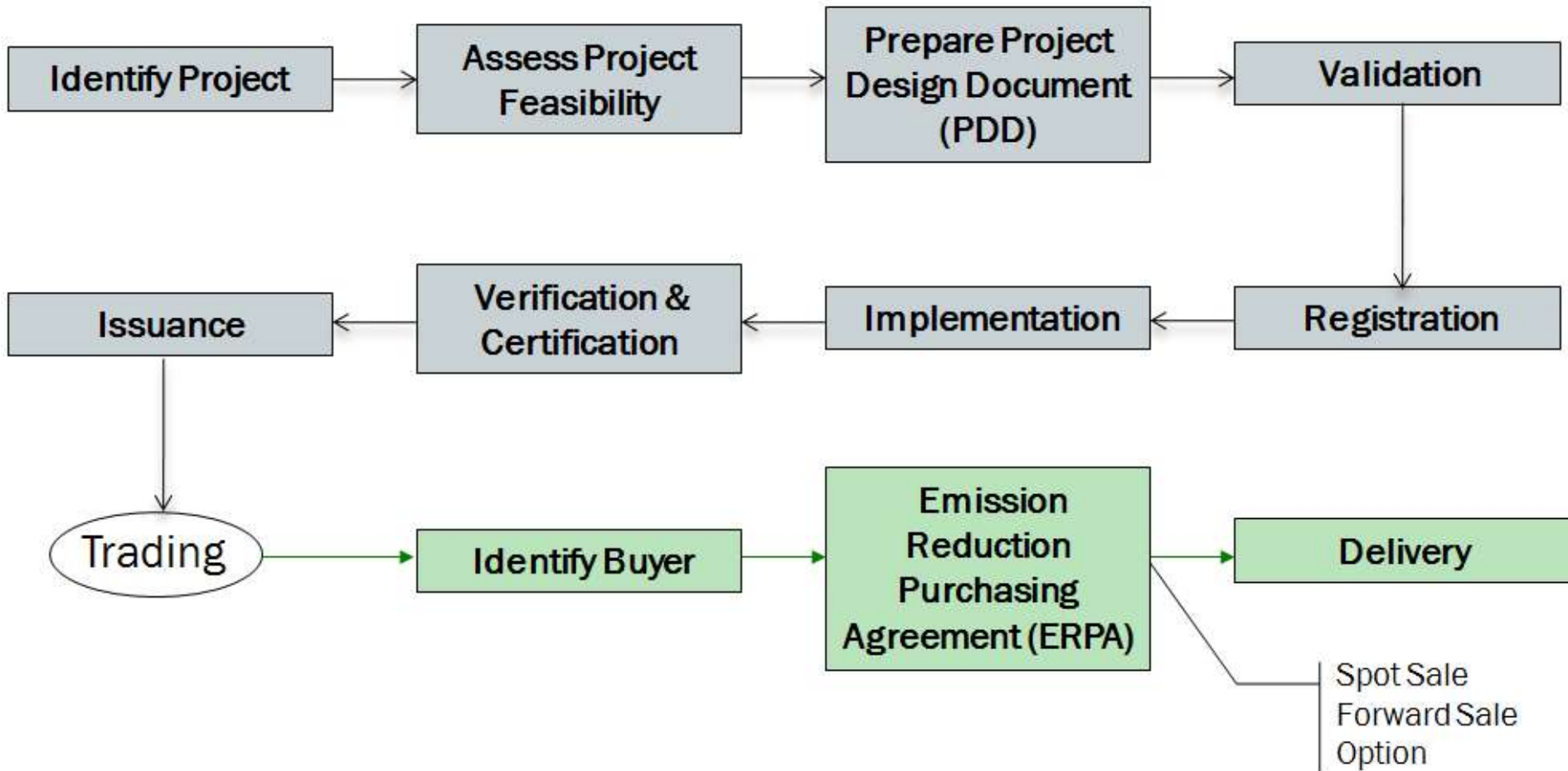
A carbon credit is:

- A tradable commodity
 - With an independent market value
 - Created pursuant to legal requirements
 - In a voluntary or mandatory market
 - From projects in non-covered sectors
 - That represents a reduction, avoidance or sequestration of 1 ton of CO₂ or equivalent greenhouse gas (GHG)
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Legal Components

- ✓ Real (represents actual emissions reductions)
 - ✓ Measurable (capable of accurate measuring & monitoring)
 - ✓ **Additional (based on a realistic baseline)**
 - ✓ Permanent (account for reversals during commitment period)
 - ✓ Verified (by independent, registry-approved verifier)
 - ✓ Enforceable (clear, unambiguous ownership)
 - ✓ Unique (no double counting)
 - ✓ Transparent & Address Leakage (does not lead to an increase in emissions outside of the project's boundary)
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Carbon Offset Projects: Typical Project Cycle



Carbon Offset Standards/Registries

- ▶ Climate Action Reserve (CAR)
 - <http://www.climateactionreserve.org>
- ▶ Clean Development Mechanism (CDM)
 - <http://cdm.unfccc.int/index.html>
- ▶ Voluntary Carbon Standard (VCS)
 - <http://www.v-c-s.org/>
- ▶ American Carbon Registry (ACR)
 - <http://www.americancarbonregistry.org/>
- ▶ Chicago Climate Exchange (CCX)
 - <http://www.chicagoclimatex.com/>

Trading and Sourcing Basics

- ▶ Credits can be purchased/sold through an exchange such as the Chicago Climate Exchange, or “over-the-counter”.
 - Over-the-Counter Transactions (2009) – 63% of Volume
 - Exchange Transactions (2009) – 37% of Volume
 - CAR Credits (aka Climate Reserve Tonnes, or CRTs)
 - 37% of volume in 2009
 - 65% of market value in 2009
- ▶ Trading vs. Retirement
 - Credits can be traded without being “retired”. Only the retirement of credits allows the holder to claim the carbon reduction.

Mandatory, Voluntary & Pre-Compliance Markets

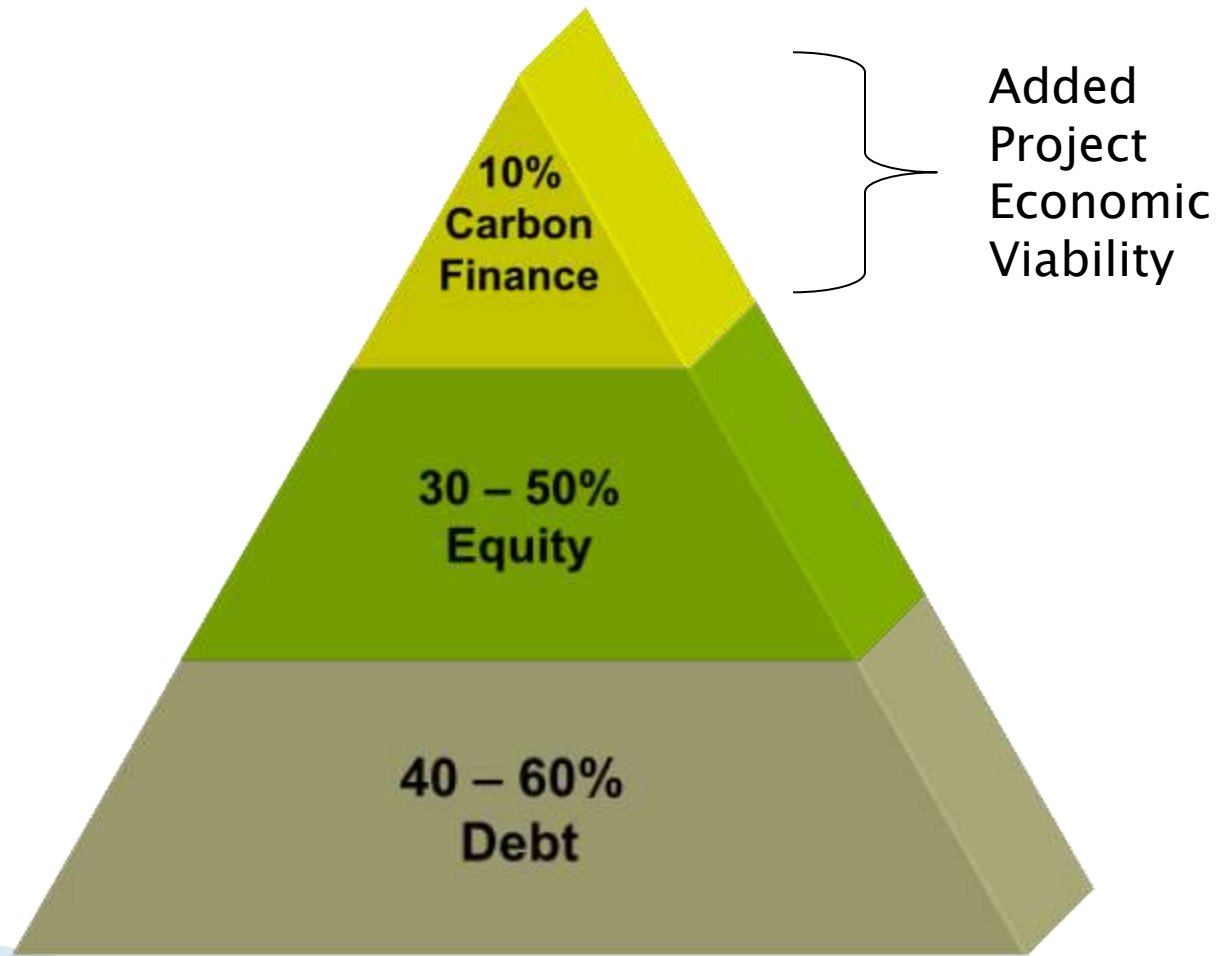
- ▶ Voluntary Markets – 35% in 2009
 - Companies purchase carbon offsets to reduce or neutralize their greenhouse gas emissions for various reasons.
- ▶ Pre-Compliance Markets – 65% in 2009
 - Buyers purchase credits with the hopes that they can be used for compliance purposes in a future cap-and-trade program.
- ▶ Mandatory Markets – 0% in 2009
 - Regulated entities purchase offsets credits to meet their compliance obligations.
 - Distinction between “offsets” and “allowances”

Size and Value of US Offset Market in 2009

		Volumes (Mt CO ₂ e)	Value (\$M)	Price/Credit
Exchange Based Transactions	CCX CFIs	6.4	\$5.8	\$.90
	CAR	0.8	\$4.0	\$5
	Subtotal	7.2	\$9.8	\$1.36
OTC Transactions	CAR	7.2	\$48.2	\$6.70
	VCS	2.1	\$9.7	\$4.60
	ACR	1.8	\$3.5	\$1.95
	Other	1.1	\$2.4	\$2.20
	Subtotal	12.2	\$63.8	\$5.20
Total		19.4	\$73.6	\$3.80

Source: Point Carbon Research - US Offset Markets in 2010: The Road Not Yet Taken. March 1, 2010


Carbon Finance



Where Does Bioenergy Fit In?

- ▶ **Methane Reductions – 49% of supply in 2009**
 - Livestock (manure management)
 - Landfills (landfill gas collection)
 - Organic waste digestion

 - ▶ **Energy Production**
 - Biomass/biogas combustion

 - ▶ **Transportation**
 - Fuel switching (biofuels)
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Hedging: Carbon Credits vs. RECs

- ▶ A carbon credit represents the reduction, avoidance, or sequestration of 1 ton of CO₂e of GHG
- ▶ A Renewable Energy Credit (REC) represents proof that 1 MWh of electricity was generated from an eligible renewable energy resource.
- ▶ Both are tradable commodities
- ▶ A REC *may* be considered convertible...
 - Represents the amount of GHG displaced from using 1 MWh of energy
 - Greater GHG reductions when grid is supplied by high-carbon fossil fuels
 - Elements like additionality must still be met

Current Regulatory Environment

▶ **International**

- Kyoto / EU ETS

▶ **Federal**

- EPA Reporting Rule
- SEC Guidance
- House/Senate Bills

▶ **State**

- Assembly Bill 32 (California)

▶ **Regional**

- Regional Greenhouse Gas Initiative
 - Western Climate Initiative
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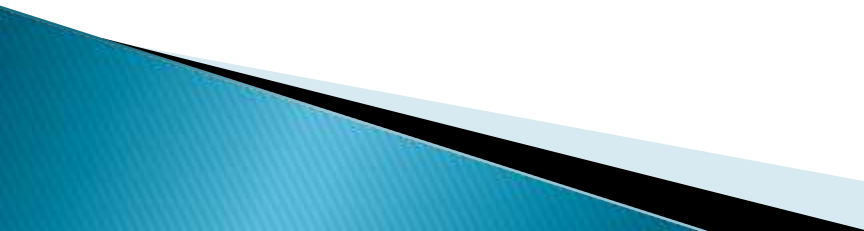
Int. Mechanisms for Reducing GHGs

▶ Kyoto Mechanisms

- Emissions Trading Scheme (ETS)
- Clean Development Mechanism (CDM)
 - Allows industrialized countries with reduction commitments to invest in projects that reduce emissions in developing countries.
- Joint Implementation (JI)
 - Allows annex I countries with reduction commitments to invest in projects that reduce emissions in other annex I countries.
- Current Prices
 - Allowances (EAUs) - \$15.24
 - Offsets (CERs) - \$ 13.03

Federal Legislation & Regulations

▶ **Environmental Protection Agency (EPA)**

- Facilities emitting > 25,000 tons CO₂e must submit annual reports to the EPA
 - Covers 85% of U.S. GHG emissions
 - Emissions data will inform future policy decisions
 - Utilities to be regulated in 2011 if comprehensive legislation is not passed by congress
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Federal Legislation & Regulations

▶ **Securities and Exchange Commission (SEC)**

- All publicly traded companies must disclose “material” risks resulting from climate change, including:
 - Impact of legislation and regulation
 - Impact of international accords
 - Indirect consequences of regulation or business trends
 - Physical impacts of climate change

Federal Legislation & Regulations

- **House Bill: Waxman-Markey – Passed 06/26/2009**
 - Overlays EPA's jurisdiction under Clean Air Act
 - Covered Sources - > **25,000 tons CO₂e/year**
 - Caps gradually escalate:
 - **2012: 3% below 2005 level**
 - 2020: 17% below 2005 level
 - 2030: 42% below 2005 level in 2020
 - 2050: 83% below 2005 level in 2050
 - Offsets
 - 2 billion offsets useable per year
 - Domestic and International Project Types
 - Methodologies to be developed by EPA & USDA

Federal Legislation & Regulations

- ▶ **Senate Bill: Kerry-Lieberman – Released 05/12/2010**
 - Also overlays EPA's jurisdiction under Clean Air Act
 - Covered Sources - > **25,000 tons CO₂e/year**
 - Caps gradually escalate:
 - **2013: 4.75% below 2005 level**
 - 2020: 17% below 2005 level
 - 2030: 42% below 2005 level in 2020
 - 2050: 83% below 2005 level in 2050
 - Similar cost containment provisions
 - Price Forecasts???
 - PointCarbon projects carbon would avg. \$31/ton btwn. 2013 - 2020

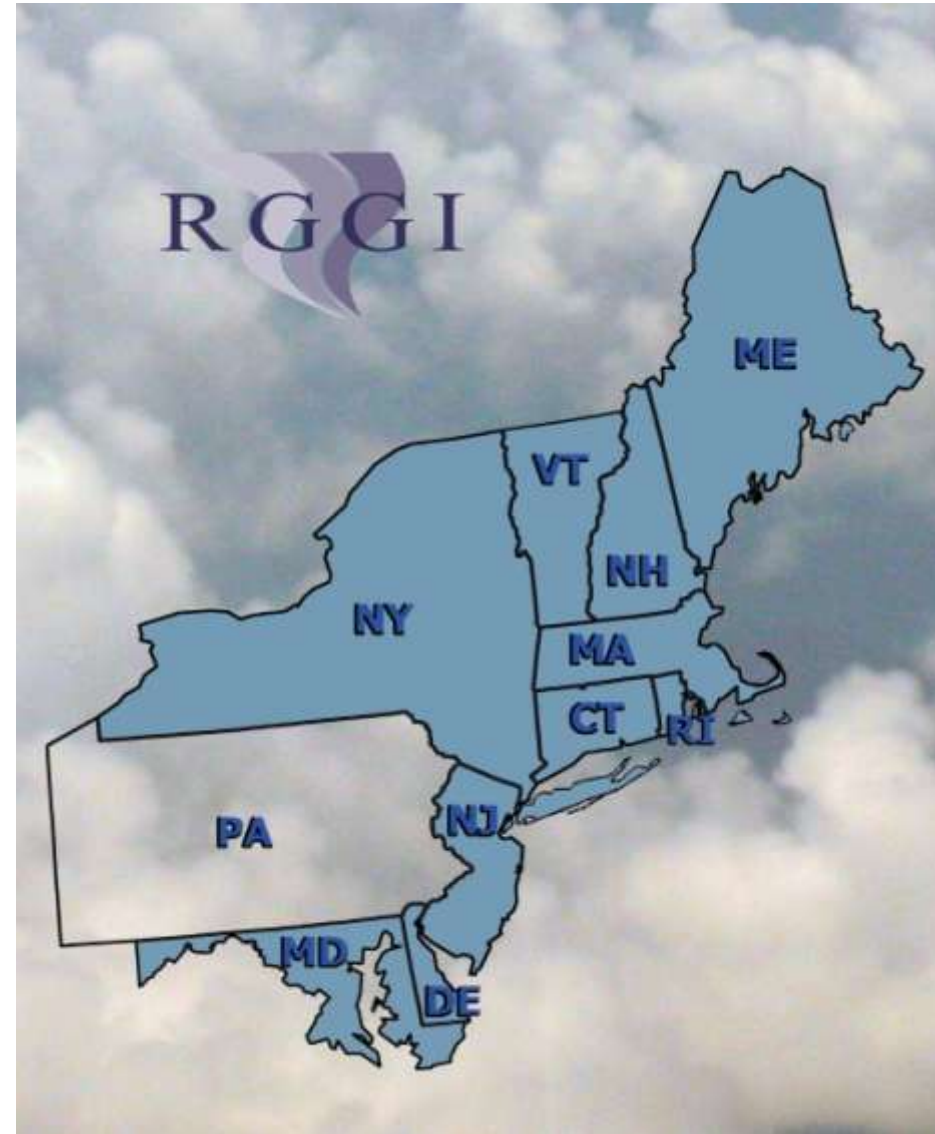
State Legislation

▶ **Assembly Bill 32 (California)**

- Broad-based cap-and-trade program
 - Electricity, Industry, Transportation Fuels, Natural Gas
- Rulemaking currently in progress
- Caps gradually escalate:
 - 2020: Reduce to 1990 levels (28% below BAU)
 - 2050: Reduce 80% below 1990 levels
- Offsets are being considered on a sector-by-sector basis
 - Climate Action Reserve is a state-sanctioned offset program

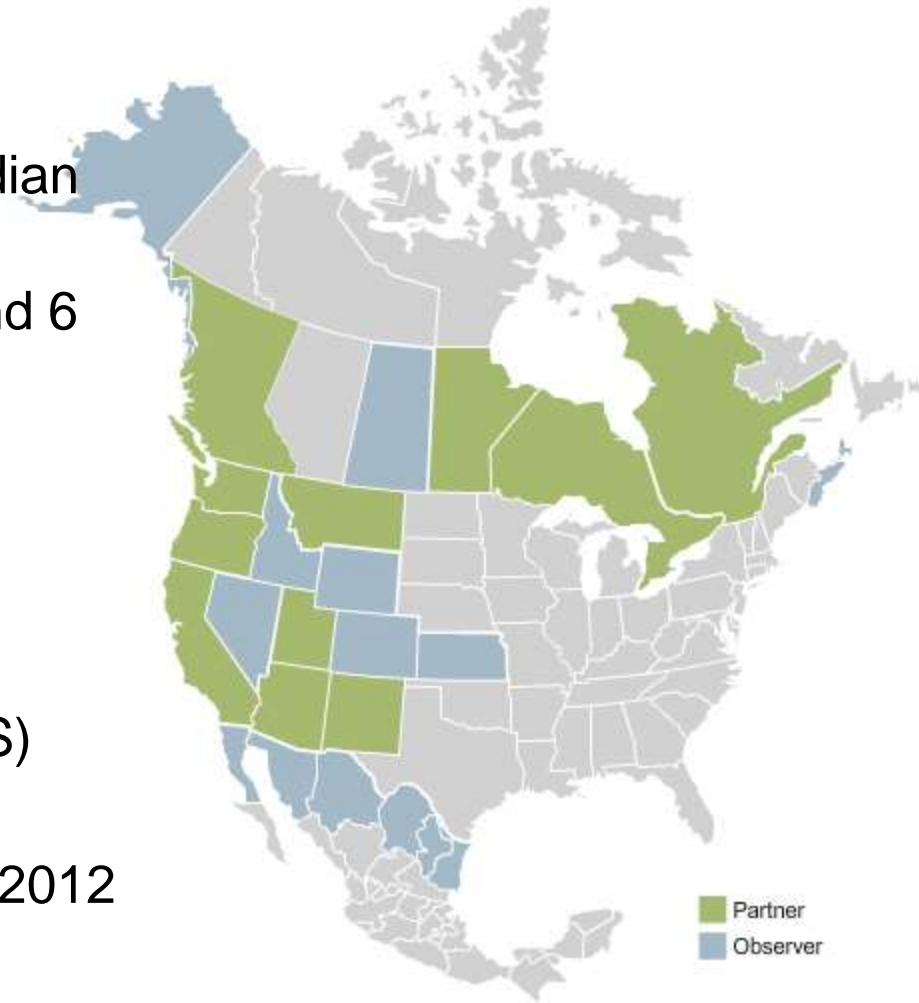
Regional Greenhouse Gas Initiative (RGGI)

- ▶ 10 states & 53 million people
- ▶ 8th largest emitter in the world
- ▶ Caps gradually escalate
 - Stabilize thru 2015
 - Reduce 10% by 2018
- ▶ Allowance Price - \$1.90
- ▶ Offsets:
 - 5 Project types accepted
 - Allowance price too low for offsets



Western Climate Initiative (WCI)

- ▶ 11 participants plus 13 “observers”
 - Participants – 7 states and 4 Canadian provinces
 - Observers – 6 states, 1 province and 6 Mexican states
- ▶ Multi-dimensional approach, including
 - Cap and Trade
 - Low carbon fuel standards
 - Renewable Portfolio Standard (RPS)
- ▶ Expects mandatory programs to start 2012



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THANK YOU!!!

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