


Regulatory Landscape for U.S. GHG Emissions and Coal Mine Methane Opportunities

*By Andy Kruger
Director, Carbon Markets*

December 2, 2009

The Intersection of Environment,
Energy and Finance.

Award Winning Brokerage Platform



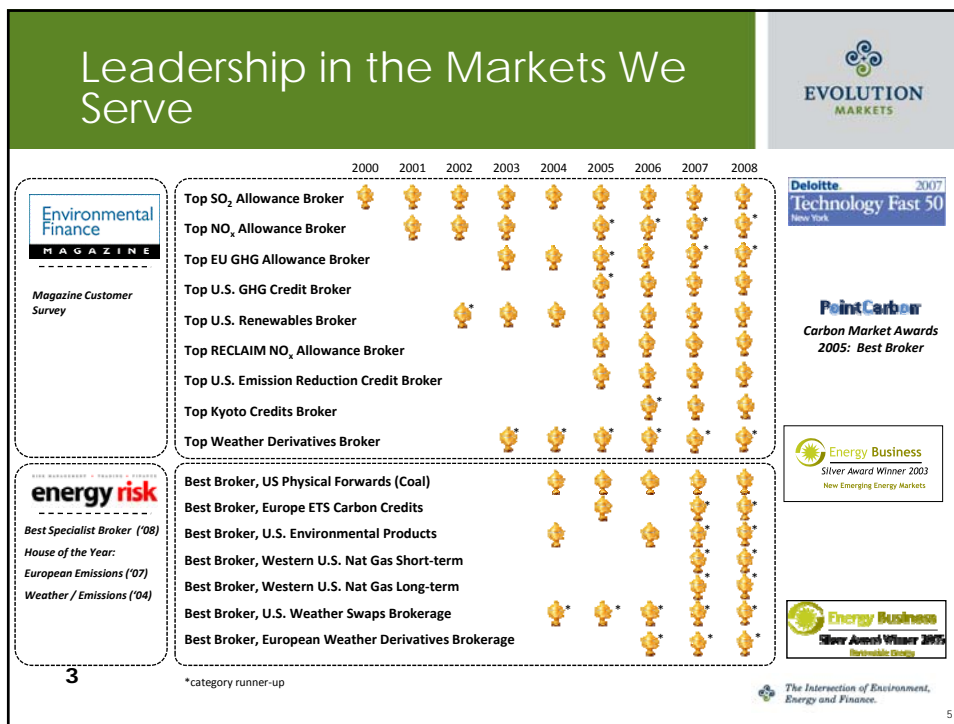
Evolution Markets is a market leading commodities brokerage firm focused on all environmental and clean energy markets

ENVIRONMENTAL MARKETS	ENERGY MARKETS
<ul style="list-style-type: none"> • Carbon Credits & Allowances • Renewable Energy Credits • SO₂ Emissions Allowances • NO_x Emissions Allowances <ul style="list-style-type: none"> ○ Houston/Galveston NO_x ○ RECLAIM (L.A. NO_x & SO₂) • Weather Derivatives • Catastrophic Risk Derivatives 	<ul style="list-style-type: none"> • Green Power Transactions • Biofuels <ul style="list-style-type: none"> ○ Ethanol ○ Biodiesel • OTC Physical Coal • OTC Coal Derivatives • Natural Gas • Nuclear Fuels

- Merchant Banking. Carbon and Renewable Energy teams work together to provide complementary services to project developers; enhance market insight and leverage; "EvoFinance"
- Integrated services create a seamless transaction process

2

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Evolution Markets – Carbon



EVOLUTION MARKETS

Evolution Markets has 25+ carbon team members located in San Francisco, New York, London, New Delhi and Beijing originating and brokering every global carbon commodity

- Origination of offset projects globally
- Originate carbon offset projects; leverage brokerage desks in New York, London and San Francisco to access buy side
- Markets and product groups:
 - **North America:** VERs, RGGI Allowances, Alberta-based offsets, CCX, pre-compliance offsets
 - **Europe:** Primary CERs, gCERs, ERUs, AAUs, EUAs, VERs, Options and other financial products

4

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N. American Regulatory Landscape



U.S. Carbon Trading Activity Rapidly Picking up due to the following:

- Federal Government moving rapidly – Senate EPW Committee approved November 2009 following positive House vote of June, 2009.
- Market for pre-compliance offsets rapidly emerging as emitters begin to hedge
- Regional frameworks differ in progress made in the following areas:
 - California
 - 10 Northeastern states
 - 6 Midwest states
 - 11 Western states/Canadian & Mexican provinces

5

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The American Clean Energy and Security Act of 2009



Passed the House of Representatives on June 26th, 2009

Covered Sources

- Sources emitting more than 25,000 tons per year of CO₂ equivalent
- Covers roughly 85% of US emissions, including utilities, refining, and the industrial sector

Requirements for the Capped Sector

- 17% below 2005 levels in 2020
- 42% below 2005 levels in 2030
- 83% below 2005 levels in 2050

6

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Allowance Distribution

Proposed 85% allocation for electricity sector, oil refineries, natural gas, states, and others, and 15% auction.

Distribution of allocation widely different between electricity, refining sectors: approximately 40% allocation to electricity sector vs 2% to refining sector.

Banking/Borrowing

- Unlimited banking
- Sources can borrow allowances without interest one year ahead
- Sources can borrow allowances one to five years ahead for up to 15% of their compliance obligation. Interest is 8% per year.

State Programs

Emissions allowances issued before December 31, 2011 by either California or the Regional Greenhouse Gas Initiative (RGGI) can be exchanged for Federal carbon allowances. The EPA will make rules for this exchange.

7

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Offsets

- Affected sources are able to use up to 2BB tons in total annually 50% International and 50% Domestic
- Domestic offsets can be submitted 1:1 for an allowance until 2018 then 1.25: 1
- Forestry will play a very large role in International Offsets
- Sectoral Approaches will play a large role in International Offsets
- Standards for offsets must stipulate
 - Reductions, avoidance, sequestration of GHGs
 - Offsets must be verifiable and additional
 - Additionality:
 - Not required by law
 - Projects starting after Jan 01, 2009

Early Offset Supply

- Projects started after Jan 01, 2001, 1 for 1 credits are only available from these projects after Jan 01, 2009
- Pre-2009 Offsets allowed in likely to be capped at +/- \$3.60 exchange value

8

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Auctioning: Starts at 20% in 2012 and goes to 80% in 2025; Reserve Floor Price of \$10 plus 5% per year plus annual CPI

Strategic Reserve

EPA is directed to hold a 'strategic reserve' of 2.5 billion allowances. The Agency can make a portion of these allowances available for sale at auction if prices rise to unexpectedly high levels.

Market Regulation

CFTC Language as passed in House version extremely troubling to marketplace including "Naturals"

9

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The Clean Energy Jobs and American Power Act of 2009



Introduced by Senate Committee on Environment and Public Work Chairman Barbara Boxer (D-CA) and Senator John Kerry (D-MA)

Covered Sources

- Sources emitting more than 25,000 tons per year of CO2 equivalent
- Covers roughly 85% of US emissions, including utilities, refining, and the industrial sector

Requirements for the Capped Sector

- 20% below 2005 levels in 2020
- 42% below 2005 levels in 2030
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10

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The Clean Energy Jobs and American Power Act of 2009



Allowance Distribution

Proposed 75% free allocation as follows:

- 35% to utilities to protect consumers against price spikes
- 30% to state-regulated local electric distribution companies (LDCs)
- 5% to merchant coals generators and long-term PPAs
- 2% for a market stability reserve if prices hit \$28/tonne
- 2.25% for domestic oil producers

Banking/Borrowing

- Unlimited banking
- Sources can borrow allowances without interest one year ahead and can borrow for up to 15% of a single year's emissions
- Sources can borrow with interest for up to five years at 8% interest per year

State Programs

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11

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The Clean Energy Jobs and American Power Act of 2009



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12

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Stimulating Early Offset Investment

- Offset Advisory Board will provide EPA with a list of eligible offset types and methodologies within 90 days of establishment
- List of eligible offset types for the EPA to consider:
 - Coal mine methane
 - Landfill gas
 - Fugitive emissions from oil and natural gas operations
 - Agricultural methane
 - Afforestation
 - Forest Management
 - Farm practices
 - Land use practices

Crediting Period

- 5 years for “term” offsets
- 5-10 years for traditional offsets
- 20 years for forestry offsets

13

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Market Stability Reserve

Additional allowances are made available at quarterly auctions ONLY to covered entities. No entity can purchase more than 20% of allowances. Reserve price:

- \$28, plus a 5% escalator for year 2013-2017
- From 2018 on the price escalates at 7% per year

Market Regulation

Bill calls for “sense of the Senate” that there should be an appropriate oversight program. Effectively passes on the issue.

14

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Offsets Applicable to the U.S. Market



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N.A. Offset Types




Commodity	Project Type	Location	Policy Implication
Alberta-based Offsets	15 government approved protocols including Wind, Landfill Gas, No Till Soil, Biomass to Energy, and several others	Alberta only	Compliance – <i>Specified Gas Emitters Regulations</i>
RGGI Offsets	Landfill gas, Hexafluoride Reductions, Afforestation, Agricultural Methane, Energy Efficiency	RGGI Footprint states	Compliance - <i>Regional Greenhouse Gas Initiative</i>
Climate Reserve Tonne (CRT)	Landfill Gas, Livestock Methane, Forestry, Organic Waste Diversion, Coal Mine Methane (several other under review)	United States (and Mexico for Landfill Gas and Livestock Methane)	Pre-compliance – potentially <i>AB32 / WCI</i> AND Voluntary – approved by the Voluntary Carbon Standard

16


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N.A. Offset Types




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Commodity	Project Type	Location	Policy Implication
Voluntary Carbon Unit (VCU)	Any CDM project type	International	Pure voluntary; international forestry VCUs could potentially be pre-compliance
Gold Standard VERs	Renewable energy, energy efficiency	International	Pure Voluntary
VER+	Any CDM/JI project type	International	Pure Voluntary
Carbon Financial Instrument (CFI)	No Till Agriculture, Landfill Gas, Livestock Methane, Forestry, Renewable Energy, other	United States	Mandatory if a reporting member, but Voluntary otherwise

17

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Climate Action Reserve (CAR) Project Types – Coal Mine Methane v1.0




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- **Approved October 7, 2009, by Climate Action Reserve (CAR) board**
 - Provides methodology for destroying methane from active underground mines.
- **The approval of the protocol comes at an important time.**
 - Considerable market interest in CAR CMM Protocol-based projects
 - U.S. Congressional action to adopt a federal carbon program.
 - Carbon cap and trade bill introduced by Senators John Kerry (D-MA) and Barbara Boxer (D-CA) listed CMM among a short list of project types which should receive special consideration by U.S. regulatory authorities setting up the domestic offsets program.
- **CAR is currently working on version 2.0 of the CMM protocol to include drainage projects that send CMM to pipelines.**
 - Adds performance standards allowing pipeline projects.
 - Expected timeline is for draft protocol to be released in December of 2009 and adopted by February of 2010.



18

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Climate Action Reserve (CAR) Project Types – Coal Mine Methane v1.0 – Cont'd.



- **Version 1 Project Definition:** Installation and operation of any device, or set of devices, that result in the destruction of methane gas that would otherwise have been emitted to the atmosphere from an active underground mine.
- **Includes:** Coal mines and MSHA Category III trona mines
- **Two defined project types:** drainage projects and VAM projects
- **Excludes:** Surface mines; Abandoned/decommissioned mines; Coal bed methane; Mines that use fluid/gas to enhance CMM drainage
- **Drainage Project Definition specifies allowable drainage activities:**
 - Boreholes, destruction devices (DD) and any nonqualifying devices that make up project are defined by project developer
- **Opportunity for multiple drainage projects at a single mine site**
 - New boreholes + existing DD = project expansion
 - New DD + existing boreholes = project expansion
 - New boreholes + new DD = new project
 - Note: Injection into a natural gas pipeline from drainage may be *excluded* (but all VAM is eligible).
- **Project Start Date/Eligibility:** On or after January 1, 2001 for 12 months after effective date of protocol, then must file within 6 months of project start date.
- **Location:** U.S. Operations only

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Climate Action Registry (CAR) – Landfill Gas



Project Definition

- Installation of a landfill gas control system for capturing and combusting methane gas

Eligibility

- Ultimate fate of methane must be combustion (whether on-site or transported for off-site use)
- Rule 1 – Additionality: beyond business as usual; Performance Standard and Regulatory Tests
- Rule 2 – Location: all landfill operations in the United States
- Rule 3 – Project Start Date: Started operating on or after January 1, 2001

20

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OTC Pre-compliance Market



Climate Action Reserve CRTs

- **Trading began Fall 2008 and continues**
- Dairy and forestry CARB-approved as voluntary early action reductions; “Priority List” offsets for CARB
- **Over 6 million spot and forward CRTs have traded at Evolution Markets since Fall 2008**
- Current market participants:
 - Financials
 - Project developers
 - Retailers
 - Compliance Buyers (most recently)

21

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OTC Pre-compliance Market



Wholesale CRT Pricing

- Price curve is contango shaped with steepest increase 2012 +
- **Forestry:** 7.50 bid / 12.00 offer
- **Dairy:** 7.00 bid / 10.50 offer
- **Landfill gas:** 6.00 bid / 8.50 offer


Liquidity

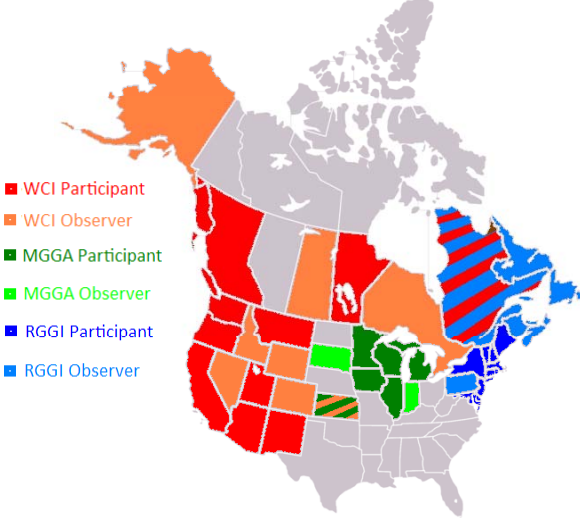
- Approximately 1.6MM CRTs issued to date
- Spot '08 volume is largely Forestry, but significant forward volumes of Landfill Gas
- Improved liquidity with emitters coming into market; developing secondary market


22

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Regional Climate Agreements





23


California: Assembly Bill (AB) 32



September 2006: [A.B.32 – California’s Global Warming Solutions Act](#)

- 1990 levels by 2020
- 2020 Target: 427 MMT CO₂e = 30% reduction from BAU 2020 levels

December 2008: [CARB Approves Climate Change Scoping Plan](#)


- Cap and trade system covering 85% of emissions
- Early Discreet Actions effective January 1, 2010 – LFG, LCFS, others

Scoping Plan Measures:

- Energy efficiency program, including building and appliance standards
- Clean vehicle standards (Pavley), including the Low Carbon Fuel Standard
- Renewable portfolio standard
- Cap and trade program
- Others

Mandatory GHG Reporting Rule

- Rule passed December 2007
- Covered facilities reported GHG inventories online June 1, 2009
- Facilities should be establishing internal reporting processes, procedures and define policies and personnel for GHG reporting

24


AB 32: Reductions



Cap and Trade:

- Establishes price signal for emissions to incentivize the market to find least expensive means to reduce
- Mandatory reporting begins June '09 for "capped sectors"
- In 2012:
 - Large industrial facilities that emit 25,000+ mtCO₂E/yr
 - Electricity generation, including imports not covered by WCI
- Starting in 2015:
 - Transportation fuel
 - Upstream industrial fuel below 25,000 mtCO₂E/yr, and residential and commercial fuel combustion

Capped Sector Reductions:

- 146.7 MMTCO₂E reductions as follows:
 - 31.7; vehicle standards
 - 26.3; energy efficiency
 - 21.3; RPS
 - 15; LCFS
 - 18; various other measures
 - 34.4; facilities need to find ways to reduce by either buying allowances/offsets or other means

Uncapped Sector Reductions:

- 27.3 MMTCO₂E reductions as follows:
 - 20.2; high GWP measures
 - 5; sustainable forest measures
 - 1.1; industrial measures
 - 1; recycling and waste measures

25

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AB 32: Market compliance instruments (federal compliance too)



Allowances:

- Issued by the CA government
- Covered entities must hold 1 allowance for every 1 MTCO₂E emitted
- % freely allocated at first, transitioning to 100% auction likely

Offsets

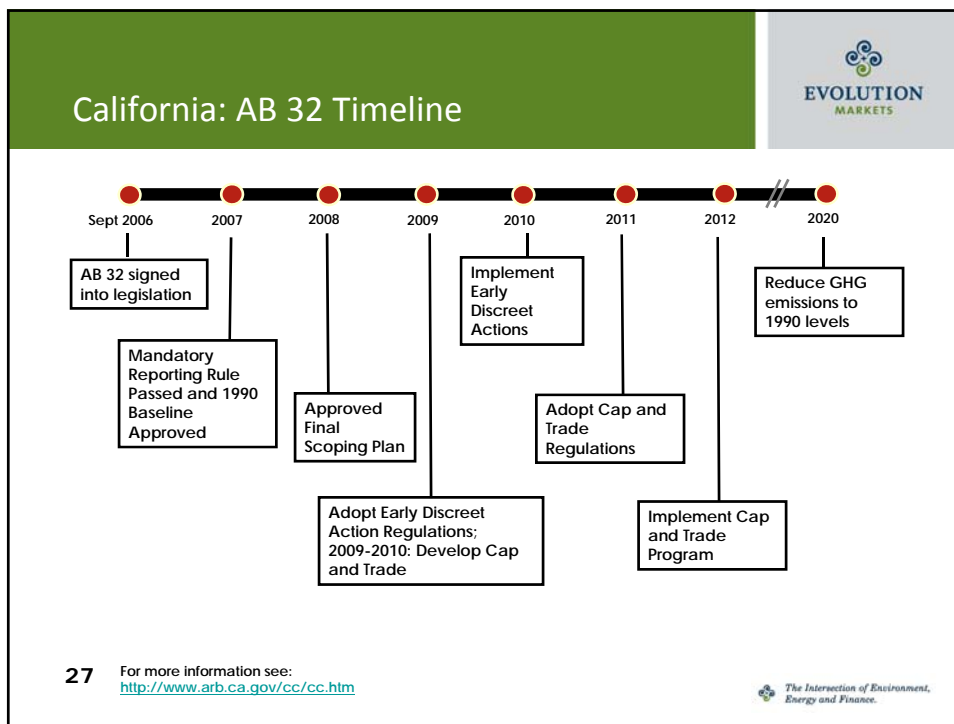
- Project-based reductions which receive credit for "offsetting" emissions
- Credits can be used in place of allowances 1:1 for compliance
- Provides for low cost reductions
- 49% of required reductions from offsets

Offsets (cont'd):

- Priority List: Board-approved offset protocols for dairy methane and forestry from the Climate Action Reserve
- Other potential offset types:
 - Coal mine methane
 - Landfill gas
 - Ozone depleting substances
 - Co-digestion
- No geographic limit
- Reviewing and approving:
 - Performance-based with ability to approve specific projects, likely

26

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Western Climate Initiative (WCI)

Overview

- Launched in February 2007
- Reductions: 15% below 2005 levels by 2020 = California goals
- Cap and trade
- Will ultimately cover 90% of WCI footprint emissions
- Unlimited banking; no borrowing
- Partners must adopt regulations to participate
- Covered industries:
 - Electricity generation (25k mtCO₂/yr+)
 - Industrial/commercial facility fuel combustion
 - Transportation sector (begins in 2015)

Partners	Observers
Arizona	Alaska
British Columbia	Colorado
California	Idaho
Manitoba	Kansas
Montana	Nevada
New Mexico	Saskatchewan
Ontario	Wyoming
Oregon	<u>Mexico</u>
Quebec	Chihuahua
Utah	Coahuila
Washington	Nuevo Leon
	Sonora
	Tamaulipas

28

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