

Climate Change Regulatory Update: Insight Into Opportunities

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Status Report on Federal Action with Regard to Climate Regulation

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Federal Action

- EPA
 - *Mass. v. EPA*, Clean Air Act, Endangerment Finding, Tailoring Rule
 - regulation of GHGs: command and control
 - this scheme will likely go forward starting in 2011 absent Congressional preemption
- Congress
 - House: (Waxman-Markey 6/26/2009)
 - regulation of GHGs: cap and trade
 - Senate: ???

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Even those who want the Senate to cap carbon emissions this summer admit that it will be a “tough slog”

- Busy Senate agenda complicates efforts to tackle sweeping energy and climate legislation
 - financial regulatory reform measure
 - tax extenders bill
 - political spending legislation and
 - Elena Kagan's Supreme Court nomination before wrapping up in four weeks.
- Another factor: death of Sen. Robert Byrd (D-W.Va.)

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Boiling it Down: Basic 3 Senate Package Options

- Economy-wide Cap with preemption of EPA action under CAA
 - *The American Power Act*, proposed by Senators Kerry (D-MA) and Lieberman (I-CT) ("Kerry-Lieberman") (5/12/10)
 - S. 2877, the *Carbon Limits and Energy for America's Renewal Act* ("CLEAR ACT"), sponsored by Senators Cantwell (D-WA) and Collins (R-ME) .
- Energy-Only Bill with no preemption of EPA action
 - bipartisan "energy only" bill like the measure ([S. 1462](#)) that Energy and Natural Resources Chairman Jeff Bingaman (D-N.M.) committee passed last summer (RES and incentive for clean energy but does not address GHGs as either cap or tax)
- *Energy-Only Cap – partial preemption of EPA action (utility sector)*
 - Senate Energy and Natural Resources Chairman Jeff Bingaman (D-N.M.) draft legislation proposes a cap on only electric utilities. (7/13/10)

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Current Favorite is "Energy Only" cap – what is the difference?

- Economy-wide Cap (cap emissions from utilities, manufacturing, transportation and other sectors)
 - The sweeping measure from Sens. John Kerry (D-Mass.) and Joe Lieberman (I-Conn.) calls for a 17 percent reduction in carbon emissions from 2005 levels by 2020 and a 42% cut by 2030.
 - applies to stationary sources that emit more than 25,000 metric tons of carbon dioxide-equivalent per year
 - cap starting in 2013
- Energy-Only Cap (cap emission from utility sector)
 - A discussion **draft** by Senate Energy and Natural Resources Chairman Jeff Bingaman (D-N.M.) would cut emissions by 2020 from regulated sources by 17 percent from 2005 levels and 42 percent by 2030.
 - applies to utilities that emit more than 25,000 metric tons of carbon dioxide-equivalent per year
 - cap starting in 2012
- Difference is in "cost of compliance certainty" vs. EPA

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While Senate debates, EPA continues to move forward...

- White House Office of Management and Budget reviewed two proposals Monday that seek to determine whether states can comply with EPA implementation of GHG regulations under the CAA
 - One proposal would examine whether state and local agencies have the authority to extend permitting programs to newly designated pollutants such as greenhouse gases. e
 - The first proposal is scheduled to be released as a proposed rule next month, according to EPA's regulatory agenda.
 - The second proposal sent to OMB yesterday seeks to guarantee authority for federal implementation plans (FIPs) that could replace state programs if the states are unable to meet federal requirements by the deadlines

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CONCLUSION

- DEBATE is not "IF" but "HOW" when it comes to federal regulation of climate change
 - With or without a Senate climate bill, there will be federal regulation of GHGs (EPA, stationary sources).

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Insights

- Some sectors recognize the inevitability of a carbon constrained world and smart actors in that sector are acting accordingly
 - UTILITY SECTOR faces
 - **GHG Challenges** accounts for 40% of domestic GHGs
 - **Coal Challenges**
 - According to a recent report by Ceres: *The 21st Century Electric Utility: Positioning for a Low-Carbon Future*, authored by Navigant Consulting (July 2010)
 - Most U.S. coal-fired power plants are at least 30 years old.
 - New U.S. EPA CAIR regulations are expected to force 25% of those old plants into retirement by 2015
 - 2008 U.S. Geological Survey study of the Powder River Basin coal fields in Wyoming found that the economically recoverable reserves might be only 6 percent of previous estimates, "raising questions about the long-term price and availability of coal in other areas of the U.S."
- With or without a climate bill, electric utilities are shifting their investments to efficiency measures that cut long-term costs and integrate more natural gas and renewable energy into their power supplies and incorporate advanced technologies
- Recent technological breakthroughs:
 - reassessment of the nation's natural gas supplies
 - Carbon Capture and Sequestration

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Insights (Continued)

- According to *The 21st Century Electric Utility: Positioning for a Low-Carbon Future*, authored by Navigant Consulting (July 2010)
 - "A utility that deals effectively with these [challenges], and receives sufficient support from regulators and legislators, will be better positioned to success in the 21st century. All else equal, such a utility is also more likely to attract lower cost capital, enabling it to earn stronger returns for investors."
 - Advice well-followed by the industrial sector, which faces GHG Challenges as well (accounts for nearly 30% of domestic GHGs).

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An Update on California Cap and Trade Regulation

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Cap-and-Trade Regulation Overview

- Legislative Basis (Global Warming Solutions Act of 2006 or “AB32”)
- CARB must adopt Cap-and-Trade regulation by **January 1, 2011**
- Cap-and-Trade Regulation must begin in **2012**
- 2020: reduce GHG levels to 1990 levels
- 2050: reduce GHG levels to 80% below 1990 levels

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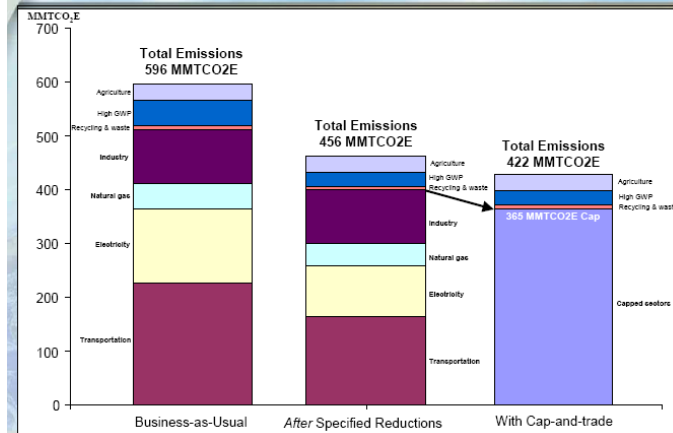
How much CO₂ to cut?

- To return to 1990 GHG emissions levels by 2020
 - Approx. 15% below current CO₂ levels
 - Approx. 427 million metric tons of CO₂ equivalent (MMT CO₂E) of GHG

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Where Cap and Trade Fits In

California 2020 GHG Emissions and Recommended Reduction Measures

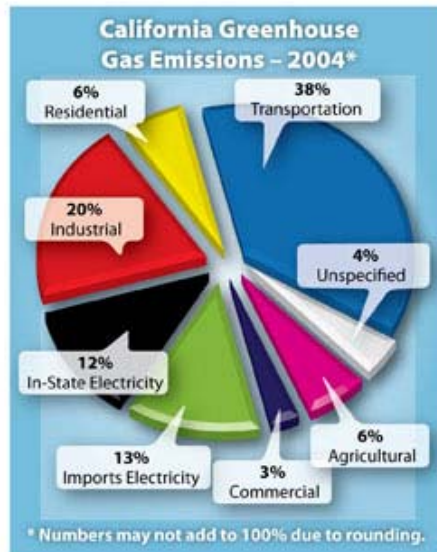


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Scoping Plan

- AB32:
 - CARB to develop a “scoping plan”
- Approved Dec. 2008
- Calls for Cap-and-Trade Program
 - links with other **Western Climate Initiative** partner programs
- <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>

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Cap-and-Trade Design Elements

- Rulemaking Information
- Market Operations and Oversight
- Caps, Allowances and Revenue Use
- Offsets
- Reporting
- Public Health and Environmental Justice

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Caps, Allowances and Revenue Use

- Economic and Allocation Advisory Committee (“EAAC”)
- EAAC’s March 2010 Recommendations
 - “Allocating Emission Allowances”
- Two Main Areas
 - Mechanisms for Allowance Distribution
 - Provisions for Allowance Value

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Mechanism for Allowance Distribution

- Extensive (if not exclusive) **auctioning**
- Use free allocation only to address **“emission leakage”**
- Sealed bid (single round) auction

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Provision of **Allowance Value**

- Preference for **free market pricing**, but:

Earmark for:

- Addressing **emission leakage**
- **Contingency fund** for impacted communities (increased exposure)
- Details unresolved (tax refunds / rebate checks, etc.)



June 22, 2010 Public Workshop

- Cost Containment and Offsets
- Public comments
- Final written comments submitted July 13, 2010



Allocation of Allowances

- CARB: leaning towards free allowances rather than pure auction
 - at least initially



Cost Containment “Collars”

- Hard: floor and ceiling price controls
- Soft: control supply of allowances
- CARB: initial preference for soft collar
 - less market distortion
- CARB leaning towards market floor



Offsets

- General guidelines
 - real
 - additional
 - verifiable
 - permanent reductions

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Offset Credits for Early Actions

- Feb. 2010 Final Policy Statement
- “work in progress”
- Limitations on offsets to meet obligations?
 - limit to 4% - 8% of facility’s GHG emissions?

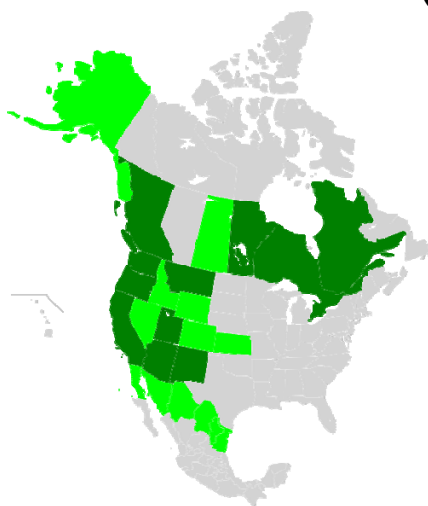
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Reporting & Verification

- Verifications due Oct. 1 and Dec. 1, 2010
- GHG Reporting Tools:
<http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-tool.htm>
- Accredited Verification Bodies:
http://www.arb.ca.gov/cc/reporting/ghg-ver/arb_vb.htm

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Western Climate Initiative (“WCI”)



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WCI Regional Cap-and-Trade program

- Reduce GHG emissions by 15% below 2005 levels by 2020
- Projected start – 2012
- <http://www.westernclimateinitiative.org/>

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WCI Objectives in 2010

- Develop allowance strategy for each WCI Partner jurisdiction
- Set budget for first compliance period (2012)
- Release final model trading rule

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Opposition to AB 32 (Prop. 23)

- Public Initiative - November 2010
 - job loss
 - increased costs
- Suspend Prop 32 until California unemployment below 5.5%
 - for four consecutive quarters
- Unemployment currently at 12% +
- <http://www.suspendab32.org/>



Stakeholders

- Oil and gas industry – Prop 23
- Manufacturing Sector – Prop 23
- Alternative energy / cleantech caveat
 - of note: PGE supports AB 32
- July Reuters Poll
 - 50% back cleantech approach
 - 38% believe net job loss



Looking Forward

- **Summer 2010** – Final proposed draft regulation will be available for public review
- **October 2010** – ARB considers the final draft of cap-and-trade regulation
- Finalize before November vote on Prop. 23?



Resources

- CARB Cap-and-Trade
 - <http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>
- Climate Change Calendar
 - <http://www.climatechange.ca.gov/calendar/events/index.php?year=2010&month=7&day=22>
- Western Climate Initiative Cap-and-Trade
 - <http://www.westernclimateinitiative.org/the-wci-cap-and-trade-program>



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Carbon Capture and Storage: Overview of Legal Issues

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Two stipulations for CCS discussion

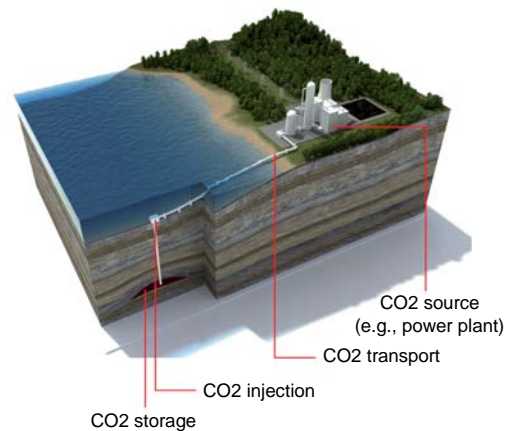
- Price on carbon
- Fossil fuel addiction



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Carbon Capture and Storage: What is it?

- CO2 Capture
- CO2 Transport
- CO2 Storage



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Carbon dioxide is captured

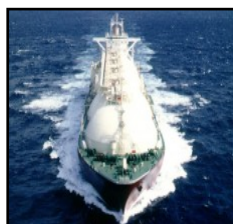
Three primary ways

1. Post-combustion
 - Separated from exhaust gases
2. Pre-combustion
 - Fuel is converted to mixture of hydrogen and CO₂. CO₂ is captured and hydrogen burned to generate electricity
3. Oxyfuel combustion
 - Fuel is burned in pure oxygen which results in flue gases consisting mainly of CO₂ and water, enabling CO₂ to be captured

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Carbon dioxide is transported

- CO₂ is then transported by pipeline or shipped for storage



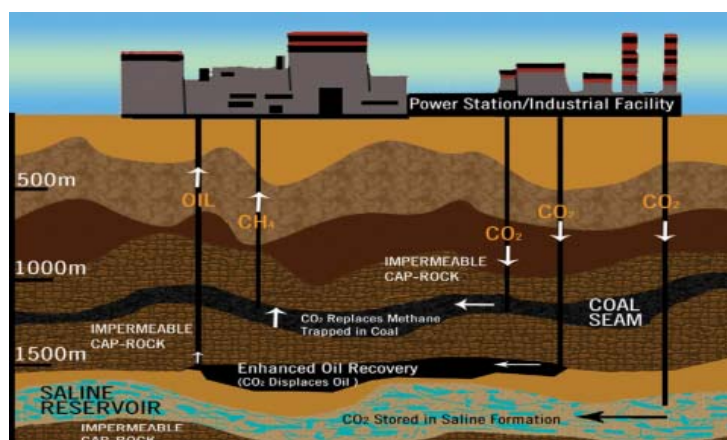
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Carbon dioxide is stored underground

- Stored in depleted gas and oil fields
- Stored in deep saline aquifer formations
- Injected into declining oil fields to increase amount of oil recovered – known as Enhanced Oil Recovery (EOR)

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CCS Storage



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The rationale for CCS

- Without CCS, cost of GHG stabilization by 2050 rises by 70% (IEA)
- CCS could provide 20% of total global GHG emission reductions by 2050 (IEA)
- CCS is a key low-carbon solution for gas/coal power, cement, and iron & steel sectors (IEA)

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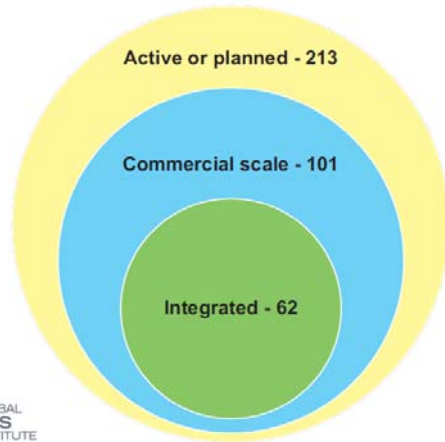
CCS is operational today...



Five large-scale CCS projects are operating today, none from power generation

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...with many more projects planned



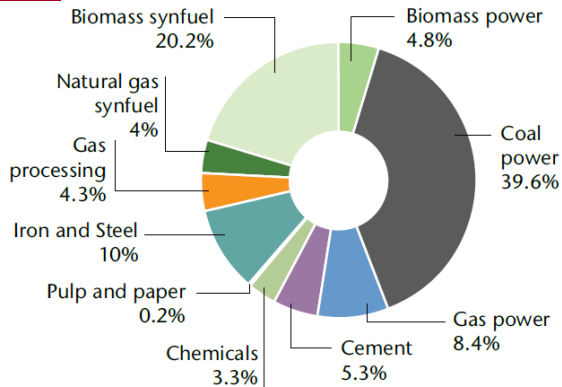
Over 100 commercial scale projects planned

Source:



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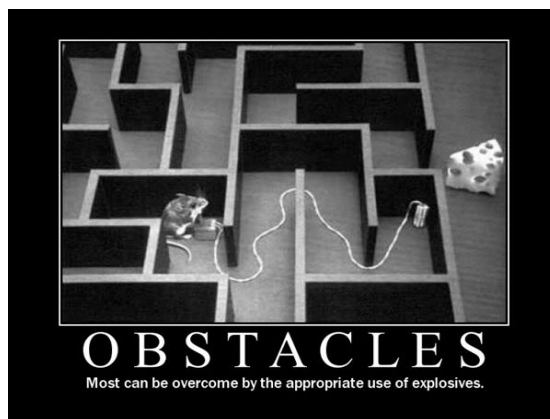
CCS is not just a “clean coal”



IEA: Coal power only makes up around 40% of stored emissions in 2050

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Obstacles to CCS



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Obstacles to CCS

- Lack of (proper) price on carbon or GHG emission performance standard
 - needed to spur technology, given large capital investment and higher operating costs
- Need for commercial scale CCS projects
- Risk (real or perceived) of harm
- Regulatory uncertainty

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Legal and regulatory issues

- Permitting of storage operations
- Liability for leakage
- Monitoring and verification
- Long-term liability
- Transportation of CO₂
- Health and safety
- Property rights
- Interaction with other laws
- Third party access
- Environmental impact assessment
- Transfer of responsibility

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CCS law and regulation today

- IPCC 2006 Inventory Guidelines
- London Protocol under Convention on Prevention of Marine Pollution
- National and Regional Legal & Regulatory Developments: Europe, Australia, US, Canada
 - EU: CCS Directive
 - US: EPA's Proposed Geologic Sequestration Rule
 - US: GHG Reporting Requirements for CO₂ Injection
 - States: Property Rights/Pore Space Ownership

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Creating a CCS legal regime

How to achieve a balance between:

- operators' concerns about liability risk endlessly into the future
- need to secure high level of risk management & environmental protection and public confidence in the safety of CCS

Options not unlimited

- large, complex body of liability law already exists
- need to avoid undermining other regimes
- need to get regulatory framework up and running fast

Solution so far:

- adapt existing liability/clean-up rules for comparable facilities
- special arrangements for long-term, post-closure risks

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Keep in mind

- The time frame
 - in 20-30 years, possibility of major changes
 - in 50 or 100 years, hard to guarantee anything
- Future changes
 - definitions of harm, damage, impairment
 - improved detection techniques & wider changes in scientific understanding
 - priorities change, public opinion forces a re-think
- Our addiction to fossil fuels

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What next?

- Continued federal funding of CCS technology
- US Task Force on CCS
- California CCS Review Panel
- Federal climate change law
- International developments



Questions?

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Offset Projects In The United States; Criteria And Lessons Learned From The CDM And Other Offset Programs

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Existing Emission Trading Schemes

- There are many versions of GHG cap and trade programs in place or being developed throughout the world. They include programs supported by international bodies such as the European Union Greenhouse Gas Emission Trading System (EU ETS), and, in the United States, by the Regional Greenhouse Gas Reduction Accord (RGGI) and the Western Climate Initiative (WCI).
- In addition, private GHG markets which are facilitated by GHG registries, such as the Chicago Climate Exchange, Canada's Blue Registry, the California Climate Action Registry and the Asian Carbon Registry, provide a platform from which emission reductions credits or offsets from specific projects can be traded.

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EXISTING EMISSION TRADING SCHEMES (Continued....)

- Various pieces of legislation being considered in the United States Congress incorporate versions of “Cap and Trade” programs. They include the American Clean Energy and Security Act, HR 254, passed by the House of Representatives in June of 2009. The American Power Act, sponsored by Senators Kerry and Lieberman and the Carbon Limits and Energy for America’s Renewal Act, sponsored by Senators Cantwell and Collins.
- “Cap and Trade” is itself a concept that traces itself back to proposals in the 1970’s by Senators Tim Wirth and John Heinz. It is the basis for removing SO₂ from the atmosphere to prevent acid rain and is part of the rule to reduce interstate transport of fine particulate matter.²

² This rule is about to be replaced by a Transport Rule recently proposed by EPA.



Carbon Offset Programs

- All of the existing Green House Gas reduction programs include provisions for generation of GHG emission reduction credits which can be created by public or private interests and then marketed. For example, the Kyoto Protocol has two types of projects which can be used to create offsets emission reduction projects. One is the Joint Implementation Project created under Article 6 of the Kyoto Protocol and the other is the Clean Development Mechanism (CDM) created under Article 12 of the Kyoto Protocol. CDM projects must be done in undeveloped countries and the credits they generate can be used by purchasers in industrial nations to meet their carbon caps. A Canadian Solid Waste Commission recently completed a Joint Implementation Project involving methane capture from a landfill which will allow it to sell carbon credits that are listed on the Blue Registry. Internet:
<http://dailygleaner.canadaeast.com/front/article/1080596>.



CARBON OFFSET PROGRAMS (Continued...)

- In general, carbon offset programs are viewed as providing an economic incentive for achieving carbon reductions because they allow for the creation of credits which are cheaper than buying program allowances/credits or making reductions in the facilities which must hold the credits to continue to operate.
- RGGI includes a provision for generating allowances outside of the capped electric power generation sector, which is the focus of that cap and trade program. Offset projects in the RGGI program are currently limited to five project categories: (1) landfill methane capture and destruction; (2) reduction in emissions of sulfur hexafluoride (SF₆) from electricity transmission and distribution; (3) sequestration of carbon due to afforestation; (4) reduction or avoidance of CO₂ emissions from natural gas, oil or propane end use combustion due to end use energy efficiency in the building sector; and, (5) avoided methane emissions from agricultural manure management operations.



Core Attributes Of Carbon Offsets

- The creation of offsets through carbon reduction projects have a number of things in common. One of their features is that they provide a degree of flexibility that reduces the cost of reducing carbon emissions to the purchaser.
- Voluntary Emission Reductions have a similar flexibility feature in that they allow the purchaser to establish carbon neutrality without taking any specific action other than purchasing the credits.
- Common core attributes of a GHG emission offsets are that they be real, additional, verifiable, permanent and enforceable.



Carbon Offsets Must Be “Real”

- For a GHG offset credit to be real, it must represent an actual reduction or removal (e.g., carbon sequestration) of a GHG that results from an identified emissions reduction activity.
- In order to make sure an offset is real there must be a baseline using accurate quantification methodologies. It must appropriately account for all relevant GHG sources and sinks and identified project leakage.¹
- Registering the offsets on a transparent registry insures that offsets are awarded only once for the project.

1. Leakage occurs when GHG emissions change outside the project boundary due to implementation of the project, e.g., shifting of emitting activities to other facilities or market forces.



Carbon Offsets Must Be “Additional”

- A GHG emission reduction or removal project is considered “additional” if the offset project would not have occurred in the absence of the offset program. This means that emissions reductions or sequestrations achieved by an offset project must result in a lower level of GHG emissions than would have occurred in the absence of the offset project.
- Because awarded offsets allow a source to emit more than it otherwise would have been able to, the underlying offset project only provides a true emission reduction benefit if the project would not have occurred absent the offset program.



CARBON OFFSETS MUST BE “ADDITIONAL” (Continued...)

- **Additionality is much easier to evaluate if a project is being implemented in response to economic incentives provided through a cap and trade offset program.**
- The offset project must be shown to exceed a business-as-usual baseline scenario. This can be done by evaluating an offset project in comparison to a business-as-usual baseline scenario that represents expected activity that would have occurred in the absence of the project.
- Projects which save a developer money or generate revenue even without offset credits are not “additional.” However, if base revenue is not sufficient to drive project development without the GHG offsets, the project can be considered “additional.”
- A project is not “additional” if it is required by law, regulation or administrative or judicial order.

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Carbon Offsets Must Be “Verifiable”

- Verification of project eligibility as well as the amount of the emission reduction or removals are necessary in order to award offset credits or for the offsets to be accepted as a voluntary emission reduction on a registry.
- Emission reductions or sequestration achieved through an offset project typically accrue over a multi-year period of time, which requires ongoing monitoring.
- This requires that a given project’s emission reductions must be well documented and sufficiently transparent so that an objective *ex post facto* review by a qualified verifier can be conducted.
- Persons doing the verification should be independent of the developer and not have an interest in the credits.

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Carbon Offsets Must Be “Permanent”

- Offsets are considered permanent if they are not reversible or, if reductions or removals are reversible, there are legal requirements in place to insure the permanence of the reductions or removals.
- When the offset is part of an ongoing cap and trade program, emissions reduced from a regulated source during a specified period are permanent by default, since the absence of emissions during the past compliance period cannot be reversed.
- For some projects insuring permanence is straight forward. For example, methane destroyed through oxidation cannot reform into methane. However, for others there may be a risk of reversal. For example, sequestration of GHG through biological means inherently bears a risk of reversal as a result of fire, natural causes or decay. These projects must be backstopped to account for any reversals so they are truly permanent.

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Carbon Offsets Must Be “Enforceable”

- To ensure that offsets are enforceable the party submitting the offset project must be subject to the jurisdiction of the regulatory authority running the cap and trade program or must voluntarily submit itself to that authority's jurisdiction.
- Enforceability in a voluntary market requires contractual liability for a failure of an offset to be real, additional and permanent.

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The Lessons To Be Learned From CDM Projects

- Project documentation should be transparent and understandable and readily accessible.
 - No double counting
 - Careful documentation of ownership
- Independent Verification
 - Should be conducted by an independent agency with no financial interest in the project or the offsets.
 - Verifiers should have proper qualifications to provide verification services.
- Project by project evaluation of additionality requires a project specific assessment because it involves selection by the project proponent of a project specific business-as-usual scenario and other assumptions for threshold investment decision criteria such as a project's benchmark internal rate of return or net present value which are difficult and time consuming to analyze.

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The Lessons to be Learned From CDM Projects (continued....)

- The benefits of cap and trade programs which specify qualifying projects include reduced financial risk for project developers, a reduction in market uncertainty and a more streamlined regulatory review process.
- CDM specifies additionality requirements for categories or types of projects. The overall goal is to provide reasonable assurance that the offset project would not have been implemented in the absence of the program.
- RGGI identifies specific projects which can be used to create offsets and thus avoid the additionality requirement.

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The Lessons to be Learned From CDM Projects (continued....)

- Care must be taken that estimates of the offsets at the beginning of a project can be credibly validated. Failure to do so could jeopardize project financing.
 - CDM history suggests that depending on the nature of the projects, estimates can be off by as much as sixty percent.
- Unanswered questions; Who is liable if credits are overstated or spurious? What if credits are revoked?
- Trading offsets before they are validated may be done to secure project financing but it also creates a risk which must be allocated.

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