California Environmental Protection Agency

Air Resources Board

Proposed Regulation to Implement the California Cap-and-Trade Program

Volume II

Appendix D

Release Date: October 28, 2010

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State of California

California Environmental Protection Agency
AIR RESOURCES BOARD
Office of Climate Change

STAFF REPORT: INITIAL STATEMENT OF REASONS PROPOSED REGULATION TO IMPLEMENT THE CALIFORNIA CAP-AND-TRADE PROGRAM

Volume II
Appendix D

Public Hearing to Consider the Proposed Regulation to Implement the California Cap-and-Trade Program

Date of Release: October 28, 2010
Scheduled for Consideration: December 16, 2010

Location:

California Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

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APPENDIX D.
CAP-AND-TRADE PROGRAM
DESIGN DEVELOPMENT PROCESS

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Appendix D

Cap-and-Trade Program Design Development Process

This appendix contains workshop materials made public by ARB staff for the development of a cap-and-trade program. Staff held approximately 40 public workshops beginning in February 2008, on the design and implementation of a cap and trade program. Over time staff developed and presented its most updated thinking on various program design elements of cap-and-trade and allowed for informal comments to be submitted by the public and stakeholders. This appendix serves as the public record of the cap-and-trade rulemaking process.

Summary of Cap-and-Trade Program Design Development

The Global Warming Solutions Act of 2006 (AB 32), requires the California Air Resources Board to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions. Throughout the cap-and-trade regulatory development process ARB has continued to be committed to developing a program that integrates open public participation and stakeholder input. ARB recognizes the value in soliciting stakeholder input from the early stages of cap-and-trade program development and design, which is why an extensive public process has been initiated on various elements of a California cap-and-trade program since February 2008. Stakeholder consultation and public involvement has played an integral role in ARB's decision-making process.

Staff developed the regulatory proposal for the California cap-and-trade program with significant and substantial public input. The public process for the cap-and-trade program began in 2008 through the development of the Scoping Plan. During that time, staff discussed the general program framework through numerous workshops and public consultations. The final Board-adopted Scoping Plan included the cap-and-trade program as a key element.

Building on the Scoping Plan structure for cap-and-trade, staff held more than 30 public workshops throughout 2009 and 2010. Staff used these workshops for discussing and developing the overall options for the program design. Stakeholders discussed and shared ideas on the appropriate design of the program. Staff received and reviewed hundreds of public comments from stakeholders as part of the workshop process. Staff also gave numerous updates to the Board and met regularly with individual stakeholders to discuss their individual concerns and recommendations. As part of the regional effort, staff also participated in the WCI public process.

Staff has also maintained a non-regulatory ARB Public Meetings Webpage, where staff has made available all workshop materials and comments posted by stakeholders on program options:
http://www.arb.ca.gov/cc/capandtrade/meetings/meetings.htm#publicmeetings.

The specific objectives of the ARB cap-and-trade stakeholder process are to:

1. Provide a forum for early input and a mechanism for informing the stakeholders and the general public of ARB's current staff thinking on various program design elements of cap-and-trade;

2. Maintain an ongoing dialogue between ARB staff and stakeholders; and

3. Establish opportunities and encourage the public and stakeholders to submit informal comments to ARB staff.

Scope of Coverage and Point of Regulation for a Potential Greenhouse Gas Cap-and-Trade Program

Josh Bushinsky
Pew Center on Global Climate Change

1

Outline

- Definitions
- Scope
- Point of Regulation
- Other considerations

2

Scope of Coverage

- What GHG emissions are included in the cap and trade program?
  - What greenhouse gases?
  - What sectors?
  - What facilities? What types and thresholds?
  - What fuels?
  - Combustion emissions included? Process-related emissions?
  - Embodied emissions?

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Point of Regulation

- Who has the obligation to surrender allowances to match emissions?
  - Upstream (where GHGs enter the economy, or close)
  - Downstream (where GHGs are emitted into the atmosphere)
  - Midstream (e.g. local distribution companies)
  - Other (e.g. vehicle manufacturers)
  - Hybrid (cover large sources downstream, address the rest of the economy at a different point of regulation or through other policy tools)

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Criteria

- **Integrity of emissions data**
  - Availability of data before setting baseline key consideration
  - Ability to measure, monitor & report emissions data at the point of regulation
- **AB 32 requirements**
  - Consider direct, indirect, cumulative and localized impacts
  - Prevent increase in toxic or criteria air pollutants
  - Maximize additional economic and environmental benefits for California

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Criteria

- **Breadth of coverage**
  - Greater coverage increases availability of low-cost reductions
- **Number of covered sources**
  - Too large a number administratively complex
  - Too small a number threatens viability of emissions commodities market
- **Acceptable risk of leakage**
- **Interaction with existing and proposed policies**
  - Policies may be complimentary or may interfere

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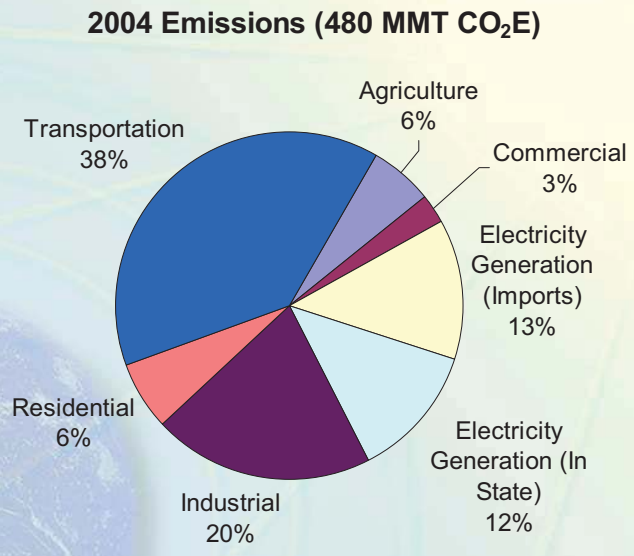
GHG Emissions Sources in California



Electricity

- CPUC/CEC Joint Proceeding Proposed Decision
  - Include electricity as part of a multi-sector cap-and-trade program.
  - Exclude residential and commercial natural gas.
  - First deliverer approach to point of regulation.

Large Industrial Point Sources

- Good candidates for inclusion in a market system
  - Significant amount of emissions from relatively few sources.
  - Accurate emissions monitoring methods for these facilities.
- How should imports be treated?
  - Deliver approach for all goods is conceivable but highly complex administratively, but may be workable for some goods.

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Transportation Fuels

- ARB recognizes the importance of achieving reductions from this sector
  - What are the appropriate ways to achieve these reductions
- More than one tool will be necessary
- Existing programs:
  - Low Carbon Fuel Standard
  - Pavley Tailpipe Standards

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Transportation Fuels

- Part of a cap-and-trade?
- Reductions depend in part on elasticity of demand for transportation fuels
- How would this affect the transition to low carbon electricity-based vehicles?

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Agriculture and Forestry

- Many, many sources
- Often difficult to measure emissions, administer compliance
- Thus may not be appropriate for inclusion in a cap-and-trade program
- Potential offset opportunities
- Initial forestry sequestration protocol, which was adopted by CARB in 2007, applies to a portion of California's forest lands, provide potential approach

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Point of Regulation: What are "Upstream" and "Downstream"?

- Refers to position of greenhouse gases as they move through the economy from production or introduction into commerce, to emission into the atmosphere

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Point of Regulation: What are "Upstream" and "Downstream"?

- Downstream:
  - at the point of emission
- Upstream:
  - at choke points toward the upstream end of the spectrum (refiners, importers, natural gas processors, coal prep plants)
  - Most fuels move through these facilities
  - Generally not all the way upstream

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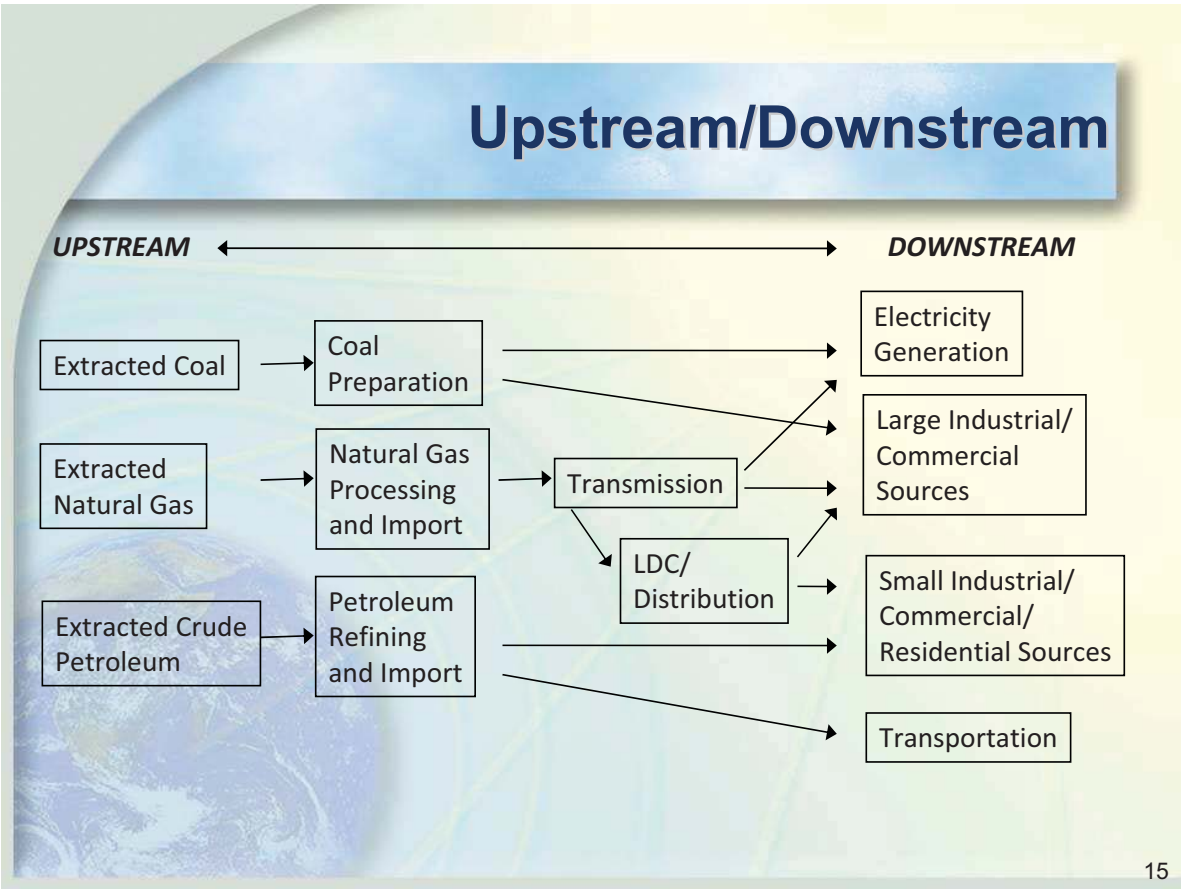
Upstream/Downstream
UPSTREAM
DOWNSTREAM
Extracted Coal
Coal Preparation
Extracted Natural Gas
Natural Gas Processing and Import
Transmission
LDC/ Distribution
Extracted Crude Petroleum
Petroleum Refining and Import
Electricity Generation
Large Industrial/ Commercial Sources
Small Industrial/ Commercial/ Residential Sources
Transportation
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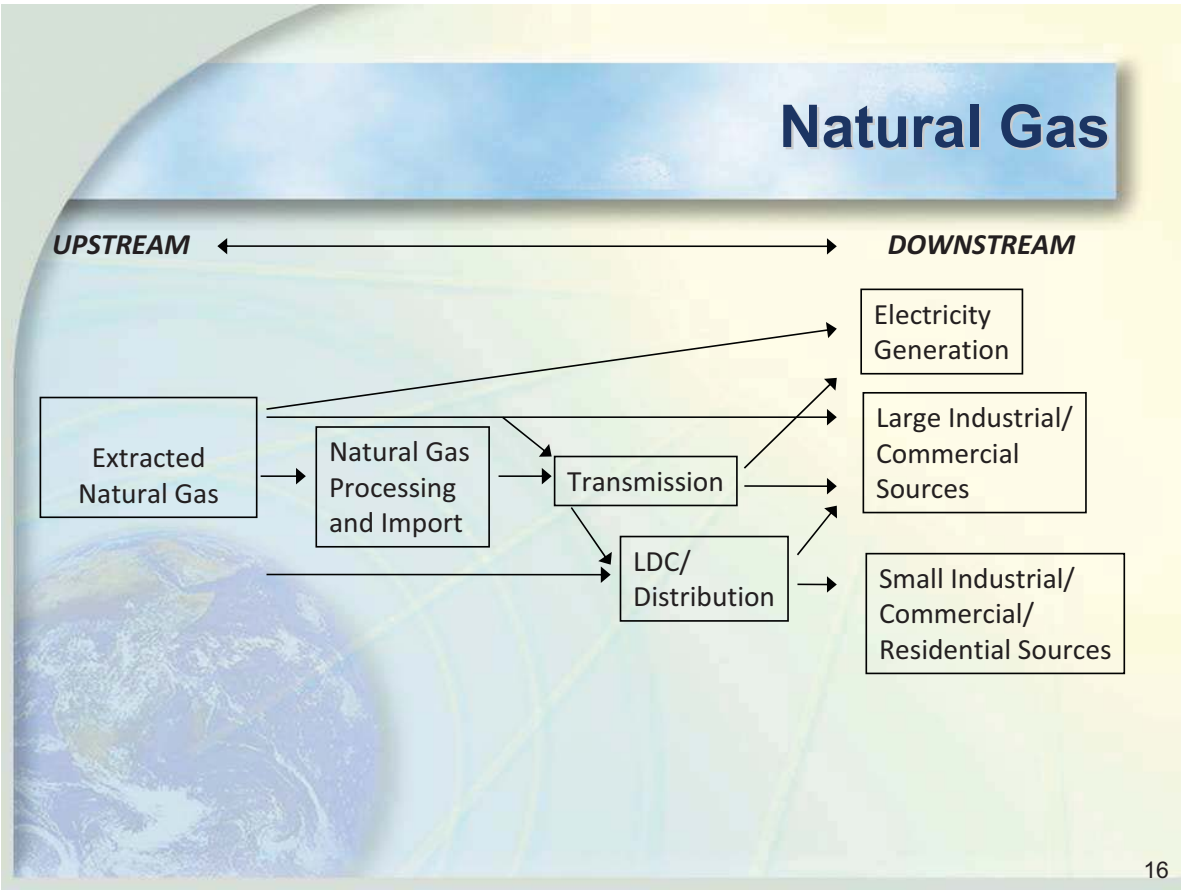
Natural Gas
UPSTREAM
DOWNSTREAM
Extracted Natural Gas
Natural Gas Processing and Import
Transmission
LDC/ Distribution
Electricity Generation
Large Industrial/ Commercial Sources
Small Industrial/ Commercial/ Residential Sources
16

Why Upstream?

- Most comprehensive coverage at the smallest number of facilities
  - Greater coverage leads to lower costs
- Possibility of lower administrative costs
- View that response to price signal independent of point of regulation

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Why Downstream?

- View that point of regulation does affect behavior; that emitters generally have more compliance options than fuel providers; and that it's appropriate for regulated entities to be the ones with options
- Most real-world experience is with downstream (acid rain, eastern NO_x program, EU ETS); or upstream where substitutes are available (lead in gasoline)

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Why Downstream?

- Facility-level data availability (already reported for electric power plants; protocols and data collection easily expandable to other large stationary combustors)
- Automatically rewards CO_2 emissions-reducing technologies (CCS, etc.); not just technologies that reduce fuel C content

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Additional Considerations

- Is there an in-state entity able to legally and effectively cover emissions?
- An upstream system at regional level requires covering imports into the region
- For electricity a key issue is how to deal with imports

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Additional Considerations

- Thresholds
  - What size emissions source?
  - Implications for administrative costs and coverage
- Phasing
  - Could additional sectors or sources be included over time?
  - Under what conditions?

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Western Climate Initiative Scope

- WCI is releasing draft recommendations on scope and the electricity sector next week
- WCI recommendations are being informed by ARB staff work
- Coordination efforts are ongoing

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Questions?

CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

March 17, 2008
1:30 p.m. - 5:00 p.m.

Coastal Hearing Room
2nd floor of the California Environmental Protection Agency (CalEPA)
Headquarters Building
1001 "I" Street, Sacramento, California

Note: The Coastal Hearing Room at CalEPA Headquarters has limited seating. The meeting will be webcast (http://www.calepa.ca.gov/broadcast/) and open to real-time questions via e-mail (ccplan@arb.ca.gov).

AGENDA

A. Opening Remarks

B. Air Resources Board (ARB) Staff Presentation: "Allocation of Allowances in a Potential Greenhouse Gas Cap-and-Trade Program"

C. Round-Table Discussion on Allocation

If a cap and trade program is implemented:

1. What method should we use to distribute the allowances?
2. How should allowance value be used? And, if the allowance value should be used to ease the costs of regulation for entities, who should receive them and how many allowances should each entity receive?
3. How should allowances be distributed to new entities and how should entities that cease operating in California be treated?
4. How should the methods of distributing allowances in a cap-and-trade program change in future years?

This is the third in an ongoing series of program design technical stakeholder meetings. These meetings are being conducted to provide interested stakeholders the opportunity to provide specific technical input concerning various elements of the program design that may become part of the Assembly Bill (AB) 32 Scoping Plan. The attached white paper is also intended to provide background on the allocation issues that will be discussed, along with a summary of recommendations on this topic from the California Public Utilities Commission/California Energy Commission Joint Proceeding, the Market Advisory Committee, the Economic and Technology Advancement Advisory Committee, and precedents from other greenhouse gas emissions cap-and-trade programs.

Thank you for participating in this public dialog. ARB welcomes varying and diverse points of view from interested stakeholders, on a variety of AB 32 subjects and scenarios.

CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

Schedule of AB 32 Economic Analysis and Program Design Stakeholder Technical Work Group Meetings

(Schedule is subject to change; when updates occur, a revised schedule will be posted at http://www.arb.ca.gov/cc/scopingplan/meetings/meetingstechstake.htm)

Group	Meeting Topic	Time	Location
Economic Analysis	Inputs and Assumptions for Core Measures and Policy Scenarios	March 17 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	Allocation of Allowances	March 17 1:30 p.m. – 5 p.m.	Coastal Hearing Room
Program Design	Offsets	April 4 9 a.m. – 12:30 p.m.	Sierra Hearing Room
Economic Analysis	How Offsets are Modeled	April 4 1:30 p.m. – 5:00 p.m.	Sierra Hearing Room
Scenarios Workshop	**Results of First Modeling Phase**	**April 17**	**Byron Sher Auditorium**
Economic Analysis	Non-economic Analysis	April 25 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	Cost Containment	April 25 1:30 p.m. – 5 p.m.	Coastal Hearing Room
Economic Analysis	Cost Effectiveness	May 5 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	Enforcement	May 5 1:30 p.m. – 5:00 p.m.	Coastal Hearing Room
Economic Analysis	TBD	June 16 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	TBD	June 16 1:30 p.m. – 5 p.m.	Coastal Hearing Room

CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

FRAMEWORK FOR DISCUSSION

Overview

The March 17, 2008, program design technical stakeholder meeting is designed to provide interested stakeholders the opportunity to provide specific technical input concerning various elements of the program design that may become part of the Assembly Bill (AB) 32 Scoping Plan. This meeting will focus on issues related to the distribution of allowances within a cap-and-trade system. ARB has structured this meeting around four questions related to allocation within a cap-and-trade program.

This meeting is part of ARB's effort to understand how to best design a cap-and-trade system for possible inclusion in the AB 32 Scoping Plan. AB 32 includes specific criteria that ARB must consider before using market-based measures to implement AB 32, and ARB will evaluate a possible cap-and-trade system against those criteria before deciding whether to include such a system in the Scoping Plan.

To establish a basic framework for our discussion today, here are basic definitions for "allowance" and "allocation" within a cap-and-trade program:

Allowance

In a cap-and-trade program an "allowance" is a permit to emit a certain amount of pollution; typically in a greenhouse gas (GHG) context this would be equal to one ton of carbon dioxide (CO_2). The number of allowances issued within a cap-and-trade program equals the total permitted level of emissions and is referred to as the "cap."

Allocation

"Allocation" is how the government or program representative distributes the allowances. Each allowance has a value, which depends on the supply of allowances and the demand to emit pollution. In order to achieve emission reductions, the number of allowances issued is reduced over time. These allowances can be distributed by various methods including: auctioning, benchmarking, and grandfathering.

In the stakeholder meeting on March 17, 2008, ARB staff will show a PowerPoint presentation titled: "Allocation of Allowances in a Potential Greenhouse Cap-and-Trade Program," and facilitate a group discussion on four questions regarding how the allowances and their value are distributed in a potential cap-and-trade design:

1. What method should we use to distribute the allowances?
2. How should allowance value be used? And, if the allowance value should be used to ease the costs of regulation for entities, who should receive them and how many allowances should each entity receive?
3. How should allowances be distributed to new entities and how should entities that cease operating in California be treated?
4. How should the methods of distributing allowances in a cap-and-trade program change in future years?

KEY QUESTIONS FOR DISCUSSION

1. How should the allowances be distributed?

- **Allowances can be sold, given away for free, or some mix.** When allowances are given away ("freely allocated"), the allowance value is transferred to the recipient of the allowance. If the State sells allowances, using an auction is usually thought to be the fairest and most transparent way. When allowances are auctioned, the allowances are distributed to the winning bidders. The value of the allowances is represented by the money paid to the State, which would then have the opportunity to use the revenue for public benefit.
- **Using free allocation or auction will have very little impact on the market price for allowances.** The market price in both cases will be close to the "marginal abatement cost." This assumes that the cheapest reductions will be made first, followed by the next-cheapest, until all the necessary reductions have been made. Over time, as the number of available allowances diminishes, the price of each allowance may increase. If an entity can make less-expensive reductions without purchasing or selling an allowance it will. If an entity's internal reduction opportunities are more expensive, it will purchase allowances from the market rather than reduce its emissions.
- **Entities have the same incentive to reduce their emissions whether allowances are freely allocated or auctioned.** The economic trade-offs between making reductions and holding more allowances will be the same in either case. The decision to make a reduction and sell a freely allocated allowance has the same economic benefit as the decision to make the same reduction to avoid the cost of purchasing an allowance at auction.
- **The direct cost to an entity is different under free allocation or auction systems.** Under a free allocation system, an entity would need to pay either for reductions to make its emissions match its allocation, or for allowances to make up the difference. Under an auction system, the same entity needs to pay for every ton emitted. Take the example of a company that is emitting 100 tons placed in a cap-and-trade system designed to reduce emissions 10 percent. For simplicity, let us assume that allowances cost $10/ton and this company cannot make emission reductions for less than $20/ton. In a simple free allocation system, this company would receive 90 allowances and would buy an additional 10 on the market at a cost of $100. The same company in an auction system would have to pay for an allowance for all 100 tons emitted and would have to pay $1,000. The economic trade-offs faced by the company, between buying allowances or making reductions, are the same in either case, but the direct cost to the company are very different. If auction revenue were used to soften this difference, for example by providing incentives or subsidies for investments in emission reductions, this difference could be reduced. In addition to the simple difference in costs, the cost of capital may be higher if an entity has to purchase all of its allowances.

- **The environmental benefit of the emissions cap is not diminished by either free allocation or auction.** However, allowance value can be used to achieve emissions reductions outside the cap-and-trade program, increasing the total environmental benefit. Auction revenues can be used in a variety of ways, as discussed further below.
- **Distributing allowances by free allocation or auction could potentially influence trading in the market.**
  - One concern is that free allocation of all allowances may reduce trading. Especially early in the program, entities might hold on to allowances they could sell to reduce the risk of having to repurchase them at a higher price if circumstances change.
  - Auctioning allowances could more rapidly establish a "liquid" allowance market in which allowances can readily be bought and sold without large changes to the market price for them. However, auctioning could also reduce trading. If auctions were very frequent they might satisfy the needs of allowance buyers without use of a "secondary" market.
  - Some stakeholders have expressed concern that auctioning will increase market volatility. This has not been the experience of the Acid Rain Program, which has held auctions since 1994. Auction prices have largely tracked closely with spot market prices[1].
  - Commenters to the Western Climate Initiative (WCI) process have also expressed concern that auctions may lead to market manipulation and scarcity of allowances, especially if entities that do not have to surrender allowances for emissions are allowed to participate. If there is a liquid market for allowances, entities will have the choice of purchasing allowances from the spot market or an auction. The price of allowances purchased at auction, or from the market at the time of an auction, is expected to be similar.
  - "Third parties" that are not required to surrender allowances may increase liquidity by being ready sellers or buyers. They may also help entities manage risk, and help smaller regulated entities by acting as brokers.
  - Susceptibility to manipulation is not an inherent feature of auctions, though the potential exists for some market designs. If ARB were to implement an auction it would carefully evaluate design options to avoid susceptibility to manipulation. This concern is also related to market design issues of scope and point of regulation.
  - The Regional Greenhouse Gas Initiative (RGGI) states commissioned a report on auction design[1]. Though ARB does not endorse the report or its findings, many issues of auction design, including the concerns above, are examined in detail.

[1] Charles Holt, William Shobe, Dallas Burtraw, Karen Palmer, and Jacob Goeree, "Auction Design for Selling CO_2 Emission Allowances Under the Regional Greenhouse Gas Initiative," Final Report, October 2007. http://www.coopercenter.org/econ/rggi_final_report.pdf

- **Auctioning may improve "price discovery," that is, a clear signal to market participants of the value of an allowance.** This may be especially valuable if an auction is held prior to the opening of a market for trading, potentially reducing early volatility and uncertainty.
- **Auctioning provides an inherent recognition of early actions through the avoided cost of purchasing fewer allowances.**

2. How should allowance value be used? And, if the allowance value should be used to ease the costs of regulation for entities, who should receive them and how many allowances should each entity receive?

Allowance value can be used in many ways, including use for the public benefit or to ease the cost of regulation. These are just two general categories among many options. For some particular uses it may be easier to transfer the allocation value through free allocation. For other uses it may be easier to auction the allowances and transfer the allowance revenue.

Below are some uses for the public benefit from funds generated from allowances:

- **Reducing costs.** Funding energy efficiency, as well as research, development, and deployment of low-emission technologies, could lower overall costs to consumers and companies. Allowance value could be used to fund programs directly, or create financial incentives for others.

- **Achieving environmental co-benefits.** Criteria and toxic air pollutants create health risks and some communities bear a disproportionate burden from air pollution. Reductions in air pollution would be a public benefit that could come from allowance value.

- **Adapting to climate change.** Climate change will impact natural and human environments. Forecasts of impacts on California include disruptions to water supplies and ecosystems. Allowance value could be used to help the state adapt to the effects of climate change.

- **Assisting workers' transition.** Regulating greenhouse gas emissions will probably stimulate economic growth in some sectors and may slow growth in others. Worker training programs funded with allowance value can help Californians shift jobs if necessary.

- **Administration of a greenhouse gas program.** Allowance value could be used to fund state efforts to implement AB 32.

Funds generated from allowances could also be used to help entities or consumers reduce their carbon emissions, or to compensate entities for potential losses in anticipated profits or asset value. This raises many questions about who should be eligible to receive allowance value and how much each entity should receive.

- **The costs of regulation will be spread unevenly across entities and consumers.** Some regulated entities would be able to fully pass the cost of allowances on to consumers. They would suffer little economic harm regardless of the allocation method.
- **In sectors where costs could not be passed on, entities may expect losses of anticipated profits or asset values.** Profit margins may decrease if allowances become an additional cost. Capital assets or facilities with high greenhouse gas emissions may decrease in value if there is reduced demand for them.
- **In sectors where costs would be passed on, free allocation of allowances to entities would create windfall profits.** In one often-cited example, British electrical power generators simultaneously received free allocations of allowances in the European Union Emission Trading Scheme's (EU ETS) greenhouse gas cap-and-trade program and raised rates. Studies have suggested that collectively they received a windfall of over $1.5 billion per year[2].
- **When costs can be passed on to consumers, consumers bear the cost of regulation.**
- **In some cases, reducing the cost of compliance by giving allowance value to entities may reduce leakage potential**. "Leakage" refers to a decrease in California production while production and emissions elsewhere increase. The result would be a reduction in economic activity and jobs in California with no net environmental benefit. The potential for leakage is higher in some sectors than others.

If allowance value were used to reduce the costs of compliance, a number of methods can be used to determine how the value should be distributed. "Benchmarking" means distributing value in proportion to product output or fuel input. For example, an entity might receive some value per ton of product or megawatt hours (MWH) of electricity generation[3]. "Grandfathering" refers to distributing allowance value in proportion to an entity's historical emissions. "Economic burden reduction" would attempt to

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[2] IPA Energy Consulting, "Implications of the EU Emissions Trading Scheme for the UK Power Generation Sector," November, 2005. http://www.ipaenergy.co.uk/downloads&publications/FINAL%20Report%201867%2011-11-05.pdf

[3] A revenue-neutral auction is one application of the principle of benchmarking. One example of such a system is Sweden's NO_x (oxides of nitrogen) program. Each year, power plants are required to purchase NO_x allowances equal to their emissions. The revenue from the allowances is returned to the power plants in proportion to their energy output. Plants that are more efficient than the average (using NOx emissions as the standard) receive a net gain, and those less efficient than the average pay a net penalty. This provides an incentive for every plant to be as efficient as possible. (Christer Ågren, "Emissions Charge Works Well," Acid News, June, 2000. http://www.acidrain.org/pages/publications/acidnews/2000/AN2-00.pdf)

compensate entities that can not pass costs through to customers, in proportion to losses of anticipated profits and asset values.

- **Benchmarking gives the most value to the most-efficient entities.** It rewards early actions to reduce emissions. Benchmarks may be based on an industry average or best performance, and may be made as specific as desired to incorporate differences in technologies, fuels, and products. They may be updated or remain constant. The more specific benchmarks are made, the higher the administrative and regulatory costs of developing and implementing them will be.
- **Grandfathering gives the most value to the highest emitters.** The highest emitters may require the largest efforts to transition to a cap-and-trade program. However, grandfathering may create or imply a disincentive for early action. The historical basis for grandfathering may be a single year, the average of several years, or a rolling average.
- **Economic burden reduction may be difficult to administer.** In a plenary form it could require predictions of the economic burden to each entity. Those predictions would probably have to incorporate historical emissions data, process information, and data and models of how costs would be passed through to consumers. That information could be unevenly available for different entities and sectors.
- **Different methods could be used for different sectors.** The methods can also be combined, e.g., by compensating entities within a particular sector for their economic burden through grandfathering or benchmarking.
- **Early action could be rewarded with allowance value.** Entities that have demonstrated reductions prior to the initiation of the cap-and-trade program could be eligible for allowance value. This would incentivize early reductions, which would have an environmental benefit of lower cumulative emissions.
- **Rebates, tax reductions, or utility rate relief may help reduce the costs borne by consumers.** Reductions of distortionary taxes such as income taxes may significantly reduce the overall costs to the economy of the cap-and-trade program[4].

3. How should allowances be distributed to new entities and how should entities that cease operating in California be treated?

Entities that are new participants in a cap-and-trade program, including new or expanded facilities, must be able to obtain allowances to meet their regulatory requirements. Even if all allowances are freely allocated, if there is a liquid market, allowances will be available to all participants. If there are concerns that entities will withhold allowances from the market in order to create a competitive disadvantage for

[4] E.g., Lawrence H. Goulder, "Mitigating the Adverse Impacts of CO2 Abatement Policies on Energy Intensive Industries," Resources for the Future Discussion Paper 02-22, March, 2002. http://www.rff.org/documents/RFF-DP-02-22.pdf

new entrants, some portion of the allowances to be allocated may be set aside for new entrants. The likelihood of this behavior also depends on design choices on scope and point of regulation. If a significant portion of allowances is auctioned, new entrants will have fair access to allowances.

If any allowances are allocated for free to entities, there could be a perverse incentive for the entities to stop their California operations to sell free allowances on the market. Consideration must be given to negating this incentive. If allowances are fully auctioned, this incentive does not exist.

4. How should the methods of distributing allowances in a cap-and-trade program change in future years?

Auction and free allocation can be used in combination, as can different methods of allocation. How allowances and allowance value are distributed can change through time.

- At some time entities may be determined to have been fully compensated for anticipated losses in profit or investment value.
- A cap-and-trade program could begin with mostly free allocations and transition to a mix of free allocations and auctions, and over time to a full auction program.
- Administrative challenges to auction or allocation may change with experience and data collection.
- New competitive pressures may increase the potential for leakage in some sectors.
- Benchmarks or historical emissions baselines may be updated.

SUMMARY OF EXTERNAL ARB RECOMMENDATIONS AND PRECEDENTS

Recommendations to the California Air Resources Board (ARB):
California Public Utilities Commission (CPUC)/California Energy Commission (CEC) Joint Proceeding (Note: this summary is based on the proposed decision published on February 8, 2008, and has not been updated to reflect changes made in the decision adopted by the two Commissions on March 12 and 13, 2008.)

The CPUC and CEC are engaged in a joint proceeding to make recommendations to ARB on policies to reduce greenhouse gas emissions from the electricity and natural gas sectors. On February 8, 2008, they released a proposed decision recommending that the electric sector be part of a multi-sector cap-and-trade program[5]. Regarding allowance value, the CPUC/CEC Joint Proceeding proposed decision recommends some percentage of allowances be auctioned. It argues that free allocation may lead to windfall profits in some cases, and an auction allows for a simple treatment of new entrants. Auctioning also rewards early action as entities will have to purchase fewer allowances. The proposed decision also recommends using some of the proceeds of an auction "to benefit electricity consumers in California in some manner."

Market Advisory Committee
The Market Advisory Committee (MAC) was formed December 20, 2006 by California Secretary for Environmental Protection, Linda Adams, and delivered its report[6] to ARB June 30, 2007. It includes recommendations on many aspects of the design of a cap-and-trade program, including subchapter 6.1 on allowance distribution. The MAC recommends "fundamental objectives of cost-effectiveness, fairness, and simplicity," and a distribution that "advances the following principles:

- Reduces the cost of the program to consumers, especially low-income consumers.
- Avoids windfall profits where such profits could occur.
- Promotes investment in low-GHG technologies and fuels (including energy efficiency).
- Advances the state's broader environmental goals by ensuring that environmental benefits accrue to overburdened communities.

[5] California Public Utilities Commission, "Interim Opinion on Greenhouse Gas Regulatory Strategies," Rulemaking 06-04-009, February 8, 2008. http://docs.cpuc.ca.gov/efile/pd/78643.pdf
[6] Market Advisory Committee, "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," June 30, 2007. http://www.climatechange.ca.gov/documents/2007-06-29_MAC_FINAL_REPORT.PDF

- Mitigates economic dislocation caused by competition from firms in uncapped jurisdictions.

- Avoids perverse incentives that discourage or penalize investments in low-GHG technologies and fuels (including energy efficiency).

- Provides transition assistance to displaced workers.

- Helps to ensure market liquidity."

It further recommends investments in adaptation to climate change and returning some allowance value to the general public. MAC members also recommended full auction, either at the outset or after a transition over time.

Economic and Technology Advancement Advisory Committee (ETAAC)
The California Global Warming Solutions Act of 2006 (also known as AB 32) required the establishment of the ETAAC, which delivered its final report[7] February 11, 2008. In Section 9 it responds to the MAC recommendations. It recommends using benchmarking over grandfathering to reward early action, stimulate innovation, and send clear price signals. ETAAC considers some auction necessary. It recommends four uses for auction revenues: Investment in, and purchase of, greenhouse gas emissions reductions; allocating funds to California universities for research, development, and deployment of technologies with "potentially high GHG emission reduction value;" incentives that address imperfections or opportunities in the low carbon market; and taking advantage of co-benefits of GHG reduction opportunities in disadvantaged communities. It also suggests reducing distorting taxes or making direct payments to ratepayers, or "assisting communities or industries that are disproportionately affected by climate change or by climate change mitigation."

ETAAC also recommends the establishment of a California Carbon Trust, funded through auction revenue, the sale of allowances, the general fund, or noncompliance penalties. The Trust would fund reductions in emissions from uncapped sectors, environmental justice goals, and California university research, development, and demonstration of low-emission technologies. The fund is further envisioned to act as a "market maker," smoothing out volatility in the market by buying allowances when prices drop and selling them if prices rise.

Precedents:
European Union Emission Trading Scheme (EU ETS)
The EU ETS was established as part of the European Union member states' strategy for compliance with the Kyoto Protocol. Trading is planned for three phases: Phase I, which ran from 2005–2007; Phase II, which began January 1, 2008 and runs 2012; and

[7] Economic and Technology Advancement Advisory Committee, "Economic and Technology Advancement Advisory Committee (ETAAC) Final Report: Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California," February 11, 2008. http://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf

Phase III, which will run from 2013–2020. In Phases I and II, each country determined its needs for allowances and its allocation plan, subject to approval by the European Commission. Each country was required to allocate at least 95 percent of its allowances for free in Phase I, and 90 percent in Phase II. Based on experience with allocations and trading to date, the recommendations from the European Commission for Phase III include full auctioning for the electricity sector starting in 2013. They also include enhanced auctioning in other sectors, transitioning to full auction by 2020, with possible exceptions for industries facing international competition from countries without curbs on greenhouse gas emissions.

Regional Greenhouse Gas Initiative (RGGI)
RGGI is a collaboration of ten Northeastern states to create a regional cap-and-trade program for carbon dioxide (CO_2) emissions from the electricity sector. Trading is scheduled to start in 2009. The RGGI Model Rule, a template for state implementation of the system, requires each state to use at least 25 percent of the allowances for "a consumer benefit or strategic energy purpose." A majority of the RGGI states have committed to 100 percent auction. Stated uses for auction revenues vary, including energy efficiency, consumer rebates, and investments in renewable electricity generation. The first auction is scheduled for the summer of 2008.

Regional Clean Air Incentives Market (RECLAIM)
The California South Coast Air Quality Management District established the RECLAIM cap-and-trade program in 1993 to reduce oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) pollution. Allowances were freely allocated based on historical emissions.

Acid Rain Program
The Acid Rain Program is a United States cap-and-trade program for SO_2 emissions from fossil fuel burning electricity generators. It was established by the U.S. Environmental Protection Agency under Title IV of the 1990 Clean Air Act Amendments. Allocations were made for free to regulated entities, based on benchmarked fuel input and historical usage. A reserve of 2.8 percent of allowances is auctioned annually to ensure that new entrants with no free allocation have access to allowances.

Allocation of Allowances in a Potential Greenhouse Gas Cap-and-Trade Program

Mark Wenzel
California Air Resources Board

Technical Stakeholder Working Group Meetings—Program Design

February 6	Overview and analytic approach
February 29	Scope and Point of Regulation
March 17	Allocation
April 4	Offsets
April 25	Cost containment
May 5	Enforcement
June 16	To be decided

April 17 Scenarios Workshop

Outline

- Background
- Definitions
- Allocation vs. auction
- Uses of allowance value
- New entrants and firms that cease operations in California
- Allocation changes over time

Send questions to ccplan@arb.ca.gov

3

Background: Market Mechanisms

- Program design stakeholder meetings working on how to design an effective cap-and-trade system for consideration in the Scoping Plan.
- Prior to inclusion of market-based approaches, ARB must:
  - Consider potential for cumulative and localized impacts.
  - Prevent increase in criteria or toxic emissions
  - Maximize additional environmental and economic benefits.

4

Role of Allowances

- Allowances:
  - In a cap-and-trade program, the State would limit emissions to a capped amount and issue as many allowances as there are tons in the cap.
  - Reductions in emissions accomplished as number of allowances issued declines through time.
  - Allowances can be traded. At the end of a compliance period, an entity has to surrender to the State allowances equal to its emissions.

5

Definitions

- Allowance value:
  - Each allowance issued will have some value determined by the supply of allowances and the demand to emit.
- Allocation:
  - How the allowances issued by the state are distributed to the entities that need them to comply with the program.

6

Options for Allowance Distribution

- Free allocation:
  - Allowances given away for free. The allowance value is transferred to the recipient of the allowance.
- Auction:
  - If allowances are to be sold, auction is usually considered to be the fairest and most transparent way.
  - Allowance transferred to winning bidder, allowance value retained by State for public benefit use.
  - Wide variety of ways to design an auction for varying purposes.
- Mix of auction and allocation.

7

Free Allocation vs. Auction

- Free allocation and auction do not necessarily imply particular purposes for use of allowance value.
- Entities have the same incentive to make reductions whether allowances are freely allocated or auctioned.
- Environmental benefit not diminished by either.
- Market price would not be dependent on choice of free allocation or auction.

8

Free Allocation vs. Auction

- Stakeholders have expressed concerns about market liquidity and manipulation with both free allocation and auction.
  - Market liquidity can be enhanced and potential for market manipulation can be reduced by design choices in a cap-and-trade program.
  - If CARB develops a cap-and-trade program as part of AB 32 implementation it will carefully evaluate choices in light of these concerns.

9

Free Allocation vs. Auction

- Auction may provide price discovery
  - A clear signal on the value of an allowance.
  - May be especially important prior to the beginning of trading.
- Auction provides implicit recognition of early action through avoiding allowance costs.
- Free allocation can be used to recognize early action explicitly.

10

Free Allocation vs. Auction

- From the point of view of a regulated entity, free allocation and auction look different.
  - Every allowance has value.
  - Cash flow and cost of capital.

11

Uses of Allowance Value

- Reducing overall costs.
  - E.g., investments in research, development, and deployment of low-carbon technologies
- Investing in co-reductions of criteria and toxic air pollution.
- Adaptation to the effects of climate change.
- Assisting workers' transition to a green economy.
- Administrative costs.
- Obtaining further reductions.
- Compensating businesses and consumers for compliance costs.

12

Compensating Businesses and Consumers

- Costs of compliance will be unevenly spread.
- Some costs will be borne by businesses, some passed on to consumers.
- Where costs are passed on, consumers bear costs of regulation; free allocation to businesses can lead to windfall profits.

13

Compensating Businesses

- Potential to compensate regulated entities for the costs of regulation, including anticipated losses of profits and asset values.
- Potential to address “leakage,” in which regulation leads to a reduction in California production and increases in emissions elsewhere. The result of leakage would be less economic activity in California for no net environmental benefit.

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Compensating Businesses

- Multiple ways to distribute allowance value
  - “Grandfathering” or basis in historical emissions.
  - “Benchmarking” or awarding allowances based on input or output.
  - Economic burden calculation.
  - Different methods can be used for different sectors.

15

Compensating Consumers

- Per-capita rebates
- Tax reductions
- Utility rate relief

16

New Entrants and Exiting Companies

- How should new entities have access to allowances?
  - Set-asides
  - Auctions
  - Liquid market
- Entities that cease California operations:
  - Auctions
  - Revocation of freely allocated allowances

17

Allocation Change with Time

- Pre-determined shift in allocation and auction percentages.
- At some time, entities may be fully compensated.
- Administrative changes to allocation or auction with experience and more data.
- Updates of benchmarks.

18

Questions for Discussion

If a cap and trade program is implemented:

- What method should we use to distribute the allowances?
- How should allowance value be used? And, if the allowance value should be used to ease the costs of regulation for entities, who should receive them and how many allowances should each entity receive?
- How should allowances be distributed to new entities and how should entities that cease operating in California be treated?
- How should the methods of distributing allowances in a cap-and-trade program change in future years?

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CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

April 4, 2008
9:00 a.m. - 12:30 p.m.

Sierra Hearing Room
2nd floor of the California Environmental Protection Agency (CalEPA)
Headquarters Building
1001 "I" Street, Sacramento, California

Note: The Sierra Hearing Room at CalEPA Headquarters has limited seating. The meeting will be webcast (http://www.calepa.ca.gov/broadcast/) and open to real-time questions via e-mail (ccplan@arb.ca.gov).

AGENDA

A. Opening Remarks

B. Air Resources Board (ARB) Staff Presentation: "Role of Offsets Under AB 32"

C. Round-Table Discussion on Offsets

1. Should California have an offsets program for compliance purposes?
2. What should the project approval and quantification process be for approving projects?
3. Should there be quantitative limits on the use of offsets for compliance purposes? If so, how should the limits be determined?
4. Should California establish geographic limits or preferences on the location of projects that could be used to generate credits within the offsets system? If so, what should be the nature of those limits or preferences?
5. Should California discount credits from offset projects?

An Economic Analysis Technical Stakeholder Meeting will be held the same day starting at 1:30 in the Sierra Hearing Room to discuss issues related to modeling offsets in Energy 2020.

This is the fourth in an ongoing series of program design technical stakeholder meetings. These meetings are being conducted to provide interested stakeholders the opportunity to provide specific technical input concerning various elements of the program design that may become part of the Assembly Bill (AB) 32 Scoping Plan. The attached white paper is also intended to provide background on the offset issues that will be discussed, along with a summary of recommendations on this topic from the Market Advisory Committee (MAC), the Economic and Technology Advancement Advisory Committee (ETAAC), and precedents from other greenhouse gas emissions cap-and-trade programs.

CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

Schedule of Upcoming AB 32 Economic Analysis and Program Design Stakeholder Technical Work Group Meetings

(Schedule is subject to change; when updates occur, a revised schedule will be posted at http://www.arb.ca.gov/cc/scopingplan/meetings/meetingstechstake.htm)

Group	Meeting Topic	Time	Location
Program Design	Offsets	April 4 9 a.m. – 12:30 p.m.	Sierra Hearing Room
Economic Analysis	How Offsets are Modeled	April 4 1:30 p.m. – 3:30 p.m.	Sierra Hearing Room
Economic Analysis	Non-economic Analysis	April 25 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	Cost Containment	April 25 1:30 p.m. – 5 p.m.	Coastal Hearing Room
Scenarios Workshop	**Overview of Policy Scenario Evaluation Process and Preliminary Modeling Results**	**May 5**	**Byron Sher Auditorium**
Economic Analysis	Cost Effectiveness	early May	Coastal or Sierra Hearing Room
Program Design	Enforcement	early May	Coastal or Sierra Hearing Room
Economic Analysis	TBD	June 16 9 a.m. – 12:30 p.m.	Coastal Hearing Room
Program Design	TBD	June 16 1:30 p.m. – 5 p.m.	Coastal Hearing Room

FRAMEWORK FOR DISCUSSION

Overview

The April 4, 2008 program design technical stakeholder meeting is designed to provide interested stakeholders the opportunity to provide specific technical input concerning various program design elements that may become part of the Assembly Bill (AB) 32 Scoping Plan. This meeting will focus on the possible generation and use of offset credits for compliance purposes under AB 32. ARB has structured this meeting around five questions related to offsets.

This meeting is part of ARB's effort to understand how to best design market mechanisms for possible inclusion in the AB 32 Scoping Plan. AB 32 includes specific criteria that ARB must consider before implementing market-based measures. ARB will evaluate any market-based measures against those criteria before deciding whether to include them in the Scoping Plan.

To establish a basic framework for our discussion today, here is the basic definition for "offset":

> **Offset**
> An "offset" is an emission reduction achieved by an entity, beyond what otherwise would have happened because of regulation, common practice, or otherwise expected behavior. In general, an offset would come from an uncapped source. For offsets to be used for compliance with AB 32, the offsets program in California may only credit projects with reductions that are real, additional, quantifiable, permanent, verifiable and enforceable.[1]

The MAC defined additionality in its glossary as follows: "emission reductions achieved through a given project over and above those that otherwise would have occurred in the absence of the project under a business-as-usual scenario."[2] The MAC also suggested two additional adjectives to be used when defining offsets—transparent and predictable. However, these adjectives are more descriptive of an offsets program than of an offset reduction. A transparent and predictable program would generate public confidence and minimize administrative costs.

For use in a California cap-and-trade system, any offset would need to come from a source and reduce emissions that are not directly covered by the cap-and-trade program.[3] The non-covered source does not have a compliance obligation under the

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[1] The text of AB 32, part 38562(d)(1) states, "The greenhouse gas emission reductions achieved are real, permanent, quantifiable, verifiable, and enforceable by the state board." Part 38562(d)(2) states, " … the reduction is in addition any greenhouse gas emissions reduction that otherwise would occur".
[2] Market Advisory Committee, "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," June 2007, p. 90.
[3] The typical definition of entity in a non-covered sector may not be broad enough. An otherwise covered entity may have some non-covered emissions, which may be eligible to generate offset credits. For example, RGGI directly covers the electricity sector for its CO_2 emissions, but allows offset credits to be generated for reductions of SF_6 emissions in transmission and distribution of electricity.

cap-and-trade program, but it may generate reductions that can be used by entities with compliance obligations. An offset credit could be generated for each metric ton of reduction of carbon dioxide equivalent (CO_2e) beyond an established baseline. Like an allowance, each offset credit authorizes its bearer to emit one ton of CO_2e. Offsets could also be used as a flexible compliance mechanism outside of the context of a cap-and-trade system.

In the stakeholder meeting on April 4, 2008, ARB staff will present an overview of the possible roles of an offsets program under AB 32, and will facilitate a group discussion on five questions regarding how offsets can be generated and used for compliance purposes under AB 32:

1. Should California have an offsets program for compliance purposes?
2. What should the project approval and quantification process be for approving projects?
3. Should there be quantitative limits on the use of offsets for compliance purposes? If so, how should the limit be determined?
4. Should California establish geographic limits or preferences on the location of projects that could be used to generate credits within the offsets system? If so, what should be the nature of those limits or preferences?
5. Should California discount credits from offset projects?

KEY QUESTIONS FOR DISCUSSION

1. Should California have an offsets program for compliance purposes, either within a cap-and-trade system or as an alternative compliance mechanism in conjunction with direct regulation?

- **An offsets program could serve two primary purposes under AB 32**. First, it could provide greater flexibility for entities under a cap to meet their compliance obligations. Such flexibility would create opportunities for lower cost solutions to be found, reducing the overall cost of the program. Second, the offsets program could encourage reductions (beyond common business practice and what is required by regulation) from non-capped sources. Another purpose of an offsets program may be to effectively link a California cap-and-trade program to other cap-and-trade programs, if both programs recognize a project as producing a credit which can be used to meet compliance obligations in their programs.[4]
- **There are several drawbacks from an offsets program.** First, offsets may come from sources where it is difficult to obtain accurate, reliable and consistent measurements of the emission reductions.[5] This may be one reason why these sources were not directly capped. Second, offsets projects often have relatively high administrative costs, both to businesses and government, in comparison to sources placed directly under a cap. However, from a business point of view, an offsets project will remain attractive if the cost of the offset reduction is substantially lower than reducing emissions at the capped source. Third, an offset mechanism may decrease the amount of emissions reductions achieved directly by capped sources. This may delay the changes eventually needed to transition California's economy to a low carbon future by reducing incentives for innovation of capped sources.
- **California would need to establish solid rules for what constitutes a regulatory grade offset in California.** Under AB 32 reductions must be real, additional, quantifiable, permanent, verifiable, and enforceable. The prescribed rules could inadvertently reduce the incentive to create offset credits because they could create uncertainties for project developers as to whether or not there will be a viable market for their emission reductions. Furthermore, limiting usage on offsets may increase investment risk, which effectively could increase costs of reductions within the system. Therefore, the real question becomes how strict the rules for offsets should be.
- **In addition to rules on criteria, California may decide to establish explicit limits on offsets.** These may include limiting the portion of compliance obligations that may be met through offset credits or the imposition of specific

[4] The particular topic of linkage to other GHG trading programs will be discussed in depth on April 25th at the program design stakeholder meeting dealing with cost containment.

[5] Various concerns have been raised in this regard. For example, the members of the California environmental justice community issued a Declaration that touched on these issues. The Declaration can be accessed via http://www.ejmatters.org/declaration.html

geographic boundaries on where qualifying offset projects can be located. Both possibilities are discussed in more detail below.

- **California has three general options for the role offsets may play in meeting California compliance obligations:**
  - Do not allow any use of offsets
  - Allow limited use of offsets (e.g. limit absolute usage of offset credits or limit only to certain types of sources)
  - Allow unlimited use of offsets

2. What should be the project approval and quantification process?

- **If California chooses to allow offsets, it would need to establish which types of offset projects are eligible to generate credits within the system.** Two basic approaches can be used for deciding which project types would be eligible. California could allow project types to be proposed and submitted directly by project developers and then be evaluated by the regulators for possible inclusion (bottom-up), or it could choose to identify project types from the outset to be used by project developers (top-down).
- **California may choose to include many different project types from the outset of the program.** Allowing project developers to submit proposals for project types could be viewed as more economically efficient for the program, because it would allow for the inclusion of more low-cost reductions. This bottom-up approach allows for project developers to be more innovative in finding low-cost reduction opportunities that would be implemented on a practical level. By allowing more project types, many smaller sources of emissions could be allowed to participate in achieving emission reductions under the AB 32 program.
- **California may choose to only allow certain project types to generate credits at the outset of the program for a number of reasons.** This top-down approach gives a clear signal to project developers as to exactly what regulators are looking for. Regulators may choose to use this approach in order to channel investment into certain sectors/projects that they feel are high priority for achieving emission reductions or achieve other policy goals (e.g. projects that have associated co-benefits). Such an approach reduces costs to the program over time, because each project proposal does not need to be assessed by staff.
- **California may consider three approaches when approving eligible project types:**
  - A bottom-up approach
  - A top-down approach
  - A hybrid approach

- **California may wish to include elements of both approaches for determining the eligibility of project types.** An example of a possible hybrid approach would be to establish an initial list of eligible project types at the outset of the program, and as the program is more administratively established, allow for project developers to submit additional project proposals that would then be reviewed by the regulators. California could then either expand the list of eligible project types based on some of these submittals, or continue to allow project type proposals to be evaluated on a one-by-one basis by the regulators.
- **California would also need to establish which methodologies can be used for quantifying emission reductions from projects.** Two basic approaches can be used for quantifying the baseline and additionality of offset projects. California could allow emission reductions to be based on individual project assessments submitted by project developers (project-by-project), which would then be reviewed on a case-by-case basis by regulators and verifiers. Emission reductions could also be based on general criteria and emission factors (standards-based) pre-established in protocols and approved by regulators, for use by project developers.
- **A project-by-project approach may be the most precise and rigorous way to quantify emission reductions from offset projects,** because individual project circumstances and factors are accounted for. However, this sort of approach can be associated with high administrative costs for regulators to validate and verify project-specific information. Also, individual baseline scenarios are based on counterfactual information in which some subjective judgment may be used on behalf of the project developers. Likewise, regulators must use consistent judgment when evaluating different methodologies for one project type. If multiple methodologies exist for a particular project type, project developers may engage in “methodology shopping” in order to find the methodology that most favorably calculates emission reductions from their individual project. The possibility of gaming the system may be greater in a project-by-project approach because project developers may use evaluation criteria that are hard for regulators and verifiers to evaluate due to their site-specific nature, when estimating their baseline scenarios.
- **A more centralized approach may provide a tool for eliminating some of the concerns associated with a project-by-project approach.** The standards-based approach uses more general information and assumptions about project types, instead of project-specific data, to establish baselines and additionality, which eliminates the need for project developers to develop a method for defining baselines. Such an approach may be helpful in determining the leakage potential of certain project types and may also lead to easier monitoring, verification, and enforcement of emission reductions. This sort of process tends to be associated with a more transparent review process.
- **A standards-based approach may also have some disadvantages.** For some projects, baselines may be hard to standardize. This approach may unfairly penalize projects where baselines are actually higher than that assumed

in the available methodology. Also reductions could be quantified that are in essence non-additional, because they were not included in the baseline scenario. In this regard it is evident that some tradeoffs exist between screening out non-additional projects and excluding additional ones.

- **There are three approaches that California could consider to determine baselines and additionality:**
    - A project-by-project approach
    - A standards-based approach
    - A hybrid approach
- **California may wish to strike a balance between the two approaches for determining emission reductions from offset projects.** An example of a hybrid approach to determining baselines and additionality of offset projects could include California establishing protocols or methodologies for certain projects, where baselines can easily be standardized, while allowing developers of additional projects to submit project-specific methodologies in cases where baselines are harder to standardize.

3. Should there be quantitative limits on the use of offsets for compliance purposes? If so, how should the limit be determined?

- **Limiting the quantity of offsets for compliance purposes is one way to attain the benefits of offsets while reducing some of the risks associated with offsets.** The primary reason to impose a limit on the number of offset credits that an emitter could use for compliance obligations is to ensure that at least a certain fraction of the reductions come from capped sources. The primary argument against a quantitative limit is that it may prevent emitters from choosing the least costly reductions.
- **Additional quantitative limits on certain offset credits may also be desirable** (e.g. if the program wishes to limit the amount of offset credits from entering the system from out-of-state projects). However, if California allows offsets from out-of-state projects there may be legal issues if quantitative limits on offsets projects within the State differ from that of out-of-state projects (i.e. the Interstate Commerce Clause).
- **Over time California could change the quantitative limit on offset credit use.** However, it is not necessarily clear when the need for offset credits would be larger. The need for offset credits may be larger early in the program, when capped sources have not yet had much time to implement new technologies or have found it prohibitively costly to prematurely replace their current equipment. Conversely, the demand for offset credits could be greater in later years, as reduction requirements become larger. It is California's hope that more of the world will implement GHG emission reduction programs over time. Such action would also limit the amount of uncapped sources that would be eligible to generate offset credits.

- **California could also allow the level of limitation to depend on certain market circumstances.** For example, "price triggers", which signal when additional offset credits may be used to meet compliance obligations, could be imposed.
- **California has four general policy options for limiting the number of offset credits which an emitter may use to meet its compliance obligations:**
    - No limit on offset credits
    - A percentage (e.g., 10%) of the obligation[6] that may be met with offsets
    - An increasing percentage of the obligation that may be met with offsets
    - A decreasing percentage of the obligation that may be met with offsets
- **Another possible way to limit offset use is to have a limit on the number of offset credits that California would issue.** However, California-issued credits may have value beyond regulatory compliance in California. In fact, RGGI has decided not to place a limit on the number of offset credits issued, but has limited the amount of the obligation that can be met with offset credits.

4. Should California establish geographic limits or preferences on the location of projects that could be used to generate credits within the offsets system? If so, what should be the nature of those limits or preferences?

- **Potential offset projects are located throughout the world; however, there may be reasons why an offsets program would limit the geographic area in which offset projects are eligible to generate credits within the system.** There are several concerns with allowing out-of-state projects. According to AB 32, reductions must be enforceable by ARB. Reductions from out-of-state offset projects may raise an issue in this regard. Allowing out-of-state projects might also reduce the development and implementation of low-carbon technologies in California industry, which could raise concerns for meeting the long-term 2050 goal. To address this issue California could recognize an out-of-state project only if a cooperating environmental agency in the project's home state has entered into a formal MOU with ARB.[7] The MOU would need to require that agency to act on behalf of ARB in carrying out certain obligations relative to GHG emission offset projects within its borders. These obligations would include performing audits of offset project sites and reporting violations to ARB.[8]

[6] This is typically discussed in terms of a percent of the compliance obligation, which is tied to emissions, rather than a percent of the expected reductions. For example, the Regional Greenhouse Gas Initiative (RGGI) established an initial limit on offsets of 3.3% of the compliance obligation. This level was chosen based on analysis that indicated that it would allow half of the required reductions to come from offsets, while the remainder of the reductions would need to come from facilities covered in the RGGI system.
[7] RGGI has followed a similar process regarding out-of-state projects in its Model Rule.
[8] RGGI has not yet specified what other obligations they may require, but these two are specified in their Model Rule.

- **Furthermore, California may choose to limit the geographic scope of the offsets program to in-state only projects in order to incent California offsets.** Allowing only in-state offsets would keep the dollars spent on offsets within the state's economy. Other benefits, such as environmental and economic co-benefits from California reductions, would also be retained by the State.
- **Several motivations exist for allowing out-of-state offset projects.** Out-of-state projects would expand the scope of the program to allow for more low-cost GHG reduction possibilities to be incorporated, reducing the overall costs of the program. The broadened scope would increase access to a larger and more established offsets market and would also allow California to export its knowledge and technologies for reducing GHG emissions throughout the United States and possibly internationally. Since climate change is a global issue establishing a broad offsets market could help support the adoption of low-carbon technologies and sustainable development in the developing world, which is vital to reducing global emissions in the long-term.
- **There are three general locations for offset projects, and California could issue credits for projects in these locations:**
    - Projects within California
    - Projects in jurisdictions with specific agreements with California, either in the context of a regional trading system like that being developed in the Western Climate Initiative or outside of such a trading system
    - International projects (beyond regional agreements)
- **If California decides to allow out-of-state offset projects, it may wish to allow only certain kinds of projects.** For example, California might allow projects using only standard protocols approved by ARB.
- **Some project types could not be executed in California but might be available in other jurisdictions** (e.g. coal mine methane projects)**.** Emission sources which are likely to be controlled through direct regulation inside California, may provide sources for California offsets credits through projects in other states.[9] This may raise competitiveness concerns because the reductions in California would be non-additional, while those reductions outside of California may be additional. This could lead to financial flows out of the state. Another complication may arise around certain project types (e.g. energy efficiency and renewable energy projects) that reduce indirect emissions from capped sources. This issue known as "double counting" would need to be addressed in order for such projects to generate credits within the system.
- **California is a partner state in the Western Climate Initiative (WCI).** A cap-and-trade program developed by the WCI would likely allow offset projects within any partner state to be eligible for compliance obligations in California.

[9] ARB has proposed landfill methane as a direct regulation through its Early Action process.

5. Should California discount credits from offset projects?

- **One way to account for the risk associated with offset projects (mainly the risk of potential non-additional reductions being counted towards the emission reduction goal) is to use a discount factor.** This can help account for statistical variance of measurement and calculation methods used to quantify reductions from offset projects.
- **Using a discount factor may penalize truly additional projects with real emission reductions.** The risk of including credits from non-additional projects within the system may be better addressed by requiring that very stringent criteria be applied or by requiring offset projects to use more conservative baseline estimations.
- **Currently no other GHG trading system uses a discount factor for their offset credits.** This may cause some difficulties if California were to decide to link with other cap-and-trade programs.[10]

[10] The topic of linkage to other GHG trading programs will be discussed in depth on April 25th at the program design stakeholder meeting addressing cost containment.

SUMMARY OF RECOMMENDATIONS TO ARB AND PRECEDENTS

Recommendations to the California Air Resources Board (ARB):

Market Advisory Committee
The Market Advisory Committee (MAC) was formed December 20, 2006 by California Secretary for Environmental Protection, Linda Adams, and delivered its report[11] to ARB June 30, 2007. It includes recommendations on many aspects of the design of a cap-and-trade program, including subchapter 6.3 on offsets. The MAC recommends that "offsets should be allowed as part of the overall cap-and-trade program. The MAC also recommends that offsets should be "real, additional, independently verifiable, permanent, enforceable, and transparent."

The MAC argued against imposing geographic or quantitative limits in order to maximize emission reductions at the least cost. The MAC did, however, agree that there may be some legitimate reasons for imposing these limits (e.g. air quality and social equity) and introducing the limits gradually to the program.

The MAC recommended that California select specific project types that would be eligible to generate credits within the system. They also recommended that California follow a standards-based approach for determining the baseline and additionality of projects, and recommended against the project-by-project approach because of the administrative complexities and costs associated with it.

No GHG cap-and-trade program has required that offset credits be surrendered for compliance on a discounted basis.

Economic and Technology Advancement Advisory Committee (ETAAC)
The California Global Warming Solutions Act of 2006 (also known as AB 32) required the establishment of the ETAAC, which delivered its final report[12] February 11, 2008. It recommends that offsets be "real, additional, permanent, enforceable, predictable, and transparent."

ETAAC recommended that while "…quantity limits on offsets can be valuable for encouraging action and creative thinking within a sector, it should be pointed out that it is difficult to come up with a "scientific" number to justify any specific limit." The Committee also discussed how "placing geographic limits on offsets is one way to guarantee that offset projects used for compliance within state borders meet California's rigid standards for 'additionality' and verification. Some members raised questions as to

[11] Market Advisory Committee, "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," June 30, 2007. http://www.climatechange.ca.gov/documents/2007-06-29_MAC_FINAL_REPORT.PDF
[12] Economic and Technology Advancement Advisory Committee, "Economic and Technology Advancement Advisory Committee (ETAAC) Final Report: Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California," February 11, 2008. http://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf

whether or not placing geographic limits on offsets could be designed in a way that does not violate the Commerce Clause."

Examples of Offset Programs:

European Union Emission Trading Scheme (EU ETS)

The EU ETS was established as part of the European Union member states' strategy for compliance with the Kyoto Protocol. Trading is planned for three phases: Phase I, which ran from 2005–2007; Phase II, which began January 1, 2008 and runs through 2012; and Phase III, which will run from 2013–2020. In both Phase I and Phase II, EU ETS allowed Certified Emission Reductions (CERs) from the Clean Development Mechanism (CDM) and credits from Joint Implementation (JI) projects. They have indicated that they will continue to accept these credits in Phase III as well.

The EU ETS has quantitative limits which differ by member country. Via the UNFCCC's CDM and JI mechanisms, the EU ETS program has accepted international offsets. However, due to over-allocation in Phase I, very few offset credits were needed to meet compliance obligations.

The CDM mechanism has followed a bottom-up approach for determining eligible project types. It has also followed a project-by-project approach for determining baselines and additionality, but is moving towards a more standards-based approach through the addition of combined methodologies.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a collaboration of ten Northeastern states to create a regional cap-and-trade program for carbon dioxide (CO_2) emissions from the electricity sector. Trading is scheduled to start in 2009. The Regional Greenhouse Gas Initiative (RGGI) will allow offsets from several specified project categories, as well as limited use of CERs when certain "price triggers" are reached.

In its Model Rule, RGGI has proposed that emitters may meet no more than 3.3% of their compliance obligation with offset credits; that would increase to 5% or 10% under certain market conditions. RGGI has also laid out provisions to issue credits for out-of-state projects.

RGGI has applied a top-down approach for determining eligible project types. The Model Rule has currently identified five project types that can generate credits within the system. RGGI has also opted for a standards-based approach for determining emission reductions from approved projects.

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Role of Offsets under AB 32

Program Design Technical Stakeholder Workgroup
April 4, 2008

Brieanne Douke
Stephen Shelby
Air Resources Board

Email questions to CCPlan@arb.ca.gov

Program Design Stakeholder Meetings

February 6	Overview and analytic approach
February 29	Scope and Point of Regulation
March 17	Allocation
April 4	Offsets
April 25	Cost containment
May 5	**Scenarios Workshop**
Early May	Enforcement
June 16	To be decided

2

Outline

- Background
- Definitions
- Possible usage of offset credits
- Establishing eligibility
- Establishing usage rules
- Questions (Recap)

Send questions to ccplan@arb.ca.gov

3

Background: Market Mechanisms

- Program design stakeholder meetings working on how to design an effective cap-and-trade system for possible inclusion in the Scoping Plan
- Prior to inclusion of market-based approaches, ARB must:
  - Consider potential for cumulative and localized impacts
  - Prevent increase in criteria or toxic emissions
  - Maximize additional environmental and economic benefits

4

Offsets

- A GHG offset is a GHG emission reduction …
  - beyond what otherwise would have happened because of regulation and common practice
  - that generates a credit that can be used to meet a regulatory compliance obligation or a voluntary commitment
- Under AB 32, the reductions must be real, additional, quantifiable, permanent, verifiable and enforceable
  - H&S Code §38562(d)(1-2)

5

Possible Uses of Offset Credits

- Voluntary reductions
- California approved offsets under AB 32
  - As part of cap and trade
  - As flexible compliance outside of cap and trade
- California acceptance of offsets through linkage with other states and programs

Today's discussion will focus on the second bullet

6

Key Questions for Today's Discussion

- Should California allow use of GHG offsets for compliance under AB 32?
- If so, what general rules should apply to their use?

7

Possible Advantages of Offsets

- May achieve an emissions reduction target at lower cost
- Extends program to sources otherwise not covered by the AB 32 program
- Can spur innovation and technology development for uncapped sources
- Can allow for setting a lower cap

8

Possible Disadvantages of Offsets

- May reduce incentives for innovation of capped sources
- May create administrative complexities
- May create perceived inequities
- May reduce environmental integrity due to uncertainty about additionality
- May result in fewer co-benefits realized in California

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Offset Project Eligibility

- Project approval process
  - Top-down vs. Bottom-up approach
- Quantification process
  - Standards-based vs. project-by-project approach
- Project type
  - Forestry, dairy methane, etc.
- Project timing
  - Start date and project length

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Project Approval Process

Approaches for approving eligible project types

- Bottom-up approach
  - Project types proposed and submitted by project developers and then evaluated by the program authority
- Top-down approach
  - Project types identified by the program authority and then used by project developers
- A hybrid approach

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Project Approval Approach

- Advantages of a bottom-up approach:
  - allows for more low-cost reduction opportunities
  - may allow for inclusion of many smaller sources of emissions
  - can encourage innovation
- Advantages of a top-down approach:
  - provides clear signal to participants
  - reduced administrative costs over time
  - investment in high priority sectors/projects (e.g. those with co-benefits)

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Quantification Process

Two approaches for quantifying emission reductions

- Project-by-project approach
  - Emission reductions are based on individual project assessments (including baseline and additionality)
- Standards-based approach
  - Emission reductions are based on general criteria and emission factors
- A hybrid approach

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Quantification Approach

- Advantages of a project-by-project approach:
  - very rigorous and precise
  - fully accounts for individual project circumstances
- Advantages of a standards-based approach:
  - may be easier to monitor, verify, and enforce
  - may be easier to determine leakage potential
  - review process may be more transparent
  - Avoids costs of defining baselines for every project

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Project Type Eligibility

Eligibility criteria may include:

- Whether additionality can be determined
- If quantification is possible
- Which sources are under the cap
- Administrative simplicity
  - For regulators
  - For project developers
- Contributions to long-term goals
- Co-benefits

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Examples of Project Types

Examples of project type eligibility in existing offset programs

- **CDM**: All **except** nuclear energy and biological carbon sequestration other than reforestation/afforestation
- **JI**: All **except** nuclear energy
- **New South Wales GGAS**: electricity supply (incl. renewables), energy efficiency, reforestation/afforestation, fuel switching, industrial processes, fugitive emissions
- **RGGI**: landfill methane, SF6 reductions, afforestation, end-use efficiencies from natural gas, methane manure management

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Project Timing

- Start date
  - When should the start date be for recognizing emission reductions as an offset?
  - Should offsets program be a vehicle for recognizing early reductions?
- Crediting period
  - How long should the crediting period be?
    - CDM: either one ten-year period or three seven-year periods
    - RGGI: two ten-year periods
- Expiration
  - Should an expiration date for the validity of credits issued be imposed?

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Possible Restrictions on Offset Use

- If offsets are accepted for AB 32 compliance, California could establish limits on their use:
  - Limits on volume used for compliance
  - Discounting and unit exchange rates
  - Banking
    - **Will be discussed at the April 25th stakeholder meeting on cost containment**
  - Geographic limits

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Quantitative Restrictions

- Advantages
  - May limit uncertainties about environmental integrity
  - Ensures emission reductions from capped entities
  - Reductions and investments may stay in the state/region
    - However, climate change is a global problem
- Disadvantages
  - Could forgo emission reductions with lower costs
  - May limit supply of offset projects
  - May create uncertainties for project developers, who are unsure about demand for their reductions

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Discounting and Unit Exchange Rates

- Should California discount credits from offset projects?
  - Advantages
    - Can account for statistical variance of measurement and calculation methods
    - Credits only realized benefits
  - Disadvantages
    - May penalize truly additional projects
    - May discourage program participation

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Some Options for Project Locations

- Within California only
- In jurisdictions with specific agreements with California
  - As part of a regional trading program, such as WCI
  - Other jurisdictions that may enter into an MOU
- Globally

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Project Locations

- Advantages of in-state only projects:
  - Can enable financial flows to stay within the state/region
  - Other benefits from offsets can be channeled to the state/region
- Advantages of broader scope:
  - Can increase access to a larger and more established offsets market
  - Can support adoption of low-carbon technologies and sustainable development

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Linkage

- California could also accept credits issued by other trading programs
  - Unilateral linkage
    - Allow the use of credits or allowances from other cap-and trade programs to be used for compliance
  - Bilateral linkage
    - Allow credits and allowances to be fully fungible in both systems
- **This topic will be discussed at the April 25th stakeholder meeting on cost containment**

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Examples of Offset Programs

- EU ETS
  - No internal offsets; links to CDM and JI
  - Modest quantitative limits on offsets use
- CDM/JI
  - Bottom-up approach
  - Primarily focused on developing countries
- RGGI model rule
  - Top-down approach; five project types
  - Primarily in-region but with price triggers that allow for broader inclusion
  - volume limit on credits for compliance
- MAC recommendation
  - Top-down approach
  - No geographic or quantitative limits

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Questions for Stakeholders

- Should California have an offsets program for compliance purposes?
- What should the project approval and quantification process be for approving projects?
- Should there be quantitative limits on the use of offsets for compliance purposes? If so, how should the limits be determined?
- Should California establish geographic limits or preferences on the location of projects that could be used to generate credits within the offsets system? If so, what should be the nature of those limits or preferences?

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CALIFORNIA AIR RESOURCES BOARD (ARB)
Assembly Bill 32 Program Design Technical Stakeholder Working Group Meeting

April 25, 2008
1:30 p.m. - 5:00 p.m.

Sierra Hearing Room
2nd floor of the California Environmental Protection Agency (CalEPA)
Headquarters Building
1001 "I" Street, Sacramento, California

Note: The Sierra Hearing Room at CalEPA Headquarters has limited seating. The meeting will be webcast (http://www.calepa.ca.gov/broadcast/) and open to real-time questions via e-mail (ccplan@arb.ca.gov).

This is another in an ongoing series of program design technical stakeholder meetings. These meetings are being conducted to provide interested stakeholders the opportunity to provide specific technical input concerning various elements of the program design that may become part of the Assembly Bill (AB) 32 Scoping Plan. The attached white paper is also intended to provide background on the cost containment issues that will be discussed.

AGENDA

A. Opening Remarks

B. Air Resources Board (ARB) Staff Presentation: "Cost Containment in a Greenhouse Gas Cap-and-Trade System"

C. Round-Table Discussion on Cost Containment

If a cap and trade program is implemented:

1. What type of cost containment mechanisms should California consider for a potential cap-and-trade system?
2. Is there a need to establish an independent market oversight body?
3. Which systems should be considered for linkage with a potential California cap-and-trade system?

Written comments and responses are welcome. Please submit your comments to ccplan@arb.ca.gov by May 9, 2008.

FRAMEWORK FOR DISCUSSION

Overview

This paper provides background for the April 25, 2008 program design technical stakeholder meeting. These meetings provide interested stakeholders the opportunity to provide specific technical input concerning various elements of a cap-and-trade system for possible inclusion in the Scoping Plan. AB 32 includes specific criteria that ARB must consider before using market-based measures to implement AB 32, and ARB will evaluate a possible cap-and-trade system against those criteria before deciding whether to include such a system in the Scoping Plan.

The April 25, 2008 meeting will focus on "cost containment," which can be broadly defined as the ability of regulators to influence the allowance price within a cap-and-trade system, both through program design choices and through active market intervention. In this context "cost" refers to the cost to regulated facilities. Staff recognizes that there are a variety of other costs associated with greenhouse gas reduction programs that also need to be considered in program design. A variety of cost containment tools are available to regulators but ARB has structured this meeting around three primary questions related to this topic:

- What type of cost containment mechanisms should California consider for a potential cap-and-trade system?
- Is there a need to establish an independent market oversight body?
- Which systems should be considered for linkage with a potential California cap-and-trade system?

Background

The Goal of Cost Containment Tools: Ensuring Environmental and Economic Performance

The interest in cost containment arises from the belief that an excessively wide range in allowance price or sudden sharp changes in allowance price (volatility) could be economically disruptive in the short term. The cost containment measures discussed in this paper are designed to address one or both of these issues.

In the long term, tightening the cap (i.e. reducing the supply of allowances) will lead to higher allowance prices. The prospect that continued greenhouse gas (GHG) emissions will carry a high cost in the future is likely to force investment decisions in the direction of a low-carbon economy. Therefore, although many cost containment tools can influence allowance price in the long term, the goal of cost containment measures should not be to prevent a steady increase in allowance prices over time.

Relationship between how the Cap is Set and the Need for Cost Containment

The cap represents the total GHG emissions permitted from all sources in the cap-and-trade system during a given compliance period. Stringency of cap levels strongly affects what allowance price will prevail in a cap-and-trade system and, therefore, the need for cost containment options.

The first compliance period of a California cap-and-trade system would likely begin in 2012. The initial cap level could be set aggressively to incent early reductions or could be set more leniently to provide a gentle transition into the program. Similarly, the level of the cap for the compliance period that ends in 2020 is critical—at the end of this period the emission levels from the capped sources must reach the target for these sources in order to ensure the broader economy-wide target is met [1].

The way in which the cap declines determines the rate at which greenhouse gases can be emitted from covered sources during a given period. This decline will be referred to as the "emission reduction path". The area under the path curve represents the total amount of emissions which occur and can be referred to as the "emissions budget" (see Figure 1).

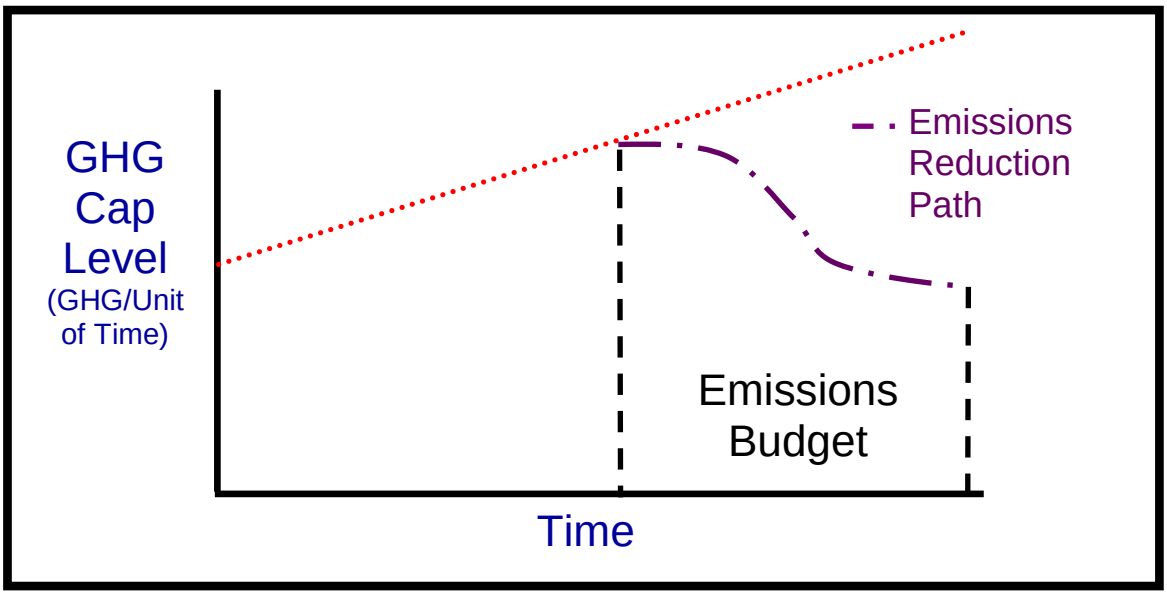

Figure 1. The emissions budget is equal to the area under the curve of the emissions reduction path.

[1] The target for the sources covered by a cap-and-trade system would be a portion of California's economy wide 2020 emissions target of 427 million metric tonnes of CO_2e.

An infinite number of possible emission budgets—varying from lenient to stringent—could be conceived for a given 2020 target for capped sources[2]. More importantly, multiple potential emission reduction paths exist with the same emission budget. Cost containment mechanisms can involve changes in the aggressiveness of the overall emissions budget, manipulation of the reduction path by which that budget is spent, or a combination of these tools.

What type of cost containment mechanisms should California consider for a potential cap-and-trade system?

A number of possible cost containment mechanisms are described below. Comments are welcome on the role any of these might play in California, and on whether there are other mechanisms not described here that should be considered.

Length of the Compliance Period
Expanding the length of the compliance period can help smooth volatility related to annual variations (e.g., low availability of hydroelectric electricity in dry years). The flexibility added by increasing the length of the compliance period may be especially valuable in the earlier years of the system when a bank of allowances has not yet been established.

Banking and Borrowing
Banking involves saving allowances from the current compliance period for use in future periods. Borrowing involves permitting allowances from future compliance periods to be used in the current period. If both banking and borrowing are allowed, market participants can effectively trade between compliance periods. This inter-temporal trading provides flexibility as to the timing of emission reductions to firms which should help reduce volatility in the allowance prices.

Banking creates an incentive to make early reductions and encourages long-term commitment to the system from stakeholders. In contrast, borrowing may create the incentive for firms which run up a heavy allowance debt to lobby for the cessation of the system.

Price Triggers

The basic concept of using a price trigger for cost containment is that when allowance prices reach a predetermined value, market intervention occurs in some specified fashion. The primary tools which could be made available to market regulators to implement these triggers include the ability to buy allowances, issue additional

[2] For this discussion, environmental harm from greenhouse gas emissions will be assumed to be proportional to the total amount of emissions released to the atmosphere regardless of exactly when the emissions occur during the eight year period (2012-2020). Over a longer time period the timing of reductions may need to be considered, with earlier reductions preferable from an environmental standpoint.

allowances, or allow a variable amount of offsets to be used to meet compliance obligations[3].

Offset triggers were heavily debated during the program design phase of the Regional Greenhouse Gas Initiative (RGGI)[4]. An offset trigger functions by reducing or increasing the quantitative or geographic limit placed on the use of offsets for compliance in a cap-and-trade system, increasing or decreasing this limit, once allowance prices reach a given level, will alter the price of allowances.

Alternatively, the allowance price could be affected by regulators purchasing or selling allowances in an attempt to create or reduce scarcity. A distinction between the various trigger options available, which involve directly purchasing or selling allowances, can be made relating to the desire to maintain the overall emissions budget. For example, to relieve undesirably high allowance prices regulators could offer allowances from future periods for sale in the current period, and maintain the overall emissions budget[5]. Alternatively, regulators could generate additional allowances to be offered for sale, thus inflating the overall emissions budget.

Is there a need to establish an independent market oversight body?

The cost containment mechanisms discussed above can have dramatic impacts on allowance prices and the overall functioning of the cap-and-trade system. This high level of potential impact highlights the importance of the individuals making the decisions as to “when” and “how” these tools should be employed.

Static rules governing the use of these tools would likely lack flexibility and may create unintended consequences[6]. A more dynamic option to ensure the proper use of these tools would be to establish an independent oversight board to selectively and proactively use the cost containment mechanisms to manage carbon market efficiency and transparency.

This board could be modeled after the Federal Reserve and be tasked with controlling the allowance budget in such a way as to balance environmental and economic goals. Other potential duties related to cost containment could include: collecting and analyzing market information and reporting to the public and to policymakers on the

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[3] These basic tools provide the foundation for a broad range of mechanisms. At times more precise vocabulary is used to differentiate these mechanisms (e.g., price ceiling/safety valve, price floor, accelerator, circuit breaker, etc). A detailed discussion of all the permutations possible is beyond the scope of this paper. See the work of William A. Pizer for the origin of this discussion: http://www.rff.org/Documents/RFF-DP-98-02.pdf

[4] Offsets are in of themselves a cost containment mechanism. Due to the complex nature of the topic of offsets this subject was treated in a separate discussion at the April 4 Program Design Stakeholder Technical Workgroup. A white paper and presentation associate with that meeting are available from: http://www.arb.ca.gov/cc/scopingplan/pgmdesign-sp/meetings/meetings.htm

[5] This may also be thought of a price trigger creating a specific type of borrowing.

[6] For example, price triggers set statically around a certain price may cause the market to gravitate toward that price.

functioning of the market. The proper release of in-depth information from a reliable source could strongly influence trends in allowance price. This independent body has been given different names by various proponents of the concept such as the "Carbon Market Efficiency Board" or the "California Carbon Trust"[7].

Which systems should be considered for linkage with a potential California cap-and-trade system?

The concept of "linkage" involves integrating one emissions trading system with one or more other systems around the world. To accomplish this in California, ARB could choose to accept allowances or offset credits issued by other trading systems. Advantages of linkage associated with cost containment could include further potential for lower cost abatement options, reduced concerns about market power, and reduced price volatility. However, linking with other systems may imply some loss of control over allowance price by regulators and could result in a reduced potential for achieving co-benefits associated with greenhouse gas reductions occurring within California.

Linkage to other markets is only advisable if the designs of the markets are compatible and linked markets should ideally embed mutually acceptable levels of mitigation requirements. The inclusion of some cost containment tools in California's system designs may influence the feasibility of linking with other systems. For example, the implementation of a price trigger by regulators in one system would affect allowance prices in all linked system.

Several types of linkage are possible. In the simplest case one trading system could allow allowances from other systems to be used for compliance without an expectation of reciprocal treatment (unilateral linkage). Alternatively, a bilateral agreement could be reached between two governments to enable allowances from both trading systems to be used interchangeably. These are both examples of "direct linkages".

It is important to recognize that "indirect" linkages may also exist—market dynamics in one system may impact market dynamics in another system if both share direct links with a common third system. The variety of potential linkages is best illustrated by the following specific examples:

- California could directly link, unilaterally, with the European Union's Emission Trading Scheme (EU ETS) by accepting European Union Allowances (EUAs) for compliance in the California system.
- California could indirectly link with EU ETS through the Clean Development Mechanism by accepting Certified Emissions Reductions (CERs) offset credits for compliance in the California system.

[7] This concept was initially proposed by the Nicholas Institute for Environmental Policy Solutions at Duke University and has been incorporated into federal climate change legislation. See: http://www.nicholas.duke.edu/institute/carboncosts/carboncosts.pdf. The Economic and Technical Advancement Advisory Committee (ETAAC) has included a California Carbon Trust that would function along these lines among its recommendations. This recommendation is discussed below.

- California's participation in the Western Climate Initiative (WCI) would likely involve identical allowances being used for compliance in all WCI partner jurisdictions. This is equivalent to direct bilateral linkage between each pair of WCI partners.

SUMMARY OF RELATED ACTIVITES, RECOMMENDATIONS TO ARB AND PRECEDENTS

Related Activities:

The Western Climate Initiative
The Western Climate Initiative is a collaboration which was launched in February 2007 by the Governors of Arizona, California, New Mexico, Oregon and Washington to develop regional strategies to address climate change. Since the inception of the program five additional partner jurisdictions have joined the system[8]. WCI is identifying and evaluating collective and cooperative ways to reduce greenhouse gases in the region. ARB staff and other representatives from California serve on the subcommittees of WCI and are closely involved in the development of this process.

The WCI has recently released draft recommendations on a variety of topics for public comment[9]. With respect to cost containment these documents recommend banking but no borrowing, three year compliance periods with a provision for a special start-up compliance period and establishment of a regional entity to monitor and report on market activities.

Recommendations to the California Air Resources Board (ARB):

Market Advisory Committee
The Market Advisory Committee (MAC) was formed December 20, 2006 by California Secretary for Environmental Protection Linda Adams and delivered its report to ARB June 30, 2007[10]. The report includes recommendations on many aspects of the design of a cap-and-trade system.

The MAC recommended full banking, no borrowing and compliance periods of approximately three years. A safety valve price trigger which removed the certainty of the cap (price ceiling) was not recommended; however, the committee encouraged ARB to consider enforcing a price floor. Linkages with other mandatory GHG trading

[8] The WCI Partners are Arizona, California, New Mexico, Oregon, Washington, Montana and Utah, as well as British Columbia, Quebec and Manitoba.
[9] Western Climate Initiative, "Draft Allocation Design Recommendation." April 2, 2008. Available from: http://www.westernclimateinitiative.org/WCI_Documents.cfm
[10] Market Advisory Committee, "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," June 30, 2007. Available from: http://www.climatechange.ca.gov/documents/2007-06-29_MAC_FINAL_REPORT.PDF

systems, including Regional Greenhouse Gas Initiative (RGGI) and the EU ETS were encouraged.

Economic and Technology Advancement Advisory Committee (ETAAC)
The California Global Warming Solutions Act of 2006 (also known as AB 32) required the establishment of the ETAAC, which delivered its final report February 11, 2008[11]. In Section 9 it responds to the MAC recommendations.

ETAAC recommends the establishment of a California Carbon Trust. The Trust would fund reductions in emissions, environmental justice goals, and California university research, development, and demonstration of low-emission technologies. With respect to cost containment, the Trust is envisioned to act as a "market maker," smoothing out volatility in the market by buying allowances when prices drop and selling them if prices rise. This active market maker is preferred by the ETAAC to a rigid price trigger such as a safety valve.

The ETAAC report supports banking with the caveat that a large bank established in earlier years could potentially reduce the incentive to innovate in later periods. With regards to borrowing, some ETAAC members felt that limited borrowing might be necessary in order to encourage long-term investments.

Precedents:
European Union Emission Trading Scheme (EU ETS)
The EU ETS was established as part of the European Union member states' strategy for compliance with the Kyoto Protocol. Trading is planned for three phases: Phase I, which ran from 2005–2007; Phase II, which began January 1, 2008, and runs to 2012; and Phase III, which will run from 2013–2020.

No banking was permitted between Phase I and Phase II of the program. This fact, coupled with the sudden realization by the market that there was an over-allocation of Phase I allowances led to a sharp decline in Phase I allowance prices in April 2006. Phase II allows unlimited banking (through Phase III) but no borrowing.

Regional Greenhouse Gas Initiative (RGGI)
RGGI is a collaboration of ten Northeastern states to create a regional cap-and-trade system for carbon dioxide (CO_2) emissions from the electricity sector. Compliance is scheduled to start in 2009. RGGI will begin with three year compliance periods and banking but no borrowing[12]. The RGGI Model Rule, a template for state implementation

[11] Economic and Technology Advancement Advisory Committee, "Economic and Technology Advancement Advisory Committee (ETAAC) Final Report: Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California," February 11, 2008. Available from: http://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf
[12] "Regional Greenhouse Gas Initiative Model Rule" January 5, 2007. Available from: http://www.rggi.org/docs/model_rule_corrected_1_5_07.pdf

of the system, also sets the following fixed price triggers which create linkages if activated:

- If the twelve-month rolling average allowance price rises above $7 per short ton:
  - Sources will be allowed to cover up to 5 percent of their emissions using domestic offsets[13]. This is an increase from the initial limit of 3.3 percent.
- If the twelve-month rolling average allowance price rises above $10 per short ton:
  - Sources will be allowed to cover up to 10 percent of their emissions with offsets.
  - The geographic limit on offsets will be relaxed. Offset projects outside the United States including the Kyoto Protocol's Clean Development Mechanism CERs will be permitted for compliance purposes. Allowances from the EU Emissions Trading Scheme and similarly rigorous future systems will also be permitted for compliance purposes.
  - The compliance period will be extended by one year, for a maximum compliance period of four years.

Regional Clean Air Incentives Market (RECLAIM)
The California South Coast Air Quality Management District established the RECLAIM cap-and-trade system in 1993 to reduce oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) pollution. RECLAIM has restricted banking, does not allow borrowing, and has a one year compliance period.

Acid Rain Program
The Acid Rain Program is a United States cap-and-trade system for SO_2 emissions from fossil fuel burning electricity generators. It was established by the U.S. Environmental Protection Agency under Title IV of the 1990 Clean Air Act Amendments. The system allows banking but no borrowing, has one-year compliance periods, and does not use price triggers. Banking is often credited for much of the early reductions which occurred in this system.

[13] This is an example of an offset trigger. Domestic offsets include offsets from the RGGI region or from any other U.S. state with a memorandum of understanding with the RGGI states.

GLOSSARY OF TERMS

Allocation
"Allocation" is how the program administrator distributes the allowances. Each allowance has a value, which depends on the supply and demand of allowances. In order to achieve emission reductions, the number of allowances issued is usually reduced over time. These allowances can be distributed by various methods including auctioning, benchmarking, and grandfathering.

Allowance
In a cap-and-trade system an "allowance" is a permit to emit a certain amount of pollution; in California's discussions of greenhouse gases, one allowance would be equal to one metric tonne of carbon dioxide equivalent (CO_2e).

Cap
The number of allowances issued within a cap-and-trade system equals the total permitted level of emissions and is referred to as the "cap." The cap declines over time to reach a desired emissions target.

Compliance Period
A "compliance period" is a length of time for which a regulated entities emissions must match the number of allowances surrendered.

Cost Containment in a Greenhouse Gas Cap-and-Trade System

Program Design Technical Stakeholder Workgroup
April 25, 2008

Sam Wade
Air Resources Board

Email questions to CCPlan@arb.ca.gov

Program Design Stakeholder Meetings

February 6	Overview and Analytic Approach
February 29	Scope and Point of Regulation
March 17	Allocation
April 4	Offsets
April 25	Cost Containment
May 5	**Scenarios Workshop**
May 19	Enforcement/Reporting/Verification
June 16	To be decided

Outline

- Background
  - How the emission reduction path influences the need for cost containment
  - Short-term vs. long-term carbon price issues
- Cost Containment Mechanisms
  - Length of compliance periods
  - Banking and borrowing
  - Price triggers
- Possibility of a Market Oversight Body
- Linkage
- Questions

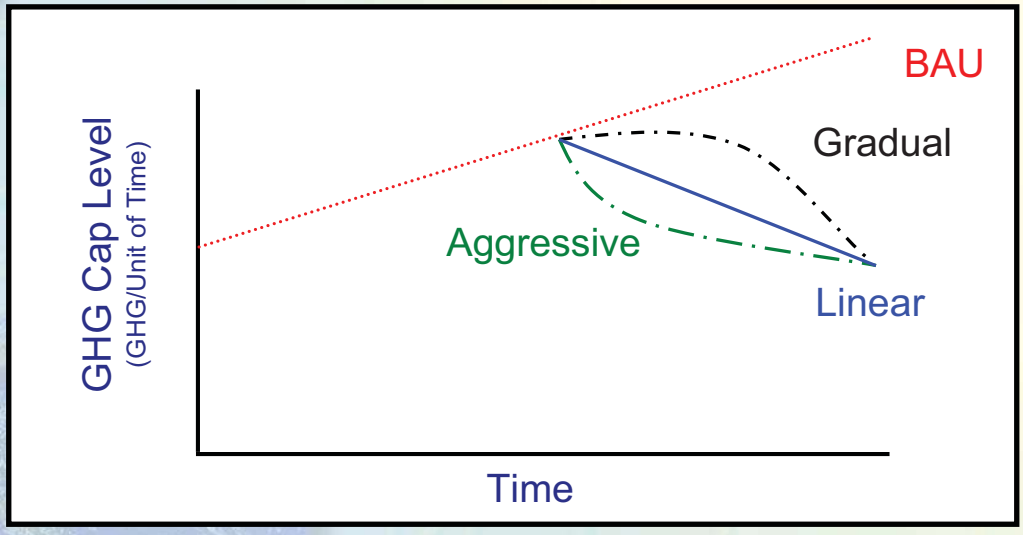
3

Key Questions for Today's Discussion

- What type of cost containment mechanisms should California consider for a potential cap-and-trade program?
- Is there a need to establish an independent market oversight body?
- Which systems should be considered for linkage with a potential CA cap-and-trade system?

4

Impact of Cap Level on the Need for Cost Containment



- Various emission reduction paths are possible to reach a 2020 target.
- A more aggressive emissions reduction path may be possible if certain cost containment mechanism are in place.

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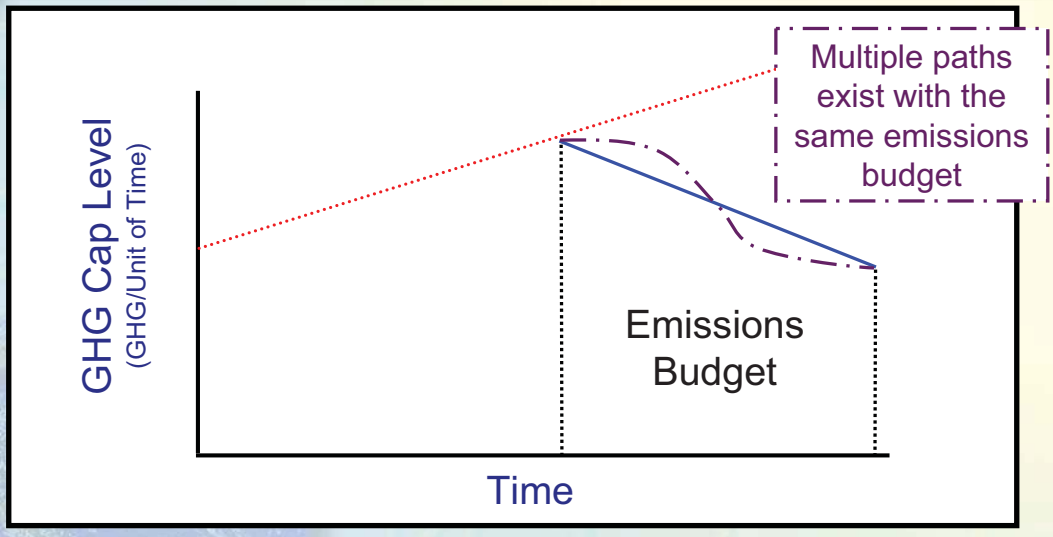
Emissions Budget



- The area under each curve is equal to the total amount of greenhouse gases emitted during that time period.
- This may be thought of as an “emissions budget”.

6

Short-term vs. Long-term Impacts

- A wide range in allowance prices and sudden significant changes in allowance price (volatility) could both be economically disruptive in the short-term.
  - Cost containment measures can address these issues.
- In the long-term, high allowance prices will make GHG emissions expensive, and will help force investment decisions in the direction of a low-carbon economy.
  - The goal of cost containment measures should not be to prevent a steady increase in allowance prices over the long-term.

7

Length of The Compliance Period

- The “compliance period” is the window of time in which a regulated entity’s emissions must match their allowances held.
- Multi-year compliance periods can help reduce volatility related to annual variations.
- Examples of compliance period length:
  - Acid Rain Program: 1 year
  - EU ETS: 1 year
  - RGGI: 3 years
  - WCI: 3 years (draft recommendation)

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Banking and Borrowing (1)

- Banking: Saving allowances from the current compliance period for use in future periods.
- Borrowing: Using allowances from future compliance periods in the current period.
- Banking and borrowing allow “intertemporal” trading between compliance periods.
  - Provides flexibility as to the timing of emission reductions.
  - Reduces allowance price volatility.

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Banking and Borrowing (2)

- Banking may incentivize beneficial behavior:
  - Incentive to make early reductions
  - Encourages long-term commitment to the program from stakeholders.
- Borrowing may create a perverse incentive:
  - Allowance debt discourages long-term commitment to the program from stakeholders.

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Banking and Over-allocation: Example from EU ETS Phase 1

Source: European Climate Exchange.
Dec '07 contracts

- EU ETS did not allow banking between Phase 1 and Phase 2.
- Allowance price crashed in Phase 1
  - Due to a sudden market understanding of over-allocation of allowances.
  - Could have been prevented if banking had been permitted.

Banking and Borrowing in Other Cap-and-Trade Systems

- Acid Rain Program
  - Banking, no borrowing
- EU ETS
  - Phase 1: no banking between phase 1 and phase 2, no borrowing
  - Phase 2: full banking, no borrowing
- RGGI
  - Banking, no borrowing
- WCI
  - Banking, no borrowing (draft recommendation)

Price Triggers (1)

- Basic definition: When allowance price reaches a predetermined value, a predetermined market intervention occurs.
  - Primary mechanisms to implement these triggers is to buy up allowances, issue additional allowances, or allow more offsets.
  - To maintain emissions budget regulators can potentially move allowances from future periods to current period in conjunction with these triggers.

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Price Triggers (2)

- Types of price triggers:
  - Increase/Decrease Offset Limits
    - Locations or amount of offsets allowed for compliance altered
  - Circuit Breakers
    - Emissions cap level held constant until prices come back down
  - Accelerator/Price Floor
    - State purchases allowances at a preset low price
  - Safety Valve/Price Ceiling
    - State issues allowances at a preset high price

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Does AB 32 Contain an Implicit Circuit Breaker/Safety Valve?

"In the event of extraordinary circumstances, catastrophic events, or threat of significant economic harm, the Governor may adjust the applicable deadlines for individual regulations, or for the state in the aggregate, to the earliest feasible date after that deadline."

– H&S Code 38599(a)

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Price Triggers: RGGI Example

- RGGI
  - If allowance price rises above $7 per short ton,
    - Sources will be allowed to cover up to 5% (up from 3.3%) of their emissions using domestic offsets.
  - If allowance price rises above $10 per short ton
    - Sources can cover up to 10% of their emissions with offsets.
    - Allow offset projects outside the U.S. as well as allowances from the EU Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism.
    - The compliance period will be extended by one year, for a maximum compliance period of 4 years.

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Creation of a Market Oversight Body

- The concept:
  - Establish an independent oversight board to manage carbon market efficiency and transparency.
  - Likely modeled after the Federal Reserve.
- Primary duty:
  - Control the allowance budget to balance environmental and economic goals.
- Other potential duties related to cost containment:
  - Collect and analyze market information.
  - Report to the public and to policymakers on the functioning of the market.
- Suggested names:
  - California Carbon Trust (ETAAC)
  - Carbon Market Efficiency Board (Lieberman-Warner)

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Linkage (1)

- California could choose to accept allowances or offset credits issued by other trading programs.
- Advantages of Linkage:
  - Further potential for lower cost abatement options.
  - Reduce concerns about market power.
  - Potentially reduce volatility.
- Disadvantages of Linkage:
  - Reduced potential for co-benefits in California

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Types of Linkages

- Direct Linkage: One or both linked systems accepts the other system's allowances for compliance purposes.
  - Unilateral linkage
    - Allow the use of credits or allowances from other cap-and trade programs to be used for compliance in CA.
  - Bilateral linkage
    - Allow credits and allowances to be fully fungible in both systems.
- Indirect Linkage: Market dynamics in one system impact market dynamics in another system through direct links with a common system.

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Examples and Issues Associated with Potential Linkages

- Direct with EU ETS by accepting European Union Allowances (EUAs) for compliance in the CA system.
- Indirect with EU ETS through CDM by accepting Certified Emissions Reductions (CERs) offset credits for compliance in the CA system.
- Direct with RGGI by accepting Regional Greenhouse gas Allowances (RGAs) for compliance in the CA system.
  - Issue: Activation of RGGI offset trigger would affect allowance prices in all linked system.
  - Some of the other cost containment tools discussed today may influence feasibility of linking with other programs in a similar fashion.

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Questions for Stakeholders

- What type of cost containment mechanisms should California consider for a potential cap-and-trade program?
- Is there a need to establish an independent market oversight body?
- What systems should be considered for linkage with a potential CA cap-and-trade system?

Send questions or comments to ccplan@arb.ca.gov

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CALIFORNIA AIR RESOURCES BOARD
Assembly Bill 32 Technical Stakeholder Working Group Meeting

REPORTING, VERIFICATION AND ENFORCEMENT

June 3, 2008
1:30 p.m. – 5:00 p.m.

Sierra Hearing Room
2nd floor of the California Environmental Protection Agency (CalEPA)
Headquarters Building
1001 "I" Street, Sacramento, California

Note: The Sierra Hearing Room at CalEPA Headquarters has limited seating. The meeting will be webcast (http://www.calepa.ca.gov/broadcast/) and open to real-time questions via e-mail (ccplan@arb.ca.gov).

This meeting is part of an ongoing series of program design and economic analysis technical stakeholder meetings. These meetings provide interested stakeholders the opportunity to provide specific technical input concerning various elements of the program design developed to meet the requirements of Assembly Bill (AB) 32. Previous stakeholder meetings have covered specific design issues involving market-based measures. These issues have included rules for offsets and modeling the use of offsets in a cap-and-trade program; analysis of non-economic impacts, such as environmental justice and reductions in co-contaminants; containing the costs of allowances; and program evaluation criteria.

This meeting will focus on the reporting, verification, and enforcement concerns stakeholders may have for the implementation of market-based greenhouse gas emission reduction mechanisms under AB 32. The attached white paper considers two such mechanisms, "cap and trade" and a carbon fee. The mechanics of these two options have been explored in earlier program design stakeholder meetings.

AGENDA

A. Opening Remarks

B. Air Resources Board (ARB) Staff Presentation: "Reporting, Verification, and Enforcement Developments Under a Market-Based Emission Reduction Program"

C. Round-Table Discussion

1. Should reporting and verification periods be shorter than compliance periods?

2. What other changes would need to be made to the existing reporting and verification procedures created by the 2007 Greenhouse Gas Reporting Regulation to accommodate a cap-and-trade system?

3. How should ARB set penalties for failure to surrender sufficient allowances or offsets to match verified emissions?

4. How should ARB best implement the enforcement provisions of section 38580 against violations resulting from electricity imports or the purchase of offsets from out-of-State entities?

5. How should ARB contend with potential manipulation in credit trading markets?

FRAMEWORK FOR DISCUSSION

Overview

The June 3, 2008 Program Design Technical Stakeholder Working Group meeting is part of ARB's effort to design market-based mechanisms which meet the criteria set forth in AB 32. The meeting will focus on the reporting, verification, and enforcement features that may be needed to implement two such market-based measures, cap-and-trade and carbon fees. This white paper begins with a brief overview of market-based measures. It explores five issues involving a cap-and-trade program, and determines whether each issue also arises under a carbon fee approach. Finally, the paper reviews recommendations made to ARB and provides examples of other cap-and-trade programs.

Earlier stakeholder meetings have discussed many options for design features for market-based measures. These include allocations of allowances, cost containment, the use of offsets, and non-economic effects. For the June 3 meeting, ARB is asking stakeholders to avoid renewing the debate over which design features are optimal. Instead, ARB requests that stakeholders identify advantages and disadvantages of particular reporting, verification, and enforcement procedures for any options of interest. To keep the discussion focused, ARB further requests that stakeholders begin their comments by clearly identifying the design options that they are addressing, or whether they believe their comments address all the options available.

The first step in implementing a cap-and-trade system for carbon emissions is to use the quantification and reporting procedures in the ARB Regulation for the Mandatory Reporting of Greenhouse Gas (GHG) Emissions to establish a baseline, or initial level of emissions, for every facility or entity within the capped sectors. Initially, ARB would distribute "allowances" to emitters[1] in the capped sectors equal in sum to the state-wide cap. The number of allowances allocated would decrease as the California-wide cap is reduced in each subsequent compliance period. Emitters would meet the cap by surrendering allowances at the end of each compliance period equal to their actual emissions. These could be obtained by direct allocation, purchase in an auction, or purchase from another capped facility. They may also be able to purchase "offset" reductions from entities not included in the capped sectors. As programs develop at the federal or regional level, interstate sales of allowances or offsets may emerge.

[1] This paper will use the term *entities* to refer to those responsible for facility compliance. Except for *entities* involved in electric power transactions (retail providers and marketers), reporting and verification are done at the *facility* level, and it is anticipated that allowances would be held by facilities under a cap-and-trade system.

A carbon fee is assessed on fuels or actual emissions during a compliance period. The fee would be set at a level to bring the State into compliance with the 2020 goal. For the program to qualify as a fee under California law, the fee revenues must be spent on program implementation or reductions in carbon emissions.

Implementing either cap-and-trade or a carbon fee approach is likely to require additions and changes to ARB's mandatory reporting regulation so that all necessary information is acquired. For example, there may be a need for reporting by lower-emitting sources within capped sectors or in sectors brought into cap-and-trade at a later time. In addition, rules governing the frequency of emissions reporting and verification may need to be revisited to address the desire for stability in the market for allowances and offsets. The purpose of the June 3 workshop is to begin to raise such issues and collect input on related issues as ARB evaluates market mechanisms.

KEY QUESTIONS FOR DISCUSSION

Should reporting and verification periods be shorter than compliance periods in a cap-and-trade system?

ARB is evaluating compliance periods as long as three years under a cap-and-trade program.[2] Capped facilities and entities would have to reconcile their verified emissions with the number of allowances surrendered at the end of the compliance period. ARB is also considering variable-length and overlapping compliance periods to prevent a surprise shortage of allowances at the end of a compliance period. Under the ARB Mandatory GHG Reporting Regulation, reporting is required annually, and verification either annually or every three years. For the June 3 stakeholder workshop, ARB is interested in stakeholder opinions on the value of making reporting and verification periods shorter than compliance periods, for example, quarterly or semiannual reporting with an ongoing verification process.

A shorter period would make information available on the extent of actual reductions, preventing surprise shortages of allowances at the end of the compliance period. Information on reduction activity might also be provided by overlapping compliance periods for different entities. A shorter reporting and verification period could encourage more rapid adjustment of prices for traded allowances and offsets and decrease opportunities for market manipulation. For these advantages to be realized, the reported and verified data would have to be

[2] The ARB held a Stakeholder meeting on April 25, 2008 to discuss options on length of compliance period. For the white paper and public comments on this issue please see http://www.arb.ca.gov/cc/scopingplan/pgmdesign-sp/meetings/meetings.htm

made available to all market participants. For example, ARB could publish a database on allowances and offsets used for compliance, generation of offsets, reduction requirements, and violations and penalties for all entities covered by AB 32.

More frequent reporting and verification is likely to result in additional costs for compiling in-house emissions reports and contracting for consultants and verifiers. Cost estimates provided to ARB by stakeholders indicate that these costs would be minor. ARB welcomes any additional cost information stakeholders could provide. More frequent reporting and verification would raise costs for facilities reducing emissions for their own compliance needs. Those facilities planning to generate surplus reductions for sale as offsets or allowances could pass most of the additional costs on to purchasers.

This issue would not arise under a carbon fee regime. Entities and facilities gain no market information from frequent reporting and an annual cycle of reporting, verification and fee payment appears to be adequate.

What other changes need to be made to the existing reporting and verification procedures in the 2007 Greenhouse Gas Reporting Regulation to accommodate a cap-and-trade system?

ARB's current mandatory reporting regulation may have to be modified to allow for complete facility-level accounting of emissions and allowances. Some facilities only report stationary combustion emissions, while a full accounting may require reporting of process and fugitive emissions. ARB would have to extend reporting procedures to cover these emissions. In addition, ARB would have to be able to distinguish between real changes in emissions and inventory changes resulting from modifications to reporting mechanisms.

For facilities not currently covered by the regulation, or those in uncapped sectors that may wish to develop offset projects, emission quantification methods will need to be identified and developed before a baseline could be established. This could affect a large number of entities if ARB expands the scope of a cap-and-trade market to sectors such as transportation fuels and residential and commercial fuel use.

Implementing market-based measures would also require resolution of emission attribution issues. For example:

- Some products containing GHG are used by other industries in their production process. This "transfer" of GHG raises a "point of regulation" issue. That is, who should be responsible for reporting the creation of the

GHG, the facility producing the product containing the GHG or the facility using it and actually releasing it?

- The GHG Reporting Regulation allows for less costly reporting and verification procedures for some smaller emitters. Additional reporting requirements may be needed for these sources under a cap-and-trade regime.
- Arrangements must be made for new emitters that enter production after a compliance period has begun. The ARB regulation requires new facilities to report following their first full calendar year of operation in California.
- The attribution of emissions for imported electricity and cogeneration facilities, discussed during development of the reporting regulation, will need to be resolved.

ARB is asking stakeholders to help identify areas in which modifications or extensions must be made.

These same issues would also arise under a carbon fee.

How should ARB set penalties for failure to surrender sufficient allowances or offsets to match verified emissions?

AB 32 enforcement provisions are modeled after the penalty structure for stationary source violations, i.e., any violation of any part of the regulations ARB adopts under AB 32 is punishable, regardless of intent or location of the violation, including out of state violators. Within this authority, ARB has authority to compute the daily penalty calculation under Health & Safety Code (HSC) 38580(b)(3).

A precondition for a cap-and-trade system is a rigorous enforcement system, including a system of penalties sufficient to deter noncompliance. Regardless of how penalties are set, noncompliant entities or facilities would still be required to submit sufficient allowances for the compliance period.

ARB seeks input on the criteria it should use to compute daily penalty calculations within the context of a yearly or triennial compliance period.

These issues do not arise under a carbon fee regime beyond failure to pay the carbon fee.

How should ARB best implement the enforcement provisions of section 38580 against violations resulting from electricity imports or the purchase of offsets from out-of-State entities?

ARB would control the allocation and retirement of allowances based on emissions limits on the capped sectors in California. However, ARB is considering proposals to allow California entities limited use of offsets and allowances from the Western Climate Initiative (WCI) region. In this situation, entities regulated in California could be responsible for surrendering out-of-state offsets or allowances to cover emissions from the generation of electricity imports.

ARB has legal authority to address violations associated with out-of-state allowances or offsets used for compliance in California. ARB seeks input from stakeholders on issues they have concerning enforcement within the context of a regional cap-and-trade system.

Some have suggested that uncertainties associated with out-of-state offsets could be addressed by ARB requiring a surety mechanism (bond) for each offset used by California entities. Since California would only allow the use of verifiable offsets, a bond would only be needed if problems arose with the verification process.

These issues do not arise under a carbon fee regime.

How should ARB contend with potential manipulation in credit trading markets?

With or without ARB support, private exchanges are likely to create exchange markets for trading offsets and allowances. These would likely include market participants with and without compliance obligations. Many stakeholders have expressed concern that speculative activity could lead to market instability or price gouging of entities or facilities needing to purchase allowances or offsets. ARB has four main options available, each representing a different level of intervention in the trading markets.

The first option, which is the most restrictive approach, would be for ARB to rely on administrative mechanisms to control registration and trade of allowances and offsets. There would be no market as such; ARB would have to approve all transfers.

The second option is at the other extreme, with no involvement by ARB in trading. ARB could endorse the development of markets for allowances and offsets and secondary markets for financial instruments based on allowances

and offsets. These markets would be conducted by existing private exchanges. Under normal market conditions, the potentially large number of market participants would limit price fluctuations. The market operational rules of the exchanges themselves would reduce the potential for manipulation. Once private exchanges develop futures markets, federal oversight agencies such as the Commodity Futures Trading Commission (CFTC) could also become involved.

The two remaining options represent hybrids of the two above. In option three, ARB could support the development of private exchange markets but seek legal authority to monitor transactions, investigate price spikes and investigate other evidence of strategic behavior in the markets. In option four, ARB could create a market entity, similar to the ETAAC recommendation to form a Carbon Trust, which could reduce the potential for manipulation by tracking prices in private exchange markets and selling or buying offsets or allowances.[3] This entity would not serve in the "market maker" role others have envisioned for a Carbon Trust, but could serve to reduce short-term price spikes which could result from market manipulation.

These issues do not arise under a carbon fee regime.

SUMMARY OF RELATED ACTVITIES, RECOMMENDATIONS TO ARB AND PRECEDENTS

Related Activities:

Western Climate Initiative
The Western Climate Initiative is a collaborative effort by seven U.S. states and three Canadian provinces to develop regional strategies to address climate change. In March 2008, the WCI released Initial Draft Program Reporting Recommendations, followed by specific recommendations on May 16, 2008.[4] The recommendations balance the need for a consistent region-wide approach to reporting and verification with the need to respect regulatory structures already in place in member jurisdictions.

[3] Economic and Technology Advancement Advisory Committee, "Recommendations of the Economic and Technology Advancement Advisory Committee: Final Report: Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California," February 11, 2008, HTTP://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf, pp. 2-3 to 2-7.
[4] Western Climate Initiative, "Draft Program Reporting Recommendations," March 31, 2008, http://www.westernclimateinitiative.org/ewebeditpro/items/O104F16572.pdf . Western Climate Initiative, "Draft Design Recommendations on Elements of the Cap-and Trade Program," May 16, 2008, http://www.westernclimateinitiative.org/ewebeditpro/items/O104F17390.pdf .

The WCI supports the use of The Climate Registry (TCR) as infrastructure, the use of third party verifiers or verifiers from jurisdictional entities, and inclusion of emitters beyond those initially proposed for inclusion in cap-and-trade systems.

Recommendations to the ARB:

Market Advisory Committee
The Market Advisory Committee (MAC) Final Report endorses a "first-handler" role for ARB in the reporting and management of emissions data under a cap-and-trade system.[5] The MAC also recommends that ARB consider lower cost reporting and monitoring systems for smaller businesses. To make the system transparent to all market participants, ARB should acquire and release the reporting data on a quarterly basis. The reporting, verification, and compliance approach should sufficiently ensure the environmental integrity of reductions so that California's system could eventually be linked to other national programs.

The MAC also offered recommendations for market monitoring and penalties for noncompliance. ARB should monitor transfers through a tracking system based on assigning serial numbers to all allowances and offsets. Entities and facilities would have firm deadlines for reporting and surrender of allowances and offsets. In addition to financial penalties, ARB should consider requiring noncompliant facilities and entities to surrender an extra number of allowances in addition to allowances matching their emissions.

Economic and Technology Advancement Advisory Committee
The Economic and Technology Advancement Advisory Committee Final Report recommended the creation of a Carbon Trust to serve in a "market-maker" role within a cap-and-trade system.[6] The Trust would serve to limit price fluctuations as well as promote new reduction technologies, projects resolving environmental justice issues, and generally support the development of a stable market for allowances and offsets. The Trust could also serve as a "shock absorber" by buying allowances when prices are low and selling when prices are high. In the role envisioned by ETAAC, the Trust could be a public entity or a joint public-private effort.

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[5] Market Advisory Committee, "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," June 30, 3007, http://www.climatechange.ca.gov/publications/market_advisory_committee/2007-06-29_MAC_FINAL_REPORT.PDF .

[6] Economic and Technology Advancement Advisory Committee, "Economic and Technology Advancement Advisory Committee (ETAAC) Final Report: Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California," February 11, 2008. http://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf

Examples of Reporting, Verification and Enforcement Procedures:

European Union Emission Trading Scheme (ETS)
The EU implemented the ETS under a principle of "subsidiarity" which respected each member state's right to establish a national plan to implement the system and to designate "competent authorities" to establish permit limits, verify emissions, inspect facilities, and enforce penalties. The result was a lack of uniformity in implementation over the scheme's first two phases. The European Commission expects Phase Three to result in a much more centralized system with uniform procedures across member states. The EU ETS requires reporting and verification of major stationary source emissions on a facility ("installation") basis, with verification performed by EU-accredited third-party verifiers. The EU's experience supports the need for uniform procedures across states if a regional cap-and-trade market is to both preserve the environmental integrity of allowances and offsets and to provide minimum cost compliance.

Regional Greenhouse Gas Initiative (RGGI)
Ten northeastern states have established a CO_2 Budget Trading Program for electricity generators using a cap-and-trade regime.[7] The program uses three-year compliance periods. For the first six years, beginning in 2009, the cap will be set to hold emissions constant. The cap will then decline 2.5% per year in each of the next four years. The program designers believe that the gradual decline in the cap would provide price signals to direct investment in control equipment without disrupting electricity rates. Complying facilities would install monitoring units and report emissions annually. Member states may still require facilities to establish an emissions monitoring plan in addition to complying with the allowance requirements.

The program would allow the use of offsets from projects outside member jurisdictions if the offsets meet two requirements designed to ensure additionality. To be eligible, the offsets would have to be located in a state in which the regulatory authority has a memorandum of understanding (MOU) with a regulatory agency in a RGGI member state. The MOU would ensure that the project meets additionality requirements beyond a business-as-usual scenario. The MOU would also require annual monitoring reports by accredited independent verifiers.

Acid Rain Program
The US EPA Acid Rain Program was established by Title IV of the 1990 Clean Air Act Amendments. It covers 2,000 sources of sulfur dioxide, primarily power plants. The tracking system used by the Acid Rain Program could be adapted for use in a California cap-and-trade program. The Allowance Tracking System

[7] Regional Greenhouse Gas Initiative, "Overview of RGGI CO_2 Budget Trading Program. http://www.rggi.org/docs/program_summary_10_07.pdf

(ATS) contains two types of accounts. The *unit account* is established for facilities with compliance responsibilities. It tracks balances and all transfers reported to EPA. Facilities' actual emissions are monitored in real time and reported into the Emissions Tracking System (ETS). These emissions are deducted from unit accounts. *General accounts* can be established by entities without compliance obligations, such as brokers. The ability of the ATS to serve as a model for a California tracking system may be limited because the emissions to be deducted from allowance balances are verified in a comparable manner through continuous emissions monitoring systems. This type of monitoring would not be possible for the more numerous, diverse, and complex sources under a California cap-and-trade system. In addition, the number of allowances and entities involved is much smaller in the Acid Rain Program.

Acid Rain allowances are also traded on private commodity exchanges. Some of these platforms have regulatory oversight by the CFTC, which provides another level of market oversight beyond U.S. EPA's tracking activities. The Federal Energy Regulatory Commission also has oversight responsibility since the complying facilities are power plants.

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Reporting, Verification, and Enforcement

Program Design Technical Stakeholder Workgroup
June 3, 2008

Raymond Olsson, Ph.D.
Air Resources Board

Please email questions to CCPlan@arb.ca.gov

1

Program Design Stakeholder Meetings

- February 6 Overview and Analytic Approach
- February 29 Scope and Point of Regulation
- March 17 Allocation
- April 4 Offsets
- April 25 Cost Containment
- May 5 Scenarios Workshop
- **June 3 Enforcement/Reporting/Verification**

2

Overview of Market-Based Mechanisms

- Cap-and-Trade (C&T)
  - Setting baselines
  - Caps, allowances, and offsets
  - Surrender sufficient allowances and offsets
- Carbon Fee
  - Fee fixed per unit of carbon emissions

3

2007 Mandatory Reporting of Greenhouse Gases Regulation

- Annual Reporting
  - Begin reporting in 2009 on 2008 emissions
  - Covers 94% of point source CO_2 emissions
- Third Party Verification
  - Required beginning 2010
  - Annual for some facilities, triennial for others
  - Verifiers can be in private sector
  - ARB accredits verifiers, conducts audits of verifiers and reviews reported emissions

4

How Long Should Reporting And Verification (R/V) Periods Be?

- Issue arises when considering longer compliance periods, such as three years
- Should ARB consider annual or shorter reporting and verification periods?
- Emissions reports would be public information

5

Advantages/Disadvantages (C&T Approach)

- Advantages:
  - Provide information to market participants on supply and demand conditions
  - Allow rapid price adjustment
  - Prevent “surprises” at end of compliance period
- Disadvantages:
  - More frequent R/V could add compliance costs
    - Data suggest additional costs would be minor

ARB welcomes additional estimates or observations on costs

6

Shorter R/V Periods with a Carbon Fee Approach?

- Entity receives no useful market information from more frequent reporting and verification.

7

Would Reporting Procedures Have to be Extended to Implement Market-Based Measures?

- Imported electricity and cogeneration
- “Transfer” of GHG and other “point of regulation” issues
- Appropriate procedures for smaller emitters
- Are there other sectors for which quantification methods must be further developed?
- The same issues arise under carbon fee

8

Violations and Penalties

- Enforcement and penalties for reporting false or late information (Mandatory Reporting GHG Regulation)
- Cap & Trade
  - Failure to surrender sufficient allowances or offsets to match verified emissions
- Carbon Fee
  - Failure to pay sufficient fees to cover verified emissions

9

Potential Penalty Structure Under Cap-and-Trade

- AB 32 enforcement modeled after stationary source penalty structure
  - Violations punishable regardless of intent or location of violator, even out-of-state
  - ARB has authority to compute a daily penalty (HSC 38580(b)(3)
- Payment of penalty would not substitute for submitting sufficient allowances

ARB seeks input on criteria to compute daily penalty

10

Could ARB Address AB 32 Requirements in Other Jurisdictions?

- If a California-only cap & trade
  - ARB controls allocation and retirement of allowances
  - "First Deliverer" for electricity imports
- If a regional or national cap & trade
  - ARB could authorize California entities to use non-California allowances or offsets for compliance
- Enforcement actions could be taken for out-of-State violations if, for example:
  - Verifications don't meet AB 32 standards
  - Verifiers don't meet California accreditation standards
- Not an issue for carbon fee

11

Applying ARB AB 32 Enforcement Authority If Regional Program Develops

- HSC section 38580 enforcement mechanism
  - Violations punishable regardless of intent or location of violator, even out-of-state
- ARB may also prevent problems:
  - Establish memoranda of understanding with other jurisdictions on verifications
  - Require a surety mechanism for allowances or offsets created outside California when used for compliance by California entities

Other options?

12

Issue: Potential Manipulation in Credit Trading Markets

- Exchange markets will develop, especially if there are regional or federal programs
- Markets for futures and options or other derivatives may follow
- Should ARB encourage these developments?
- Should ARB play a direct role in these markets or encourage federal regulation?
- Not an issue for carbon fee

13

How Should ARB Handle Potential for Market Manipulation?

Potential Options:

- Create a California-only administrative "market"
- Endorse private markets with federal oversight only, no market oversight role for ARB
- ARB seeks legal market oversight authority
- Creation of a Carbon Trust to stabilize the market by buying and selling allowances and offsets

Other methods or combinations of institutional roles?

14

Two Requests

- Focus on Reporting, Verification, and Enforcement (RVE) issues
- Specify if issues you are raising apply to a specific option or all options

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Questions for Stakeholders

- Should reporting and verification periods be shorter than compliance periods?
- What changes need to be made to the Mandatory GHG Reporting Regulation?
- How should ARB set penalties for failure to surrender sufficient allowances or offsets?
- How should ARB implement existing enforcement provisions (sec. 38580) for violations involving out-of state offsets or electricity imports?
- How should ARB contend with potential market manipulation in credit trading markets?

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Public Technical Working Group Meeting

Greenhouse Gas Reporting in a Cap-and-Trade Program

February 18, 2009
California Air Resources Board

Purpose of Meeting

- Identify issues relating to greenhouse gas emissions reporting for the cap-and-trade regulatory development process

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Meeting Agenda

2:00 pm	Introduction & Purpose of Meeting
	Agenda & Ground Rules
	Reporting Presentation
	Your Questions For Clarity & Understanding
	Your Ideas, Suggestions & Concerns
3:35 pm	Break
3:40 pm	Biomass Presentation
	Your Questions For Clarity & Understanding
	Your Feedback On Biomass (Handout)
	Your Comments On Today's Meeting
	Next Steps
	Closing Comments
5:00 pm	Adjourn

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Meeting Ground Rules

Facilitator:
- Guide the meeting process.
- Keep discussions focused and on track.

Everyone please:
- Come up to one of the podiums to share your questions and ideas.
- Limit your comments to 2 minutes or less.
- Respect the process and the person who is speaking.
- Turn **off** your cell phones and pagers.

Webcast Audience
- Your questions and comments will be shared during the meeting. Direct your e-mails to: **ccworkshops@arb.ca.gov**

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Agenda

- Background
- Discussion of ARB Mandatory Reporting Requirements and WCI Draft Essential Requirements of Mandatory Reporting
- Identification of reporting issues that will be discussed in future technical stakeholder working group meetings
- Reporting biomass emissions -- beginning the conversation

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California Cap-and-Trade Rulemaking Timeline

- Provided overview of timeline at January 29th workshop
- Extensive public process throughout rulemaking
- Focus in 2009 will be on working through implications of different issues
- Focus in 2010 will be on finalizing program design and developing regulatory language
- Expect Board adoption of regulation by end of 2010

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Preliminary Schedule for Initial Issue-Focused Meetings

February 18, 2009 ***Today!***	• Reporting: Greenhouse gas reporting in a California cap-and-trade program • Reporting: Biomass emissions reporting -- identification of issues that need to be addressed
March 2009	• Early reduction program • Set asides • Essentials of market oversight and operations • Offsets compliance limits • Competitiveness issues
April 2009	• Defining the essential elements of offsets and offset system requirements • Attributing emissions to imported electricity • Evaluating potential impacts to vulnerable communities from cap and trade

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ARB Mandatory Reporting Regulation

- Board approved in December 2007 and is now effective
- Requires reporting and verification of greenhouse gas emissions from specified sources

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WCI Design Recommendations

- September 2008
  - *Design Recommendations for the WCI Regional Cap-and-Trade Program*
    - Recommended that WCI Partners establish the essential requirements for reporting by all entities and facilities required to report in each of the WCI Partner jurisdictions

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WCI Draft Essential Requirements of Mandatory Reporting

- January 6, 2009
  - *Background and Progress Report for Draft Essential Requirements for Mandatory Reporting* (WCI Reporting Document)
    - Covers most sectors from the ARB regulation and industrial process emissions from seven additional sectors
    - Electricity sector still under development
    - Reporting elements will be developed throughout 2009 for several source categories
    - 2009/2010: States/Provinces consider rules for reporting 2010 emissions in 2011

WCI Reporting Document builds on ARB Mandatory Reporting Regulation among others

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ARB Coordination with WCI

- ARB and other California agencies are actively participating in ongoing WCI efforts
  - WCI committees: Reporting, Electricity, Offsets, Markets, Cap Setting and Allowance Distribution, Complementary Policies
  - CA staff participation on each committee

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California Source Reporting Requirements

- California's mandatory reporting rule is currently in effect
  - Reporting beginning in 2009 for 2008 emissions
- ARB does not plan to revise these rules until the full cap-and-trade regulation is adopted in late 2010

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ARB Mandatory Reporting Regulation and WCI Essential Requirements for Reporting Document

Reporting Sectors and Thresholds

- ARB Mandatory Reporting Regulation:
  - Specified sectors and combustion sources ≥25,000 MT CO2
  - Power plants ≥1MW + ≥2,500 MT CO2
- WCI January 2009 Reporting Document:
  - Potentially any source ≥10,000 MT CO2 ***equivalent***

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Industrial Process Emissions Covered

- ARB Mandatory Reporting Regulation:
  - Cement, Refineries, Hydrogen Plants, Power Plants
- WCI January 2009 Reporting Document:
  - ARB sources plus ~15 identified process sources
  - Sources in California include
    - Oil/gas production and distribution, pulp and paper, lime, glass manufacture, and mineral production

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Electricity Imports

- ARB Mandatory Reporting Regulation:
  - Extensive information from retail providers, marketers to guard against paper reductions
- WCI January 2009 Reporting Document:
  - First jurisdictional deliverers report

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Transportation Fuels

- ARB Mandatory Reporting Regulation:
  - Optional at reporting facilities
  - Methods to be developed to cover fuels in 2015 cap
- WCI January 2009 Reporting Document:
  - Upstream reporting
  - Methods to be developed in 2010

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Residential, Commercial, Industrial Fuels

- ARB Mandatory Reporting Regulation:
  - Only at reporting facilities for industrial
  - Methods to be developed to cover fuels in 2015 cap
- WCI January 2009 Reporting Document:
  - Upstream reporting
  - Methods to be developed in 2010

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Source Testing for Emission Factors

- ARB Mandatory Reporting Regulation:
  - Allowed for CH_4, N_2O; geothermal CO_2
  - ARB regulation also allows source testing for CO2 at sulfur recovery units, and for CO2 from biomass solids and waste-derived fuels.
- WCI January 2009 Reporting Document:
  - Has included source testing for all above, and also for sulfur recovery, but not for CO2 from biomass solids/waste-derived fuels, yet

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Verification

- ARB Mandatory Reporting Regulation:
  - Annual third party after conflict of interest (COI) review
  - Some sources triennial
- WCI January 2009 Reporting Document:
  - Annual third party after COI review for capped sources

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Verifier Accreditation

- ARB Mandatory Reporting Regulation:
  - ARB accredits
- WCI January 2009 Reporting Document:
  - ARB and TCR-ANSI accredited Verifiers are grandfathered
  - Other verifiers will be accredited to ISO 14065 program developed under ISO 17011
  - WCI may have additional accreditation criteria

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Verification Program Appeals

- ARB decides on all appeals
- WCI may require a regional body to handle all appeals for consistency

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Reporting Issues for Discussion in 2009

- Working definition of biomass
  - Basic discussion today
  - Discussion of sustainability guidelines and a method to assess carbon neutrality to be scheduled later
- Source testing for facilities burning biomass and waste-derived fuels when above the cap-and-trade threshold
- Quantification methods for new sectors, including industrial process emissions

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Reporting Issues for Discussion in 2009

- CA and WCI different reporting thresholds
- Reporting threshold for power plants
  - WCI does not establish a different threshold for power plants
  - 2,500 metric tons for CA program is lower than the WCI proposal
- Cogeneration
- Point of regulation for transportation fuels and natural gas for commercial/residential uses
  - Methods to differentiate upstream and downstream coverage

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Reporting Issues for Discussion in 2009

- Fuel testing requirements for general combustion facilities not combusting pipeline-value natural gas
- Electricity transaction reporting changes to assist in tracking electricity imports
- Potential changes in quantification methods, e.g., further specification of sampling techniques
- Reporting exemptions for schools, hospitals, backup generators

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Reporting Issues for Discussion in 2009

- Annual third-party verification for all capped sources
- Potential changes to the verification administration

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Additional Issues on Reporting?

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Essential Requirements for Reporting Biomass Emissions

Biomass Definition

- ARB Mandatory Reporting Regulation
  - "Biomass"
    - non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries
    - non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material
  - "Biomass fuels" or "biomass-derived fuels"
    - Fuels derived entirely from biomass

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Biomass Definition (cont'd)

- Definition of biomass under consideration by the WCI Reporting Committee is consistent with ARB's Mandatory Reporting Regulation
- WCI's September 2008 design document recommends that carbon neutrality of biomass be determined by each jurisdiction
  - "For biomass determined by each WCI Partner jurisdiction to be carbon neutral, the carbon dioxide emissions from the combustion of that biomass are not included in the cap-and-trade program, except for purposes of reporting."
- Carbon neutrality is closely related to defining biomass for reporting purposes
  - California will work through this issue

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WCI Treatment of Biomass

- Combustion emissions reported; biomass CO_2 tracked separately
- Limited deduction of biomass emissions relative to reporting threshold
- Fewer quantification options currently proposed
  - CEMS or carbon testing

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Developing a Cap-and-Trade Biomass Reporting Definition (See Handout)

- What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?
- Should the ARB definition take into account other working definitions?
  - Consistency across RPS, RFS, LCFS, and WCI
- What reporting provisions should be considered regarding data collection, measurement, emission factors, etc.?
- E-mail your name, agency/organization information, and responses to **ccworkshops@arb.ca.gov**

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Discussion

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Closing Comments and Next Steps

- How ARB will use your feedback
  - Consolidate data received
  - Post on reporting website by 3/5
  - Use feedback to inform content and process for future meetings

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Karen Khamou	Transportation
Manpreet Mattu	Reporting Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Mihoyo Fuji, Claudia Orlando	Natural gas for residential and commercial
Mihoyo Fuji	Marginal abatement costs and competitiveness issues
Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Background Information

ARB Mandatory Reporting Requirements and WCI January 2009 Background and Progress Report for Draft Essential Requirements for Mandatory Reporting (WCI January 2009 Reporting Document)

♦ **Key to Cap-and-Trade:** Emissions reporting will be the backbone of the California cap-and-trade program. Data from mandatory reporting provide information that assists in establishing the starting allowance budget and rules for distributing allowances.

♦ **Regulatory Actions, Timeline:** California's mandatory reporting rule is currently in effect, with reporting beginning in 2009 for 2008 emissions. The WCI Reporting Committee is developing Essential Requirements for reporting, including quantification methods and verification requirements. Once finalized, WCI Partner jurisdictions would adopt or revise mandatory reporting regulations consistent with WCI Essential Elements. **ARB does not plan to revise its mandatory reporting rules until the California cap-and-trade regulation is adopted in late 2010.** (See reverse for how WCI proposal differs from ARB mandatory reporting requirements in key areas.)

♦ **Reporting Threshold:** The entities and facilities subject to reporting in the WCI partner jurisdictions would include facilities with annual emissions equal to or greater than 10,000 metric tons of CO_2e. In California, lowering the current reporting threshold from 25,000 metric tons of CO_2e would add 200-300 facilities.

♦ **The ARB Mandatory Reporting Regulation** was one of the important starting points for work underway by the WCI Reporting Committee. Consequently, the WCI January 2009 Reporting Document is similar. The WCI Reporting Committee and Electricity Committee are continuing to examine options for electric sector reporting, including how best to support First Jurisdictional Deliverer (FJD) as the point of regulation.

♦ **Key Additions in the WCI Proposal**: Process emissions for 12 to 15 industrial source categories are included in the WCI January 2009 Reporting Document that are not part of California's reporting regulation. Additional methods are being developed for process emissions in the oil and gas sector; reporting provisions for suppliers of transportation fuels, and residential, commercial and industrial fuels remain to be developed.

♦ **Reporting Mechanism:** Under the WCI January 2009 Reporting Document, entities and facilities would report to the jurisdictions in which they are located. Data would then be uploaded to a common platform hosted by The Climate Registry (TCR).

♦ **Third-Party Verification:** Under the WCI January 2009 Reporting Document, procedures would establish a uniform accreditation system for verifiers based on ISO standards, plus a mechanism to demonstrate knowledge of WCI requirements.

Provisions in the WCI January 2009 Reporting Document that are Different from the ARB Mandatory Reporting Regulation

- Lower reporting threshold of 10,000 MT CO_2 *equivalent.*
- Does not include an electric-sector threshold, while ARB's rule specifies 2,500 MT and 1 MW, both of which would be lower than WCI's general threshold for all reporters.
- Includes no exemptions for schools, hospitals, backup generators, although the WCI program design discusses that such exemptions may be considered.
- Includes reporting of industrial process emissions for about 10 specified sources with an additional 14 processes under consideration.
- Includes more stringent methods for general combustion facilities not combusting pipeline-quality natural gas that would require some fuel testing rather than default emission factors.
- Has more limited quantification methods for facilities burning biomass and waste-derived fuels when above the cap-and-trade threshold than ARB's regulation. Under the ARB regulation, waste-burning facilities are limited to CEMS monitoring; biomass facilities may conduct carbon testing. Another option under consideration is to add source testing.
- Moves away from electricity transaction reporting required to implement a load-based cap, toward information needed from first jurisdictional deliverers.
- Makes several relatively minor changes in quantification methods, e.g., further specification of sampling techniques.
- Includes fuel production and distribution reporting (transportation, commercial, residential, small industrial fuel usage) and methods to differentiate upstream and downstream coverage will follow in 2010.
- Includes annual third-party verification for all sources subject to the cap, without a triennial option.
- Includes potential changes to the verification administration by deferring some tasks to a central designee or body. All new WCI verifiers will be accredited to the ISO 14065 standard developed under ISO 17011. WCI may add additional accreditation requirements to any existing accreditation process.
- Proposes one reporting deadline (April 1), followed by a five-month verification period. This schedule may be revised as the cap-and-trade program begins.

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Background: Biomass Reporting in a Cap and Trade Program

Issue

Depending on specific details defining biomass, biomass-derived fuels may or may not fall under the definition of carbon-neutral. Different definitions and reporting requirements that apply to biomass are contained in the California's Renewable Portfolio Standard, the Federal Renewable Fuel Standard, the proposed Low Carbon Fuel Standard, and ARB's Mandatory Reporting Regulation.

For the purpose of this workshop, staff is soliciting stakeholder comments on the following questions:

1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?
2. Should the definition of biomass that ARB incorporates into its reporting requirements for a cap-and-trade program take into account other working definitions, e.g., the RPS, RFS, and LCFS (when adopted)?
3. What reporting provisions related to biomass should be considered regarding data collection, measurement, emission factors, etc.?

Background

As part of California's cap-and-trade program development, the ARB will address reporting requirements for all fuels that are covered by cap-and-trade, including biomass-derived fuels.

Resource categories for biomass include agriculture, forestry, and municipal waste. Agricultural biomass includes orchard and vineyard crops, field and vegetable crops, food processing residues, and animal manure. Municipal wastes may include biosolids, biogenic organics, green wastes, food waste, and paper/cardboard, landfill gas, and sewage digester gas.

In development of a cap and trade program, staff will review ARB's reporting definition for biomass and clarify as necessary the types of fuels that are 'carbon neutral'. **ARB does not plan to revise its mandatory reporting rules until the California cap-and-trade regulation is adopted in late 2010.** ARB intends to use the next several months to discuss reporting issues, including biomass and carbon neutrality to help inform the 2010 rulemaking.

To begin the discussion, staff has included the following background information on existing definitions and standards for biomass.

Existing Definitions of Biomass

ARB's Mandatory GHG Reporting Requirement for Biomass:

ARB has adopted a definition of biomass in its GHG mandatory reporting program. "Biomass" means non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. And; "Biomass-derived fuels" or "biomass fuels" means fuels derived entirely from biomass.

WCI "Background Document and Progress Report for Essential Requirements of Mandatory Reporting for the Western Climate Initiative, Third Draft":

The WCI identifies "biomass fuels" or "biomass-derived fuels" as fuels derived entirely from biomass[1]. Each Partner jurisdiction would determine its own definition for carbon-neutral fuel. Emissions from the combustion of biomass determined to be carbon-neutral by a Partner jurisdiction do not need to be covered by allowances in that jurisdiction; biomass emissions are reported, however, regardless of carbon neutrality.

WCI Design Recommendations for the WCI Regional Cap and Trade Program:[2]

Recommends that "carbon dioxide emissions from the combustion of pure biofuels, or the proportion of carbon dioxide emissions from the combustion of biofuel in a blended fuel (e.g. B20 or E85)" not be included in the cap and trade program, except for purposes of reporting. With regard to life cycle analysis, WCI Design Recommendations state that WCI Partner jurisdictions "will assess whether and how to include upstream emissions from biofuel and fossil fuel production, taking into consideration the potential for emissions leakage, the potential role of other policies (such as a low carbon fuel standard), consistent treatment among fuels, and other factors (such as practicality of implementation)"[3].

Existing Biomass Standards

California Renewable Portfolio Standard**.** *State standard addressing electric power consumption in the retail market - inclusion of biomass as it counts toward a utility's renewable portfolio.*

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[1] Page 1-22, WCI.9 Definitions; Background Document and Progress Report for Essential Requirements of Mandatory Reporting for the Western Climate Initiative, Third Draft (January 6, 2009)

[2] Section 1.4 http://www.westernclimateinitiative.org/ewebeditpro/items/O104F20432.PDF

[3] Ibid, Section 1.5 http://www.westernclimateinitiative.org/ewebeditpro/items/O104F20432.PDF

The California Renewable Portfolio Standard (RPS) sets a statewide statutory goal of 20% renewable electricity by 2010 and a 33% renewable electricity standard by 2020 by Executive Order. The general definition under the State RPS for biomass is any organic material not derived from fossil fuels, including agricultural crops, agricultural wastes and residues, waste pallets, crates, dunnage, manufacturing, and construction wood wastes, landscape and right-of-way tree trimmings, mill residues that result from milling lumber, rangeland maintenance residues, sludge derived from organic matter, and wood and wood waste from timbering operations. Biomass feedstock from state and national forests is allowable under the State RPS definition.

Renewable Fuel Standard. *Federal standard addressing consumption of liquid fuel - inclusion of biomass fuel under the Federal Renewable Fuel Standard*

The Energy Independence and Security Act of 2007 (EISA) Renewable Fuel Standard (RFS) addresses consumption of liquid fuel and is a federal standard that defines renewable biomass by categories (conventional biofuel, advanced biofuel, cellulosic and biomass-based diesel) and rules out specific feedstocks. Conventional biofuel is ethanol derived from corn starch and applies to fuels produced in new facilities only; advanced biofuels is anything but ethanol derived from corn starch; cellulosic biofuels and biomass-based diesel are advanced biofuels from specific feedstocks that contain a lower carbon footprint than other advanced biofuels.

Generally, the RFS biomass definition limits crops and crop residues by type and its origin. It restricts crops and crop residues to lands that were cultivated or cleared prior to the EISA and are actively managed, fallow, or non-forested. Thinning materials and woody residues from federal forests cannot be feedstock for biofuels. It includes usage of “planted trees and tree residue from actively managed tree plantations on non-federal land cleared at any time prior to enactment…”and “slash and pre-commercial thinnings that are from non-federal forestlands...” Logging residues and pre-commercial trees from naturally-regenerated forestlands are allowed.

The RFS includes a lifecycle analysis or greenhouse gas screen that establishes minimum verifiable GHG reductions. For ‘conventional’ renewable fuels such as ethanol derived from corn, the fuel must meet a 20% emission reduction in direct and indirect lifecycle emissions (and come from new facilities) to qualify under the RFS compared to equivalent petroleum fuels. ‘Advanced fuels’ must meet a 50% lifecycle GHG threshold; and cellulosic biofuel must meet a 60% lifecycle GHG threshold.

Alternative and Renewable Fuel and Vehicle Technology Program (AB118). AB 118 (Núñez Statutes of 2007, Chapter 750) directs the California Energy Commission to develop and implement the “Alternative and Renewable Fuel and Vehicle Technology Program”, a funding and incentive program to support the development of alternative fuels. This program is in development. The CEC did not adopt the EISA RFS definition of ‘renewable biomass’ to meet AB118 funding requirements because the EISA definition excludes forest biomass from federal forest lands, which is inconsistent with existing State policies that recognize forest biomass waste streams as a feedstock source, and support state forest management and fire risk reduction policies. AB118’s draft regulation does include sustainability criteria which identifies sustainable forest biomass as:

"Section 31010.5(b)(2)(F) Projects that use forest biomass resources as part of their feedstock, and that demonstrate the advancement of natural resource protection goals, are those that use forest biomass collection or harvesting practices that do not diminish the ecological values of forest stands, and that are consistent with forest restoration, fire risk management, and ecosystem management goals".

Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

AB 32: California Global Warming Solutions Act of 2006

Public Meeting: Recognizing Voluntary Early Actions in Cap-and-Trade

March 10, 2009
9:00 a.m. - 12:00 p.m.
Sierra Hearing Room
2nd floor of the California Environmental Protection Agency (CalEPA) Headquarters Building
1001 "I" Street, Sacramento, California

Purpose: This meeting will provide a forum to discuss options for recognizing voluntary early actions in a California cap-and-trade program.

AGENDA

Opening Remarks and Explanation of Meeting Structure (15 minutes)

Staff Presentation (15 minutes)

Round-Table Discussion: Which options should ARB explore for recognizing and appropriately crediting voluntary early actions through cap-and-trade? (45 minutes)

Breakout Sessions: (30 minutes each)
1. Voluntary Early Actions at Capped Facilities
2. Voluntary Early Actions at Un-capped Sources or Projects

Reconvene Roundtable: Review and discussion of breakout session results (30 minutes)

Other Issues (15 minutes)

Adjourn

Note: The Sierra Hearing Room at CalEPA Headquarters has limited seating. The meeting will be webcast (http://www.calepa.ca.gov/broadcast/) and open to real-time questions via e-mail (ccworkshops@arb.ca.gov). Because we will have a breakout session during a one hour portion of the meeting, we encourage those participating via webcast to email their comments and responses to the breakout questions during that hour. We will include your responses when we reconvene in the final hour of the meeting.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

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Recognizing Voluntary Early Actions under a Cap-and-Trade Program
Discussion Paper

BACKGROUND

This meeting focuses on the design of a voluntary early action program in California's cap-and-trade system. Future public meetings in the cap-and-trade rulemaking will discuss other design issues including but not limited to offsets, market operations, cap setting, and allowance distribution. These meetings will provide stakeholders and the public with opportunities for input on the details of the cap-and-trade program design that need to be addressed before the Board considers the proposed rule in 2010.
AB 32 includes specific criteria that ARB must consider before implementing market-based measures, such as cap-and-trade. Throughout the rulemaking process, ARB will evaluate the options for designing the cap-and-trade program against those criteria.

FRAMEWORK FOR DISCUSSION

Overview

AB 32 calls for ARB to provide "appropriate credit for early voluntary reductions."[1] By requiring allowances to be surrendered for each ton of greenhouse gas (GHG) emissions, the cap-and-trade program provides incentives for covered sources to keep emissions low when the program starts in 2012. In the case of an auction, early actions that reduce GHG emissions reduce the need to purchase allowances. If allowances are freely allocated, one option would be to distribute allowances to capped sources based on an industry-wide emissions average. In this approach, ARB would allocate additional allowances to a source with lower than average emissions.

This meeting will focus primarily on potential mechanisms for providing appropriate credit for early reductions. Any program to provide credit for early action will also need to include provisions for quantifying, reporting, and verifying creditable reductions. These issues will be discussed in more detail at a later date.

ARB invites stakeholder feedback on the options presented, including the feasibility, advantages and disadvantages of each, and on any additional strategies.

GENERAL QUESTIONS FOR DISCUSSION

- What options should California consider for recognizing and appropriately crediting voluntary early actions in a cap-and-trade program?
- What criteria should ARB use to choose among options that are consistent with the overall goals of the cap-and-trade program (e.g., no double counting, reductions are

[1] California Health and Safety Code section 38562(b)(3).

permanent, extent of co-benefits associated with the reductions, compatibility with other State policies, etc.)?

- How far back should we go to establish eligibility for early action credits (e.g., 2007-2011)?
- Should credits be based on total reductions achieved prior to 2012 without regard to when in the eligibility window these occurred (e.g., one source might have started in 2007, and another source may not have started until 2011)?
- Should early reduction credits be treated the same as allowances, and how should they be accounted for in the cap?

Voluntary Early Actions at Capped Facilities

- What options for rewarding voluntary early actions should be considered?
- If allowances are set aside for this purpose, should the number of allowances set aside be limited?
- How should credits provided for early actions affect the level of the cap at the start of the program?
- Should the 2012 cap increase to include early action credits from capped sources, and what conditions or criteria should apply in making that determination?
- Should firms that voluntarily reported emissions to the California Climate Action Registry receive credit for actions they took to reduce emissions[2]? If so, what years of registry reporting should be considered?

Voluntary Early Actions Outside of Capped Sources

- What options for rewarding voluntary early actions should be considered?
- What criteria should be used to select projects that would be eligible for credits?
- Should project-based voluntary reductions that follow Board-approved protocols qualify for credits in a cap-and-trade program?[3]
- If early action projects continue to generate emission reductions after 2012, should they still qualify for early reduction credits, set asides, or offsets?

[2] All reports of firms reporting to the California Climate Action Registry are available here: https://www.climateregistry.org/CARROT/public/reports.aspx

[3] The ARB has approved project protocols for three different voluntary early action project types: Forestry, Manure Management Digesters, and Urban Forestry. For more information please see the following link: http://www.arb.ca.gov/cc/protocols/protocols.htm

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Public Meeting

Recognition of Early Action in a Cap-and-Trade System

March 10, 2009

California Air Resources Board

Purpose of Meeting

- Provide a forum to discuss issues relating to recognizing voluntary early actions in a California cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by March 31st (to ccworkshops@arb.ca.gov)

Agenda

- Opening Remarks and Explanation of Meeting Structure (15 minutes)
- Staff Presentation (15 minutes)
- Round-Table Discussion (45 minutes)
- Breakout Sessions (30 minutes each)
- Reconvene Roundtable (30 minutes)
- Other Issues (15 minutes)
- Adjourn

3

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

4

AB 32 Direction to ARB on Early Action

- Design regulations to encourage early action to reduce GHG emissions
- Ensure entities with pre-2012 greenhouse gas reductions receive appropriate credit
- Adopt methodologies for the quantification of voluntary greenhouse gas emission reductions

5

General Questions for Discussion

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Selecting the Options for Early Actions

- Beyond auctioning and benchmarking, what options should California consider for recognizing and appropriately crediting voluntary early actions in cap-and-trade?
- What criteria should ARB use to choose among options that are consistent with the overall goals of the cap-and-trade program (e.g., no double counting, reductions are permanent, extent of co-benefits associated with the reductions, compatibility with other State policies, etc.)?

Selecting the Options for Early Actions (cont'd.)

- How far back should we go to establish eligibility for early action credits (e.g., 2007-2011)?
- Should credits be based on total reductions achieved prior to 2012 without regard to when in the eligibility window these occurred (e.g., one source might have started in 2007, and another source may not have started until 2011)?
- Should early reduction credits be treated the same as allowances, and how should they be accounted for in the cap?

Questions for Breakout Sessions

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Voluntary Early Actions at Capped Sources

- What options for rewarding voluntary early actions at capped sources should be considered?
- If allowances are set aside for this purpose, should the number of allowances set aside be limited?
- How should credits provided for early actions affect the level of the cap at the start of the program?

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Voluntary Early Actions at Capped Sources (cont'd.)

- Should the 2012 cap increase to include early action credits from capped sources, and what conditions or criteria should apply in making that determination?
- Should firms that voluntarily reported emissions to the California Climate Action Registry receive credit for actions they took to reduce emissions? If so, what years of registry reporting should be considered?

11

Voluntary Early Actions Outside of Capped Sources

- What options for rewarding voluntary early actions outside of capped sources should be considered?
- What criteria should be used to select projects that would be eligible for credits?

12

Voluntary Early Actions Outside of Capped Sources (cont'd.)

- Should project-based voluntary reductions that follow Board-approved protocols qualify for credits in a cap-and-trade program?
- If early action projects continue to generate emission reductions after 2012, should they qualify for early reduction credits, set asides, or offsets?

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Karen Khamou	Transportation
Manpreet Mattu	Reporting Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Mihoyo Fuji, Claudia Orlando	Natural gas for residential and commercial
Mihoyo Fuji	Marginal abatement costs and competitiveness issues
Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

Implementing a Quantitative Limit on the Use of Offsets in a Cap and Trade Program

March 23, 2009

California Air Resources Board

Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

2

Purpose of Meeting

- Discuss options for implementing a quantitative limit on the use of offsets in a cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by April 30th (to **ccworkshops@arb.ca.gov**)

3

Outline of Presentation

- Introduction and Background
- What does '49% of reductions' mean?
- How should the offset limit be implemented?
  - Usage, supply, hybrid limits
  - WCI considerations
  - Temporal considerations
- Offset limits in other greenhouse gas cap-and-trade programs
  - EU ETS
  - RGGI
- Questions for Discussion

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

5

Upcoming Meetings

- April 2nd
  - Competitiveness Issues & 'Leakage'
- April 10th
  - Biomass Emissions in a Cap-and-Trade Program
- April 21st
  - Essential Elements of an Offset System
  - Intro to Cap Setting and Data Review

6

What Sources are Capped?

- 2012-2014
  - In-State Electricity Generation Facilities (>25,000 MT CO_2e/year) and Imported Electricity
  - Large Industrial Facilities (>25,000 MT CO_2e/year)
- 2015-2020
  - 'Upstream' treatment of fuel combustion where fuel enters into commerce covering
    - Small industrial fuel use (for facilities $\leq$ 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use

Source: Scoping Plan page 31

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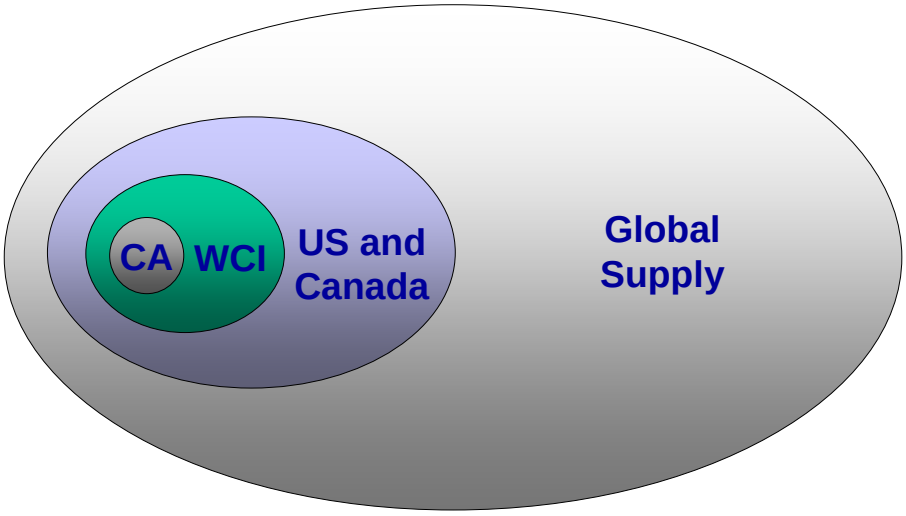
What is an Offset Credit?

- A GHG offset is a GHG emission reduction …
  - beyond what otherwise would have happened because of regulation and common practice
  - that generates a credit that can be used to meet a regulatory compliance obligation or a voluntary commitment
  - that addresses emissions not included in a cap-and-trade program
- Under AB 32, the reductions must be real, additional, quantifiable, permanent, verifiable and enforceable
  - H&S Code §38562(d)(1-2)

8

Anticipating Potential Offset Supply by Region



9

Why Allow Offset Credits?

- Cost-containment
  - Allow capped sources to take advantage of lower-cost reductions
- Temporal considerations
  - Offset projects may be available more quickly than other forms of reductions
- Target sources/sinks of emissions that are difficult to include directly in the cap
  - May be difficult to quantify emissions/reductions for all sources/sinks but possible at the individual project level

10

Scoping Plan: Limits on Offsets

- All offsets must meet high quality standards; no geographic limits
- The majority of emission reductions must be met through action at capped sources
  - No more than 49% of reductions can come from offsets
- Similar to the "supplementarity" argument
  - The Kyoto protocol requires that the use of flexible mechanisms (e.g., CDM offsets) be 'supplemental' to domestic action

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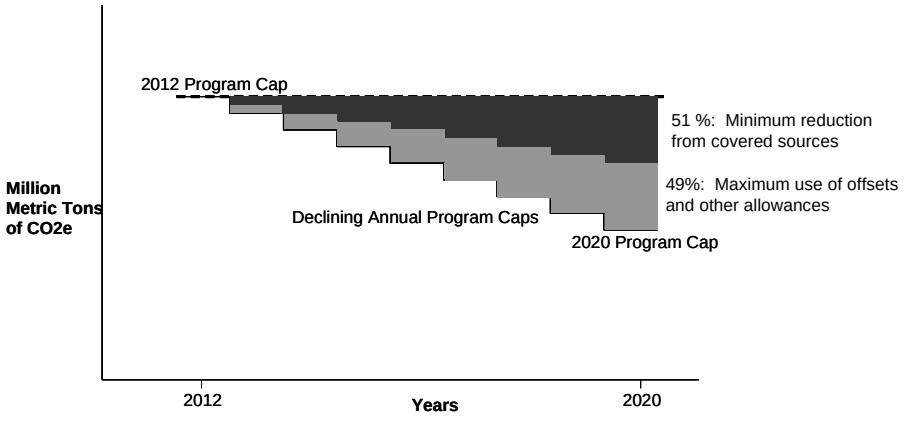
Offset Limits Pros and Cons

- Pros
  - Ensures emission reductions from capped entities
  - Address concerns about environmental integrity of offset credits
- Cons
  - Forgo emission reductions with lower costs
  - May discourage creation of offset projects

12

What does 49% of reductions mean?



Source: Scoping Plan Appendix page C-22

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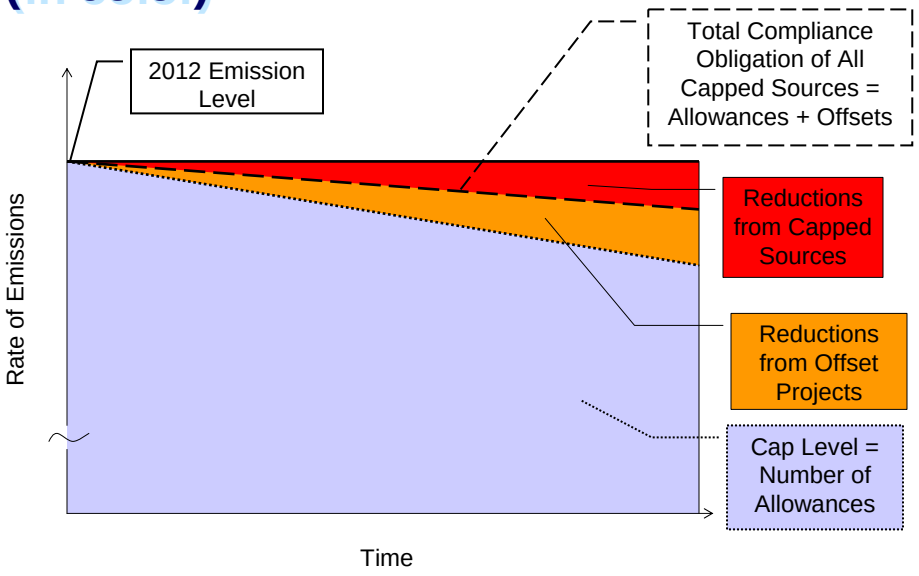
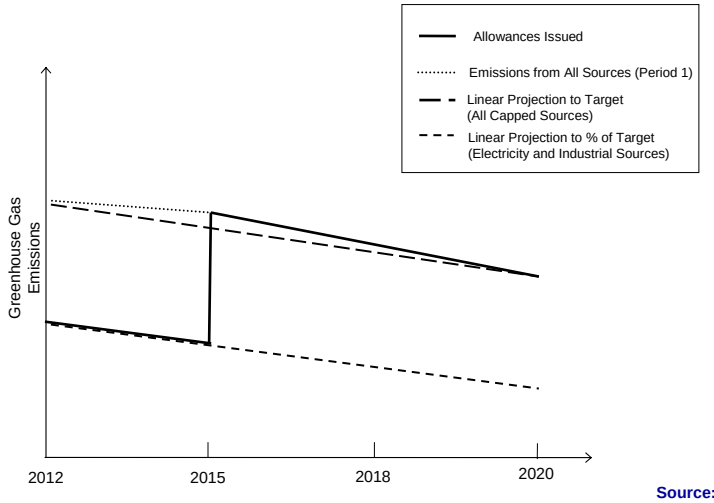
What does 49% of reductions mean? (in color)



Accounting for Phase II Change in Scope



Source: Scoping Plan Appendix page C-18

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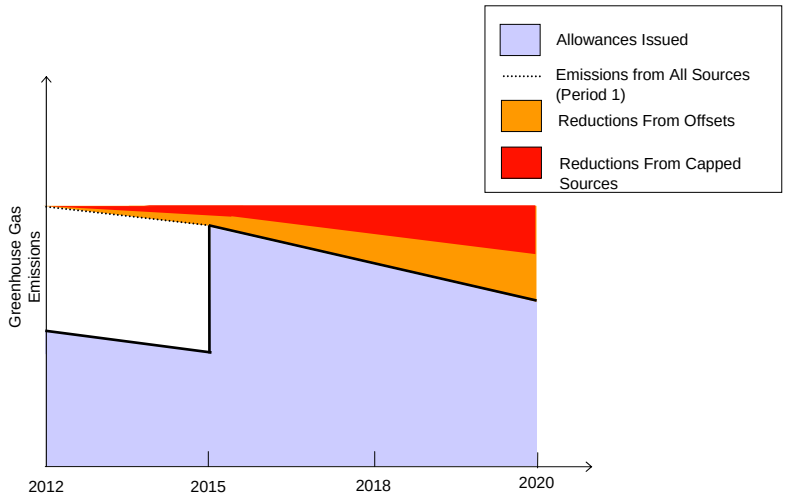
Accounting for Phase II Change in Scope (continued)



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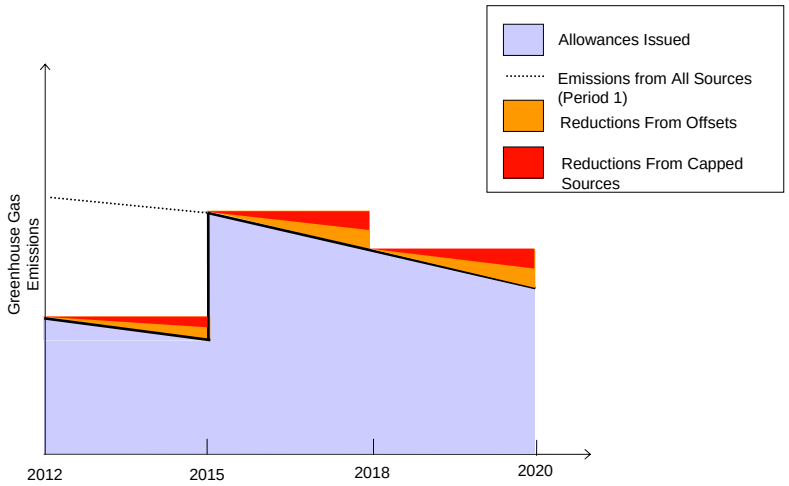
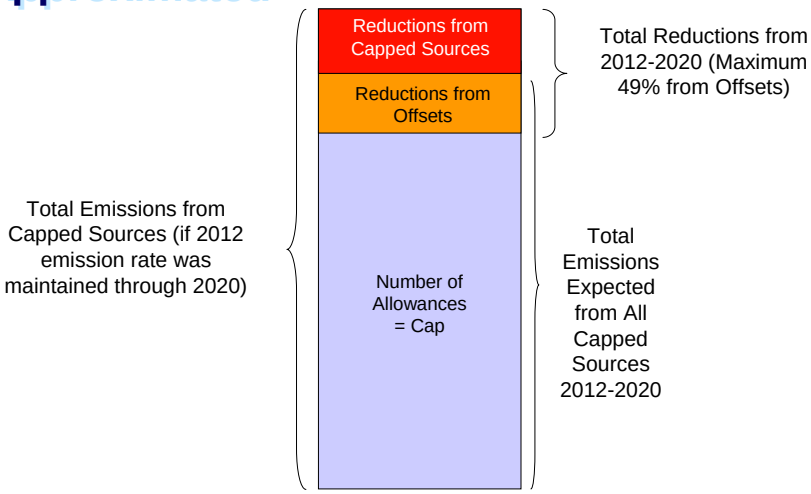
Alternate Definitions of 'Reductions'



Once the Cap is Set, a Total Maximum Amount of Expected Offset Use Could be Approximated



Potential Types of Offset Limit Implementation

- Usage Limits
  - Fix the amount that an individual entity can use
    - Example: each entity able to surrender allowances and offsets up to a fixed percentage of individual 'compliance obligation' (emissions)
- Supply Limits
  - Fix the total amount of offsets that would be accepted in the system
    - No limit placed on the amount used by an individual entity
- Hybrids of both are conceivable

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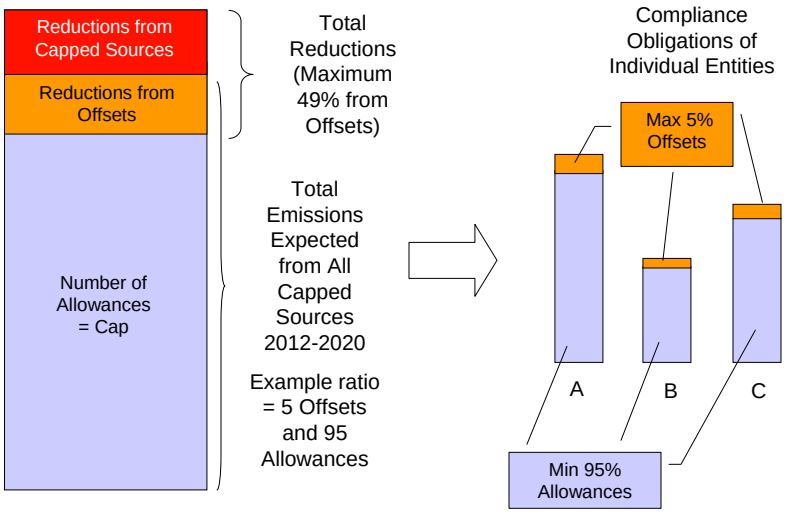
'Usage' Limit Graphical Example



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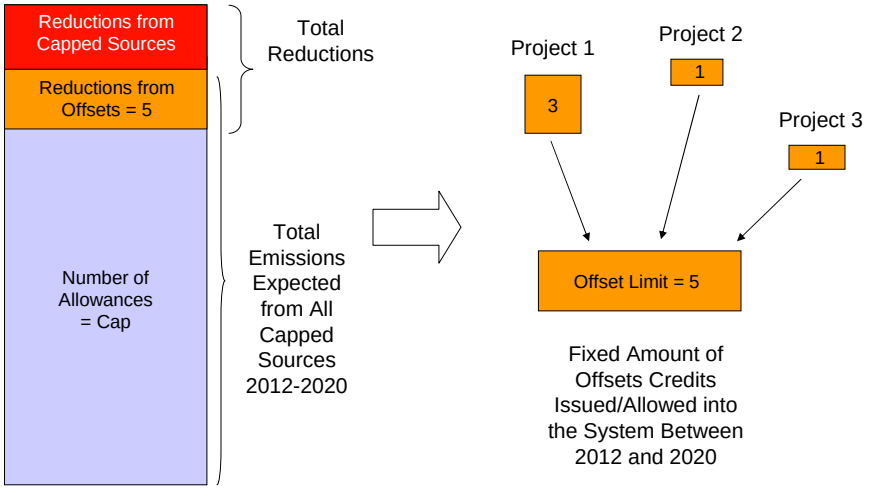
‘Supply’ Limit Graphical Example



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Considerations of Offset Limit Structures

- Usage Limit:
  - Diminishes the total cost of compliance vs. a supply limit
  - Complying entities capture benefit of limit structure
- Supply Limit:
  - Increases the total compliance cost vs. a usage limit
  - Offset sellers capture benefit of limit structure
  - May create uncertainty for project developers

Source: Anger and Dixon 2009

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Hybrid Limit Option

- Create a new offset license instrument
  - 'Offset Quota Certificate'
  - Number issued is fixed = total offset limit
- Sources using offsets for compliance surrender both an offset credit and an offset quota certificate
- CA could auction offset quota certificates
  - State captures benefit of limit structure
- Proceeds of offset quota certificate auction could be used for purposes similar to use of any allowance auction proceeds

How Should the Limit be Calculated and Applied Across the WCI?

- Jurisdiction Specific
  - Each jurisdiction independently estimates reductions
  - Each jurisdiction implements a limit
- WCI Wide
  - Estimate reductions using the WCI-wide cap (sum of 'allowance budgets')
  - Apply a uniform limit WCI-wide
- Many possible permutations with different market implications

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Should the Offset Limit Change Through Time?

- Arguments for Greater Use of Offsets in Early Years
  - Reduction activities at capped sources will take time to implement
- Arguments for Increased Use of Offsets in Out Years
  - Expectation of higher carbon prices in later years
  - Potentially greater confidence in mature offset program rules

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Offsets Limits in the EU ETS

- **Phase I** – unlimited use of credits from CDM but in practice not available and not needed
- **Phase II** – initial assumption: offset limit of 10% <u>of allocated allowances</u>
  - Each member state could argue for a higher limit
  - Some EU member states got limits up to 20%
  - Overall limit at about 13.6 % of EU wide cap
    - Potential to exceed supplementarity goal
  - Limit varies by source type in some countries
    - UK limited to 9.3% of allocation for electricity generators 8% for all other sources

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Offsets Limits in the EU ETS (continued)

- **Phase III**
  - Tighten limit to ensure offset use is supplemental to domestic action
  - Reconsideration of limits on use of international credits after international agreement is achieved
  - Rules on offsets for 2013 -2020 can respond to changing circumstances
    - Intentionally avoided legislative lock-in

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Offsets Limits in RGGI

- Guiding principle:
  - No more than 50% of reductions from offsets
  - 'Reductions' defined from an increasing BAU
- Principle led to an initial offset limit of 3.3 % of compliance obligation (emissions)
- Price Triggers
  - If Allowance Price > $7/short ton
    - Offset limit = 5% of compliance obligation
  - If Allowance Price > $10/short ton
    - Offset limit = 10% of compliance obligation

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Questions for Discussion

- Should the limit be applied based on the use of offsets, the supply, or a hybrid of both?
  - Are there other options?
- How should the 49% limit be applied across jurisdictions in the Western Climate Initiative?
- How should the limit be divided among time (compliance) periods?
  - Is it more critical to have a greater supply of offsets early in the program or later in the program?

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Potential Topics for Future Meetings on Offsets

- Essential elements system requirements for the offset program
- Eligible offset project types and protocols
  - Protocol review process
  - Requirements for linkage to other offset and GHG trading systems
  - International offsets/ International forestry offsets
- Further meetings to discuss staff thinking on implementing a quantitative limit on the use of offsets

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Reminder:

Stakeholders are asked to provide written comments on this topic to ARB by April 30th (to **ccworkshops@arb.ca.gov**)

Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Karen Khamou	Transportation
Manpreet Mattu	Reporting Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Mihoyo Fuji, Claudia Orlando	Natural gas for residential and commercial
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- Western Climate Initiative
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Backup Slides

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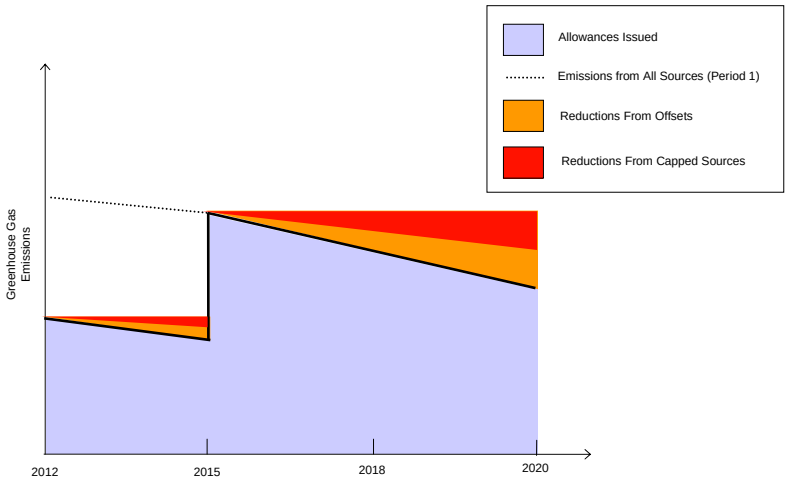
Alternate Definitions of 'Reductions' (2)



Public Meeting

Overview of a California Cap-and-Trade Market

March 23, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss design options for implementing an allowance auction
- Discuss design options for compliance
- Stakeholders are asked to provide written comments on these topics to ARB by April 30 (to ccworkshops@arb.ca.gov)

3

Agenda

- Opening Remarks/Meeting Structure (15 min)
- Presentation: Auction Design (30 min)
- Roundtable: Auction Design Issues (30 min)
- Break (15 min)
- Presentation: Enforcement and Compliance (30 min)
- Roundtable: Compliance (30 min)
- General Discussion
- Adjourn

4

How Do Allowances and Offsets Enter the Market?

- Today's Discussion: Allowance auction
- Discussion for future meetings:
  - Direct distribution of allowances to compliance entities
  - Use of approved offsets in the market
  - Allowances imported from "linked" cap-and-trade systems
  - Trading allowances

5

How Could Allowances Be Used for Compliance?

- At the end of a compliance period, ARB would have:
  - Verified reports of emissions
  - Proof of ownership of allowances equal to quantity of emissions
- ARB would then:
  - Evaluate compliance submissions
  - Resolve discrepancies
  - Determine compliance or violations and assess penalties

6

Meeting Objectives

- Discuss preliminary list of design features and issues on auctions and compliance
- Solicit input on items we've missed
- Identify your preferences among the options

7

Auction Design

8

Considerations in Evaluating Auction Objectives

- Some objectives are common to existing auction systems
- Objectives may conflict when implementing a design feature
- Design will probably involve tradeoffs
- How you make tradeoffs involves both values and how you expect the market will operate

9

Some Common Objectives Under Consideration

- Promote open access
- Ensure fairness and transparency
- Minimize administrative and transactions costs
- Promote economic efficiency
- Prevent manipulative behavior
- Reveal market valuation of allowances
- Minimize price volatility
- Promote allowance market liquidity

10

Some Common Design Features Under Consideration

- Financial Assurance Requirements
- Participation Restrictions
- Information Disclosure
- Purchase Limits
- Auction Frequency
- Award Process
- Reserve Price
- Noncompetitive Bids

11

Evaluating Design Features

- The following slides discuss:
  - Specific examples of design features
  - What the features accomplish
  - Tradeoffs inherent in these features
- ARB is evaluating which of these design features to include in the cap-and-trade program

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Design Feature: Financial Assurances

- Participants provide proof of ability to pay for allowances (financial assurance)
  - Limit bidding to amount of financial assurance
  - Provide bid default guarantees
  - Designed to ensure auction integrity
- Possible Tradeoffs
  - Limits access if credit difficult to obtain
  - Raises cost of participation

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Design Feature: Participation Eligibility

- Limit participation to compliance entities
  - Designed to ensure compliance entities have priority in access to allowances
  - Assumption that non-compliance entities would unnecessarily drive up prices
- Possible Tradeoffs
  - Reduces economic efficiency by reducing pool of bidders

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Design Feature: Information Disclosure

Auction operators will acquire extensive information on participants through auction operation:

- Identity of bidders, their bid prices and quantities
- Identity of winners, their bid prices and quantities
- Status as compliance or non-compliance entities

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Design Feature: Information Disclosure

- How much of the information should be provided to market participants?
- Possible Tradeoffs:
  - Disclosure of some of this information by the regulator could aid market manipulation
  - Regulator maintaining confidentiality of all data could reduce transparency of market

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Design Feature: Purchase Limits

- Some auction platforms limit the share of allowances which can be purchased by any single entity
  - Intended to reduce potential market manipulation by speculators accumulating large positions
  - Examples
- Possible Tradeoffs:
  - A purchase limit can reduce economic efficiency by preventing bidders from using available market information
  - Complicates planning by businesses needing allowances to enter a market

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Design Feature: Auction Frequency

- Higher auction frequency (e.g. quarterly) can:
  - Send price signals on allowance value in the early years of the program
  - Allow bidders to modify their bidding strategies
  - Reduce the chance that participants overbid
- Tradeoffs
  - Higher administrative costs
  - Reduces number of allowances at each auction, increases risk of oversubscription

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Design Feature: Options for Awarding Auctioned Allowances

- Sealed versus open bids
- Setting auction price:
  - As lowest winning bid (first price) or as highest losing bid (second price)
  - Single price: all winners pay marginal winning bid
  - Pay-as-bid: each winner pays own bid

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Design Feature: Options for Awarding Auctioned Allowances

- How many rounds of bidding?
  - Single round: submit only one bid
  - Multiple round: submit bids until winner declared
- Multiple round methods
  - Ascending or descending
  - Use submitted bids or auctioneer-issued value at each round

20

Design Feature: Options for Awarding Auctioned Allowances

Tradeoffs among the options:

- Multiple rounds provide:
  - Greater amount of information on bidders' valuation
  - Higher operating costs
  - Greater complexity for participants
  - Greater potential for manipulation
- Single price method provides market valuation but pay-as bid provides detailed bidder valuations

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Design Feature: Auction Reserve Price

- A reserve price is a minimum bid below which bids would not be accepted
  - Could result in unsold allowances
  - Unsold allowances could be held over for future auction, retired, or held for other use
- Tradeoffs if allowances remain unsold:
  - Creates price floor
  - Raises allowance cost
  - Reduces economic efficiency

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Design Feature: Non-Competitive Bid Process

- Process creates a reserve of allowances for entities wishing to avoid quantity risk
  - Reduce number of allowances auctioned by amount of the reserve
  - Resolve auction using “competitive” bids
  - “Non-Competitive” bidders pay the auction price
  - Compatible with single-price formats
- Tradeoffs
  - Benefits those more concerned with allowance availability and overbidding
  - Problem with oversubscription of reserve

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Roundtable Discussion

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Enforcement and Compliance Issues in Cap-and-Trade

Potential Goals for Enforcement

- Level Playing Field
- Enforceability
- Simplicity
- Clarity
- Transparency
- Fair and Consistent Penalties

Existing Mandatory Reporting Requirements

- Emissions Reporting
- Verifier Accreditation
- Verification

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Potential Allowance Oversight

- Tracking who has Received Allowances
- Possible use of Allowance Registries
- Allowance “Surrender” (To “surrender” is to turn in allowances for compliance purposes.)
- Matching Surrendered Allowances to Reported Emissions
- Enforcement Mechanisms Needed along the Way

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Existing Enforcement Elements

- Inspections and Auditing
- Investigations, Possible Penalties
- Settlements and Court Proceedings
- Possible Press Release
- Case Summary Posted to Web
- Annual Report

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Penalties Afforded Under AB 32

- H&SC §38580(a)
  - ARB shall monitor compliance and enforce
- Directed to use existing penalty provisions:
  - Article 3 Commencing with §42400
  - Chapter 1.5 commencing with §43025

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Existing Penalty Structure

- Administrative

H&SC § 42410 - $10,000 per day to a $100,000 max
H&SC § 42402.5 - $500 per offense

- Civil H&SC § 42400
  - Up to $1,000 per day
  - Up to $1,000,000 for willful and intentional violations, causing great bodily harm
  - A maximum of 6 months to 1 year in jail
- Criminal H&SC § 42402
  - Up to $1,000 per day
  - Up to $1,000,000 for willful and intentional violations, causing great bodily harm

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Existing Penalty Structure

- Administrative H&SC §43028

  Not to exceed $25,000 per day or $300,000

- Civil H&SC §43026

  Up to $1,000 per day and

  Up to $10,000 per violation per day

  Penalties to eliminate any economic benefit

  Other penalty amounts apply (negligence, etc.)

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Factors Considered in Existing Penalty Structure

California Health & Safety Code §42403 & §43031:

In determining the amount assessed … shall take into consideration all relevant circumstances, including, but not limited to:

- Extent of harm caused by the violation,
- Nature and persistence of the violation,
- Compliance history, including the frequency of past violations,
- The length of time of the violation,
- Preventive efforts taken by the defendant, including the record of maintenance and any program to ensure compliance occurs

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Factors Considered in Existing Penalty Structure (con't.)

- The unproven or innovative nature of the control equipment, and the accuracy, reproducibility, and repeatability of the available test methods
- Any action taken, including the nature, extent, and time of response of the cleanup and construction undertaken, to mitigate the violation,
- Financial burden,
- Cooperation during the course of the investigation,
- Efforts to attain, or provide for compliance, and
- In certain cases, the size of the business.

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Possible Excess Emissions Penalty Options in Cap-and-Trade

- Should penalties be significantly higher than expected allowance price to deter violations?
- Possible penalty options for insufficient allowance surrender:
  - Fixed Financial?
  - Variable Financial Using Discretion?
  - Quantitative: Additional Allowances ?
  - Let's look at some examples from existing programs….

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Excess Emission Penalties: US EPA SO_2 and NO_x

- SO2 Program
  - Automatic financial penalty
  - Automatic offset (deduct allowance from next year's allocation)
  - Possible civil and criminal penalties
- NOx Program
  - 3 allowances surrendered for each excess ton
  - Possible civil and criminal penalties

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Excess Emission Penalties: EU ETS

- Uniform excess emissions penalties
  - € 40 ($50)/ton CO_2e in 1st Phase (2005-2007)
  - €100 ($125)/ton CO_2e in 2nd Phase (2008-2012)
  - €100 ($125)/ton CO_2e in 3rd Phase (2012-2020) and adjusted for inflation
  - Excess emissions must be offset in following year

Excess Emission Penalties: EU ETS (cont'd.)

- Member State set additional penalties (e.g., for fraudulent reporting) but have broad discretion
- "Naming and Shaming" provision for violators

Potential Options: Quantitative Versus Financial Penalties

- Should penalties be automatic or discretionary?
- Should penalties be:
  - Quantitative (extra allowances)?
  - Financial?
  - Both?
- How high should penalties be to deter non-compliance?

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Compliance Timing

- If an entity has not surrendered sufficient allowances the amount of the shortfall may not be resolved until the subsequent compliance period.
- Can the entity submit allowances from the subsequent compliance period or only from the prior compliance period?

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Summary

- Level Playing Field
- Administrative Simplicity
- Clarity
- Free of Market Manipulation (collusion & speculation)
- Linkage to Regional or Federal Programs
- High-Level of Compliance
- Transparency

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Roundtable Discussion

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Next Steps

For More Information…

- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
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GHG Enforcement Section

- Judy Lewis, GHG Enforcement Section, Manager (916)322-1879
- Allison Spreadborough 322-8891
- Dickman Lum 327-1520
- Kitty Oliver 323-4567
- Ryman Simangan 322-0355
- Terone Preston 323-0255

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CALIFORNIA AIR RESOURCES BOARD
AB 32 Global Warming Solutions Act

CAP-AND-TRADE PUBLIC MEETING
CONCEPT PAPER

EMISSIONS LEAKAGE ISSUES IN A CALIFORNIA CAP-AND-TRADE PROGRAM

BACKGROUND

This concept paper is being released in advance of an April 13, 2009 meeting on identifying and assessing potential emissions leakage issues in a California greenhouse gas cap-and-trade program. The purpose is to provide the background necessary to discuss how to identify and assess emissions leakage for potential emissions-intensive and trade-exposed industries.

ARB is holding this meeting as part of the rulemaking effort for designing the cap-and-trade program (program). There are many details that need to be discussed before we take the proposed rule to the Board in 2010. We are involving stakeholders to work through the detailed elements of California's program design in a transparent process.

FRAMEWORK FOR DISCUSSION

Overview

The Global Warming Solutions Act of 2006 (AB 32) directs the Air Resources Board (ARB) to design all greenhouse gas (GHG) regulations to minimize leakage.[1] This requirement has lead ARB to examine what factors might cause leakage, such as relocation of industries or loss of foregone growth in production capacity as new investment capital seeks lower-cost locations, competitiveness from industries not subject to similar reduction requirements, or loss of market share. Staff is exploring program design features that can minimize emissions-related leakage and economic loss.

How to Identify Emissions Leakage Risk

ARB proposes to consider two key indicators of leakage risk.

First, we propose to assess potential cost increases due to program compliance costs. Increased costs associated with compliance could result either from the costs of actions taken to reduce emissions at the facility; and costs of acquiring emission allowances to cover remaining emissions after all actions to reduce emissions are taken at the facility.

Second, we propose to assess the ability of industries to pass compliance costs on to their customers. If industries have limited ability to pass on costs because their competitors are not subject to similar emission reduction requirements or compliance

[1] Health and Safety Code Section 38562(a)(8)

costs, then the risk of leakage may be heightened. Existing producers may lose market share, and new investment may shift to regions that do not have similar program requirements. The ability to pass costs on to customers can depend on factors such as market concentration, the market power of a given firm or sector, or the degree to which a market is open to competition outside of the jurisdiction.

How Other Programs Identify and Address Leakage Risk

Currently, the European Union Emission Trading Scheme (EU ETS) and the Australian Carbon Pollution Reduction Scheme (CPRS) are exploring methods for assessing whether an industry will have substantial product price increases due to emission reduction requirements, and whether that industry will have a limited ability to pass those increased costs on to consumers. Each program is considering methodologies to measure the impacts of competitiveness and leakage within their systems.

European Union Emissions Trading Scheme and the Commission Services Paper[2]

The European Commission plans to identify sectors in its program that may be vulnerable to emissions leakage in June 2010 in time for the initiation of Phase III (2013–2020) of its cap-and-trade program.

In September 2008, the European Commission issued a Commission Services Paper that presents a methodology to measure the impacts of competitiveness and emissions leakage on various sectors.

The EU ETS Commissions Services Paper uses a two-step methodology:

1) Measure the impacts of the EU ETS on energy-intensive sectors,[3] and
2) Account for other market factors (e.g., transportation costs, market protection policies, and geographic scope and concentration).

1) Measure the Impacts of EU ETS on Energy-Intensive Sectors

- Defining a sector: A sector or sub-sector is defined at a high level of disaggregation to ensure the specificities of the production processes. Both direct and indirect emissions need to be taken into account.

- Potential product price increases: Additional costs as a result of the EU ETS can be calculated by using a standardized electricity input fuel mix and

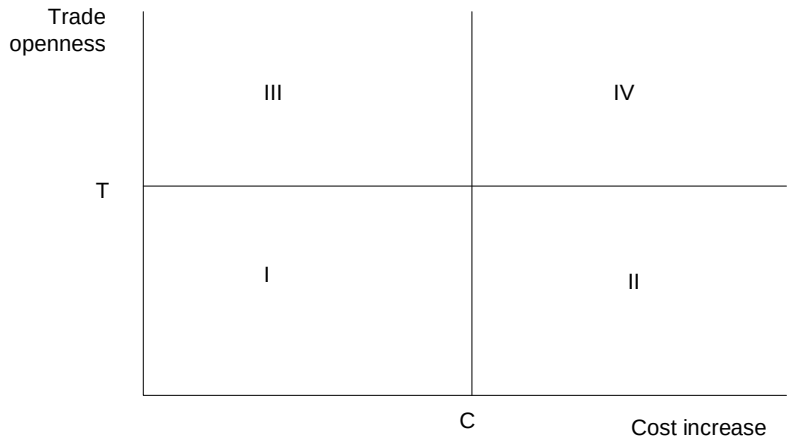
[2] The European Commission, Commission Services Paper on Energy Intensive Industries Exposed to Significant Risk of Carbon Leakage, September 2008
[3] A business is considered as being energy intensive where the purchases of energy products and electricity account to at least 3.0% of its production value as defined by the Energy Products Tax directive (Directive 2003/96 EC). EU focuses the scope of the assessment to energy intensive industries.

assuming full pass through of allowance costs in electricity prices. These can subsequently be expressed in terms of product price increases.

- Exposure to international trade: Exposure to non-EU trade will be used as an approximation while other indicators such as price elasticities are desirable.

Based on how open a sector is to non-EU trade and the cost increase associated with increased auctioning in EU ETS Phase III, sectors can be classified into four groups to assess their potential for leakage. (See Figure 1 below.)

Figure 1: Assessment of leakage risk based on cost increase and openness to non-EU trade[4]



Where: Each quadrant represents the degree to which a sector or sub-sector is potentially exposed to a degree of risk of emissions leakage, such that

I is exposed to low or zero risk of emissions leakage
II is exposed to low-to-moderate risk of emissions leakage
III is exposed to moderate-to-high risk of emissions leakage, and
IV is exposed to a high risk of emissions leakage

2) Account for Other Market Factors

The analysis in Step 1 is complemented by a second step in which other factors are taken into account, e.g., factors that affect the openness of a specific market including transportation costs, market protection policies, and its geographic scope and concentration. These additional factors would be considered in a qualitative manner to more accurately assess the potential for leakage in the (sub) sectors and activities evaluated in Step 1. Results of the two step assessment will ultimately inform the quadrant in Figure 1 that a specific (sub) sector or activity would fall into.

[4] The European Commission, Commission Services Paper on Energy Intensive Industries Exposed to Significant Risk of Carbon Leakage, September 2008, p.2.

In December 2008, European Union heads of state and government agreed on more specific methodologies and thresholds to identify the sectors or sub-sectors potentially exposed to a significant risk of emissions leakage[5].

Following the results of the international negotiations at the December 2009 Conference of Parties (COP) 15, and informed by the two step methodology of the Commission Services Paper, the European Commission will make its final decision on which emission-intensive industries qualify as vulnerable to emissions leakage.

Australia Carbon Pollution Reduction Scheme (CPRS)

In July 2008, the Australian CPRS published a Green Paper[6] which proposed an assistance program for emissions-intensive trade-exposed (EITE) industries that face risks of emissions leakage.

The Green Paper used a two-step methodology to determine who would receive assistance based on their exposure to emissions leakage. The methodology assesses:

1) emissions intensity, and
2) cost pass-through ability.

1) Assess Emissions Intensity

- Define a sector: The Green Paper compared several options for defining who could qualify as an EITE industry. The Australian Government found it preferable to define qualification in the EITE assistance program based on a production process within an industry, such as clinker production, newsprint manufacturing, and float glass production.
- Assess emissions intensity: The Green Paper identifies three broad categories of emissions:

    1) Direct emissions associated with the production activity or process and covered by the scheme
    2) Indirect emissions from electricity generation
    3) Indirect emissions from sources other than electricity, including emissions generated in the production of inputs and pre- and post- production activities

[5] The Council of the European Union, Energy and climate change – Elements of the final compromise (17215/08), 12 December 2008.

[6] The Department of Climate Change, Commonwealth of Australia, Carbon Pollution Reduction Scheme Green Paper, July 2008.

2) Assess Cost Pass-Through Ability

The Green Paper considered several options to assess cost pass-through ability to determine which industries could pass through product cost increases. The following indicators were analyzed:

- The proportion of exports and imports relative to domestic production (trade shares);
- The measure of responsiveness to price changes (price elasticity) of individual products; and
- Correlations between relevant global and domestic prices for goods produced in Australian industries, appropriately adjusted for exchange rates.

Based on stakeholder comments on the Green Paper, the Australian Government released a White Paper[7] that presented their preferred methodology to evaluate the emissions intensity and cost pass-through ability of industries.

The methodology presented in the White Paper to assess emissions intensity was emissions intensity per unit of revenue or value added[8].

The White Paper also states that any one indicator could not accurately assess cost pass-through ability, and therefore suggested using trade exposure as the primary indicator which could be measured by:

- Price elasticity
- Import and export parity prices[9]
- Trade shares[10]
- Qualitative assessment of international competition

[7] The Department of Climate Change, Commonwealth of Australia, Carbon Pollution Reduction Scheme White Paper, 15 December 2008
[8] Value added is earnings or revenue minus costs of bought in goods and services. Value added can include labor costs and operational profits or loss.
[9] The import parity price is calculated by converting the world price for the product into local currency and adjusting for transport, tariff and other costs. Export parity price is calculated by converting the world price into local currency and removing any transport, tariff (in the destination market) and other costs the supplier would incur if exporting. If the price an entity receives for the goods it produces is directly related to the international parity price, it may provide an indication that the entity is exposed to international competition.
[10] Trade share can be defined as the ratio of the traded quantity of a product relative to domestic production.

REFERENCES

Background Materials

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Bataille et al, *Pricing GHG emissions: The Impact on Canada's Competitiveness*, C.D. Howe Institute, Toronto, 2009.

EU Emission Trading Scheme

- 'Carbon leakage': A challenge for EU industry
  http://www.euractiv.com/en/climate-change/carbon-leakage-challenge-eu-industry/article-176591
- Commission Services Paper
  http://www.euractiv.com/en/climate-change/eu-considers-industries-exposed-carbon-leakage/article-175583

Australian Carbon Pollution Reduction Scheme

- Industry Assistance
  http://www.climatechange.gov.au/whitepaper/assistance/index.html
- Green Paper (Chapter 9)
  http://www.climatechange.gov.au/greenpaper/report/pubs/greenpaper-ch9.pdf
- White Paper (Chapter 12)
  http://www.climatechange.gov.au/whitepaper/report/pubs/pdf/V2012Chapter.pdf

Public Meeting

Discussion of Emissions Leakage Issues in Cap-and-Trade

April 13, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Today's Meeting

- Begin discussion of emissions leakage issues in a cap-and-trade program
  - Frame the issues in the California context
  - Discuss methodologies used by other GHG cap-and-trade programs
  - Outline a framework and timeline for assessing potential leakage-related issues in a California cap-and-trade program

3

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

4

What Does AB 32 Require?

- AB 32 measures must minimize leakage to the extent feasible
- Per AB 32, “Leakage” means a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state

5

What Is Emissions Leakage?

- Arises when production is transferred to jurisdictions without a GHG emissions cap, leading to no (or a smaller) net decrease in global GHG emissions

6

Why Competitiveness Matters

- Competitiveness is one indicator of how likely leakage is to occur from production transfer
- Competitiveness can be thought of as the extent to which a producer can raise the price of goods without facing loss of demand
- Producers that face compliance costs may not be able to pass costs through to consumers because their competitors that do not face similar costs do not have to increase their prices

7

Competitiveness and GHG Emissions Leakage in California

- California is interconnected with trade markets around the globe
- Some GHG emission-intensive California industries compete in markets that may not be subject to similar GHG reduction requirements
- Potential for increased GHG emissions ("leakage") and job losses in California
- This could put some California capped industries at a competitive disadvantage

8

How is ARB Addressing This Issue?

- Identify potentially affected industries
- Evaluate possible impacts
- Evaluate options to address leakage
- Incorporate appropriate features in the program design

9

What Are Emissions Intensive, Trade Exposed Industries?

- Industries that compete in global markets that are not able to pass on the costs of the GHG emissions reduction program
- Industries in this category may include non-ferrous metals smelting, iron and steel-making, cement, and other energy and/or emissions intensive activities.

10

Why Are These Industries Potentially Vulnerable?

- These industries may face significant compliance costs from carbon intensive combustion processes and fuel use
  - Limited ability to reduce costs due to fewer opportunities for emission reductions
- Inability to pass through costs to consumers
  - Competition from those without similar compliance requirements (trade exposure)

11

Emissions-Intensive Industries in the US*

- Ferrous metal
- Non-ferrous metals (copper and aluminum)
- Non-metal mineral products (cement and glass)
- Paper and pulp
- Basic chemicals

***Leveling the Carbon Playing Field, World Resources Institute, 2008**
http://www.wri.org/stories/2008/05/leveling-carbon-playing-field

12

Industrial Sources in a California Cap-and-Trade Program

- Cement and other minerals
- Chemicals (basic and other)
- Food processing
- Glass
- Metal processing
- Oil and gas extraction/transmission
- Paper
- Petroleum refining
- Others

13

How Do Other Programs Address Leakage-Related Issues?

- European Union Emissions Trading Scheme (EU ETS)
- Australian Carbon Pollution Reduction Scheme (CPRS) proposal

14

EU ETS Program

- Caps industrial sources, including electricity
- Percentage of auctions in 2013-2020 (Phase III) likely to expand
- EU ETS 2008 staff paper on methodology to identify potentially vulnerable European industries **("Commission Services Paper")**
- Analysis led to preliminary agreement on thresholds to identify leakage-exposed sectors or sub-sectors
- Final decision awaits Copenhagen Conference (COP 15) in December 2009

15

EU ETS Commission Services Paper

- Objective of analysis: assess potential of GHG requirements to increase industry "exposure" and emissions leakage
- Proposed methodology to measure impacts to potentially vulnerable industries at risk of emissions leakage
- Account for other market factors that could contribute to exposure and emissions leakage

16

EU ETS
Commission Services Paper

- Methodology to measure impacts
  - Step 1: Define potential exposed sources at the sector or sub-sector level
    - Manufacture of cement, lime and plaster, OR
      - Manufacture of cement
      - Manufacture of lime and plaster
    - Manufacture of pulp, paper and paperboard, OR
      - Manufacture of pulp
      - Manufacture of paper and paperboard

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EU ETS
Commission Services Paper (cont'd.)

- Step 2: Measure potential product price increase
  - Account for direct carbon product cost
  - Account for indirect carbon product cost
    - Standardize fuel mix of electricity input
    - Assume full compliance costs are passed down to the manufacturer

18

EU ETS
Commission Services Paper (cont'd.)

- Methodology to measure the impacts (cont'd.)
  - Step 3: Measure potential exposure of vulnerable sources to international trade
    - Use exposure to non-EU trade as primary indicator
    - Suggests selection of additional indicators, such as price elasticity, to get better estimate of exposure

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EU ETS
Commission Services Paper (cont'd.)

- Account for other market factors, e.g.,
  - Transportation costs
  - Market protection policies
  - Geographic scope and concentration

20

Australia Carbon Pollution Reduction Scheme (CPRS)

- Starts in 2010
- Cap includes industrial sources and electricity
- Assistance program for emissions-intensive, trade exposed industries under development
  - Preliminary assessment: more than 30 affected processes
  - Currently conducting formal assessment
  - Stakeholders involved in assessment

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Australia CPRS

- Measuring the impacts
  - Step 1: Define exposed sources based on activity
    - Activities defined through stakeholder process
  - Step 2: Assess emissions intensity
    - To derive emissions intensity, direct and indirect emissions are evaluated relative to employment, revenue or value added

22

Australian CPRS (cont'd.)

- Measuring the impacts
  - Step 3: Assess competition from lower cost products and ability to pass-through costs (trade exposure)
    - Responsiveness of customers to price changes (price elasticity)
    - Parity of import and export prices
    - Share of trade in the market
    - Potential for international competition

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Sectors Under Consideration in the CPRS

Metal
- Alumina refining
- Aluminum smelting
- Copper refining/smelting
- Iron and steel manufacturing
- Pig iron production

Non-Metal Mineral
- Clinker production
- Lime production
- Soda ash production
- Silicon production

Glass
- Float glass production
- Glass container production

Oil and gas
- Petroleum refining
- Coke production
- LNG

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Sectors Under Consideration in the CPRS (cont'd.)

Chemicals

- Ammonia production
- Caustic/chlorine gas production
- Ethanol production
- Methanol production
- Nitric acid/ammonium nitrate production
- Ethylene/polyethylene production

Paper

- Newsprint manufacturing
- Printing paper manufacturing
- Cardboard manufacturing
- Carton board manufacturing

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California Framework for an Assessment Methodology

Step1:

- Define potential exposed sources
  - By sector or subsector
  - By activity as a set of processes

26

California Framework for an Assessment Methodology (cont'd.)

Step1 (cont'd.):

- Define potential exposed sources in the context of trade market
  - Trade flow and California industry's market share
    - US or North America market
      - Implications for California industries in the WCI and possible federal program
    - International market
  - Industry market trends
    - Supply and demand

27

California Framework for an Assessment Methodology (cont'd.)

Step 2:

- Identify methods to estimate potential compliance cost
  - Emissions data collection (mandatory reporting)
  - Reductions opportunities using existing technologies
  - Available financial data, e.g.,
    - Revenue, production costs, value added, other

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Framework for an Assessment Methodology (cont'd.)

Step 3:

- Identify methods to assess ability to pass-through costs (trade exposure)
  - Parity of import and export prices
  - Share of trade in the market
  - Price elasticity
- Identify other relevant quantitative/ qualitative information

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Proposed Next Steps To Assess Competitiveness and Leakage

- Consider comments on assessment framework (May)
- First cut of assessment methodology options (June)
- Concept Paper on assessment methodology (late summer)
- White Paper addressing methods to minimize leakage to potentially affected sources (Fall)

ARB will solicit public review and comment at each step of the process

30

Questions for Discussion

- What criteria should be used to define exposed sectors?
- What criteria should be used to define the affected market for potentially exposed sources?
- What data should be used to assess potential risk of cost increases through trade exposure?

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For More Information…

- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Comments

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on the assessment methodology framework are requested by May 11th; please submit comments to: ccworkshops@arb.ca.gov

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Public Meeting

Cap Setting and Data Review: Introductory Discussion

April 28, 2009
California Air Resources Board

Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

2

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

3

Purpose of Today's Meeting

- Initiate a discussion on how the emissions cap will be determined for the California cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by May 29th (to **ccworkshops@arb.ca.gov**)

4

Outline of Presentation

- Introduction and Background
  - Objectives of the cap-setting process
- What is a capped source?
  - Establishing a compliance obligation
- Calculating the level of the cap
  - Examining historical emissions data trends
  - Setting expected future emissions levels
- Analysis of the cap levels
  - Development of scenarios with various compliance pathways
  - Economic analysis
- Cap trajectories from other cap-and-trade programs.

5

Guiding Principles of the Cap-Setting Process

- Meet all AB 32 requirements for market systems
- Ensure:
  - Overall environmental effectiveness
  - Technological feasibility of reduction goals
  - Cost-effectiveness of reduction goals
- Maximize:
  - Simplicity of program design
  - Transparency of decision making

6

Relationship Between Statewide Limit and Cap

- AB 32 required ARB adopt a statewide limit for 2020 emissions equal to 1990 emission levels
  - Board approved a target of 427 MMT CO_2e in December 2007
- The cap for 2020 in the cap-and-trade program is a subset of the statewide target
  - Scoping Plan estimate for 2020 cap is 365 MMT CO_2e
- Annual caps will be set from 2012-2020
  - Referred to as California's 'Allowance Budgets' in the context of the Western Climate Initiative

7

Capped Sources

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities (>25,000 MT CO_2e/year) and Imported Electricity
  - Large Industrial Facilities (>25,000 MT CO_2e/year)
- 2015-2020 (Broad Scope)
  - Adds 'upstream' treatment of fuel combustion where fuel enters into commerce covering
    - Small industrial fuel use (for facilities $\leq$ 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use

Source: Scoping Plan page 31

8

ARB Sources of Historical Emissions Data

- Top-down Inventory Data
  - Years Available:
    - 1990-2004 currently publicly available
    - 2005-2008 expected to be available in time for cap-setting
  - Coverage
    - Broad Scope
- Bottom-up Mandatory Reporting Data
  - Years Available:
    - 2008-2009 expected to be available in time for cap-setting
  - Coverage
    - Narrow Scope

9

Establishing a Compliance Obligation: Narrow Scope

- What generates a compliance obligation for narrow-scope sources?
  - Start with mandatory reporting regulations
  - Potentially add or exclude some emission categories
- Possible considerations:
  - Accuracy of specific reporting methodologies
  - Treatment of emissions from biomass combustion
  - Process emissions
  - Imported electricity

10

Establishing a Compliance Obligation: Broad Scope

- What generates a compliance obligation for broad-scope sources?
  - Point of regulation will be determined for fuel providers
  - New reporting requirements will be completed for fuel providers
- Possible Considerations:
  - 'Netting-out' fuels sold by fuel providers to large point sources with direct compliance obligations

11

Level of the Cap: Examining Historical Emissions Data Trends

- Present historical data sets which approximate narrow- and broad-scope coverage
- Possible considerations:
  - Hydroelectric variability
  - Economic variability

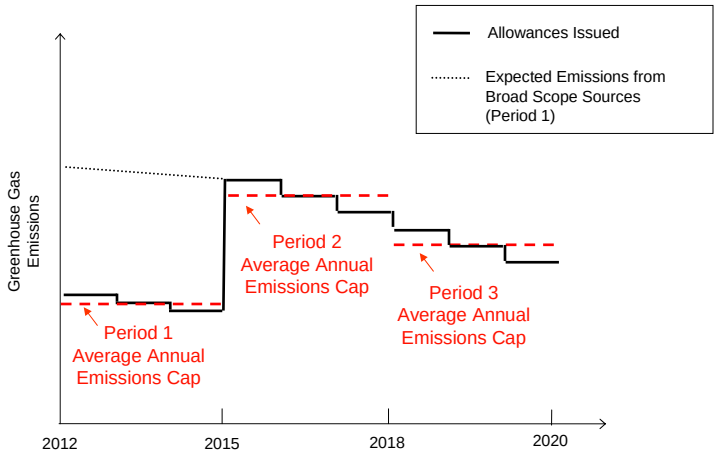
12

Level of the Cap: Setting the Cap Based on Expected Future Emissions Levels

- WCI Design Document Approach:
  - Set annual caps
  - Establish a 2020 level for 'broad scope' sources
  - Project 2012 'best estimate of expected actual emissions' for 'narrow scope' sources
  - Project 2015 'best estimate of expected actual emissions' for 'broad scope' sources
  - Establish straight line trajectories to 2020 for both scopes
    - Some uncertainty in how trajectory would be established for the first compliance period (2012-2014)

13

Concept: Desired Average Annual Emissions from Capped Sources by Period



14

Projecting Expected Future Emissions Levels

- Cap-setting projections based on estimates of:
  - Population growth
  - Economic growth
  - Expected voluntary and mandatory emission reductions
    - Including contribution of complementary policies
  - Other factors?

15

Analyzing Possible Compliance Pathways

- Cap-and-trade is a flexible mechanism
  - Multiple compliance paths conceivable
- ARB will evaluate compliance pathway scenarios
- Analysis will help ensure that the trajectory of the cap is reasonable and can be achieved in each period
- The ongoing economic analysis and compliance pathway analysis are interrelated

16

Board Direction in the Scoping Plan Resolution for Economic Analysis

- Examine economic impacts of:
  - Initial cap level
  - Rate of decline
- For reductions, examine:
  - Overall costs, savings, and cost-effectiveness
  - Estimates of the timing of capital investment
  - Annual expenditures to repay capital investments, and resulting cost savings

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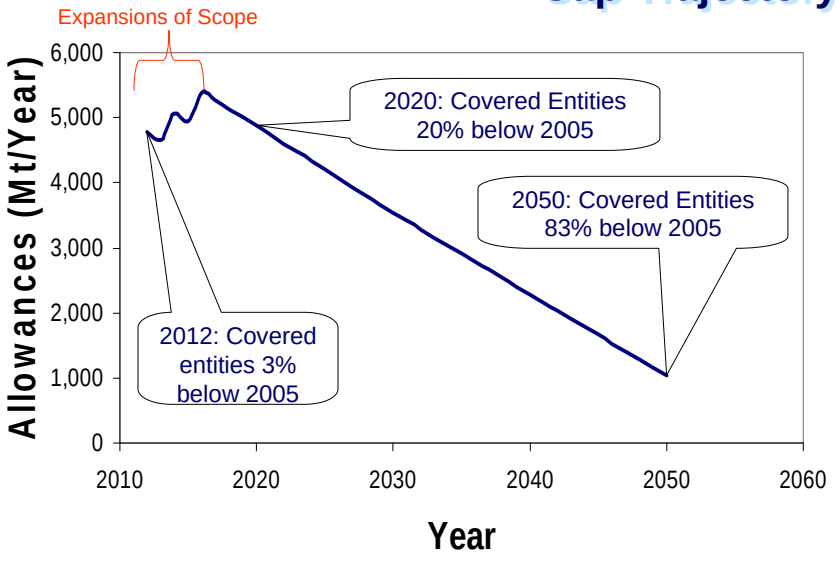
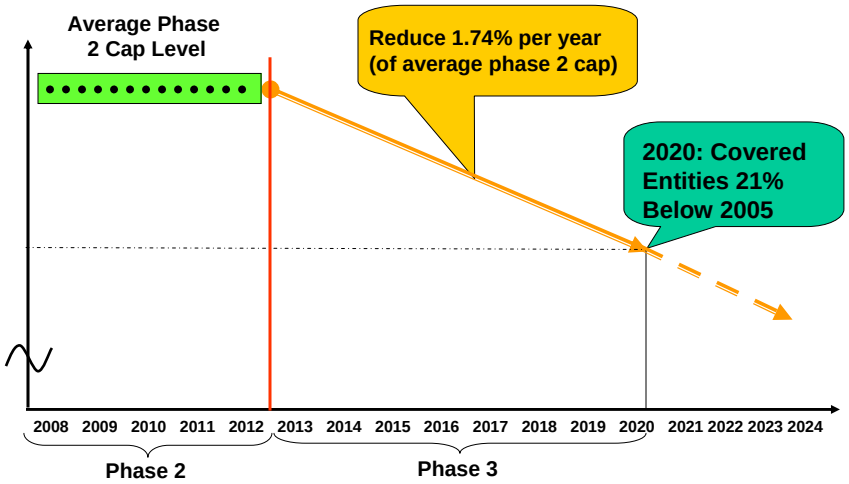
Waxman-Markey Discussion Draft: Cap Trajectory



18

European Union ETS Phase III: Cap Trajectory



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Potential Topics for Future Meetings on Cap Setting

- Establishing expected compliance obligations for sources of emissions
  - Narrow-scope
  - Broad-scope
- Examining trends in historical emissions data
- Establishing detailed method for projections of future expected emission levels
- Developing compliance pathway scenarios

20

Key Question for Stakeholder Comment

- Please examine the proposed WCI cap-setting methodology and give us your comments.
  - How should this method be expanded upon?
- Please comment on potential approaches to the following:
  - Projection of future emissions levels
  - Compliance pathway analysis methodologies

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Comment Period

Reminder:

Stakeholders are asked to provide written comments on this topic by May 29th to **ccworkshops@arb.ca.gov**

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets; Cap-and-trade project manager
Claudia Orlando	Electricity
Joshua Cunningham	Transportation
Manpreet Mattu	Reporting; Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Karin Donhowe	Natural gas for residential and commercial
Mihoyo Fuji	Marginal abatement costs and competitiveness issues
Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=capandtrade
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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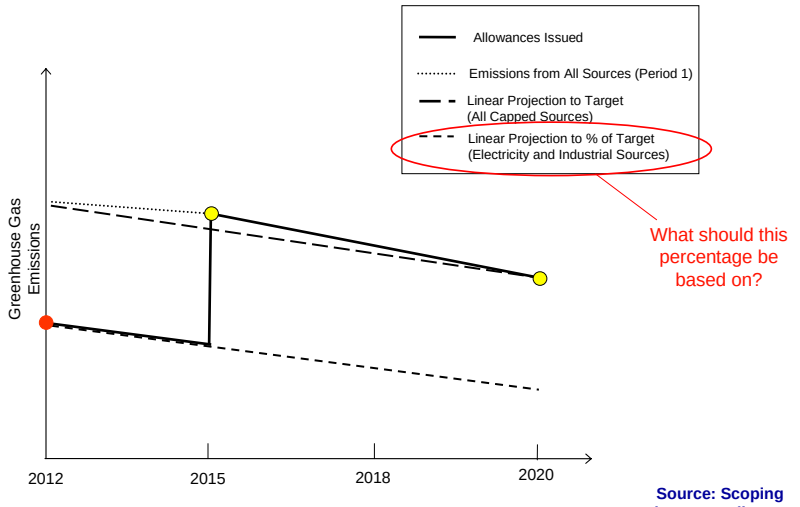
Backup Slides

Accounting for 2015 Change in Scope



Source: Scoping Plan Appendix page C-18

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Public Meeting

Criteria for Compliance Offsets in a Cap-and-Trade Program

April 28, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss preliminary approach for establishing rules in the California cap-and-trade program to determine whether offsets meet AB 32 requirements
- ARB would like to receive input on the preliminary thinking in this presentation
- Stakeholders are asked to provide written comments on this topic to ARB by May 21st (to **ccworkshops@arb.ca.gov**)

3

ARB Compliance Offset Development Process

Today
- Criteria for compliance offsets
  - Requirements for offset projects

Future Topics
- Protocol review and approval process
- Approval process for offset projects
  - Verification of offset projects
  - Issuance of offset credits
- International offsets and linkage

4

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

5

Outline for Today's Presentation

- AB 32 Requirements
- Offsets in the Scoping Plan
- Defining a Compliance Offset
- Defining Criteria for Compliance Offsets

6

What is an Offset?

- In general, a GHG offset is a GHG emission reduction …
  - beyond any reduction otherwise required by regulation or that otherwise would occur
  - that generates a credit that can be used to meet a regulatory compliance obligation or a voluntary commitment
  - that addresses emissions not included in a cap-and-trade program

7

What Does AB 32 require?

- Any reduction of greenhouse gas (GHG) emissions used for compliance purposes must be:
  - real, permanent, quantifiable, verifiable, enforceable and additional
    HSC §38562(d)(1) and (2)

8

Scoping Plan: Compliance Offsets

- All offsets must meet high quality standards (AB 32 requirements)
- The majority of emission reductions must be met through action at capped sources
  - No more than 49% of reductions can come from offsets
- No geographic limits

9

Approaches for Defining Compliance Offsets

- The definition could:
  - Include all specific requirements or provisions for compliance offsets
  - Refer to further requirements of the offset system that may be defined elsewhere in the regulation or program design
  - Combine elements of both of these approaches

10

Approaches for Defining Compliance Offsets (cont'd.)

- Example elements of a compliance offset definition:
  - Tradable unit
  - Offset unit (e.g. reduction of 1 metric ton CO_2e)
  - AB 32 specified criteria (real, additional,…)
  - Types of emissions reductions
  - Geographic eligibility
  - Project eligibility date and vintage
  - Ownership rights

11

ARB Preliminary Staff Thinking: Defining a Compliance Offset

- Tradable unit
  - A compliance offset is a tradable and fungible unit within cap-and-trade program
- Offset unit
  - A compliance offset is equivalent to 1 metric ton CO_2e
- AB 32 specified criteria
  - A compliance offset must meet all criteria specified in the offset regulation

12

ARB Preliminary Staff Thinking: Defining a Compliance Offset (cont'd.)

- Types of emission reductions
  - Eligible: Direct emission reductions or removals that occur at the location where the reduction activity is implemented
  - Ineligible: Indirect emission reductions or removals that occur at a location other than where the reduction activity is implemented

13

ARB Preliminary Staff Thinking: Defining a Compliance Offset (cont'd.)

- Geographic eligibility
  - ARB would issue compliance offsets for projects in California or for projects implemented in a jurisdiction with an agreement with California
  - ARB would not approve offset projects for reductions in developed countries from sources that within California are covered by the cap-and-trade program*

*Western Climate Initiative Design Recommendations for the WCI Regional Cap-and-Trade Program. September 23, 2008, p. 11.

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ARB Preliminary Staff Thinking: Defining a Compliance Offset (cont'd.)

- Geographic eligibility (cont'd.)
  - ARB would accept approved offset credits issued by other systems
    - Would need to meet all AB 32 criteria
    - ARB may establish added criteria to ensure similar rigor to CA approved/issued compliance offsets
    - ARB would need to develop process to assess which other systems would be eligible
    - ARB would need to determine how to enforce

15

ARB Preliminary Staff Thinking: Defining a Compliance Offset (cont'd.)

- Project eligibility date options:
  - SB 527-CCAR: 2001
  - AB 32: 2007
  - Start of mandatory reporting: 2008
  - Start of cap-and-trade program: 2012
  - Others?
- Eligible vintage date options:
  - Same as above

16

Other Considerations for Defining Compliance Offsets

- Ownership rights
  - Is the entity with operational control of an emission reduction project the owner of the offsets?
  - Should ownership of compliance offsets be freely transferable?
  - Which instrument should be used for tracking transfers of ownership?

17

AB 32 Specified Criteria for Compliance Offsets

- Real
- Quantifiable
- Permanent
- Verifiable
- Enforceable
- Additional

Are there others ARB should consider?

18

Criteria: Real

- Typically understood to mean that all emission reductions or removals credited as compliance offsets genuinely took place
- Components of 'Real'
  - Conservative estimates
  - Sound quantification methodologies
  - Verified reductions
  - Reductions are permanent

19

ARB Preliminary Staff Thinking: Criteria: Real

- Account for uncertainty and accuracy in calculating emission reductions
  - Conservative estimates
- Account for emissions leakage
- Avoid double counting

20

Criteria: Quantifiable

- Typically understood to mean that reductions must be real and accurately quantified
- Components of quantifiable:
  - Calculation methodologies that are measurable, credible and replicable
  - Review of methodologies
  - Project specific variations

21

ARB Preliminary Staff Thinking: Criteria: Quantifiable

- Include scientifically sound and accurate methodologies
- Periodic review of methodologies
- Take variations into account
- Establish uniformity in quantification and monitoring procedures for each project type
- Comprehensive accounting of emission sources and sinks
- Provide some flexibility in choice of monitoring/measurement techniques meeting accuracy requirements

22

Criteria: Permanent

- Typically refers to the guarantee that GHG reductions or removals are not re-emitted into the atmosphere
- Risk of non-permanence is mostly associated with biologic and geologic sequestration projects

23

ARB Preliminary Staff Thinking: Criteria: Permanent

- For sequestration projects permanence requirement of 100 years
  - Considerations are made for the relative duration of anthropogenic CO_2 in atmosphere
- Possible approaches to ensuring permanence
  - Pre-issuance obligation: may require contracts, conservation easements, etc
  - Post-issuance obligation: may require third-party insurance or buffer accounts

24

Criteria: Verifiable

- Verifiable refers to the ability for auditor to assess the assertion that GHG reductions have occurred against program criteria
- Verification audits could be performed by regulator or third-party

25

ARB Preliminary Staff Thinking: Criteria: Verifiable

- To ensure verifiability it is important that the offset system include:
  - Clear and transparent quantification methods
  - Monitoring requirements
  - Reporting and documentation requirements

26

ARB Preliminary Staff Thinking: Criteria: Verifiable (cont'd.)

- No forward crediting (credits issued prior to verification of reductions)
  - Compliance offsets must be verified
- Third-party verification already required for emissions reporting

27

Criteria: Enforceable

- Need for ability to investigate and take action for violations or non-compliance
- Provides accountability
- Provides confidence that compliance offsets meet AB 32 requirements and achieve reductions

28

ARB Preliminary Staff Thinking: Criteria: Enforceable

- Offsets must be backed by regulations and tracking systems in order to:
  - Establish and track ownership
  - Ensure against double-counting of emission reductions and
  - Provide transparency
- Regulation could give ARB authority to investigate and take action for violations by offset users, project developers and/or any potential third-party verifiers

29

Criteria: Additional

- For additionality, ARB is starting with AB 32 provision:
  - The emission reduction must be "in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any greenhouse gas emission reduction that otherwise would occur" HSC §38562(d)(2)
- How do we ensure that all reductions meet this requirement?

30

Criteria: Additional (cont'd.)

Approaches to Additionality

- Project-specific assessment
  - CDM model
  - Administratively intensive
  - Allows for variability
- Standardized assessment
  - CAR model
  - Easier to administer
  - Allows less variability
- Hybrid
  - Combines elements of these two

31

Criteria: Additional (cont'd.)

Approaches to Additionality (cont'd.)

- Project specific additionality tests
  - Regulatory
  - Common practice
  - Financial (investment)
  - Technology
  - Barriers
  - Others?

32

Criteria: Additional (cont'd.)

- Options for establishing a baseline
  - Standardized methodology
  - Project-specific methodology
- Crediting period options
  - 5 – 10 years for non-sequestration type projects
  - 30-100 years for sequestration type projects
  - Possibility for renewal

33

Criteria: Additional (cont'd.)

- Future regulations
  - What happens if future regulations mandate reductions that have previously generated compliance offsets?
    - Projects could cease to be additional the date the new regulation enters into force
    - Projects could cease to be additional when a regulation is passed and it is established that it will go into effect

34

ARB Preliminary Staff Thinking: Criteria: Additional

- Hybrid approach to additionality
  - Focus on standardized assessments but include some project-specific tests
    - Regulatory
    - Funding source
    - Others?
- Hybrid approach to establishing baselines
  - Use standardized baseline methodologies but allow some project-specific factors to be accounted for

35

Other Criteria ARB Should Consider

- Transparency
  - Public participation process for projects
  - Disclosure of project information
- Minimize negative effects (no net harm)
- Co-benefits
- Others?

36

Comments

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- Written comments on preliminary staff thinking are requested by May 21st; please submit comments to: ccworkshops@arb.ca.gov

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For More Information…

- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

Use of Allowance Set Asides in a Cap-and-Trade Program

May 18, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and regulatory language
- Late 2010: Board consideration of cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss approaches for the potential use of set-asides in a California cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by June 12th (to **ccworkshops@arb.ca.gov**)

3

Outline for Today's Presentation

- Define Allowance Set-Aside
- Policy and Design Considerations of Allowance Set-Aside Program
- Examples
- Discussion

4

Meeting Agenda

1:30-1:35	Introductions and Opening Remarks
1:35-2:00	Staff Presentation
2:00-4:20	Roundtable Discussion and Questions and Answers
4:20-4:30	Closing Remarks and Next Steps

5

What Are Set-Asides?

Set-asides are a pool of allowances reserved for specific purposes, such as:

- Rewarding early action
- Incentives for energy efficiency, water efficiency and land use planning
- Recognition of voluntary emissions reductions
- Recognize projects that reduce emissions in low-income or disadvantaged communities

6

Policy Considerations

- Can allowance set-asides provide a useful tool for achieving AB 32 goals?
- Would this type of incentive and recognition approach achieve more than alternative approaches (e.g., monetary incentives, energy efficiency programs)?

7

Policy Considerations (2)

- Would allowance set-asides strengthen or complicate the cap-and-trade program?
  - Would set asides raise the cost of remaining allowances?
  - Would set aside requirements raise compliance costs to project proponents or capped sources enough to discourage their use?

8

Approaches for Using Set-Aside Allowances

- *Example*: Retire set-aside allowances on behalf of reductions achieved by qualifying projects, such as voluntary renewables
- *Example*: Distribute allowances to those taking action based on reductions achieved
  - Giving allowances would recognize emission reduction activities
  - Value would help recoup project investment
  - *Consideration:* Similar incentives might be achieved through distribution of revenue from allowance auctions

9

Design Considerations for Set-Aside Programs

General principles for calculating reductions

- Methods must be measurable, accurate and replicable
- Emission reductions must be verified
  - Periodic review to ensure reductions continue over life of the project
- Periodic review of methodologies

10

Design Considerations for Set-Aside Programs (2)

Should allowance set-asides be based on specific considerations?

- Permanent design feature or decline over time
- Geographic
  - Within the State
  - Within the WCI region
  - No limits
- Achievement of co-benefits

11

Design Considerations for Set-Aside Programs (3)

What eligibility requirements should apply to set-asides projects?

- Examples:
  - Methodology that prevents potential double counting
  - Specification of qualifying types of projects based on quantification criteria
  - Applicability of projects that may be funded through other revenue streams

12

An Existing Set-Aside Program

Regional Greenhouse Gas Initiative (RGGI)

- Limited to voluntary renewable energy projects
- Sets aside allowances for every MWh sold into voluntary market
- Retires allowances from the cap to account for these voluntary purchases

13

Set-Aside Program Concepts

Example 1: Voluntary Renewable Energy
Retire allowances associated with GHG reductions from a renewable energy generation project

- Advantages:
  - Additional reductions from capped sectors
- Disadvantages:
  - Fewer allowances to obligated entities in the cap
  - Could increase allowance price depending on extent of set-aside program
- *Unknown:* How much of a demand in new renewable generation would set asides encourage

14

Set-Aside Program Concepts (2)

Example 2: Energy Efficiency

- Allowances provided to project proponent for energy efficiency projects that help achieve electricity sector goals
- Allowances are sold back into the market to help defray costs of the project

15

Set-Aside Program Concepts (3)

Example 2: Energy Efficiency (cont'd.)

- Advantages:
  - Potential for greater penetration of economy-wide energy efficiency
  - Supports California energy efficiency goals
- Disadvantages:
  - Allowance prices are variable and may not adequately recover investment
  - Potentially high administrative/tracking costs

16

Set-Aside Program Concepts (4)

Example 2: Energy Efficiency (cont'd.)

- *Unknown:*
  - May be difficult to adequately quantify and verify reductions
  - Who would get credits – multiple participants and funding sources

17

Key Questions for Stakeholder Discussion

- Are set-asides an appropriate mechanism for achieving AB 32 policy goals?
- What other mechanisms may be preferable to incentivize reductions?
- How should set-aside allowances be distributed?

18

Key Questions for Stakeholder Discussion (2)

- What specific eligibility criteria could be imposed, consistent with AB 32 goals?
- What program limits should be considered (e.g., quantity, geographic location, other)?

19

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  - http://www.westernclimateinitiative.org

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Public Meeting

Reviewing and Approving Offset Projects and Protocols

May 21, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss preliminary staff thinking on:
  - Reviewing and adopting offset protocols
  - Project types
  - Reviewing and approving offset projects
- Stakeholders are asked to provide written comments on this topic to ARB by June 19th (to **ccworkshops@arb.ca.gov**)

3

ARB Compliance Offset Development Process

April 28th

- Criteria for compliance offsets
  - Requirements for offset projects

Today

- Protocol review and adoption process
- Approval process for offset projects
  - Verification of offset projects
  - Issuance of offset credits

Future Topics

- International offsets and linkage

4

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

5

Outline for Today's Presentation

- Offsets in the Scoping Plan
- Reviewing and adopting compliance offset protocols
- Project types
- Reviewing and approving compliance offset projects

6

Scoping Plan: Compliance Offsets

- All offsets must meet high quality standards (AB 32 requirements)
- The majority of emission reductions must be met through action at capped sources
  - No more than 49% of reductions can come from offsets
- No geographic limits

7

Compliance Offset System Potential Elements

- Protocol Adoption
- Validation
- Registration
- Monitoring and Reporting
- Verification
- Certification
- Issuance
- Enforcement
- Others?

8

What Are Project Protocols?

- Provide project eligibility requirements
- Methods to calculate, monitor and report emission reductions or removals accurately and consistently
- ARB adopted protocols must generate offsets that meet all AB 32 criteria (i.e. real, additional, quantifiable, permanent, verifiable and enforceable)

9

Existing Project Protocols

- Protocols for some project types have already been developed as part of existing offset programs (e.g. CCAR, RGGI, CDM, etc…)
- ARB Board has adopted voluntary offset protocols developed by CCAR:
  - Forests, manure digesters, urban forestry

10

Protocol Approval Process

- Project-by-project
  - Individual project assessments submitted by project developers and reviewed on a case-by-case basis by ARB and verifiers
- Standards-based
  - General criteria and quantification methods pre-established in protocols and approved by ARB for use by project developers
- Hybrid
  - Combines elements of these two

11

Protocol Approval Process: WCI Coordination

- ARB is coordinating its efforts for protocol review and approval with the Western Climate Initiative effort
- ARB is working with WCI to approve protocols for the regional program that will ensure that California meets AB 32 requirements

12

ARB Preliminary Staff Thinking: Protocol Approval Process

- ARB would follow the hybrid approach
  - Use standardized methodologies to the extent possible
  - Develop a process for reviewing and approving future methodologies, including those submitted by individual project developers

13

ARB Preliminary Staff Thinking: Project Types

- Prioritize an initial list of project types
  - Analyze potential of those project types to achieve reductions
  - Evaluate whether protocols exist for priority project types
    - If so, determine whether they need to be modified to meet ARB requirements
  - In the case that protocols do not exist for priority project types establish protocol development process

14

ARB Preliminary Staff Thinking: Prioritization of Project Types

- Prioritization based on the following criteria:
  - Is the project type applicable in California?
  - Is the project type able to achieve real tons that avoid double counting in the short term? In the long term?
  - How widely applicable is the project type?
  - Is the project type generally cost effective?
  - Does a quantification method already exist for the project type?
  - Does the project type help ARB achieve policy goals in the Scoping Plan?

15

ARB Preliminary Staff Thinking: List of Eligible Project Types

- 1st Priority: Board approved protocols
  - Forests, manure digesters, urban forestry
- ARB staff starting to develop list
- Request stakeholder input on project types that may meet prioritization criteria

16

ARB Preliminary Staff Thinking: Board Approved Voluntary Protocols

- Cap-and-trade regulation could increase stringency and/or expand the offset system beyond the current board-approved protocols
- Starting in 2012 all compliance offsets would be subject to offset system regulatory requirements
  - ARB regulatory verification and enforceability requirements

17

ARB Preliminary Staff Thinking: Existing Offset Protocols

- Review and potential revision process could be very resource intensive
- This process may require additional expertise and resources beyond those available to ARB
- ARB could utilize outside expertise and capacity to review and modify existing protocols to meet ARB criteria

18

Compliance Offset System Potential Elements

- Protocol Adoption
- Validation
- Registration
- Monitoring and Reporting
- Verification
- Certification
- Issuance
- Enforcement
- Others?

19

Validation

- Assessment of a project's likelihood that implementation will result in the GHG emission reductions/removals described in the project documentation
- Pro: upfront confidence of GHG reductions if project is implemented
- Con: adds another step and cost

20

ARB Preliminary Staff Thinking: Validation

- Validation on a voluntary basis
  - Third-party validation in this case
- Due to the use of standardized methodologies to quantify emission reductions validation should not be required

21

Registration

- Point at which there is formal acceptance of the project into the system and project is allowed to generate compliance offsets
- Registration is prerequisite for verification, certification and issuance
- Standards contained in protocols relevant to registration of offset projects

22

ARB Preliminary Staff Thinking: Registration

- Project developer submits request for registration
  - Need to determine what documentation is required in request
- ARB conducts assessment of request
  - What should the timeframe for review be?
- Criteria for approval of request
  - Need to be developed
  - Processing fee?

23

Monitoring and Reporting

- Collection and archiving of all relevant data that determines baselines and emission reductions from projects
- Project protocols may have project specific requirements for the types of monitoring and reporting required

24

ARB Preliminary Staff Thinking: Monitoring and Reporting

- Monitoring is required for verification, certification and issuance of compliance offsets
- All collected data must ensure verifiability of project's stated emission reductions

25

Verification

- Process in which verifier assesses against program criteria the assertion that GHG reductions have occurred
- Verification process
  - Mirror the requirements for mandatory reporting?
- How much flexibility is needed to address different project types?

26

ARB Preliminary Staff Thinking: Verification

- AB 32 requires a regulation for the verification of compliance offsets
- The offset system must include:
  - Clear and transparent quantification methods
  - Monitoring requirements
  - Reporting and documentation requirements

27

ARB Preliminary Staff Thinking: Verification (cont'd.)

- Require third-party verification
- Include project specific verification requirements
- Materiality threshold
- Reasonable level of assurance

28

Certification

- Formal written assurance that the GHG reductions in the verification report actually took place
- Could be considered a request for issuance of compliance offsets

29

ARB Preliminary Staff Thinking: Certification

- Require certification of emission reductions after the verification process
  - Written statement
- Once the emission reductions are certified ARB could issue offset credits for those reductions

30

Issuance

- Creation and transfer of compliance offsets equal to the number of verified and certified emission reductions from a registered offset project

31

ARB Preliminary Staff Thinking: Issuance

- Project developer submits proposal for issuance of offset credits
  - Need to determine what is required in proposal (i.e. verification report, certification)
- ARB conducts assessment of request
  - What should the timeframe for review be?
- Approval or rejection of request
  - Need to determine what the criteria are for approval
  - Issuance fee?

32

Enforcement

- Ability to investigate and take action for violations or non-compliance
- Provides accountability
- Provides confidence that compliance offsets meet AB 32 requirements and achieve reductions

33

ARB Preliminary Staff Thinking: Enforcement

- Offsets must be backed by regulations and tracking systems in order to:
  - Establish and track ownership
  - Ensure against double-counting of emission reductions and
  - Provide transparency
- ARB is responsible for enforcement of its regulations
  - Projects located outside CA: Need a mechanism (e.g. MOU) to ensure enforceability

34

ARB Preliminary Staff Thinking: Enforcement

- Regulation could give ARB authority to investigate and take action for violations by:
  - Potential third-party verifiers
  - Project developers that register reductions
  - Use of offsets for compliance purposes

35

Comments

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Public Meeting

Including Imported Electricity in a California Cap-and-Trade Program

June 5, 2009

California Air Resources Board

Meeting Agenda

1:30 - 1:35	Introductions and Purpose of Meeting
1:35 - 4:20	Staff Presentation Roundtable Discussion
4:20 - 4:30	Closing Remarks and Next Steps

2

Presentation Outline

- AB 32, Scoping Plan, and Mandatory Reporting Requirements (MRR)
- Issues for Discussion
  - Approaches for electricity imports compliance obligation
  - Identifying obligated entities and sources of imported power
  - Emission factors for unspecified power
- Next Steps

3

AB 32 Requirements and Scoping Plan Recommendations

- AB 32: California must account for electricity imports
- Scoping Plan
  - California cap-and-trade program includes electricity sector, beginning in 2012
  - California cap-and-trade program linked to WCI

4

ARB Mandatory Reporting Requirements

- In-State generators:
  - Power plants ≥1MW and emitting ≥2,500 $MTCO_2$ must report CO_2 emissions
- Imported and specified electricity:
  - Retail provider or marketer reports quantity measured at the power plant's sub-station (busbar)
- Unspecified electricity:
  - Electricity measured at the first point of receipt for which reporting entity has information

5

Power Path for Electricity Imports

6

Approaches for Electricity Imports Compliance Obligation

Approaches for Compliance Obligation for Imported Electricity

- Deliverer Approach
  (CEC/CPUC Joint Decision Recommendation)
  – First deliverer of electricity to the California grid
- "First Jurisdictional Deliverer" (FJD)
  (WCI Design Recommendations)
  – The first entity that delivers imported electricity over which the consuming jurisdiction has regulatory authority
  – Two FJD approaches under consideration by WCI

8

FJD Approach 1: Individual Boundary

- Imported power generated from a WCI jurisdiction is covered at point of generation
- Electricity purchaser/seller has compliance obligation if it:
  - Holds title to non-WCI power, and
  - The power is imported into a WCI consuming jurisdiction
- Each WCI jurisdiction monitors transmission paths crossing its own borders and collects GHG allowances from obligated entities

9

Potential Impacts of Individual Boundary Approach

- Pros
  - Implementation can be handled either as a California only approach or through WCI
  - California is not dependent upon another jurisdiction to monitor and enforce
- Cons
  - More potential points of regulation as electricity travels across jurisdictions
  - Creates market complexity and uncertainty

10

FJD Approach 2: Common Boundary

- Electricity purchaser/seller has compliance obligation if it
  - Holds title for power crossing into first WCI jurisdiction and,
  - Is used for consumption in WCI

11

Potential Impacts of Common Boundary Approach

- Pros
  - Fewer points of regulation
  - Electricity deliverer is at first point of entry in WCI and doesn't change regardless of where power is consumed
- Cons
  - Requires coordinated reciprocal monitoring and enforcement by all WCI partners
  - Enforcement challenges

12

Questions on Approaches Under Consideration by WCI

- Are the potential market impacts significant?
- What mechanisms could be used to diminish any potential market impacts?
- Are there ways state and federal agencies could lessen potential impacts on wholesale markets?

13

Identifying Obligated Entities and Sources of Imported Power

Approaches to Assist in Identifying Obligated Entities

- ARB Mandatory Reporting Requirements
  - Retail providers and marketers report electricity imports into California
- Proposed AB 32 Cost of Implementation Fee Regulation
  - Applies to in-State retail providers, and marketers importing electricity into California
- NERC E-tags
  - Covers purchasers/sellers of power between control areas

15

Alternative Approaches to Track Sources of Imported Power

- Tracking using NERC E-tags which list source balancing authority/point of receipt
- Contracts and settlements data
- Tracking by emission attributes
  - Similar to WREGIS, but would include non-renewable generators

16

Questions for Stakeholders

- Which approach for including imports best lends itself to cap-and-trade?
- Are there other options that staff should consider for identifying obligated entities, and what criteria should we consider in determining the best approach?
- What criteria should ARB use in selecting a tracking method for imported power?
- If ARB develops an attribute tracking system, would non-WCI generators participate?

17

Emission Factors for Unspecified Power

Specified v. Un-Specified Power

- Electricity purchased for consumption may be:
  - Specified Power: Electricity linked to specific generating facilities or units by ownership or contract
  - Unspecified Power: Electricity not linked to specified generation facilities or units

19

Emission Factors for Unspecified Power

CPUC/CEC Recommendations

- Single regional default emission rate
  - 1,100 lbs CO2e/MWh for all unspecified purchases between 2005-2008
- Replace value with "values derived from a common set of rules that will be developed by WCI"

20

Default Emission Factor Options – Marginal Source Concept

- Marginal Sources
  - Generation sources that are dispatched to serve incremental additions to load
  - Surplus power used for export is usually generated by marginal sources

21

Default Emission Factor Options (2) Marginal Source Concept (cont'd)

Option 1:

- Single number for all power imported from non-WCI jurisdictions

Option 2:

- Regional variations based on:
  - Local resource mix
  - Within a balancing authority, or other defined region

22

Default Emission Factor Options (3)

Option 3:

- Establish an emissions factor based on emission rate of a typical coal-fired facility
  - Would avoid potential under-reporting of actual emissions where coal plants are in the mix of resources
  - Would provide incentive for marketers and retail providers to track electricity from cleaner sources, to the extent they can

23

Questions for Stakeholders

- Is there enough of a locational difference in the resource mix in non-WCI imported power to warrant multiple default emission factors? If so, how could "contract shuffling" be prevented?
- Are there additional approaches to consider in setting emissions factors to calculate unspecified power?
- Should a reporting threshold apply to imported power? If so, why?
- What criteria should be used in determining a default emission factor?

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Next Steps

- Written comments encouraged and accepted through June 206 to:
  http://www.arb.ca.gov/cc/capandtrade/comments.htm
- Staff Concept Papers
  - August 2009: Preliminary thinking on identifying obligated entity, sources of imported power, and methodology for tracking imported power
  - October 2009: Discussion of alternative methods for calculating default emission factor for unspecified power

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  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=capandtrade
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

Reporting and Verification in a Cap-and-Trade Program

June 5, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Highlight differences between ARB's Mandatory Reporting Regulation and WCI's Essential Requirements for Reporting
- Discuss specific areas where ARB's Regulation may need to be modified to better support cap-and-trade program
- Discuss verification requirements under a cap-and-trade program

3

Your Comments

- ARB would like to receive input on the preliminary thinking in this presentation
- Stakeholders are asked to submit their comments online by June 26: http://www.arb.ca.gov/cc/capandtrade/comments.htm

4

ARB Reporting Requirements Development Process

Today

- Reporting and Verification in Cap-and-Trade
  - ARB/WCI distinctions in reporting
  - Potential modifications to ARB Reporting Regulation, including verification requirements, for cap-and-trade program

Topics to be discussed in near future:

- Issues and alternative approaches for reporting cogeneration cap-and-trade
- Issues related to reporting transportation fuels

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Proposed U.S. EPA Reporting Regulation

- EPA's proposed Mandatory Reporting Rule (MRR) is not intended to support a cap-and-trade program
- ARB will provide and post its comments on ARB's website

6

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Clarifying Questions (10) minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

7

ARB Mandatory Reporting Requirements and Final Draft Essential Requirements of Mandatory Reporting for the WCI

Development and Purpose of Mandatory Reporting Regulation

- Originally written in response to AB 32 reporting requirements
- Preliminary ideas for foundation for future market program

9

WCI Essential Reporting Requirements

- Final Draft Essential Requirements of Mandatory Reporting for the Western Climate Initiative released May 7th
  - Includes revisions to some previously released requirements as well as new requirements for certain source categories not previously released

10

Reporting Sectors and Thresholds

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Specified sectors and combustion sources with emissions ≥ 25,000 metric tons (MT) CO_2 per year •Power plants over 1MW and ≥ 2,500 MT CO_2 per year •Electricity retail providers and marketers	•Facilities ≥10,000 MT CO_2 *equivalent* •Electricity retail providers and marketers as first jurisdictional deliverers

- WCI Design Recommendations and Scoping Plan have established the threshold for coverage in the cap-and-trade program at 25,000 MT CO_2 *equivalent*

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Industrial Sectors

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Cement, Refineries, Hydrogen Plants, Power Plants, Cogen, and other combustion sources	•ARB sources plus about 20 identified process and fugitive sources •Sources in California include oil/gas production and distribution, petrochemical production, pulp and paper, lime, glass, electronics

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Electricity Imports

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Extensive information from retail providers and marketers to guard against paper reductions	•First jurisdictional deliverers report (retail providers and marketers bringing power across the border)

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Fuels Combustion Emissions

- Existing Mandatory Reporting Regulation
  - Industrial stationary source fuel combustion
  - Mobile source fuel combustion at stationary facilities, optional reporting
- Additional reporting likely to be needed for second phase of cap-and-trade program
  - Transportation fuels
  - Residential & commercial fuels
  - Additional fossil fuels
    - Propane
    - Kerosene

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Fuels in the 2012-2014 Phase of Cap-and-Trade

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Emissions from fuel use at reporting industrial facilities •On-site mobile sources optional at reporting stationary facilities	•Reporting by upstream fuel producers, suppliers •Point of regulation will vary by jurisdiction and fuel type •Methods to be developed 2010

NOTE:
Recently adopted Low Carbon Fuel Standard (LCFS) requires fuel providers to meet an average declining standard of 'carbon intensity.' This includes upstream fuel production emissions and indirect land-use change factors. LCFS takes effect 2011.

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Biomass Fuels

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Counts towards the reporting threshold •Reported separately from fossil CO_2 •Subject to verification	•Not counted in determining applicability if found carbon neutral •Reported only when facilities also have fossil fuels to report •Considering whether to exclude from scope of verification

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General Stationary Combustion Sources

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Use default emission factors for CO_2 •Verify triennially – Annual verification is required for general stationary combustion sources in the oil and gas sector, unlike other GSC •Option to test fuels or use CEMS data	•Use default emission factors below the 25K cap •Capped facilities use fuel parameters determined by the operator or fuel supplier •Verify annually •CEMS are an option

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Cogeneration

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Report emissions and distribute fossil CO_2 by electricity, heat, and manufactured product	•Whether to require emissions distribution is under discussion

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Cement Plants

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Plant-specific process emissions factor developed annually •Reporting includes efficiency metrics	•Plant-specific process emissions factor developed monthly •Additional specified analytical methods •No efficiency metrics reported

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Verification Requirements

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Third Party Verification •Verification required beginning in 2010 •Conflict of interest (COI) review •Annual verification and triennial verification	•Annual third party verification after COI review for capped sources

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Verifiers

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•ARB accredits all verifiers for California reporters	•Both ARB and Climate Registry (TCR) verifiers (accredited through American National Standards Institute (ANSI) or Standards Council of Canada (SCC) will be grandfathered •Other verifiers to be accredited through ANSI or SCC

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Verification Findings

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Positive Verification Opinion: Conformance with regulation AND meets materiality threshold of 95% •Adverse Verification Opinion: Non-conformance with regulation OR does not meet materiality threshold of 95%	•Same

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Verifier Conflict of Interest (COI)

ARB Mandatory Reporting	Final Draft WCI Essential Requirements
•Detailed conflict of interest (COI) requirements in reporting regulation	•Similar

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Clarifying Questions

Potential Modifications to ARB Mandatory Reporting Regulation

Goals for Potential Modifications

- Achieve levels of completeness, accuracy, and transparency
- Reporting program elements need to support a successful cap-and-trade program
- Strive for consistency with WCI essential elements for reporting and federal reporting rule

Potential Modifications (1)

- Additional industrial process emissions methods
  - Oil and gas production and distribution, petrochemical production, pulp and paper, lime, glass, others

Potential Modifications (2)

- 10,000 metric ton CO_2e threshold
  - WCI: lower threshold critical to monitoring leakage, industry competitiveness
- Modified information from retail providers and marketers
  - First jurisdictional deliverers report

Potential Modifications (3)

- Distribution of emissions by cogeneration facilities
- Monthly emission factors for cement plants
- Align reporting and verification deadlines
- Adding upstream fuel sources (before 2015)

Potential Modifications (4)

- Verification changes due to market design:
  - Annual verification for all sources within cap
  - Verification opinion due date
  - Enforcement ramification and penalties for adverse verification opinions
  - Increase in liability insurance for verification bodies

Questions and Comments Roundtable Discussion Period

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on concepts presented here are requested by June 26th; please submit comments online: www.arb.ca.gov/cc/capandtrade/comments.htm

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Joshua Cunningham	Transportation
Manpreet Mattu	Reporting Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Karin Donhowe	Natural gas for residential and commercial
Mihoyo Fuji	Marginal abatement costs and leakage related issues
David Kennedy, Stephen Shelby, Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- Submit/View comments on Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

Point of Regulation for the Sources of Fuel Combustion Included in the Second Compliance Period in a California Cap-and-Trade Program

June 23, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and regulatory language
- Late 2010: Board consideration of cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss options for the points of regulation (and regulated parties) as they apply to sources of fuel combustion included in the second compliance period of the California cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by July 14th (**http://www.arb.ca.gov/cc/capandtrade/comments.htm**)

3

Outline for Today's Presentation

- Background on fuels in the cap
- Compliance obligation considerations
- Point of regulation options for each fuel
- Future meeting topics
- Roundtable discussion and questions

4

Background on Fuels in the Cap

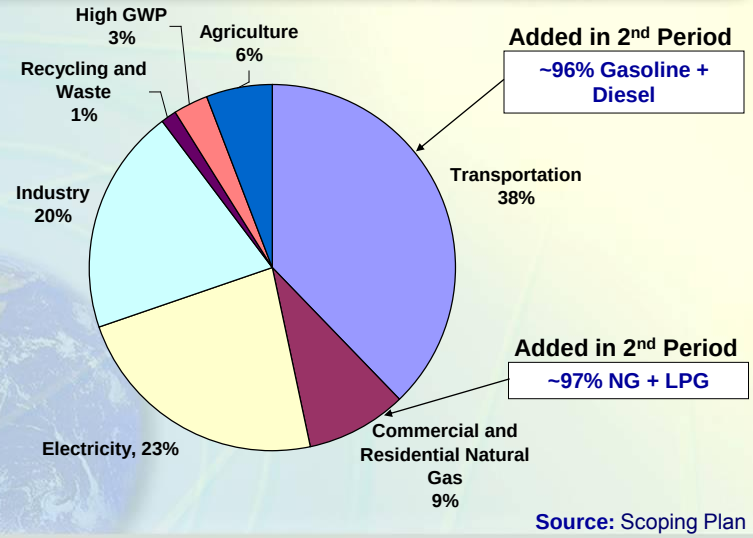
Capped Sources

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities (>25,000 MT CO_2e/yr) and Imported Electricity
  - Large Industrial Facilities (>25,000 MT CO_2e/yr)
- 2015-2020 (Broad Scope – 2nd and 3rd compliance periods). Narrow scope fuels plus:
  - Transportation fuel use
  - Small industrial fuel use (<25,000 MT CO_2e/yr)
  - Residential and commercial fuel use

Source: Scoping Plan page 31

6

California GHG Inventory (2002 – 2004 Average)

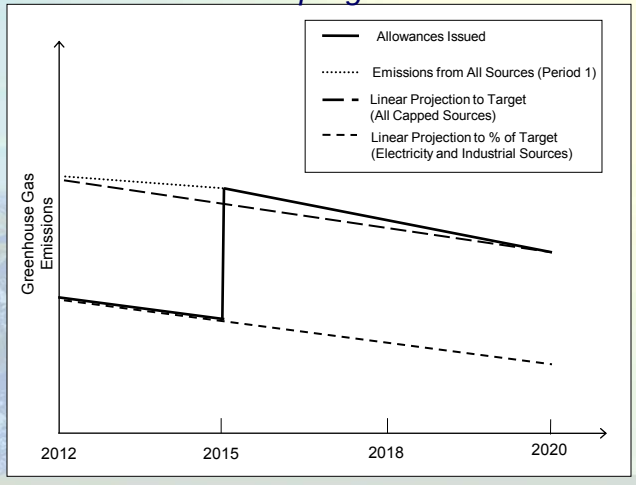


Source: Scoping Plan

7

Concept of the Cap

Goal: Establish cap for each year at the beginning of the program



Source: Scoping Plan Appendix page C-18

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Compliance Obligation Considerations

Considerations for Determining Point of Regulation (POR)

- Capture as many emissions as possible
- POR with information to report fuel used in CA
- Limit the number of regulated parties
- POR with information to avoid double pricing of emissions from fuel use at large stationary sources (i.e. 'net out')
- Consider relevant legal constraints
- Consider need for full information on how refined fuel was produced (i.e. full production pathway)

10

Establishing a Compliance Obligation: Broad Scope

- Who: Point of regulation will be defined for all types of fuel consumed in California
- What: Direct emissions from fuel combustion (fuel carbon content as proxy)
  - Fuel production pathway emissions upstream from the point of regulation may also have a compliance obligation
- Considerations:
  - 'Net out' fuels sold by fuel providers to large point sources with direct compliance obligations
  - 'Net out' fuels exempt from the program (e.g. petroleum used in plastics)

11

Reporting

- GHG Mandatory Reporting Regulation will be revised as part of cap-and-trade regulation in 2010
  - 2nd compliance period fuels to be added
- Regulated parties in the cap-and-trade program will be also be reporting entities

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Point of Regulation Options for Each Fuel

POR for Regulations with Fuels

	LCFS	Proposed AB 32 Fee Reg	CaRFG3, RFS	AB 32 Cap / Trade
Gasoline, diesel	Refinery or importer of blendstock	Refinery or importer of blendstock	Distribution Rack	TBD
Natural gas	Utilities or fuel dispensing eq. owner	Utilities + ind. pipeline operators	N/A	TBD
LNG	Fuel provider supplying to dispenser	Treated as Natural Gas	N/A	TBD
Electricity	Utilities or veh elec providers, indiv. owners	Fuel supplier or importer of electricity	N/A	***See notes below***
Hydrogen	Fuel producer for veh use	N/A	N/A	***See notes below***
E85	Fuel producer for veh use	N/A	N/A	TBD

- POR definition above for LCFS does not capture all possible PORs
- Electricity for transportation will not be classified as a "fuel". The point of regulation for electricity will capture all uses.
- Hydrogen (H_2) fuel doesn't contain carbon so H_2 fuel use will not be included. H_2 production is captured as industrial source.

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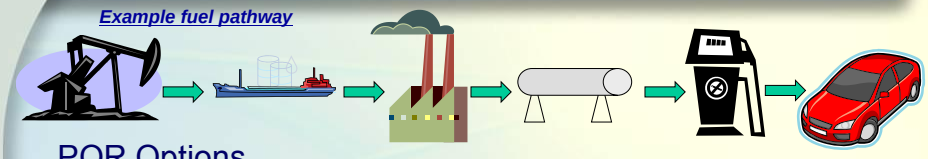
Gasoline and Diesel

Example fuel pathway



POR Options

- Refiners or blendstock importers
- Distribution terminal racks

Considerations

- Compliance at rack would be consistent with CaRFG3
- Refiners and importers will have fuel production info (LCFS)
- Compliance must account for low biofuel blends (e.g. E10-10% ethanol blend)
- Ability to 'net out':
  - E.g. Diesel fuel used in narrow scope industrial sources

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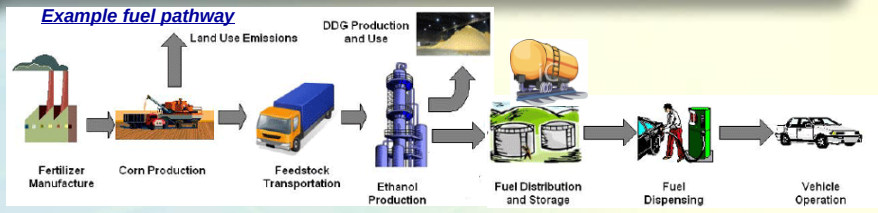
High Biofuel Blends (E85, B100, etc)

Example fuel pathway



POR Options

- Fuel producers or importers
- Refiners

Considerations

- Compliance must account for petroleum feedstock (e.g. 15% gasoline)
- Various biofuel carbon intensity variations are being considered

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Natural Gas

POR Options

- CA end users supplied directly from interstate pipelines
- Intrastate pipelines
- Local Distribution Companies (LDCs)

Considerations

- Multiple points of regulation may be needed to capture scope of emissions
  - E.g., capture end users for direct deliveries from interstate pipelines and/or non-utility deliveries
- LDCs have some ability to 'net out' narrow scope sources
- Avoid double counting (e.g., NG underground storage)
- Entities already reporting information to the state
- Ability to pass through costs

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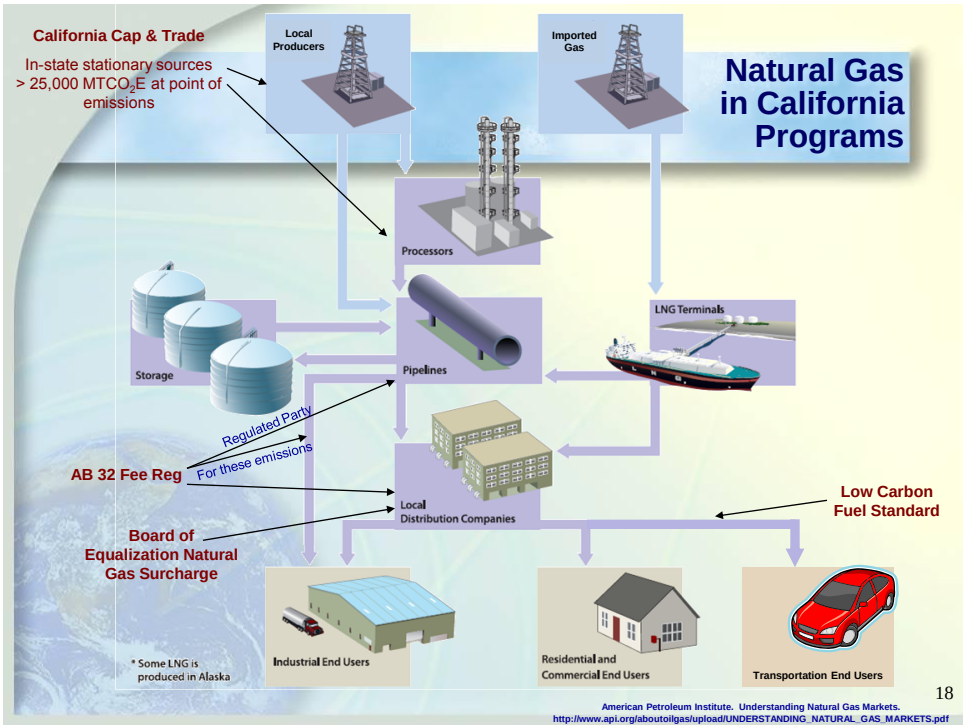
Natural Gas in California Programs



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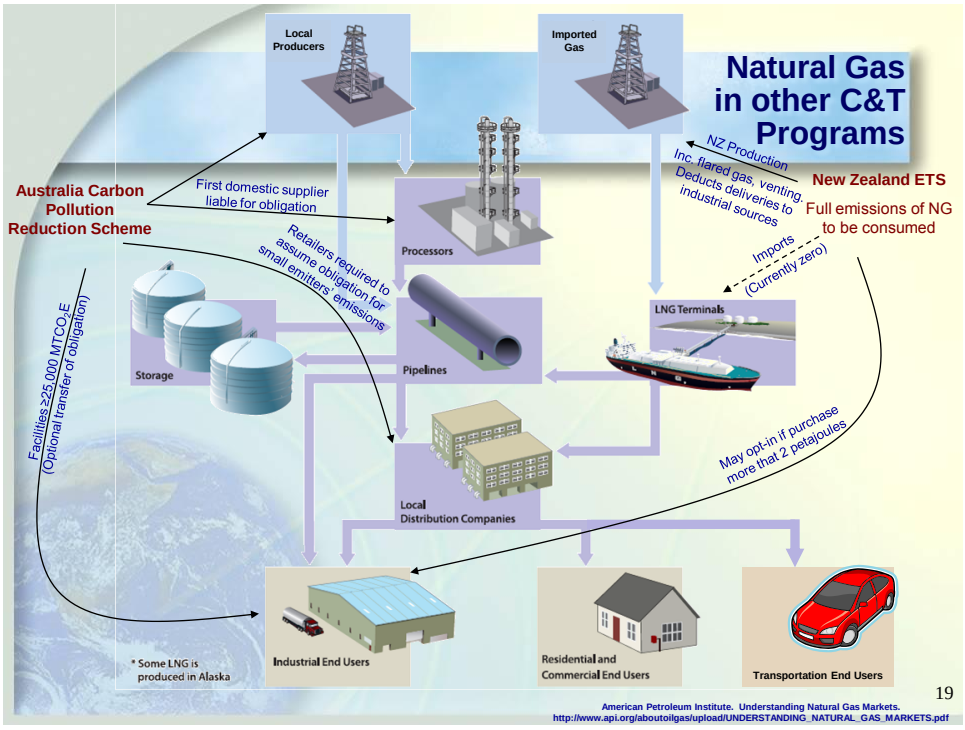
American Petroleum Institute. Understanding Natural Gas Markets.
http://www.api.org/aboutoilgas/upload/UNDERSTANDING_NATURAL_GAS_MARKETS.pdf



Non-Natural Gas Fuels

- Liquid petroleum gas ("propane")
  - ~9% of resid./comm. sector emissions; ~1% of total inventory
  - Variety of end uses, delivery methods
  - CPUC regulates safety of propane distribution systems, at point of propane system operator
  - Prices are unregulated
- Kerosene
  - ~0.3% of resid./comm. sector emissions; ~0.03% of total inventory
- Others?

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Workshop Discussion Questions

1. Are we capturing the appropriate fuel types?
2. Are there suggestions for the cap setting process for these fuels?
   - Sources of data, projections
   - Determining fuel production pathway emissions
3. What are the benefits and challenges with various POR alternatives?

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Future Fuels-Related Topics

- Consideration of importing LCFS credits for compliance with cap-and-trade program
- Reporting process
  - Methodologies for 2nd compliance period fuels
- Cap setting process and data, including fuels
- Possible inclusion of fuel pathway emissions (out-of-state) in fuel provider compliance obligation
  - Cap-setting public meeting

22

References

- Low Carbon Fuel Standard (LCFS)
  - http://www.arb.ca.gov/regact/2009/lcfs09/lcfsisor1.pdf
- AB 32 Mandatory Reporting
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- BOE Tax Laws (NG Surcharge Law and Fuel Surcharge)
  - http://www.boe.ca.gov/sptaxprog/natgas.htm
  - http://www.boe.ca.gov/sptaxprog/spftdmfuels.htm
- New Zealand Emissions Trading Scheme
  - http://www.climatechange.govt.nz/emissions-trading-scheme/index.html
- Australia Carbon Pollution Reduction Scheme
  - http://www.climatechange.gov.au/emissionstrading/index.html

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Joshua Cunningham	Transportation fuels
Manpreet Mattu	Reporting, and Energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Karin Donhowe	Residential and commercial fuels
Mihoyo Fuji	Marginal abatement costs and leakage related issues
David Kennedy, Stephen Shelby, Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=capandtrade
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

Linking California's Cap-and-Trade Program to Other Greenhouse Gas Trading Programs

July 27, 2009
California Air Resources Board

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

2

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

3

Purpose of Today's Meeting

- Discuss policy options on:
  - Linking to other GHG trading programs
- Stakeholders are asked to provide written comments on this topic to ARB by August 21st
  - http://www.arb.ca.gov/cc/capandtrade/comments.htm

4

Outline for Today's Presentation

- Defining Linkage
- Implications of Linkage
- Types of Linkage
- Linking Options for California
- Linkage and Offsets Limit
- Requirements for Linkage

5

Linkage Defined

- Linkage recognizes compliance instruments (e.g., allowances, offsets, and/or any other credits) from other programs to meet compliance obligations in California's cap-and-trade program.
  - Reciprocity: linkage may also provide for compliance instruments in California's cap-and-trade program to meet compliance obligations in other GHG trading programs.

6

Linkage in Scoping Plan

- Confirmed California's commitment to link with Western Climate Initiative (WCI) partners
- Also said California should be "primed to take advantage of opportunities for linking with other programs, including future federal and international efforts"

7

ARB Development Process for Other Compliance Units

March 23rd
- Offset compliance limit

April 28th
- Criteria for compliance offsets

May 21st
- Protocol review and adoption process
- Approval process for offset projects

Today
- Linkage

Future Topics
- International offsets

8

Implications of Linkage

- Linkage has many implications. Among them …
  - A broader market
  - Reduced overall abatement costs
  - Exposure to other programs, their rules, and their oversight
- For fuller discussion, see literature
  - IETA Report in November 2007 by Jud Jaffe and Rob Stavins provides a good overview

    http://belfercenter.ksg.harvard.edu/files/IETA_Linking_Report.pdf

9

Broadened Market

- Linkage broadens the market for allowances and offsets.
  - Allowing states (and provinces) to create a regional program
  - Bringing more buyers and sellers and more allowances into the market increases liquidity and improves the market's functioning
    - Increased liquidity more important for smaller programs
  - Reducing concerns about market power

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Linkage: One of Several Cost Containment Mechanisms

- Possible cost containment mechanisms
  - Recommended by ARB Scoping Plan and WCI
    - Allowance trading (i.e., cap and trade)
    - Banking
    - Longer compliance periods (3 yrs vs 1 yr)
    - Offsets
    - Linkage
  - Not recommended by ARB Scoping Plan or WCI
    - Borrowing
    - Price ceiling ("safety valve")

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Reduced Abatement Cost

- Linkage reduces overall abatement costs by allowing emitters to choose lower cost reductions in one program instead of higher cost reductions in the other program.
  - Without linkage, these cost savings are achievable only under ideal assumptions.

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Defining Abatement Cost

- In this presentation, abatement cost refers to an emitter's (net) expenditures to reduce its emissions
  - This differs from defining abatement costs as the net social costs of reducing emissions
    - e.g., Jim Sweeney and John Weyant "Analysis of Measures to Meet the Requirements of California's Assembly Bill 32" http://piee.stanford.edu/cgi-bin/docs/publications/Precourt%20Institute%20AB%2032%20Draft%20Report.pdf
  - Abatement costs may differ from private compliance costs, which may include expenditures for (additional) allowances

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Cost and Allowance Price

- Under bilateral linkage, even with lower overall abatement costs …
  - Allowance price could rise or fall in California depending on whether the marginal abatement cost in California is relatively high or low.
    - In general, the allowance price rises in the program with lower marginal abatement cost but declines in the program with higher marginal abatement cost.

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Linkage and Total Cost for Abatement

- Under bilateral linkage, even with lower overall abatement costs …
  - Total cost for abatement in California could rise or fall depending on whether California emitters are a net buyer or seller of compliance instruments.
    - In general, abatement and thus total cost for abatement rises in the program which is a net seller of allowances, although revenue from selling allowances more than offsets the increased abatement costs. Conversely, abatement and thus total cost for abatement declines in the program which is a net buyer of allowances.

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Leakage

- Linkage may reduce economic dislocation when entities in different programs face the same carbon price.
- Linkage could increase leakage if allowances are sold from a program more susceptible to emissions leakage to a less susceptible program.

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Distributional Effects

- Linkage can have distributional effects within and between programs since a different carbon price ...
  - Alters who are buyers and sellers of allowances
  - Changes the price of energy and emissions-intensive goods purchased by consumers
- Price change example:
  - When (small) Norway and (large) European Union Emissions Trading Scheme (EU ETS) linked, Norway's carbon price changed to match the EU ETS market price.

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Financial Flows

- Linkage may raise political concerns if there are large financial flows out of a jurisdiction.
  - However, financial flows between entities involved in a trade are beneficial to them since trading is voluntary.

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Location of Co-Benefits

- Linkage may increase or decrease the amount of co-benefits within a program's own jurisdiction since inherent design allows flexibility for where reductions occur.

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Exposure to Other Programs

- Linkage exposes a program to the rules and oversight of other programs.
  - Compliance mechanisms in one system essentially extend to any linked system. Examples include:
    - Safety valve
    - Borrowing
    - Offsets

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Types of Linkage

- Bilateral (and multi-lateral) linkage
- Unilateral linkage
- Indirect linkage

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Bilateral Linkage

- A “two-way” link in which two programs agree that compliance instruments (i.e., allowances, offsets) from each program may be used to meet compliance obligations in either program
  - This linkage essentially makes a common market from separate cap-and-trade programs
  - Examples:
    - Norway and EU ETS
    - Australia and New Zealand (proposed)

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Multi-Lateral Linkage

- A multi-lateral link is a bilateral link, except between more than two programs.
  - Examples:
    - Regional Greenhouse Gas Initiative (RGGI) states with each other
    - WCI partner jurisdictions

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Unilateral Linkage

- A “one-way” link in which a program recognizes compliance instruments from another program to meet compliance obligations in its own program
  - Hypothetical examples:
    - MGGA accepts RGGI allowances, but not vice versa
    - California’s cap and trade accepts LCFS credits, but not vice versa

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Indirect Linkage

- Two programs effectively become linked to each other because each has linked to a third program.
  - The indirect link is established irrespective of whether …
    - the formal links are bilateral or unilateral
    - the link is via allowances, offsets, or any other credits

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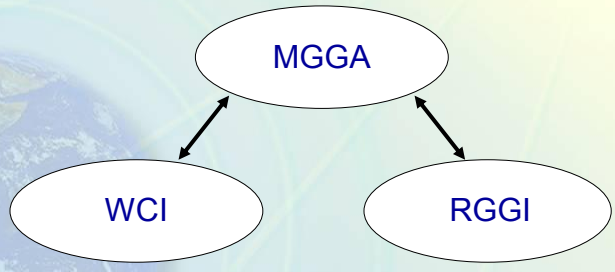
Indirect Linkage: Example #1

- Hypothetical example: WCI and RGGI not linked directly but linked indirectly by both linking directly to MGGA (Midwest Greenhouse Gas Accord).



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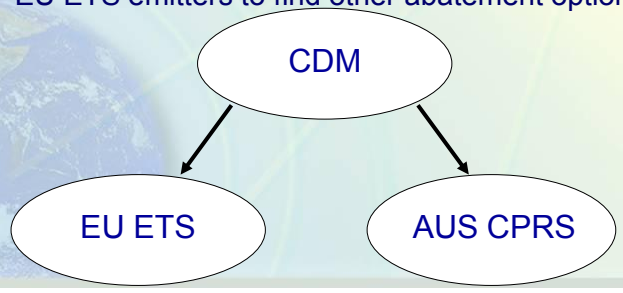
Indirect Linkage: Example #2

- If both the EU ETS and Australian Carbon Pollution Reduction Scheme (CPRS) linked unilaterally to the Clean Development Mechanism (CDM), the two programs would still be indirectly linked to each other.
  - In particular, CRPS buying CDM credits would require EU ETS emitters to find other abatement options.



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Linking through Western Climate Initiative

- California is working with six other Western states and four Canadian provinces to create regional market design.
- Scoping Plan commits to linking with WCI partners consistent with AB 32 requirements and WCI regional design.

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Other Possible Linking Options for California's Cap-and-Trade Program

- Sub-national programs in North America
  - RGGI, MGGA
- National programs
  - EU ETS, AUS CPRS
- International programs
  - CDM, JI (Joint Implementation)
- Voluntary offset programs
  - CAR (Climate Action Reserve), VCS (Voluntary Carbon Standard)
- Other carbon reducing programs
  - CA's LCFS (Low Carbon Fuel Standard)
- Others?

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Linking to Sub-National Programs

- WCI
  - Scoping Plan confirmed California's commitment to link to its WCI partners
- RGGI
  - Is this program comparably rigorous given concerns of its possible over-allocation?
  - Its allowances represent a short ton, not a metric ton
- MGGA
  - Still in design process
- NSW GGAS (New South Wales Greenhouse Gas Abatement Scheme)
  - Does linking a program with an absolute cap to a program with an intensity-based cap lead to an increase in emissions?
  - Being phased out with national program looming

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Linking to National Programs

- EU ETS
  - As a sub-national that cannot be a signatory to the Kyoto Protocol, California cannot link to programs such as the EU ETS until after 2012.
  - After 2012?
- U.S. cap-and-trade
  - Design of federal cap-and-trade program still under consideration in Washington DC
  - Federal legislation passed by the US House includes moratorium on state and regional programs for 2012-2017
- Australia CPRS
  - Not yet approved by its government

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Linking to International Programs

- California might decide to accept a subset of CDM credits.
  - Precedent from EU ETS
- Scoping Plan identified a sectoral approach.
  - Ongoing post-Kyoto negotiations
- These issues will be the focus of an upcoming public stakeholder meeting.

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Linking to Voluntary Programs

- CAR and VCS
  - Are their processes (e.g., verification) compliance-grade?
- CCX (Chicago Climate Exchange)
  - Can voluntary cap-and-trade programs meet all the requirements necessary for linking?

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Linking to LCFS

- LCFS regulation left open possibility for a unilateral link, i.e., that LCFS credits could meet cap-and-trade obligations but not vice versa
- How would the cap in California's cap-and-trade program be affected?
  - Does a link to a program with an intensity-based cap lead to an increase in emissions?
  - Would reductions from LCFS be double-counted?
  - LCFS captures life-cycle emissions, which may or may not be subject to California cap.

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Quantitative Limits to Linkage

- If a quantitative limit restricts the number of compliance units which may trade into a program, then a common carbon price may not be achieved and other implications from linkage may be diminished.
  - e.g., Two programs with offset limits decide to accept offsets but not allowances from the other program.

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Linkage and Offset Limits

- WCI Design Recommendations
  - Outside the offset limit
    - Allowances from other WCI jurisdictions
    - Allowances from non-WCI programs with bilateral links to the WCI
  - Within the offset limit
    - Allowances from non-WCI programs under a unilateral link
    - All offsets

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Possible Requirements for Linking (1)

- Similar reporting requirements and methods to ensure that “a ton is a ton” across programs
- Agreement on current and future emission caps
  - i.e., program stringency
- Agreement on a process for making future changes to linked programs
  - When would changes in one program require two programs to be unlinked?
- Similar cost containment provisions
  - e.g., safety valve, borrowing, offsets

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Possible Requirements for Linking (2)

- Electronic registries, or a common registry, that can directly communicate transfers to each other
- Similar capability and effectiveness in enforcing program requirements
- An agreement covering monitoring and enforcement procedures
- Other?
  - Similar allowances allocations (i.e., auction vs free)
  - Similar program scope (i.e., same sectors under a cap)

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International Carbon Action Partnership (ICAP)

- A partnership which offers an open forum to share experiences and knowledge
  - Members include California and other jurisdictions that have implemented or are implementing cap-and-trade programs
  - ICAP goals
    - To contribute to the establishment of a well-functioning global cap and trade carbon market
    - To enhance the design of carbon markets to achieve maximum reductions and to prevent leakage
    - To ensure that design compatibility issues are recognized at an early stage
  - http://www.icapcarbonaction.com/

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Linking and Regulatory Language: Preliminary Staff Thinking

- The regulatory language would establish the conditions under which California could link to another program
- Board would delegate authority to Executive Officer to determine whether the conditions have been met
- Link with WCI partners that have met the regional design requirements in their programs

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Questions for Stakeholders

- Beyond its WCI partners, to which programs should California consider linking?
- What kind of links (bilateral, unilateral, etc.) should California establish?
- Which implications—advantages or disadvantages—are the most important for ARB to consider when evaluating whether to link with another program?
- What details on linkage should be included or excluded from the regulatory language?

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Comments

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Stakeholders are asked to provide written comments on this topic to ARB by August 21st
  - http://www.arb.ca.gov/cc/capandtrade/comments.htm

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Team Leads for Cap & Trade Rulemaking

Sam Wade, Mary Jane Coombs	Cap setting and allowance distribution
Ray Olsson	Market operations and oversight
Brieanne Aguila	Offsets and cap-and-trade project manager
Claudia Orlando	Electricity
Manpreet Mattu	Reporting and energy efficiency
Bruce Tuter, Mihoyo Fuji	Industrial sectors
Stephen Shelby	Offsets
Karin Donhowe	Broad scope fuels
Mihoyo Fuji	Marginal abatement costs and leakage related issues
David Kennedy, Stephen Shelby, Barbara Bamberger, Mihoyo Fuji, Jeannie Blakeslee, Judy Nottoli, Jerry Hart	Impact analyses (environmental, economic, localized, small business, public health)

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For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=capandtrade
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting

International Offsets in a California Cap-and-Trade Program

July 30, 2009
California Air Resources Board

California Cap-and-Trade Rulemaking Timeline

- Focus in 2009: work through implications of different issues and policy decisions
- Focus in 2010: finalize program design and develop regulatory language
- End of 2010: Board action on cap-and-trade regulation
- Extensive public process throughout

2

Purpose of Meeting

- Discuss how international offsets could play a role in a California cap-and-trade program
- Stakeholders are asked to provide written comments on this topic to ARB by September 11th (http://www.arb.ca.gov/cc/capandtrade/comments.htm)

3

ARB Compliance Offset Development Process (Public Meetings)

April 28th

- Criteria for Compliance Offsets

May 21st

- Reviewing and Approving Offset Projects and Protocols

July 27th

- Linkage of Allowances and Offsets

Today

- International Offsets

4

Meeting Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (30 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

5

Outline for Today's Presentation

- International offsets in the Scoping Plan
- Current international offsets systems and international and national discussions on offsets approaches and reforms
- Preliminary staff thinking on international offsets in a California cap-and-trade program

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Scoping Plan: Compliance Offsets

- All offsets must meet high quality standards (AB 32 requirements)
- The majority of emission reductions must be met through action at capped sources
  - No more than 49% of reductions can come from offsets
- No geographic limits
  - Specific mention of international offsets as a possibility

7

Scoping Plan: International Offsets

Why have international offsets?

- Foster policy change in developing world
- Encourage spread of clean, low-carbon technologies outside of California
- Cost-containment / offset supply
- Reduce emissions related to imported commodities
- Explore sectoral approaches to reduce competitiveness / leakage concerns in carbon-intensive sectors (e.g., cement)

8

Current International Offsets Systems

- Some voluntary markets, but principal system is Clean Development Mechanism (CDM) under Kyoto Protocol
- CDM uses a project-based approach to generate compliance offsets
  - Project developers propose emissions reductions projects in developing countries
  - Must be additional, third-party verified, etc.
  - If approved by CDM Executive Board, can sell offsets to capped entities in developed countries
- Criticism of CDM
  - Difficult to evaluate additionality on individual project basis
  - Some project types highly criticized (e.g., HFC-23)

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Current Discussions on International Offsets (UNFCCC)

- Developed countries pushing for CDM reform
- Proposed move from project-based offsets to "sectoral crediting" at least in highly competitive sectors and rapidly industrializing countries (e.g., China, India)
- Sectoral crediting basics:
  - Establish emissions baseline for developing country in a particular sector (covers all emitters in that sector, perhaps with a de minimis threshold)
  - Developing country must reduce emissions <u>below</u> baseline <u>before</u> it earns marketable emissions reduction credits
  - More on this later…

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Current Discussions on International Offsets (U.S. Federal)

- House recently passed climate bill
  - Would allow international offsets from a developing country if offsets meet certain standards (similar to AB 32) and U.S. is party to a bilateral or multilateral climate treaty with offset host country
  - Expresses preference for sectoral approaches, and directs U.S. EPA to identify sectors/countries where only sectoral crediting would be permitted
  - Would accept UNFCCC-approved offsets (e.g., CDM), but project-based would not be allowed after 2016 in sectors identified above
- Debate now moves to Senate

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Questions for Design of a California Cap-and Trade Program

- Should ARB accept existing international offsets?
- Should ARB accept project-based offsets, accept sectoral crediting only, or a combination of the two?
- How could ARB enforce international offsets?

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How Could Sectoral Crediting Work?

- Engage major developing countries at the national or subnational level
- Before crediting, require a cooperative agreement with the developing country or state/province establishing a sectoral crediting baseline/ target, requirements for MRV, etc.

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How Could We Engage Developing Countries?

- Might first engage developing countries at the sub-national sectoral level
  - Many developing countries lack capacity (MRV, etc.) for national sectoral crediting
  - More progressive states/provinces may have greater capacity in the short-term
  - Sub-national “pilots” could help build capacity for eventual national sectoral agreements

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What Could an Agreement with a Developing Country Contain?

- Agreement (e.g. MOU, cooperative principles) could
  - Identify sector(s) for cooperation
  - Provide technical, institutional, regulatory and policy collaboration and assistance
  - Establish the crediting baseline/target
  - Require adequate MRV to ensure AB 32 requirements are met

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Cooperative Agreement (1): Identify Sectors for Cooperation

- Factors
  - Sectors where California has expertise
  - Sectors with competitiveness/leakage concerns
  - States/provinces interested in collaboration
- Examples of Potential Sectors & Provinces
  - Cement (Shandong, China)
  - Energy (Guangdong & Jiangsu, China)
  - Forestry (Amapá, Amazonas, Mato Grasso & Para, Brazil; Aceh & Papua, Indonesia)
  - Other sectors in the future (e.g., Transportation)

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Cooperative Agreement (2): Pre-Crediting Capacity Building

- Identify local capacity level and needs
  - Data availability
  - MRV capacity (e.g., training, other environmental reporting programs, etc.)
  - Technology
  - Regulatory capacity and governance
  - Compliance and enforcement capability
- Potentially finance early capacity building

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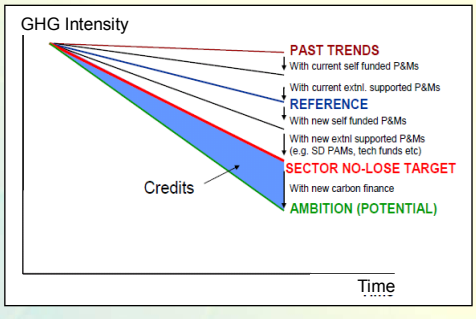
Cooperative Agreement (3): Establishing Crediting Baseline/Target

- Could establish "no-lose" intensity target for developing country sector
  - Target designed to ensure additionality
- Emissions reductions beyond the no-lose target eligible for sale
  - No penalty for not meeting the no-lose target (but no credits either)



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Cooperative Agreement (4): Monitoring, Reporting, Verification

- Adequate MRV is prerequisite for crediting
  - Needed to assess performance in relation to sector no-lose target and beyond
- Options
  - Joint MRV between California and developing country province/state
  - Third-party independent verification

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Preliminary Staff Thinking: Offsets from Other Systems

- ARB could accept other systems' offsets if they meet all AB 32 criteria
- Would need process to evaluate other systems and determine their eligibility
- Might require additional criteria for some offset types to ensure similar rigor to California-approved/issued offsets
- Wait-and-see on proposed CDM reforms

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Preliminary Staff Thinking: Project-Based Offsets

- Staff shares others' concerns about project-based CDM, and would favor sectoral approaches
- However, may need early supply of offsets when cap-and-trade begins in California in 2012
  - Sectoral crediting systems have not yet been implemented

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Preliminary Staff Thinking: Project-Based Offsets (2)

- Therefore, might consider limited project-based CDM
  - Certain project types with high sustainability criteria (e.g., black carbon/efficient cook stoves)
  - Projects in least developed countries
  - Phase out by country, province/state, sector, etc. in favor of sectoral crediting
  - Exclude in sectors where sectoral crediting initiated

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Preliminary Staff Thinking: Sectoral Crediting

- Sectoral crediting is preferable in long-term
  - Easier to ensure additionality
  - Can help control leakage
  - May foster broader policy changes in developing countries
- But is also more complex than project-based
  - Has not yet been implemented
  - Requires more development time and capacity building in developing countries
- Staff exploring a sectoral crediting approach

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How Could ARB Enforce International Offsets?

- ARB could require all international offsets to be backed by origin country regulations that could
  - Establish and track ownership
  - Ensure against double counting of emission reductions
  - Provide transparency
  - Be third-party verified
- Projects located outside CA: Need a mechanism (e.g. MOU) to ensure enforceability
- Others?

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Comments

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on preliminary staff thinking are requested by September 11th; please submit comments to: (http://www.arb.ca.gov/cc/capandtrade/comments.htm)

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Team Leads for Cap & Trade Rulemaking

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- Western Climate Initiative
  - www.westernclimateinitiative.org

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Public Meeting

Combined Heat and Power (CHP) and Cap-and-Trade

September 9, 2009
California Air Resources Board

Questions and Comments

- Questions/comments during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on concepts presented here are requested by October 2nd; please submit comments online:

www.arb.ca.gov/cc/capandtrade/comments.htm

Cap-and-Trade and CHP

- Scoping Plan measure sets a target of an additional 4,000 MW of CHP capacity by 2020, resulting in an estimated 6.7 MMT in GHG emission reductions
- Scoping Plan projection of 2020 cap is 365 $MMTCO_2e$ (29% reduction from 2020 business-as-usual emissions in capped sectors)
- CHP applications in various capped and un-capped sources

CHP Applications by Different Sectors

- **Industrial** - chemical, refining, pulp and paper, food processing, glass manufacturing
- **Institutional** - colleges and universities, hospitals, prisons, military bases
- **Commercial** - hotels, airports, large office buildings, nursing homes
- **Municipal** – wastewater treatment plants, K-12 schools, district energy systems
- **Residential** - multi-family housing, planned communities

Desired Outcomes for CHP in Cap-and-Trade Program Design

- Encourage new and replacement CHP to reduce statewide CO_2e emissions at facilities inside and outside the cap
- Establish criteria for cap compliance obligations for affected facilities
- Develop an allowance distribution methodology for affected facilities

How Cap-and-Trade Works

- State generates a limited number of allowances (permits to emit one metric ton of CO_2e) and monitors compliance
- Total number of allowances equal to the emissions limit for a particular compliance period ("cap")
- Emissions cap declines over time

How Cap-and-Trade Works [2]

- Sources comply by holding enough allowances to cover their emissions
- Capped sources surrender allowances equal to their actual emissions at end of each compliance period
- Allowances can be
  - Freely allocated (technology benchmark or historical emissions) or auctioned (purchased)
  - Purchased, traded, or banked

How Cap-and-Trade Works [3]

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities (>25,000 MT CO_2e/year) and Imported Electricity
  - Large Stationary Source Facilities (>25,000 MT CO_2e/year)
- 2015-2020 (Broad Scope)
  - Adds 'upstream' treatment of fuel combustion where fuel enters into commerce covering
    - Small industrial and commercial fuel use (for facilities $\leq$ 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use

ARB Mandatory Reporting Requirements for CHP

- ARB Mandatory Reporting Rule specifies methods to distribute emissions between thermal energy and electricity
  - Emissions associated with electricity generation use electricity sector requirements
  - Emissions associated with thermal energy production use industrial sector requirements
  - Include nameplate capacity, technology description, net electricity generation and useful thermal output

CHP in the Context of Cap-and-Trade

CHP could be in the cap as:

- A part of a larger facility that uses CHP for on-site industrial processes and electricity demand
- A separate facility that generates electricity and sells excess heat (e.g., for industrial processes)
- A separate facility that uses heat for industrial processes and sells excess power to the grid

What Might Constitute a Compliance Obligation for Facilities with CHP?

Option 1: Capped Facility with a CHP Unit

- Compliance obligation begins in 2012 for <u>any</u> facility that exceeds 25,000 $MTCO_2e$
- Facility reports its emissions per existing mandatory reporting regulation
- Facility holds allowances based on total emissions covered under the cap

Considerations

- "First deliverer" requirements may apply for electricity sold to the grid
- If a "first deliverer" approach applies, facility could pass along embedded allowance cost to the retail provider ("carbon adder")

Considerations [2]

- Depending on distribution method, allowances for on-site stationary source electricity generation could be calculated differently from electricity sector allowances
  - Free allowances to electricity generation could be based on fuel type and generation; allowances to stationary source facility could be based on actual emissions, not necessarily the fact that CHP is displacing electricity from power plant
  - Benchmarking approaches may level the playing field

Considerations [3]

- CHP could reduce overall compliance obligation for a stationary source facility
  - More efficient production reduces demand for electricity from the grid

Option 2: Capped Facility with a CHP Unit

- Facility could be divided: utility owns CHP and delivers electricity to the grid; industrial facility uses waste heat for industrial process
- Facility is treated as two separate facilities
  - The CHP "facility" (that generates electricity) has compliance obligation as a "first deliverer"
  - Industrial "facility" has compliance obligation for industrial and process emissions (not emissions from the CHP unit)

Considerations

- Distribution of allowances could shift between electricity and industrial sectors
- May need to address many cases of multiple ownership within one facility
  - Rule could allow owners to decide who has compliance obligation
  - NAICs code (industrial classification system) might be used to "define" the electricity generator and the industrial facility type

Option 3: "But For" Facility

- Facility exceeds 25,000 $MTCO_2e$ only because it operates a CHP unit ("but for" facility)
  - Facility reports its emissions based on reporting requirements
  - Facility does not hold allowances
  - Natural gas provider is capped upstream and passes along allowance costs beginning in the 2nd compliance period

Considerations

- Eligible sources would be exempt from compliance obligation, but not from mandatory reporting
- Utilities would need to balance other portfolio investments
- Alternative approach could be to not exempt "but for" facilities, but consider set-asides or free allowances to cover CHP emissions

Possible Options for Allowance Distribution

- Mandatory Reporting methodologies for facilities with benchmarking
  - Separate electricity and thermal reference cases
  - Performance Standards for efficient CHP
- "Two Facility" Approach for dual thermal/electricity applications
- Set-asides for small and non-industrial applications
- Exemptions for small and non-industrial applications ("but for" facilities)

Questions for Today's Discussion

Discussion Topics [1]

- Should staff establish a "but for" CHP category for small industrial and commercial sources that would otherwise not exceed the threshold for capped sources?
- Who should hold allowances for facilities with multiple ownership?

Discussion Topics [2]

- What methods should ARB consider to distribute allowances for CHP emissions within a facility?
- What additional options should staff consider to incentivize the use of CHP by capped facilities?

-DISCUSSION SESSION- Ideas/Suggestions/Comments

Webcast viewers can email comments or questions during this session to:

ccworkshops@arb.ca.gov

Written Comments

Written comments on concepts presented here are requested by October 2nd; please submit comments online:

www.arb.ca.gov/cc/capandtrade/comments.htm

For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- Submit/View comments on Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- Western Climate Initiative
  - http://www.westernclimateinitiative.org

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Public Meeting to Discuss the Updated AB 32 Economic Analysis

November 16, 2009

California Air Resources Board

Purpose of Meeting

- To provide an update on the status of the ARB AB 32 Economic Analysis
- To present preliminary results from Energy 2020 modeling work
- To present plans for economic analysis of the cap-and-trade regulation

Meeting Agenda

- Opening Remarks (5 minutes)
- Staff Presentation (20 minutes)
- ICF Presentation (1 hour)
- Questions (2 hours)
- Adjourn

3

Scoping Plan Resolution

The resolution adopting the Scoping Plan directs staff to:

- Report to the Board on an updated economic analysis by the end of 2009
- Seek expert input on analysis (EAAC)
- Coordinate with WCI analysis
- Foster opportunities for other economic analyses by interested parties

4

ARB Economic Update Timeline

- Scoping Plan Updated Economic Analysis Report to be released in December 2009
- Results to be presented to the Board in January 2010
- Economic analysis to support the cap-and-trade rulemaking in 2010 will build on this work

5

Economic and Allocation Advisory Committee (EAAC)

- EAAC appointed by CalEPA and ARB to recommend allocation approach, uses of allowance value and provide expert input on updated AB 32 economic analyses
- The Economic Impacts subcommittee of the EAAC is working with ARB to provide feedback on assumptions, analytic tools and interpretation of results
- Weekly calls among subcommittee and ARB staff to discuss measure analysis and updated modeling effort

6

Key Elements of the Updated Economic Analysis

- Energy 2020 Analysis
- E-DRAM Macroeconomic Analysis
- GHG Reduction Measures Update
- Impact on Small Business
- Collaborative Modeling Exercise
- Comparison of Existing Analyses

7

Energy 2020

- Energy 2020 is an integrated model of the North American economy
- Delays in assembling a Reference Case prevented use of Energy 2020 in Scoping Plan Analysis
- Used for the economic analysis of the Western Climate Initiative (WCI) program
- Continuing to update model inputs as information becomes available and evaluate the effects of Cap and Trade and other Scoping Plan policies
- ARB contract with ICF/SSI to perform modeling (presentation to follow)

8

E-DRAM

- E-DRAM is a computable general equilibrium model of the California economy
- E-DRAM will be used to evaluate how the costs and savings estimated by Energy 2020 affect the California economy
- E-DRAM will be used to evaluate how the updated Scoping Plan measures affect the California economy

9

Measures Update

- Analyses include updated cost and savings for major policies:
  - Pavley II: Under development at ARB
  - LCFS: Sensitivity analysis including changes in assumptions of input costs
  - Energy Efficiency: New estimates of cost effective efficiency from CEC 2009 IEPR
  - Renewable Energy: Incorporating E3 modeling for CPUC analysis of 33% RPS

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Analysis of Small Business Impacts

- Use E-DRAM outputs to quantify industry specific impacts
- Use Employment Development Department data to evaluate employment share in industries with substantial concentration of small business
- Use Department of Finance data to evaluate share of sales in industries with substantial concentration of small business

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Collaborative Modeling

- Efforts will evaluate updated Scoping Plan policies with different modeling tools using common assumptions to the extent possible
- Charles River Associates
- David Roland-Holst (University of California, Berkeley)
- Results anticipated in early 2010

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Comparison of Existing Analyses

- ARB staff is reviewing and comparing existing analyses of the economic impacts of various climate policies
- Comparison of key indicators:
  - Measure cost effectiveness
  - GDP/GSP
  - Household disposable income
  - Employment

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Economic Analysis of Cap-and-Trade

- Additional economic analysis to support cap-and-trade rulemaking will continue in 2010
  - Sensitivity analyses
  - Compliance pathway analysis
  - Emissions leakage analysis

C&T Compliance Pathway

As part of the economic analysis in support of the cap-and-trade rulemaking staff is:

- Developing a common framework for estimating cost and reduction potential of various abatement strategies
- Constructing marginal abatement cost curves to present possible compliance pathways based on reduction goals and estimates of future allowance price

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Emissions Leakage Assessment

As part of the economic analysis support of the cap-and-trade rulemaking, staff is undertaking analysis of emissions leakage

- Define emissions leakage and evaluate methodologies to indentify sectors that are exposed to leakage (Spring 09)
- Propose methodology to identify leakage exposed sectors (December 09)
- Identify leakage exposed sectors based on the finalized methodology after EAAC recommendation (~Q1/2010)
- Determine how to address leakage (~Q2/2010)

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For More Information…

- EAAC Web Page
  - http://www.climatechange.ca.gov/eaac
- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
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California Air Resources Board

Evaluation of the Relationships between Emissions Quantification, Scope and Points of Regulation for the AB 32 Cap-and-Trade Program

Issue Summary

ARB has held an extensive public process, in conjunction with the Western Climate Initiative (WCI), to determine which sources of emissions should be covered by the cap-and-trade program. Both California's Climate Change Scoping Plan and the Design Recommendations of the Western Climate Initiative contain a summary of the scope of the program.[1]

ARB needs to determine in greater detail who is a covered entity in the program as we develop the cap-and-trade regulation. ARB staff has compiled the attached table to provide compare ARB's current mandatory reporting regulation and the WCI Essential Requirements for Mandatory Reporting, and to summarize the anticipated changes to ARB's mandatory reporting regulation to support the proposed scope of the cap-and-trade regulation.[2]

We provide this discussion to explain the preliminary staff thinking included in the attached table. Staff will continue to work with stakeholders to determine which emissions sources will be included in the scope of the cap-and-trade program.

Background on Scope and Point of Regulation Decisions for the Cap-and-Trade Program

The term 'scope' defines the greenhouse gas (GHG) emissions that are covered by the cap-and-trade program, including:

- The emissions sources that fall under the cap.
- The greenhouses gases that fall under the cap.
- The point(s) of regulation where the program would be enforced.

The "point of regulation" is a portion of the scope definition that identifies the covered entities that have the obligation to surrender GHG compliance instruments (emission allowances or allowable offsets) equal to their GHG emissions.

---

[1] **Climate Change Scoping Plan** page 31 (December 2008)
http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm
Design Recommendations for the WCI Regional Cap-and-Trade Program pages 1-3 (September 2008)
http://www.westernclimateinitiative.org/the-wci-cap-and-trade-program/design-recommendations

[2] Information about ARB's mandatory reporting program for GHG emissions is available here:
http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
The WCI's **Final Essential Requirements for Mandatory Reporting** is available here:
http://www.westernclimateinitiative.org/component/remository/Reporting-Committee-Documents/Final-Essential-Requirements-for-Mandatory-Reporting/

Several key terms are used to describe the point of regulation:

- **Downstream, at the point of emission:** The point of regulation can be where the emissions occur, such as where coal is combusted. This point of regulation is typically referred to as "downstream." Examples of downstream points of regulation include: (a) stationary source combustion of coal, natural gas, and oil; and (b) process and fugitive emissions from industrial facilities.
- **Upstream, where carbon enters the California economy:** The point of regulation can be at the point where carbon enters into the economy. This point is typically referred to as "upstream." Examples of upstream points of regulation for fossil fuels include: (a) where natural gas is processed and upgraded to pipeline quality; (b) where oil products are refined or imported; and (c) where coal is mined. For some high global warming potential (GWP) gases (such as sulfur hexafluoride, SF_6), an upstream point of regulation may be the point at which the gas is manufactured.
- **Midstream:** The point of regulation can be between the upstream and downstream. This is referred to as midstream. Midstream regulation for fossil fuel may be where the fuel is distributed, examples include: (a) natural gas transmission pipelines; (b) natural gas local distribution companies (LDCs); and (c) gasoline and diesel terminal racks, fuel distributors or wholesalers.

From the scope and point of regulation definitions, any covered entity must be able to tell whether it has a surrender obligation under the cap, and which of its emissions are subject to this obligation.[3] The attached detailed scope document compiles staff's current thinking about these questions for all sources in a concise tabular form. Preliminary staff thinking on program scope is based on the principles discussed below.

Evaluating Quantification Methodologies for Inclusion in the Scope of the Cap-and-Trade Program

To ensure that the cap-and-trade program meets the AB 32 criteria of 'quantifiable', ARB staff developed the following principles for evaluating whether individual quantification methodologies are appropriate for calculating 'surrender obligation' within the scope of the cap-and-trade program[4]:

- The quantification methodology provides accurate and consistent quantification of emissions across all reporters

[3] This discussion of scope is borrowed from the **WCI Draft Program Scope Recommendations** (March 2008). Available from: http://www.midwesternaccord.org/Meeting%20material%20pages/Scope%20and%20Electricity%20Meeting%201/Draft_WCI_Scope_Recommendation.pdf

[4] AB 32 requires that all Greenhouse Gas Emission reductions achieved be real, permanent, quantifiable, verifiable, enforceable, and additional.

- The methodology facilitates third-party verification
- The methodology is enforceable by ARB
- The methodology is related to a meaningful portion of the GHG emissions from California sources
- The methodology facilitates implementation of the intended incentives of the cap-and-trade program
- Emissions can be cost-effectively measured or calculated and reported using the quantification methodology

Provide Accurate and Consistent Quantification of GHG Emissions

Emission accounting methodologies should provide an accurate measure of the current magnitude of GHG emissions from a source. Reliable methods must capture and incorporate the variability in key input parameters over the course of the reporting period. In addition, it is critical to the success of a cap-and-trade program that the methods provide the same level of accuracy of source emissions after emission reduction strategies have been implemented.

False emission reductions which could unintentionally result from a shift between alternate quantification methodologies must be avoided to the extent feasible.[5]

In short, methods must accurately quantify both current and future emissions from a source. Wherever possible, reporters should use the same quantification methodology for each type of source to ensure consistency across reporting entities.

Provide Verifiable GHG Emissions Data

Consistent and reliable verification of all GHG emissions is an essential part of a viable regulatory cap-and-trade program. Participants must have confidence that a common metric is employed (i.e. a ton of carbon is a ton of carbon) as they buy and sell carbon allowances. Reporting regulations must provide independent third party verifiers with the ability to confidently judge the veracity of facility emissions reports. Reporting regulations based on accepted quantification methods (e.g. ASTM, ISO) provide verifiers with a standard with which to objectively judge the validity of reported emissions. Consistent and accurate accounting requires that as little as possible is left to the verifier's subjective judgment.

Provide Enforceable Methodologies

Reporting regulations must be formulated and written to provide enforcement bodies with the ability to identify and potentially prosecute any infractions in

[5] These emission reductions are sometimes labeled as 'paper reductions' because reductions appear to have resulted 'on paper' due to the accounting methodologies employed but no actual environmental benefit occurs.

facility emission reports. Reporting methods must provide concrete and unambiguous criteria against which the validity of the report may be judged.

Quantify Most Meaningful Sources of GHGs

In selecting the quantification methodologies that apply in the cap-and-trade program staff places a priority on methods that can be used in a consistent fashion across a variety of sources.

In addition, the point of regulation will be moved upstream for GHG sources that are difficult to regulate at the point of emission (e.g., combustion of transportation fuels in passenger vehicles). The result of this upstream regulation may lead to a decrease in accuracy or precision due to greater reliance on default emission factors rather than direct measurement at the emissions source. Also, upstream regulation may lead to different quantification methodologies for the same fuel type in different end uses.

Creation of the Correct Incentives to Motivate GHG Emissions Reduction

A trade-off may exist between striving for accuracy and precision in emission quantification and creating the correct incentives for low-lifecycle emissions from products with complex supply chains. This may be especially true where a significant portion of the emissions associated with delivering a product to the end consumer exist outside of California.

In general the cap-and-trade program has not taken a ‘full lifecycle’ accounting approach to emissions quantification. ARB may consider a form of lifecycle emissions accounting in some cases to create the correct incentives for a switch to low-lifecycle emissions products.

Cost-effectiveness

To balance accuracy with reporting costs we must consider the costs associated with any quantification methodology. An example is the frequency of fuel carbon content sampling. More frequent sampling increases accuracy of emissions calculations but also increases the costs of the specified quantification methodology.

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Narrow Scope Sources in Current ARB Reporting Regulation						
Stationary Combustion (Section 95115 in current ARB Reporting Regulation)						
Operators of All Facilities with Stationary Combustion Emissions						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Stationary Combustion					Staff expects to propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Fossil Fuel Combustion (CO2)	Y	Y	Y	Y	
	Biomass-Derived Fuel Combustion (CO2)	N	Y	Y	Y	
	Fuel Combustion (CH4, N2O)	Y	Y	Y	Y	
Cement (95110)						
Cement Manufacturing Facility Operator						
Reporting Threshold			No Threshold	Y	10 k/year CO2e	Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff expects to propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Clinker Production (CO2)	Y	Y	Y	Y	
	TOC Content (CO2)	Y	Y	Y	Y	
Electricity Generating Deliverers (95111a)						
Electrical Generating Facility Operator						
Reporting Threshold			2.5 k/year CO2 and > 1 MW	Y	10 k/year CO2e	
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
	Process					Staff to review for consistency with federal reporting requirements, may propose modifications.
	Acid Gas Scrubbers (CO2)	Y	Y	?	Y	
	Fugitives					
	Coal Storage (CH4)	N	Y	?	Y	
	Cooling Units (HFCs)	N	Y	?	Y	
	Geothermal (CO2)	N	Y	?	Y	
	SF6 equipment	N	Y	?	N	Reporting requirements may defer to new SF6 regulation.
Electricity Importing Deliverers (95111b)						
First Jurisdictional Importing Deliverer (Retail Provider or Marketer)						

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Reporting Threshold			No Threshold	?	No Threshold	Staff to consider threshold.
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
Activity Downstream of Emissions						Staff to consider modifications as needed to support first jurisdictional deliverer point of regulation.
	Emissions Assigned to Imported Power Transactions (CO2, CH4, N2O)	Y	Y	Y	Y	
	SF6 equipment	N	Y	?	N	
Cogeneration (95112)						
Cogeneration Facility Operator						
Reporting Threshold			2.5 k/year CO2 and > 1 MW	Y	10 k/year CO2e	
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
Include Distribution of Fossil CO2 to Electricity and Thermal Uses (per current regulation)?						Staff to consider changes to emissions distribution requirements to support cap-and-trade regulation and Scoping Plan objectives.
	Process					Staff to review for consistency with federal reporting requirements, may propose modifications.
	Acid Gas Scrubbers (CO2)	Y	Y	?	Y	
	Fugitives					
	Coal Storage (CH4)	N	Y	?	Y	
	Cooling Units (HFCs)	N	Y	?	Y	
	SF6 equipment	N	Y	?	N	
Petroleum Refining (95113)						
Refining Facility Operator						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff may propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Calciners (CO2)	Y	N	Y	N	
	Cat Cracking (CO2)	Y	Y	?	Y	
	Other Cat Regen (CO2)	Y	Y	?	Y	
	Process Vents (CO2, CH4, N2O)	Y	Y	?	Y	
	Asphalt production (CO2, CH4)	N	Y	?	Y	
	Sulfur Recovery (CO2)	Y	Y	Y	Y	
	Fugitives					
	Wastewater (CH4, N2O)	N	Y	?	Y	
	Oil/Water seps (CH4)	N	Y	?	Y	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	Storage Tanks (CH4)	N	Y	?	Y	
	Equipment leaks (CH4)	N	Y	?	Y	
	Flares and destruction devices					
	Flares (CO2)	Y	Y	Y	Y	
	Destruction devices--low Btu gases (CO2)	Y	Y	Y	Y	
Hydrogen Production (95114)						
Hydrogen Production Facility Operator						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff may propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Process CO2	Y	Y	?	Y	
	Process Vent (CO2, CH4, N2O)	Y	Y	?		
	Sulfur Recovery (CO2)	Y	Y	Y	N	
	Flares and Destruction Devices					
	Flares (CO2)	Y	Y	Y	Y	
	Destruction devices--low Btu gases (CO2)	Y	Y	Y	N	
Additional Narrow Scope Sources Under Consideration (Not in Current ARB Reporting Regulation)						
Aluminum Production						
Aluminum Manufacturing Facility Operator						
	Process CO2	Y	N	Y	Y	
Glass Production						
Glass Production Facility Operator						
	Process CO2	Y	N	Y	N	
Iron and Steel Production						
Iron and Steel Manufacturing Facility Operator						
	Process CO2	Y	N	Y	Y	
Lime Production						
Lime Production Facility Operator						
	Quick Lime Production (CO2)	Y	N	Y	Y	
Magnesium Production						
Magnesium Production Facility Operator						

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	Process (cover gas) SF6, HFC-134a, FK 5-1-12, fluorinated GHGs, CO2	Y	N	Y	N	
Miscellaneous Uses of Carbonates						
Facility Operators Calcining Carbonates						
	Process CO2	Y	N	Y	N	
Nitric Acid Production						
Nitric Acid Facility Operator						
	Process N2O	Y	N	Y	N	
Oil & Natural Gas Systems						
Oil and Gas Field Operators						
	Fugitive CH4	N	N	Y	N	
	CH4 from pipe blow downs	Y	N	Y	N	
Pulp and Paper Manufacturing						
Pulp and Paper Manufacturing Facility Operator						
	Recovery Furnace and Kiln Systems (fossil CO2)	Y	N	Y	Y	
	Recovery Furnace and Kiln Systems (bio CO2)	N	N	Y	Y	
	Wastewater treatment CH4	N	N	?	Y	
Soda Ash Manufacturing						
Soda Ash Manufacturing Facility Operator						
	Process CO2	Y	N	Y	N	
Suppliers and Recipients of Carbon Dioxide						
CO2 Supplier or Transfer Recipient						
	Fugitive CO2	?	N	Y	N	
Suppliers of Industrial GHGs						
Producers, Importers and Exporters of N2O or Fluorinated GHGs						
	N2O, fluorinated GHGs	?	N	Y	N	

INDUSTRIAL PROCESS EMISSIONS CATEGORIES IN THE FEDERAL REPORTING RULE THAT ARB DOES NOT INTEND TO INCLUDE IN CAP-AND-TRADE AND MANDATORY REPORTING REQUIREMENTS AT THIS TIME: Adipic Acid Production, Ammonia Manufacturing, Coal Mine Fugitive Emissions, Electronics Manufacturing, Ethanol Production, Ferroalloy Production, Food Processing, HCFC-22 Production and HFC-23 Destruction, Industrial Wastewater, Lead Production, Manure Management, Motor Vehicle Manufacturers, Municipal Solid Waste Landfills, Petrochemical Production, Phosphoric Acid Production, Silicon Carbide Production, Suppliers of Coal-Based Liquid Fuels, Titanium Dioxide Production, Zinc Production.

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Fuel Deliverers*						
Natural Gas and Natural Gas Liquids						
Local Distribution Company						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
Activity Upstream of Emissions						
	(a) Total NG deliveries by volume	Y	N	Y	N	
	(b) Deliveries to narrow-scope facilities	N, subtract from (a)	N	Y	N	
	(c) Non-combustion use of NG	N, subtract from (a)	N	Y	N	
	(d) Biomass-Derived NG deliveries (landfill- or digester-derived)	N	N	Y	N	
	(e) LNG-derived deliveries	May have an additional obligation for upstream emissions from LNG liquefaction	N	?	N	
Interstate Pipelines	List of customers (and quantities delivered?)	N, used for reconciling narrow scope sources?	N	?	N	
End users from interstate pipelines	NG receipts	Y, if not already assesed for surrender obligation				
Transportation Fuels						
Refinery, blendstock importer, distribution terminal rack (TBD)						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
Activity Upstream of Emissions						
	(a) CaRFG3 (gasoline) throughput/sales	Y	N	Y	N	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	(b) ULSD (diesel) throughput/sales	Y	N	Y	N	
	(c) Deliveries to narrow scope facilities with a surrender obligation for gasoline/diesel combustion	N, subtract from (a), (b)	N	Y	N	
	(d) LCFS reporting for pathway emissions?	?	N	?	N	
Fuel Producers or Importers or Refineries (TBD)			N	Y	N	
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
Activity Upstream of Emissions						
	(a) Quantity and composition of biofuel produced/sold	?	N	?	N	
	(b) LCFS reporting for pathway emissions?	?	N	?	N	
Propane						
Propane Provider (TBD)						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
Activity Upstream of Emissions						
	Emissions Assigned to Total LPG deliveries by volume	Y	N	Y	N	

Notes:
* 'Broad Scope' Emissions = 'Narrow Scope' Emissions plus Emissions from 'Fuel Deliverers'

Public Meeting

Cap Setting and Data Review: Establishing Surrender Obligation and Examining Historical GHG Data Trends

November 16, 2009

California Air Resources Board

Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (45 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

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Timeframe for Cap-and-Trade Rulemaking

- **November 2009:** release preliminary draft regulation for public comment
- **Spring 2010:** release complete draft regulation for public comment
- **August 2010:** release staff report and draft regulation for formal 45 day review
- **October 2010:** Board consideration of regulation
- **Late 2011:** First auction of allowances
- **January 1, 2012:** Program formally launches

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Today's Meeting

- Purpose:
  1. Discuss staff thinking on which emissions are covered in the cap-and-trade program
  2. Provide estimates of historical emissions for these covered sources
  3. Present example cap levels
- Stakeholders are asked to provide written comments on these topics to ARB by December 14th. (http://www.arb.ca.gov/cc/capandtrade/comments.htm)

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Outline of Presentation

- Introduction and background
- Which emissions are covered by the cap?
- Examining emissions data trends
- What are appropriate California cap levels?
- Relationship between cap stringency offset limit
- What major outstanding factors might influence cap estimates?
- Current thinking on timeline for development of cap numbers

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Important Definitions

- **Covered Entities** – Those that have a 'surrender obligation' for greenhouse gas emissions covered by the cap-and-trade program
- **Compliance Instruments** – Either an allowance or an offset credit
- **Surrender Obligation** – The quantity of compliance instruments a covered entity is responsible for submitting to match against a specified set of greenhouse gas emissions
- **Allowance budget** – Annual number of allowances associated with one year (when multiple budgets are summed across time referred to as 'the cap')
- **Cap** – The total amount of allowances to be issued in a given time period (sum of multiple budgets)

Covered Entities

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities and Imported Electricity
  - Large Stationary Sources
- 2015-2020 (Broad Scope)
  - Addition of 'upstream' treatment of fuel combustion where fuel enters into commerce covering:
    - Fuel use at small stationary sources (captures combustion at facilities < 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use
- ARB is seeking additional comment on the possibility of accelerating the inclusion of upstream fuel deliverers to 2012

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Establishing Surrender Obligation (1)

- What emissions count toward the surrender obligation for narrow-scope sources exceeding the threshold?
- Possible considerations:
  - Accuracy of specific reporting methodologies
  - Treatment of emissions from biomass combustion
  - Process emissions
  - Imported electricity
- Mandatory reporting regulations provide acceptable quantification methods:
  - Potentially add or exclude some quantification methods as part of C&T regulatory package
- Current staff thinking represented in 'scope table' handout

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Establishing Surrender Obligation (2)

- What emissions count toward the surrender obligation for broad scope sources?
  - Still considering appropriate points of regulation for fuels
  - New reporting requirements will be developed for fuel deliverers as part of the C&T regulatory package
- Current status of staff thinking represented in 'scope table' handout
- Possible Considerations:
  - Approaches for calculating surrender obligation for transportation fuels
  - 'Netting-out' fuels sold by fuel deliverers to large point sources with direct surrender obligations

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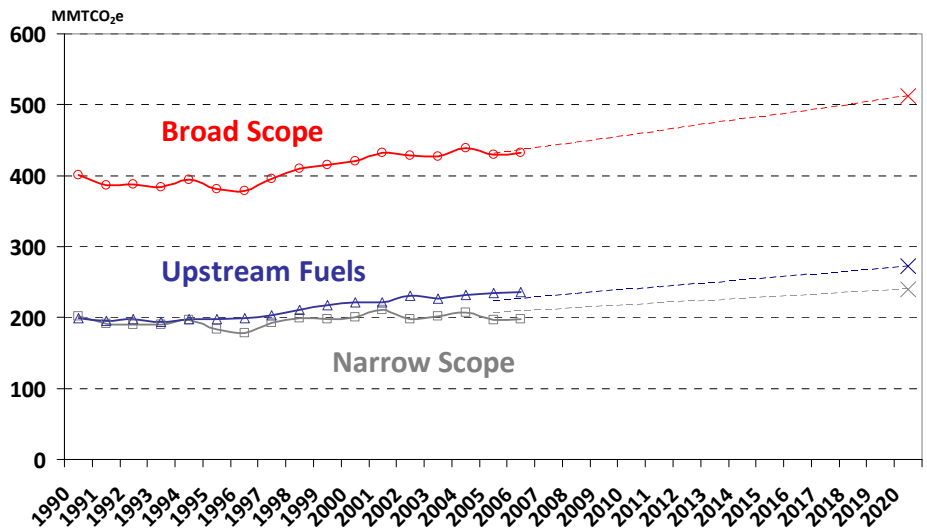
Historical GHG Emission Trends and Scoping Plan BAU Projections



Sources: ARB Greenhouse Gas Inventory http://www.arb.ca.gov/cc/inventory/inventory.htm
ARB Scoping Plan (Appendix 1 pg. C-17) http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf

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Revision of Emissions Projections

- Scoping Plan 'business-as-usual' emission estimates predated the current economic downturn
- ARB staff is revising projections in conjunction with WCI efforts
- Evaluating external sources of emission projections
  - For example, EIA projects GHG emissions for the Pacific region (see next slide)

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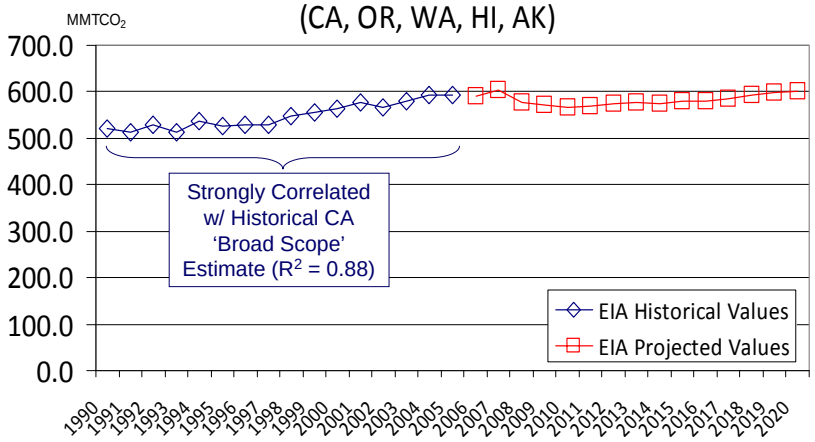
Energy Information Administration Data on Total CO_2 Emissions for the Pacific Region (CA, OR, WA, HI, AK)



Sources: Energy Information Administration State Carbon Dioxide Emissions (October 2008)
http://www.eia.doe.gov/oiaf/1605/ggrpt/excel/tbl_statetotal.xls

Energy Information Administration Annual Energy Outlook 2009 (Updated Reference Case)

http://www.eia.doe.gov/oiaf/aeo/supplement/supref.html

Update on Western Climate Initiative Coordination

- WCI has contracted with Pechan to assist in projecting 'best estimates' of emissions for 2012 and 2015 for all jurisdictions.
  - Will be harmonized with ARB's efforts
- ARB working as part of the WCI Cap Setting and Allowance Distribution Committee to develop more details of the cap-setting method.

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Process for Establishing California Allowance Numbers (1)

- 2012 allowance budget level (Point A on slide 16) will be established at ARB's best estimate of expected actual emissions in 2012 for narrow scope sources
- Method of setting rate of decline in first compliance period (sets Point C) still needs to be determined

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Process for Establishing California Allowance Numbers (2)

- 2015 allowance budget level (Point D) will be the sum of the expected actual emissions in 2015 for broad scope emissions and narrow scope budget level (Point C)
- Rate of decline through 2020 based on straight line from 2015 budget (Point D) to 2020 budget (Point E)

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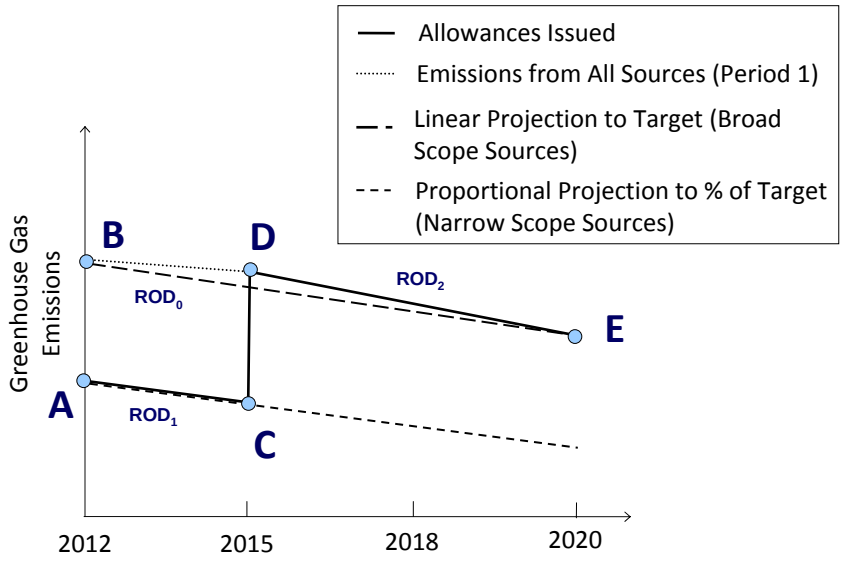
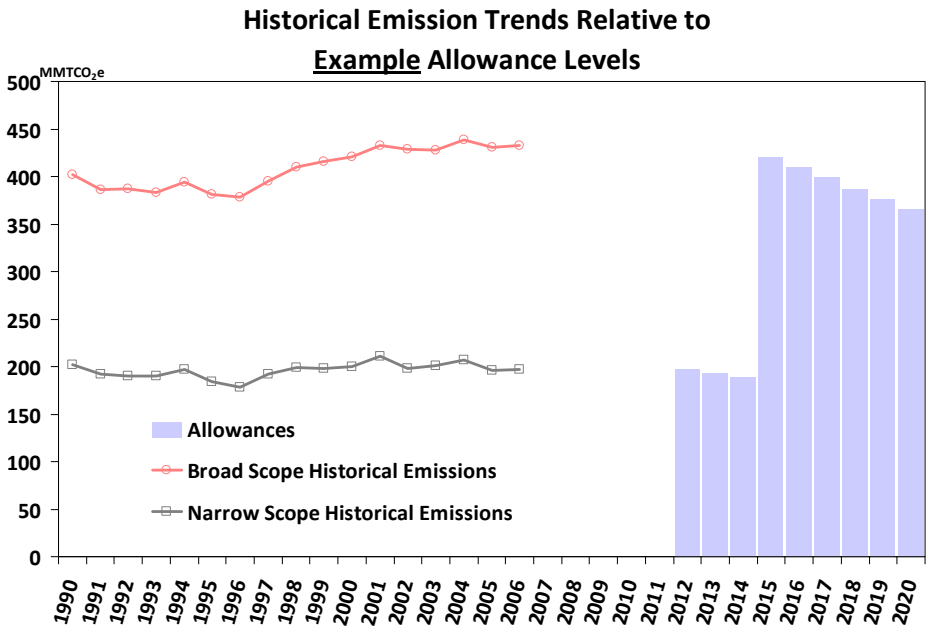
Figure Used in Derivation of Example CA Allowance Numbers





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Current Staff Thinking: Quantitative Offset Limit

- Implement limit as a 'usage limit' based on a percentage of an entity's surrender obligation
- WCI is proposing:
  - Regionally harmonized percentage limit
  - Carry-over mechanism of 'unused' limit between compliance periods

Source: WCI *Draft Offset Limit Recommendation White Paper* October 2009

http://www.westernclimateinitiative.org/component/remosotory/Cap-Setting--and--Allowance-Distribution-Committee-Documents/Draft-Offset-Limit-Recommendations-Paper/

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Assumptions Embedded in Example California Offset Numbers

- Offsets Allowed = 49% of cumulative reductions from initial cap levels
- Assume that the limit is implemented as a percentage use limit based on entity's surrender obligation
- Limit calculated is ~4% of total surrender obligation
- Max amount of offsets presented graphically on next slide
  - Distributed using the same percentage over all years (proportional to scope)

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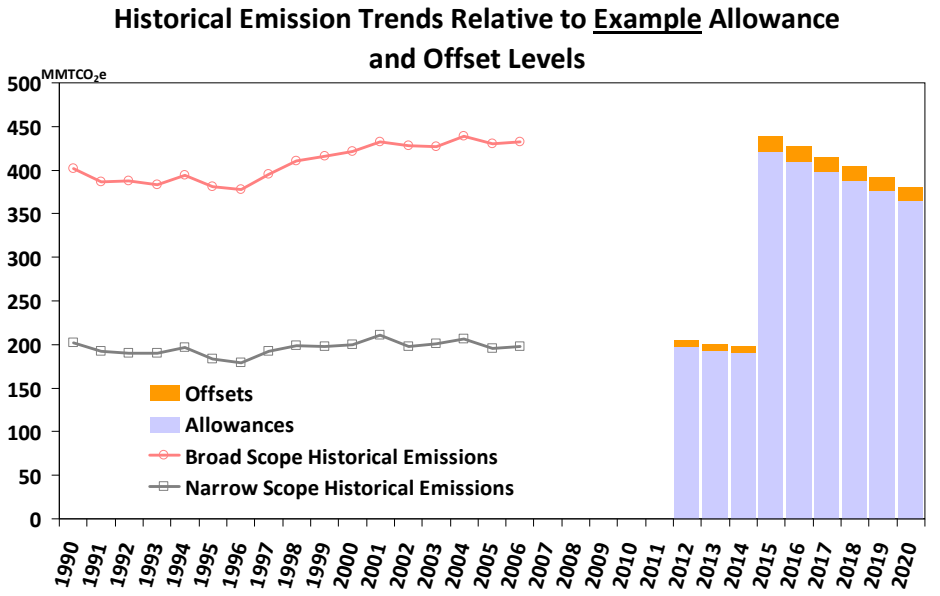

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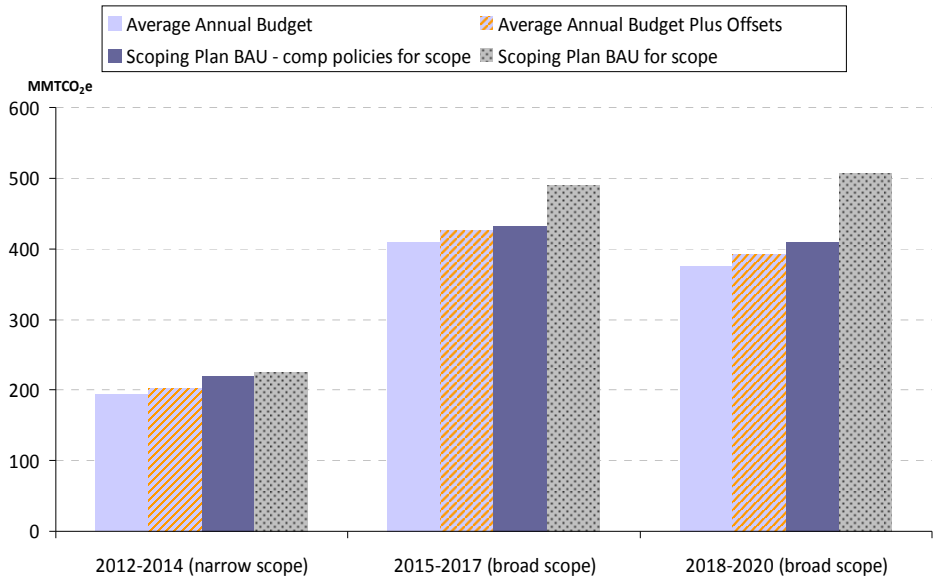
Comparison of Example Cap Levels to Scoping Plan BAU and Expected Reductions from Complimentary Policies



What Outstanding Considerations Might Influence Cap Estimates?	
Factor to Consider	**Estimated Impact of Factor**
Emissions Projections – 2012 and 2015 'Best Estimates'	**Small-Large Change**
Imported Electricity – Reflecting emissions covered in linked trading programs (WCI)	**Large Change** (0-12% decrease in broad scope emissions coverage)
Transportation Fuels – Possible obligation for lifecycle emissions	**Medium Change** (2-6% increase in broad scope emissions coverage)
Industrial Facilities – Additional process emissions not captured in inventory	**Small Change**
Imported Electricity – Changes due to choice of default emission factor for unspecified electricity	**Small Change** (0.5-1% change in broad scope emissions assuming no impact of linked programs)
Thresholds/Coverage – Other minor adjustments to scope for all sectors not captured in inventory	**Small Change**

Transportation Fuels Coverage in Cap-and-Trade Program

- Direct emissions from electricity generation will be covered by electricity deliverers
- Direct emissions from in-state production of hydrogen will be covered at the production facility
- Combustion emissions from CNG/LNG use in transportation will be covered at upstream fuel providers

- ARB is still considering how to calculate surrender obligation for remaining transportation fuels
  - Gasoline
  - Diesel
  - Liquid biofuels

Possible Approaches for Calculating Transportation Fuels' Obligation (1)

- Emissions factors based on the net "carbon content"
  - Gasoline and diesel factors based on direct combustion emissions
  - Liquid biofuel factors would be zero
  - Straightforward, but may over-incentivize those biofuels with high lifecycle emissions
- Emissions factors based on the tailpipe combustion factor
  - Gasoline, diesel, *and* biofuel factors based on direct combustion emissions
  - Straightforward, but may under-incentivize those biofuels with low lifecycle emissions

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Possible Approaches for Calculating Transportation Fuels' Obligation (2)

- Emission factors based on net "carbon content" plus some portion of fuels' lifecycle emissions
  - *e.g.*, lifecycle portion could be direct and/or indirect land use emissions
  - Hybrid approach of incorporating some lifecycle price signals, but maintaining simplicity of set emissions factors
- Emission factors based on lifecycle carbon intensity factor (per LCFS)
  - Relative fuel-switching incentives more aligned with each fuel's total GHG footprint
  - Would need to harmonize with narrow scope sources by netting out portion of LCFS factor that is already capped (*e.g.* in-state refinery emissions)
  - Reporting process may rely on LCFS reporting—requires coordination among GHG Mandatory Reporting Tool, LCFS Reporting Tool, and market platform

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Current Expected Timeline of CA and WCI Cap Number Development (1)

- Today
  - Example CA Cap (Example CA Allowance Budgets)
- November 2009
  - Example CA Cap in first draft of CA regulation text
- December 2009
  - Public release of Pechan report for WCI on projections
- February 2010
  - "Preliminary" WCI Allowance Budgets

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Current Expected Timeline of CA and WCI Cap Number Development (2)

- June 2010
  - "Established" WCI Allowance Budgets Released for Public Comment
- October 2010
  - ARB Board Adopts "Established" CA Budgets as part of C&T Rulemaking
- November 2011
  - "Final Allowance Budgets"
- August 2014
  - "Revised Final Budgets"
- August 2017
  - "Revised Final Budgets"

Potential Adjustments After 2010 Board Adoption of Regulation?

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Potential Topics for Future Meetings on Cap Setting

- Ongoing Improvements to Cap Numbers
  - In coordination with WCI, establish detailed method for projections of future expected emission levels (2012 and 2015)
- Developing compliance pathway scenarios analysis
  - Coordination with the Economic Analysis Subcommittee of the Economic and Allocation Advisory Committee (EAAC)

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Key Questions for Stakeholders

- Comments on example allowance and offset levels?
- What flexibility should ARB have to adjust the number of allowances in the system?
  - Post-regulation adoption?
  - Before the beginning of a compliance period?
  - During compliance periods?
- What is the most appropriate approach for calculating the surrender obligation for fuels?
  - What is the relative importance of fuel-switching incentives, consistency across sectors and end uses, scalability to a broader program, and reporting and administrative complexity?

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OVERVIEW

PRELIMINARY DRAFT REGULATION FOR A CALIFORNIA CAP-AND-TRADE PROGRAM

- FOR PUBLIC REVIEW AND COMMENT -

November 24, 2009

CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS

IN ACCORDANCE WITH CALIFORNIA GLOBAL WARMING SOLUTIONS ACT of 2006 (AB 32)

OVERVIEW

PRELIMINARY DRAFT REGULATION FOR A CALIFORNIA CAP-AND-TRADE PROGRAM

- FOR PUBLIC REVIEW AND COMMENT -

CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS

NOTES FOR REVIEWERS:

- The following proposal for a California cap-and-trade program is a preliminary draft only.
- Some sections of the draft are incomplete. We are continuing work on these sections.
- We appreciate the comments you can provide, which will help us prepare the proposed regulatory language.
- We will discuss the preliminary draft language during a workshop on December 14, 2009. We will post information on the workshop at http://www.arb.ca.gov/cc/capandtrade/meetings/meetings.htm.
- The regulatory text is located here: http://www.arb.ca.gov/cc/capandtrade/meetings/121409/pdr.pdf.
- To be most helpful, we would like to receive your comments on this preliminary draft by January 11, 2010 so we can best incorporate your ideas. Please submit your comments here: http://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=dec-14-pdr-ws&comm_period=1.
- We will use the comments received to prepare a proposed regulation and preliminary staff report for public comment in Spring 2010.
- A final proposed draft regulation will be available for public review in Summer 2010.
- The Board is scheduled to consider the final draft at its October 2010 meeting.

Overview
California Cap-and-Trade Program
Preliminary Draft Regulation (PDR)

INTRODUCTION

Under State law[1], California must reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. The AB 32 Scoping Plan[2] calls for a California cap-and-trade program that links with other regional partner jurisdictions in the Western Climate Initiative (WCI) to create a regional market system. As such, cap and trade is one of the key measures that California will employ to reduce the State's impact on climate change. As adopted in the Scoping Plan, the cap-and-trade program would establish a cap covering about 85 percent of the State's GHG emissions and allow trading to ensure cost-effective emissions reductions. The cap-and-trade regulation will set up the framework and requirements for participation in the cap-and-trade program.

The preliminary draft regulation (PDR) reflects the approach to cap-and-trade approved by the Board in the AB 32 Scoping Plan. This approach includes:

- Requiring sources of GHG emissions to manage their emissions under an aggregate declining emissions cap that supports achieving the 2020 emissions target mandated by AB 32.
- Starting the program in 2012 with about 600 of the state's largest GHG-emitting stationary sources (primarily industrial sources and electricity generators), along with electricity imports.
- Including emissions from transportation fuel combustion (e.g., gasoline, diesel, ethanol), and from fuel combustion at stationary sources that fall below the threshold for direct inclusion in the program (e.g. residential and commercial natural gas combustion) by covering the suppliers of fuel to these sources.
- Requiring a minimum number of allowances to be auctioned at program start.
- Allowing limited use of high quality offsets outside of capped sectors to cover a portion of the overall emissions reductions.
- Establishing clear rules for emissions trading, monitoring, and enforcement.

This document is the preliminary draft regulation (PDR), and conveys, at a conceptual level, ideas on how to design a broad-based multi-sector cap-and-trade program that will work with the complementary measures to reduce emissions to meet the 2020 statewide limit as required under AB 32. A California cap-and-trade program would include a stringent declining emissions cap. Emissions trading and the limited use of offsets would provide flexibility for covered entities to comply.

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[1] Assembly Bill 32, the Global Warming Solutions Act, requires California to develop regulations that will reduce greenhouse gas emissions to 1990 levels by 2020.
[2] http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

The PDR combines preliminary regulatory language on cap-and-trade process and structure, along with narrative text that describes significant issues for which specific regulatory language has not yet been developed. In some cases, placeholders mark areas where language will be developed in the future. ARB is seeking your input on the PDR, including concepts and options that are contained within the body of the document.

Most of 2009 has been spent working through the overall options for program design. The conceptual framework of the PDR is the result of a great deal of public consultation including 21 public meetings to discuss and share ideas on the appropriate structure of the cap-and-trade program. ARB would like to emphasize that release of this document marks the beginning of the next phase of the cap-and-trade rulemaking. Over the next year, we will continue our public outreach effort, culminating in the Board's consideration in 2010 of the first broad-based GHG cap-and-trade program in the nation.

The PDR also includes a preview of upcoming regulatory revisions to ARB's Mandatory Reporting regulations for greenhouse gases (GHG) to accommodate a wider range of facilities and entities than are currently required to report their emissions. More detailed proposed regulatory language on this necessary complement to the cap-and-trade program will be released in the spring of 2010.

The Western Climate Initiative

The Western Climate Initiative[3] (WCI) is a collaboration of seven western states, including California, and four Canadian provinces that have joined together to find mutual ways to reduce greenhouse gases in the region.

The centerpiece of the WCI strategy is a regional cap-and-trade program. The WCI released the design of its program in September 2008. This PDR is consistent with that design. By 2015, a comprehensive program could cover nearly 90 percent of the GHG emissions in WCI states and provinces. ARB believes that a regional cap-and-trade program would help lower the costs of reducing emissions, contributing to a cleaner environment while also driving the kinds of investment and innovation that accelerate growth in the clean technology sector.

Cap and Trade

In its most basic sense, cap and trade is a regulatory approach used to control pollution by setting a firm cap on allowed emissions while employing market mechanisms to achieve emissions reductions while driving costs down.

[3] For more information on the WCI, please go to www.westernclimateinitiative.org/

In a cap and trade program, a limit, or *cap* is put on the amount of pollutants (GHGs) that can be emitted. Each allowance equals one metric ton of carbon dioxide equivalent[4]. The total number of allowances created is equal to the cap set for cumulative emissions from all the covered sectors. These allowances may be auctioned and/or freely given to companies or other groups. In addition to allowances, a limited amount of emissions reductions from sources that are outside the cap coverage, called *offsets*, could be authorized. This would allow emissions in the capped sectors to slightly exceed the allowances issued. The term *compliance instruments* covers both allowances and offsets. After initial distribution of allowances—or in the use of offsets—compliance instruments may be traded among entities. At the end of each *compliance period*, covered entities are required to turn in, or *surrender*, enough compliance instruments to match their emissions during this time period.

Fundamental Design Elements of a Cap-and-Trade Program

The following elements constitute the basic components of a cap-and-trade program consistent with what is being proposed in the PDR.

The Cap

The cap is set for each compliance period, the first of which will begin on January 1, 2012. Compliance periods could be three years in duration (e.g., 2012 to 2014, 2015 to 2017, and 2018 to 2020). ARB is considering requiring entities to surrender a portion of their reported emissions each year during the three year compliance period. We are also considering shortening the compliance period to one year.

We are considering how to phase in sectors into the program. Under the staggered approach that was outlined in the Scoping Plan, entities in the following sectors would be covered in the program according to the following timelines:

Starting in the first compliance period (2012):

- Electricity generation, including imports
- Large industrial sources and processes at or above 25,000 $MTCO_2e$

Starting in the second compliance period (2015):

- Industrial fuel combustion at facilities with emissions below 25,000 $MTCO_2e$, and all commercial and residential fuel combustion of natural gas and propane
- Transportation fuels

[4] Since the program includes greenhouse gases (e.g. methane) that are more effective at trapping heat than carbon dioxide, all emissions are measured in units relative to the heat trapping potential of carbon dioxide or CO_2e, the “e” standing for “equivalent”.

Without a staggered approach, all sectors identified above would be subject to the cap-and-trade program on January 1, 2012. We are considering bringing all sectors into the program in 2012 and encourage public comment on this alternative approach.

Allowances

Covered entities in a cap-and-trade program must account for GHGs they emit. Permits to emit are called allowances and are issued by the state to program participants. Every year, the cap would decline and, as a result, fewer allowances would be issued. Limiting the number of allowances issued in this fashion ensures emissions continue to decline.

At the end of a compliance period, each covered entity would be required to surrender allowances, and some offsets, equal to its total GHG emissions during that compliance period. Once the allowances are surrendered they are permanently retired by ARB. Failure by a covered entity to surrender sufficient allowances to match its emissions would result in significant penalties.

Once an entity holds an allowance, it can: 1) surrender it to comply with its obligation under the regulation: 2) bank it for future use; 3) trade it to another entity; or 4) ask ARB to retire it.[5]

Buying and selling allowances establishes a price for each ton of GHG emissions which in turn reflects the cost for facilities and entities in the program of reducing emissions per ton. The flexibility provided by trading allows for continued growth by individual sources while guaranteeing that there is no increase in total GHG emissions for capped sectors.

Because allowances can be traded—that is, bought and sold— they have a significant economic value whether they are allocated free of charge to a facility or entity, or initially acquired at auction. An entity would buy an allowance if the market value of the allowance is less than the cost of reducing emissions on-site. Alternatively, if an entity believes that selling an allowance is cost-effective, it may sell the allowance to another entity at the current market price. ARB is considering different approaches for allocation and auction design and is receiving input from a panel of economic, financial, and policy experts (see EAAC description below).

Banking

Banking typically refers to the carry-over of unused allowances or offsets from one compliance period to another. The ability to bank allowances provides an

[5] For example, non-governmental organizations or private individuals may wish to purchase allowances solely for the purpose of retiring them.

incentive for covered entities to make early reductions since the declining cap could push allowance prices higher over time.

Offsets

Under cap-and-trade, covered entities could buy offset credits in lieu of buying allowances or reducing their emissions on-site. Offsets are tradable credits that represent GHG emissions reductions that are made in areas or sectors not covered by the cap-and-trade program. One offset credit would be equal to one metric ton of GHG emissions.

Offsets must meet rigorous criteria that demonstrate that the emissions reductions are real, permanent, verifiable, enforceable, and quantifiable. To be credited as an offset, the action or project must also be additional to what is required by law or regulation or would otherwise have occurred. Under a California cap-and-trade program, ARB could issue or approve an offset credit that could be used by a covered entity instead of turning in an allowance for the equivalent amount of CO_2e emitted.

The Scoping Plan called for a limited use of offsets. The PDR includes a proposal that a covered entity be allowed to use offsets for up to 4 percent of what it surrenders at the end of a compliance period.

Linkage to Other Greenhouse Gas Emissions Trading and Offset Crediting Systems

Using the approach under consideration, California could link its cap-and-trade program to other trading systems. Linkage would be implemented through agreements with other systems for all details of cap-and-trade program operations. This would include verification of emissions; certification of offsets based on approved protocols; tracking, registration and reporting systems; and related infrastructure that records and tracks emissions, allowances and offsets, along with verification of compliance in a given compliance period.

ADDITIONAL ELEMENTS OF THE PRELIMINARY DRAFT REGULATION

We have addressed a variety of other issues in a question-and-answer format below:

In Addition to Preliminary Draft Regulatory Language, What Is ARB Asking the Public to Consider and Provide Comment On?

In addition to draft regulatory language, the PDR highlights and seeks comment on key issues and approaches that are still under consideration. We have inserted narrative text within the body of the PDR to explain these. While we have specifically highlighted a number of areas for public input, we encourage

comments on all portions of the draft. We will reflect public comment on the PDR, submitted by January 11, 2010, in the Spring 2010 proposed draft regulation.

Does the PDR Address the Allocation of Allowances and the Use of Auction Proceeds?

In 2009, a 17-member Economic and Allocation Advisory Committee (EAAC) was appointed to advise ARB on the implementation of the proposed cap-and-trade program. The EAAC comprises economic, financial, and policy experts with various backgrounds and experiences. It will provide advice on allocation of allowances and use of their value and evaluate the implications of different allowance allocation strategies such as free allocation, auction or a combination of both. The Committee is expected to prepare a report with its findings in January 2010.

The PDR summarizes different allocation options the EAAC is considering. We will address the Committee's recommendations on allocation in the Spring 2010 draft regulation.

How Does the PDR Address Reporting Requirements for Covered Sources?

In 2007, ARB adopted mandatory emission reporting requirements for the largest stationary sources of GHG emissions. The Scoping Plan includes a cap-and-trade program that goes beyond large stationary sources to include transportation fuels and smaller sources of fuel combustion by regulating the providers of these fuels. Therefore, the ARB will revise mandatory reporting regulations to harmonize the rules with applicable cap-and-trade program provisions.

The PDR previews proposed additional types of sources, GHGs, and thresholds that may be included in revisions to mandatory reporting. Staff plans to present to the Board revisions to the mandatory reporting regulation in the same rulemaking package as cap-and-trade for their consideration in October 2010. Work on these revisions is underway and will be available for public review and comment in Spring 2010.

A summary of potential revisions to the California Mandatory Reporting Regulation (MRR) are summarized following the main body of the PDR text.

How Does the PDR Address Stationary Combustion of Biomass Fuels?

Most biomass fuel combustion emissions from stationary sources would not create an obligation to surrender allowances. Therefore, for combustion emissions of stationary sources, only fossil fuel combustion emissions are counted toward the 25,000 metric tons CO_2e/year threshold. Biomass CO_2

emissions from stationary sources would, however, continue to count toward the threshold for mandatory GHG emissions reporting.

Does the PDR Propose to Include Cement in the Cap-and-Trade Program?

The PDR includes cement as a covered entity. Considerations associated with the potential for emissions leakage from this sector are awaiting EAAC recommendations and staff's analysis of the industry's trade exposure. Staff is investigating how best to encourage blending of supplementary cementitious materials and other approaches to reduce emissions associated with in-state cement production. We will provide more detail in the Spring 2010 draft regulation.

How Would the Cap-and-Trade Program Address Co-Pollutants?

We are requesting public comment on whether and how best to incorporate co-pollutant considerations into the cap-and-trade program. Co-pollutants include smog-forming air emissions, such as reactive organic gases and nitrogen oxides, as well as air toxics, such as diesel particulate.

AB 32 contains several provisions for the design of market-based compliance mechanisms such as cap and trade that require ARB to the extent feasible to: design regulations that are equitable, minimize costs, and maximize total benefits to the State; ensure that greenhouse gas reductions measures complement efforts to reduce smog-forming and toxic air emissions; prevent increases in the emissions of smog-forming and toxic air pollutants that result from the cap-and-trade program.

During the past year, the issue of co-pollutant reductions has been discussed in many arenas, including at public meetings of the EAAC as well as ARB public meetings on cap-and-trade design elements, general approaches, and options. Over the course of these meetings, staff received comments about co-pollutant emissions considerations in the design of the program.

Some stakeholders believe that a cap-and-trade program may lead to increases in co-pollutant emissions in selected communities. As part of the economic and environmental assessment of the cap-and-trade regulation, we are assessing the emission reduction opportunities available to sources covered by this regulation. This evaluation will consider the potential for the incentives and flexibility inherent in the cap-and-trade program to result in direct, indirect, and cumulative emission impacts, including localized impacts in communities that are already adversely impacted by air pollution. To the extent that we identify increases in co-pollutant emissions due to the cap-and-trade program, we will also, to the extent feasible, identify the means to prevent these increases.

Some stakeholders have encouraged staff to use the cap-and-trade program as a mechanism to achieve additional co-pollutant emission reductions, particularly in areas that experience disproportionate air pollution impacts. Potential approaches suggested by some stakeholders for addressing co-pollutant emissions in disproportionately impacted communities include restrictions or surcharges on trading in certain geographic areas, and using potential auction proceeds to fund environmental projects in these communities. Other stakeholders have encouraged ARB to avoid attempting to use the cap-and-trade program itself to address co-pollutant related issues, but rather to use other mechanisms to address these concerns.

Just as ARB is considering how the climate change program should incorporate criteria pollutants and air toxics, we are also evaluating how the State Implementation Plan, the Goods Movement Emission Reduction Plan, and the diesel risk reduction plan can help us meet our climate change goals. The integration of these programs will lead to more efficient and streamlined programs for both regulated industries and state government.

In addition, AB 32 calls upon ARB to direct public and private investment toward the most disadvantaged communities for all AB 32 programs. In response, ARB is developing a white paper to discuss the identification of disadvantaged communities. The identification method will be based on ARB-funded research that combines air pollution data with socio-economic factors. We anticipate releasing the paper before the end of the year.

How Will the California Cap-and-Trade Program Work Under a Federal System?

Federal climate change legislation is still being debated in Congress. In the meantime, ARB is moving forward with the development of a cap-and-trade program. Once a federal program is in place, California along with states and provinces in other regional cap-and-trade programs (e.g. WCI, the Regional Greenhouse Gas Initiative, and the Midwestern Regional Greenhouse Gas Reduction Accord) will work to link and/or transition to the national program.

What is the Timeline for the Cap-and-Trade Program?

The cap-and-trade rulemaking timeframe with associated amendments to Regulation for the Mandatory Reporting of Greenhouse Gas Emissions is outlined below.

December 2009-January 2010	Public workshop and public comment period on PDR
January 2010	Economic and Allocation Advisory Committee allowance allocation recommendations to the Board (presented at February Board Hearing).
February 2010	Public workshop on proposed revisions to Mandatory Reporting Regulation
Spring 2010	Proposed draft cap-and-trade regulation and proposed draft amendments to the Mandatory Reporting Regulation (MRR) released Workshops on the proposed draft cap-and-trade regulations, proposed draft MRR amendments, and draft analyses Work begins on development of a compliance instruments tracking system
September 2010	Public release of final draft cap-and-trade regulation and proposed changes to the MRR along with Initial Statement of Reasons; 45 day public comment period begins
October 2010	Board considers cap-and-trade regulation and MRR changes for adoption
Spring 2011	Adopted regulations go to the Office of Administrative Law for review and approval
Summer 2011	Launch of compliance instruments tracking system
Fall 2011	Hold initial auction of allowances
January 1, 2012	Cap-and-trade program launch

What Is in the PDR and How Is It Structured?

The PDR represents an initial draft of what would be Article 5 of the California Code of Regulations under California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms.

Following this structure for the PDR, the following outline represents the proposed table of contents for the applicable subarticles to the rule:

Subarticle 1.	Table of Contents
Subarticle 2.	Purpose and Definitions
Subarticle 3.	Applicability
Subarticle 4.	Compliance Instruments
Subarticle 5.	Registration and Tracking System
Subarticle 6.	California Greenhouse Gas Allowance Budgets
Subarticle 7.	Surrender Requirements for Covered Entities
Subarticle 8.	Distribution of Allowance Value
Subarticle 9.	Auction Design and Mechanisms for Distributing Auction Proceeds
Subarticle 10.	Free Allowance Mechanisms
Subarticle 11.	Trading and Banking
Subarticle 12.	Linkage to External Trading or Offset Crediting Systems
Subarticle 13.	Offset Credits
Subarticle 14.	Enforcement and Penalties
Subarticle 15.	Other Provisions

Synopsis of the PDR

The remainder of this Overview outlines PDR provisions and briefly explains the concepts contained within the body of the PDR document. The “discussion of concept” sections noted here in indented text refer to text boxes included in the PDR to provide more detailed explanation of the draft regulatory language in a particular section or to explore additional concepts.

Subarticle 1 – Table of Contents

Subarticle 2 – Purpose and Definitions

Section 95801, Purpose: The purpose of this regulation is to reduce GHG emissions by applying a declining aggregate cap on emissions. The regulation also creates a flexible compliance system through the use of tradable instruments.

Section 95802, Definitions: Provides definitions of terms and abbreviations used throughout this regulation. This section is still undergoing review for clarity and for consistency with related definitions in other regulations.

Subarticle 3 – Applicability

Section 95810, Covered Gases: Lists the GHGs covered by this regulation.

Section 95820, Covered Entities: Identifies entities whose GHG emissions are covered under this regulation. Covered entities include: operators of large point sources of GHG emissions, electricity deliverers, and fuel deliverers. These covered entities are said to have a 'surrender obligation' because they must surrender 'compliance instruments' to match the amount of emissions for which they are responsible under this regulation.

> *Discussion of Concept: Explanation of Points of Regulation by Sector* – Provides background on why the proposed covered entities were selected.

Section 95830, Inclusion Thresholds for Covered Entities: Identifies GHG emissions thresholds for covered entities. Covered entities are those that emit at or above a 25,000 metric ton CO_2e threshold each year.

Section 95840, Opt-In Participants: Identifies entities that can opt-in to the cap-and-trade system including traders, brokers, offset providers, verifiers, and those who wish to voluntarily retire compliance instruments.

Subarticle 4 – Compliance Instruments

Section 95850, Compliance Instruments Issued by ARB: Identifies two types of tradable instruments that the ARB may issue—California Greenhouse Gas Emission Allowances and California Offset Credits. These compliance instruments are matched against emissions from covered entities to satisfy a surrender obligation.

Section 95860, Compliance Instruments Issued by Approved External Greenhouse Gas Emissions Trading Systems:

> *Discussion of Concept: Compliance Instruments Issued by Approved External Program* – Identifies that ARB could approve compliance instruments issued by external programs. Also discusses types of compliance instruments that could be considered by ARB to meet a surrender obligation.

Subarticle 5 – Registration and Tracking System

Section 95870, Registration and Tracking System: Identifies and defines registration requirements for covered entities and opt-in participants, and outlines the details of the compliance instrument tracking system.

Subarticle 6 – California Greenhouse Gas Allowance Budgets

Section 95890, Annual Base Allowance Budgets for Calendar Years 2012-2020: Identifies how the declining emissions cap will be set for the program. The cap is divided into annual budgets which specify the number of allowances created in each year from 2012 through 2020.

Note: The budget schedule is preliminary and illustrative only. **It will be revised extensively in future drafts.**

Section 95900, Annual Base Allowance Budgets for Calendar Year 2021 and Subsequent Calendar Years: Provides placeholder language for a methodology to determine a base budget schedule for all post-2020 compliance periods.

Section 95910, Modifications to the Base Budget Schedule: Provides criteria and administrative procedures for modifying the base budget schedule.

> *Discussion of Concept: Administrative Adjustments to the Base Allowance Budgets* – Explores the option of modifications to the base budgets after adoption of the regulation to account for changes in program scope, WCI membership or improved estimates of future expected emission levels from covered entities.
>
> *Discussion of Concept: Budget Adjustment for Voluntary Investment in Renewable Sources of Electricity Generation* – Examines the option of tightening the cap of the program to account for voluntary investment in renewable sources of electricity generation that indirectly reduces the need for emissions from the covered entities.

Subarticle 7 – Surrender Requirements for Covered Entities

> *Discussion of Concept: The Compliance Cycle* Describes the expected interaction between the timing of allowance distribution, emissions reporting and surrender of compliance instruments.

Section 95920, General Requirements: Explains that all covered entities subject to this regulation will report to ARB through the mandatory reporting process. Contains provisions detailing record retention requirements.

Section 95930, Duration of Compliance Periods: Describes the timing of the three-year compliance periods (2012-2014, 2015-2017, and 2018-2020) for covered entities.

Section 95940, Phase-in of Surrender Obligation for Covered Entities: Describes the timing of obligation for covered entities in the program.

Discussion of Concept: Potential Inclusion of Fuel Deliverers in 2012 – Examines the option of specifying fuel deliverers as covered entities beginning in 2012 rather than 2015. This option differs from the Scoping Plan recommendations but would take into account the comments of those stakeholders who recommended this approach throughout the public participation process on cap-and-trade program design elements.

Section 95950, Emission Categories Used to Calculate Surrender Obligation: Describes how to calculate a covered entity's surrender obligation based on the entity's emissions for a given compliance period. Most fugitive emissions and biomass fuel combustion emissions from stationary sources would not create a surrender obligation.

Discussion of Concept: Calculating Surrender Obligation for Fuel Deliverers – Describes the cap-and-trade program's overall treatment of transportation emissions. Outlines four possible options for how transportation fuel deliverers' surrender obligation is determined: (1) surrender obligation is based on net "carbon content" (combustion emissions for gasoline and diesel, zero for biofuels); (2) surrender obligation for gasoline, diesel, and biofuels is based on direct combustion emissions; (3) surrender obligation is based on net "carbon content" plus some portion of the fuel's lifecycle emissions; and (4) surrender obligation is based on the lifecycle carbon intensity factor (as determined by the Low Carbon Fuel Standard).

Section 95960, Timing for Calculation of Covered Entities' Surrender Obligation: Describes when a covered entity's emissions must be included in the calculation of surrender obligation for a given compliance period. Provides flexibility for a covered entity that is included in the cap-and-trade program for the first time in the third year of a compliance period.

Discussion of Concept: Addressing Bankruptcy of Covered Entities – Describes options to deal with default on surrender obligation due to bankruptcy. One option would be to surrender a portion of an entity's compliance obligation each year; another option would be to shorten the compliance period to one year.

Section 95970, Quantitative Usage Limit on Designated Compliance Instruments: Sets the quantitative usage limit on offsets at approximately 4 percent of an entity's surrender obligation. Ensures that the majority of emission reductions will result from actions by the covered entities rather than from offset projects.

Discussion of Concept: Quantitative Usage Limit on Offsets and other Similar Compliance Instruments - Describes how the quantitative usage limit was set by the Scoping Plan to provide a balance between the cost-containment advantages of offsets and the desire to maintain a strong incentive for emission reductions from covered sources. Provides a link to example calculations showing how the limit could be determined.

Section 95980, Surrender of Compliance Instruments by a Covered Entity: Describes the mechanics of how a covered entity fulfills its surrender obligation

by transferring a sufficient amount of compliance instruments from its Holding Account to its Compliance Account. Defines an initial surrender deadline followed by data review, reconciliation and final surrender.

Subarticle 8 – Distribution of Allowance Value

> *Discussion of Concept: Informational Placeholder on Allowance Allocation* – The cap-and-trade program creates valuable allowances. A determination of how to distribute the value associated with the creation of allowances is challenging. This draft summarizes the potential uses of this 'allowance value' and the potential mechanisms to distribute this value as reflected in the Economic and Allocation Advisory Committee's deliberations.

Subarticle 9 – Auction Design and Mechanisms for Distributing Auction Proceeds

Section 96030, Format for Auction of California GHG Allowances: This section is a placeholder until ARB staff receives the recommendations of the EAAC on auction design. It contains a link to a presentation on auction design made by staff at a stakeholder meeting on March 23, 2009.

Section 96040, Auction Operation and Registration: Describes the general procedures and requirements for an entity to participate in an auction.

> *Discussion of Concept: Cost Containment* – Describes options for mitigating high and low prices in the market for compliance instruments including: relaxation of the quantitative limit on offsets; expansion of acceptable types of offset credits; use of allowances from the next compliance period; and use of an allowance reserve.

Subarticle 10 – Free Allocation Mechanisms

> *Placeholder:* Provides a placeholder for ways in which allowances might be distributed that do not involve auctioning. This issue will be addressed in the recommendations provided by the EAAC in January, 2010, and staff will incorporate language on this issue in the Spring 2010 draft of the regulation.

Subarticle 11 – Trading and Banking

Section 96080, Trading: Explains how staff will approach acquiring sufficient information on transactions involving allowances and offsets to support market monitoring. Staff believes the information available to regulators from exchange trading of secondary and derivative products is likely to be sufficient for monitoring trades on those venues. Staff is concerned about getting similar levels of information on bilateral trades and non-exchange traded derivatives. Staff's objective is to ensure that transactions fall clearly within California or Federal regulation.

Discussion of Concept: Use of Trading Facilities – Considers whether ARB should promote trades of allowances through trading facilities selected by Executive Officer.

Discussion of Concept: Use of Clearing Facilities – Discusses option that trades of offsets be conducted through clearing facilities to maintain contract documentation and reduce counterparty risk until the issue of credit reversal can be addressed through standardized contracts.

Section 96090, Banking: Describes rules and restrictions for banking of compliance instruments in Holding Accounts.

Subarticle 12 – Linkage to External Trading or Offset Crediting Systems

Section 96150, General Requirements: Describes the basic criteria for approving linkage to an external greenhouse gas emissions trading system (GHG ETS) or a GHG offset crediting system.

Section 96160, Requirements for Approval of External Greenhouse Gas Emissions Trading Systems: Describes the specific criteria for approving linkage to an external GHG ETS.

Section 96170, Requirements for Approval of GHG Offset Crediting Systems: Describes the specific criteria for approving linkage to a GHG offset crediting system.

Section 96180, Types of Linkage: Describes how unilateral linkages and bilateral linkages would be established.

Section 96190, Agreement: Describes the requirements for a Memorandum of Understanding (MOU) between California and an external GHG ETS or a GHG offset crediting system for establishing linkage.

Section 96200, Eligible Allowance Vintages: Describes the process for approving eligible allowance vintages from a linked external GHG ETS.

Section 96210, Suspension of Linkage:

Discussion of Concept: Suspension of Linkage – Identifies that ARB could suspend a linkage to an approved external program if that program no longer meets the criteria described in this subarticle.

Subarticle 13 – Offset Credits

Discussion of Concept: Creation of Offset Credits – Describes several options for ARB's role in the issuance and acceptance of offset credits. These include: ARB as a credit issuing body; ARB as the body that approves offset credits issued by external programs; and ARB as the body that both approves and issues offset

credits. The PDR includes draft regulatory language that would allow ARB to become both a credit issuing body and an approving body for offset credits that are issued by external programs.

Section 96220, General Requirements for Offset Credits: States that GHG emission reductions or avoidances, or GHG sequestration that result from an offset project must be real, additional, quantifiable, permanent, verifiable, and enforceable.

Section 96230, Approval of Offset Quantification Methodologies: Describes how an offset quantification methodology may be approved.

Discussion of Concept: Requirements and Approval of Offset Quantification Methodologies – Discusses ARB staff's recommended approach for the adoption of offset quantification methodologies by the Board.

Section 96240, Requirements for Approval of Offset Quantification Methodologies: Describes the requirements and criteria that an offset quantification methodology must meet in order to be approved by the Board. These include criteria for quantification, additionality, activity baselines, accounting for activity-shifting and market-shifting leakage and offset uncertainty, permanence, crediting periods, monitoring and reporting and project-type-specific verification requirements.

Discussion of Concept: Offset Project Types – Discusses the criteria that will be considered when ARB evaluates which offset project types should result in the adoption of an offset quantification methodology.

Discussion of Concept: Ozone Depleting Substances – Discusses whether to allow offset project types that reduce GHGs that are not specifically called out in AB 32 such as the destruction of ODS to be allowed to generate offset credits.

Discussion of Concept: Offset Project Eligibility Date for Additionality – Discusses the eligibility date for determining the additionality of offset projects for which ARB could issue offset credits.

Section 96250, Requirements for Offset Project Operators: Describes requirements for Offset Project Owners.

Section 96260, Registration of Offset Projects for ARB Issued Offset Credits: Describes the requirements that an offset project must meet in order to be registered by ARB. These include the use of an approved offset quantification methodology, additionality and offset project location.

Discussion of Concept: Current Board Approved Offset Quantification Methodologies – Discusses the offset quantification methodologies already approved by the Board.

Discussion of Concept: Where Should California Issue Offset Credits?– Describes several options for where projects may be located for which ARB could issue offset credits, ranging from limiting projects to only those in California to no geographic limits. Possible geographic limits on projects for which ARB could issue credits would not necessarily mean limiting the geographic location of offset credits issued by an external program that ARB would approve under Sections 96180 through 96195.

Section 96270, Approval of a Renewed Crediting Period: Describes the requirements and process for determination of whether an offset project may be approved for an additional crediting period.

Section 96280, Renewal of Registration for Renewed Crediting Period: Describes the process for registration of an offset project that has been approved for a renewed crediting period.

Section 96290, Monitoring, Reporting and Record Retention Requirements for Offset Projects: Describes both the general and project-type-specific requirements for the monitoring, reporting and record retention associated with offset projects.

Section 96300, Verification of GHG Reductions, Avoidances or Sequestrations from Offset Projects: Describes the verification requirements for reductions resulting from offset projects. Also describes the timing for submission of verification statements.

Discussion of Concept: General Offset Verification Requirements – Identifies that the process for the verification of GHG reductions from offset projects would be similar to that laid out in the mandatory reporting regulation. The mandatory reporting requirements for verification may need to be amended in order to support the offsets system.

Section 96310, Verifier and Verification Body Accreditation:

Discussion of Concept: Accreditation of Offset Verifiers – Discusses accreditation for verification bodies that would verify GHG reductions from offset projects.

Section 96320, Conflict of Interest for Offset Projects:

Discussion of Concept: Conflict of Interest Requirements for Offset Projects – Identifies that the requirements for conflict of interest in regards to offset projects would be similar to those laid out in the mandatory reporting regulation. The mandatory reporting requirements for conflict of interest may need to be amended in order to support the offsets system.

Section 96330, General Requirements for Issuance of Offset Credits by ARB: Describes the general requirements for the issuance of ARB offset credits.

Section 96340, Issuance of Offset Credits in an Initial Crediting Period: Describes the rules that apply for the annual issuance of offset credits in an offset project's initial crediting period.

Section 96350, Issuance of Offset Credits in a Renewed Crediting Period: Describes the rules that apply for the annual issuance of offset credits in an offset project's renewed crediting period.

Section 96360, Issuance of Offset Credits by ARB: Describes the process for determining how offset credits will be issued for GHG emission reductions, avoidances or sequestration resulting from a registered offset project. Also describes the process for notifying the Offset Project Owner of this determination.

Section 96370, Registration of Offset Credits Issued by ARB: Describes how offset credits will be registered and made available to the Offset Project Owner.

Section 96380, Ownership and Transferability of Offset Credits Issued by ARB: Describes rules and limitations for the ownership and transferability of offset credits.

Section 96390, Cancellation of Offset Credits: Describes criteria for determining if an offset credit would need to be cancelled. Also describes what happens if an offset credit is determined to be void or invalid after issuance or acceptance of the offset credit by ARB.

> *Discussion of Concept: Reversals of Offset Credits* – Discusses the enforcement and assessment of penalties that may be imposed if an offset credit is reversed or found to be invalid after issuance or acceptance by ARB.

Section 96400, Offset Credits Issued by External Programs: Describes the general requirements that an offset credit issued by an external program must meet in order to be accepted by ARB.

> *Discussion of Concept: International Offset Credits and Sector-Based Crediting* – Discusses California's desire to work at the international level to reduce GHG emissions and support the adoption of low-carbon technologies and sustainable development in the developing world. Also states California's intent to move beyond international project-based crediting towards the development of international sector-based crediting mechanisms to achieve emissions reductions in the developing world. Also discusses California's participation in international forestry efforts to reduce emissions for deforestation.

Section 96410, Requirements for Offset Credits Issued by an External Program for Projects Located in the United States or Canada: Describes the requirements and limitations for the approval of offset credits issued by an external program to projects located in either the U.S. or Canada. Also describes requirements for

MOUs and coordination needed for the retirement of offset credits in external systems.

Section 96420, Requirements for Offset Credits Issued by an External Program for Projects Located in Developing Countries: Describes the requirements and limitations for the approval of offset credits issued by an external program to projects located in developing countries. Also describes requirements for MOUs and coordination needed for the retirement of offset credits in external systems.

Section 96430, Requirements for Sector-Based Crediting: Describes the requirements for MOUs and the determination for approval of sectors and crediting baselines for credits issued under a sector-based crediting mechanism.

Subarticle 14 – Enforcement and Penalties

> *Discussion of Concept: Enforcement and Penalty Provisions* - ARB expects to add provisions to this subarticle to specify particular enforcement provisions for separate requirements in the regulation. These provisions would include methods for calculating the number of violations and consequences for non-compliance. ARB is trying to find a combination of penalty levels and number of violations that would deter non-compliance by removing any economic benefits of non-compliance.

Section 96500 Jurisdiction: Explains what activities will constitute consent on the part of a market participant to be subject to California's jurisdiction.

Section 96501 Authority to Suspend, Revoke or Modify: Describes ARB's authority to place restrictions on market participants with an account subject to the cap-and-trade program.

Section 96502 Injunctions: Ties violations of this rule to pertinent enforcement provisions in the Health and Safety Code.

Section 96503 Penalties: Ties the assessment of penalties under this regulation to pertinent enforcement provisions in the Health and Safety Code.

Section 96504 Violations: Describes what constitutes a violation under this article.

Subarticle 15 – Other Provisions

Section 96540 Severability, Effect of Judicial Order: Addresses remedies for legislative or judicial decisions that negate portions of the rule (e.g., federal law that preempts state regulation, changes to state law, or court action).

Section 96550 Reserved Provisions: Includes a placeholder.

Subchapter 10, Article 2, Sections 95100-95199 – Amendments to Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

The ARB GHG Mandatory Reporting Regulation (MRR) will be updated in conjunction with the cap-and-trade rulemaking. Revisions will focus on specific provisions that are needed for the reporting regulations to support the cap-and-trade program. Work on these revisions is now underway and will be available for public review and comment in Spring 2010. Staff expects to present MRR revisions and the cap-and-trade regulation to the Board in one rulemaking package.

The PDR contains the following information pertinent to the MRR amendments:

- Attachment 1: Anticipated Changes to Reporting: A bulleted list of areas that are expected to change
- Attachment 2: Draft Table of Contents for the Revised Mandatory Reporting Regulation
- Attachment 3: Preliminary Draft Amendments to Section 95107, Enforcement
- Attachment 4: A tentative calendar for the public participation process
- Attachment 5: Evaluation of the Relationships between Emissions Quantification, Scope and Points of Regulation for the AB 32 cap-and-trade program: A description of considerations that will be examined for inclusion of an emissions source within the scope of the cap-and-trade program.
- Attachment 6: Detailed Scope Table: Depicts preliminary staff thinking in tabular format on which emissions generate a surrender obligation and proposed additional types of sources, GHGs, and reporting thresholds.

Subchapter 10 Climate Change, Article 5, Sections 95800 to 96550, Title 17, California Code of Regulations, to read as follows:

Article 5: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

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Subarticle 2. Purpose and Definitions

§ 95801 Purpose

(a) The purpose of this article is to reduce emissions of greenhouse gases from entities identified in this article through the establishment, administration and enforcement of the California Greenhouse Gas Cap-and-Trade Program by applying an aggregate greenhouse gas allowance cap on covered entities and providing a trading mechanism for compliance instruments.

§ 95802 Definitions

*UU*Note:* Terms denoted with an asterisk in this section and also contained in the Regulation for the Mandatory Reporting Regulation of Greenhouse Gas Emissions (MRR) will be reconciled for consistency in later versions of this preliminary regulation.

(a) *TTDefinitions*. For the purposes of this article, the following definitions shall apply:

(1) "Accuracy" means the closeness of the agreement between the result of the measurement and the true value of the particular quantity (or a reference value determined empirically using internationally accepted and traceable calibration materials and standard methods), taking into account both random and systematic factors*.

(2) "Activity baseline" means, in the context of an offset project or activity, the scenario that reflects a conservative estimate of business-as-usual performance or activities for the relevant type of activity or practice such that the baseline provides an adequate margin of safety to reasonably calculate the amount of GHG reductions in reference to such baseline.

(3) "Activity-shifting leakage" means GHG emissions that result from the displacement of activities from inside the offset project's boundary to

locations outside the offset project's boundary as a result of the offset project activity.

(4) "Additional" means, in the context of offset credits, emission reductions must be in addition to any greenhouse gas reduction, avoidance or sequestration otherwise required by law or regulation, or any greenhouse gas reduction, avoidance or sequestration that would otherwise occur.

(5) "Allowance" means a limited tradable authorization to emit up to one metric ton of carbon dioxide equivalent.

(6) "Allowance budget" or "Annual allowance budget" means the number of allowances associated with one year in Subarticle 6.

(7) "Allowance cap" means the total number of California Greenhouse Gas Allowances that the Executive Officer issues over a given period of time.

(8) "Approved offset quantification methodology" means an offset quantification methodology approved by the Board.

(9) "Auction" means the process of selling California GHG allowances by offering them up for bid, taking bids, and then distributing the allowances to winning bidders.

(10) "Auction reserve price" means a price for allowances below which bids at auction would not be accepted.

(11) "Banking" means the holding of compliance instruments from one compliance period for the purpose of sale or surrender in a future compliance period.

(12) "Base allowance budget" means an allowance budget prior to any adjustments.

(13) "Bilateral linkage" means the approval of compliance instruments from an external greenhouse gas emission trading system or a greenhouse gas offset crediting system to meet surrender obligations under this article, and in some cases the reciprocal approval of compliance

instruments issued by California to meet surrender obligations in an external greenhouse gas emissions trading system.

(14) "Biomass" – [Placeholder].

ARB is considering the use of the definition contained in the "Renewable Energy Program: Overall Program Guidebook," 2nd Ed., California Energy Commission, Report No. CEC-300-2007-003-ED2-CMF, January 2008. ARB is also considering biomass to mean non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. In the context of this article it may be necessary to modify this definition.

(15) "Biomass fuels" or "biomass-derived fuels" means fuels whose entire heat generating capacity is derived entirely from biomass*.

(16) "Borrowing" means using allowances from a future compliance period to meet a current surrender obligation.

(17) "Burden of proof" means demonstration of proof by a preponderance of evidence.

(18) "Business-as-usual" means the normal course of business or activities for an entity or a project before the imposition of greenhouse gas emission reduction requirements or incentives.

(19) "Calendar year" means the time period from January 1 through December 31.

(20) "California Cap-and-Trade Market Tracking System" means an information system to support the California Air Resources Board's implementation of this article, including recording of transactions, allowance and offset credit issuance and retirements, and compliance evaluation.

(21) "California Greenhouse Gas Emissions Allowance" or "CA GHG Allowance" or "California Allowance" means an allowance issued by ARB and equal to up to one metric ton of $CORR_2$ equivalent.

(22) “California reformulated gasoline” or “Gasoline” or “CaRFG” means gasoline sold or intended for sale as a motor vehicle fuel in California that is subject to Title 13, California Code of Regulations, Sections 2250-2273.5.

(23) “California electricity transmission and distribution system” means the combination of the transmission and distribution systems located within California that allows electric power to move from one point to another over multiple paths and connects electric generating facilities to end users of electricity.

(24) “Cap” see “Allowance cap”.

(25) “Carbon dioxide” or “CO_2” means the most common of the six primary greenhouse gases, consisting on a molecular level of a single carbon atom and two oxygen atoms.

(26) “Carbon dioxide equivalent" or “CO_2 equivalent” or "CO_2e" means a measure for comparing carbon dioxide with other GHGs, based on the quantity of those gases multiplied by the appropriate global warming potential (GWP) factor and commonly expressed as metric tons of carbon dioxide equivalents ($MTCO_2e$).

(27) “Carbon intensity” means the amount of lifecycle greenhouse gas emissions, per unit of energy of fuel delivered, expressed in grams of carbon dioxide equivalent per megajoule (gCO_2e/MJ).

(28) “Cement” means a building material that is produced by heating mixtures of limestone and other minerals or additives at high temperatures in a rotary kiln to form clinker, followed by cooling and grinding with blended additives. Finished cement is a powder used with water, sand and gravel to make concrete and mortar.

(29) “Clearing price” means the price of an allowance determined at an auction.

(30) “Clearing organization,” means an entity through which futures and other derivative transactions are cleared and settled. It is also charged

with assuring the proper conduct of each contract's delivery procedures and the adequate financing of trading.

(31) "Coal" means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society for Testing and Materials Designation ASTM D388–05 "Standard Classification of Coals by Rank".

(32) "Common practice" means activities and management practices that are widely used in a region whether or not it is required by law or regulation.

(33) "Compliance Account" means an account created by ARB for a covered entity with a surrender obligation, or for an entity intending to voluntarily retire a compliance instrument.

(34) "Compliance instrument" means an allowance or offset credit. Each compliance instrument can be used to fulfill a surrender obligation equivalent to up to one metric ton of CO_2e.

(35) "Compliance period" means the three-year period for which the surrender obligation is calculated for covered entities.

(36) "Conduct agreement" means an agreement that must be signed by all registrants, agreeing to the disclosure of bidding information and other conduct rules.

(37) "Conflict of interest" means a situation in which, because of financial or other activities or relationships with other persons or organizations, a person or body is unable or potentially unable to render an impartial verification opinion of a potential client's greenhouse gas emissions, or the person or body's objectivity in performing verification services is or might be otherwise compromised*.

(38) "Conservative", in the context of offset credits, means utilizing quantification parameters, assumptions, and measurement techniques that minimize the risk of overstating GHG reductions, avoidances or sequestration credited for a given offset project.

(39) "Counterparty" means the opposite party in a bilateral agreement, contract, or transaction.

(40) "Covered entity" means an entity that has a surrender obligation.

(41) "Crediting baseline" means the absolute GHG emissions level, GHG emissions intensity level calculated as GHG emissions per unit of production, or technology standard that must be met for a sector to generate sector-based credits.

(42) "Crediting period" means the pre-determined period for an offset project or activity for which GHG reductions, avoidances or sequestration from the activity baseline are verified by an accredited verifier or verification body for purposes of the issuance of offset credits.

(43) "Data year" means the calendar year in which emissions occurred.

(44) "Developing country" means a country eligible to receive official development assistance according to the income guidelines of the Development Assistance Committee of the Organization for Economic Cooperation and Development.

(45) "Diesel fuel" means a fuel composed of distillates obtained in petroleum refining operations.

(46) "Direct emissions" means greenhouse gas emissions from sources that are under the operational control of the operator.

(47) "Direct emission reduction" means a greenhouse gas emission reduction action made by a greenhouse gas emission source at the source.

(48) "Electricity deliverer" means either an electricity generating facility or an electricity importer that delivers power to a point on the California electricity transmission and distribution system.

(49) "Electricity generating facility" means a facility that generates electricity and includes one or more electricity generating units at the same location.

(50) "Electricity importer" means an owner of electricity generated outside of California as it is delivered to the first point in California.

(51) "Emissions" means greenhouse gases released into the atmosphere from a source*.

(52) "Emissions data report" or "greenhouse gas emissions data report" or "report" means the report prepared by a covered entity each year and submitted by electronic means to ARB that provides the information required by the MRR*.

(53) "Emissions leakage" means a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state.

(54) "Emissions reductions data report" means the report prepared by an Offset Project Operator and submitted to ARB that provides the information that will be required by the MRR.

(55) "End user" means, in the context of natural gas consumption, either the point to which natural gas is delivered for consumption or a publicly-owned natural gas utility that further distributes natural gas for consumption.

(56) "Enforceable" means, in the context of offset credits, the ability to hold a particular party liable to ensure that GHG reductions, avoidances or sequestration are real, additional, verifiable, and permanent, and to take appropriate action if any of the criteria in this article are not met.

(57) "Entity" means a person, firm, association, organization, partnership, business trust, corporation, limited liability company, company, or government agency.

(58) "Executive Officer" means the Executive Officer of the California Air Resources Board, or his or her delegate.

(59) "External greenhouse gas emissions trading system" or "External GHG ETS" means a greenhouse gas emissions trading system other than

the *California Cap on Greenhouse Gas Emissions and Market-Based Compliance Reduction* program.

(60) "External program" means either an external greenhouse gas emissions trading system or a greenhouse gas offset crediting system.

(61) "Facility" means a property, building, plant, structure, installation, equipment or grouping of stationary equipment located on one or more contiguous properties, in actual physical contact or separated solely by a public roadway or other public right-of-way, and under common operational control that emits or may emit GHG(s).

(62) "Fuel" means solid, liquid or gaseous combustible material.

(63) "Fuel Deliverer" means a transportation fuel deliverer, natural gas deliverer, or deliverer of natural gas liquids as specified in Subarticle 3.

(64) "Global warming potential" or "GWP factor" means the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a given period of time.

(65) "Greenhouse gas" or "GHG", "greenhouse gases" or "GHGs" includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbon (HFC), nitrogen trifluoride (NF_3) and perfluorocarbon (PFCs).

(66) "Greenhouse gas avoidance" or "GHG avoidance" means protection of carbon stocks in order to prevent the release of greenhouse gas emissions.

(67) "Greenhouse gas emissions trading program" or "GHG ETS" means an administrative approach used to control greenhouse gas emissions by providing economic incentives for achieving greenhouse gas emission reductions.

(68) "Greenhouse gas offset crediting system" or GHG offset crediting system" means an administrative body that issues offset credits corresponding to the volume of verified emission reductions achieved by an offset project.

(69) “Greenhouse gas emission reduction” or “GHG emission reduction” or “greenhouse gas reduction” or “GHG reduction” means, in the context of offset credits, the GHG reductions achieved by an offset project and verified by an accredited independent third-party verifier or verification body as meeting standards consistent with those contained in this article.

(70) “Greenhouse gas sequestration” or “GHG sequestration” means, in the context of offset credits, the process through which agricultural and forestry practices remove carbon dioxide from the atmosphere. In general terms, GHG sequestration also means the fixation of carbon in a carbon sink through biological or physical processes.

(71) ”Holding Account” means an account established within the California Cap-and-Trade Market Tracking System for the purpose of holding compliance instruments.

(72) “Hydrocarbon” means a chemical compound containing predominantly carbon and hydrogen.

(73) “Hydrofluorocarbon” or “HFC” means a class of compounds gases consisting of only hydrogen, fluorine, and carbon.

(74) “Hydrogen” means the lightest of all gases, occurring chiefly in combination with oxygen in water; exists also in acids, bases, alcohols, petroleum, and other hydrocarbons.

(75) “Hydrogen plant” or “hydrogen production facility” means a facility that produces hydrogen with steam hydrocarbon reforming, partial oxidation of hydrocarbons, or other processes.

(76) “Import” means to bring a product from outside California into California.

(77) “Importer” means the majority owner of a product when it first enters California.

(78) “Indirect emission” means emissions of GHGs arising along the supply or value chain from a source distinct from the facility in question*.

(79) "Initial crediting period" means the crediting period that begins with the date that the first verified emission reductions took place according to the first verification statement that is received by ARB.

(80) "Issue" or "issuance" means, in the context of offset credits, the creation of offset credits equivalent to the number of GHG reductions, avoidances or sequestration which have been verified for an offset project. In the context of allowances, issue means the placement of an allowance in an entity's holding account.

(81) "Least Developed Country" means the group of countries defined by the United Nations General Assembly in its resolutions (59/209, 59/210 and 60/33) in 2007.

(82) "Lifecycle greenhouse gas emissions" or "lifecycle GHG emissions" means the aggregate quantity of GHG emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), related to the full product lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

(83) "Linkage" means the process by which compliance instruments issued by external programs are approved to meet surrender obligations under this article.

(84) "Margin of safety". To be defined at a later date.

(85) "Market index" means any published index of quantities or prices based on results of market transactions.

(86) "Material misstatement" means one or more inaccuracies identified in the course of verification that result in the total reported emissions, or reported purchases, sales, imports or exports of electricity, being

outside the 95 percent accuracy required to receive a positive verification opinion*.

(87) "Megawatt hour" or "MWh" means the electrical energy unit of measure equal to one million watts of power supplied to, or taken from, an electric circuit steadily for one hour.

(88) "Memorandum of Understanding" or "MOU" means a signed agreement between ARB and each collaborative partner. An MOU is only intended to provide for cooperation between the parties and does not create any legally binding rights or obligations.

(89) "Methane" or "CH_4" means a GHG consisting on the molecular level of a single carbon atom and four hydrogen atoms.

(90) "Metric tonne" or "metric ton" or "MT" or "tonne" means a common international measurement for the quantity of GHG emissions, equivalent to about 2204.6 pounds or 1.1 short tons.

(91) "Monitoring" means, in the context of offset projects, the collection and archiving of all relevant data necessary for determining the baseline and the volume of GHG reductions, avoidances or sequestration that are attributable to the offset project after accounting for offset uncertainty and activity-shifting and market-shifting leakage.

(92) "Natural gas" means a naturally occurring mixture of gaseous hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions.

(93) "Natural gas liquid" means ethane, butane, isobutane, natural gasoline, and propane which is ready for commercial sale or use.

(94) "Nitrogen trifluoride" or "NF_3" means a GHG consisting at the molecular level of one nitrogen and three fluorine atoms; a corrosive gas.

(95) "Nitrous oxide" or "N_2O" means a GHG consisting at the molecular level of two nitrogen atoms and a single oxygen atom.

(96) "Offset accuracy" means that quantification methodologies and measurement techniques are set at standards for acceptable statistical precision and based on the best available science.

(97) "Offset credit" means a tradable compliance instrument issued or approved by ARB and represents a reduction, avoidance or sequestration of one metric ton of CO_2e. The GHG reduction, avoidance or sequestration must be real, additional, quantifiable permanent, verifiable and enforceable.

(98) "Offset project" means all equipment, materials, items, or actions directly related to the reduction, avoidance or sequestration of greenhouse gases. Equipment, materials, items, or actions unrelated to an offset project reduction, avoidance or sequestration of greenhouse gases, but occurring at a location where an offset project occurs, are not considered part of an offset project.

(99) "Offset project commencement" means, for an offset project involving physical construction, other work at an offset project site, or installation of equipment or materials, the date of the beginning of such activity. For an offset project that involves the implementation of a management activity, "offset project commencement" means the date on which such activity is first implemented or the applicable offset quantification methodology is first utilized.

(100) "Offset Project Operator" means the person(s) or entity(s) with operational control of the offset project.

(101) "Offset project registration" means the process for formal acceptance by ARB of an offset project that may be issued offset credits under this article.

(102) "Offset uncertainty" means a factor associated with the result of measurement or quantification of GHG reductions, avoidances or sequestration that characterizes the dispersion of the values that could be reasonably attributed to the measured quantity.

(103) “Operational control” for a facility subject to this article means the authority to introduce and implement operating, environmental, health and safety policies. In any circumstance where this authority is shared among multiple entities, the entity holding the permit to operate from the local air pollution control district or air quality management district is considered to have operational control for purposes of this article*.

(104) "Operator" means the entity having operational control of a facility*.

(105) “Opt-in participant” means an entity that does not have a surrender obligation under this article but wishes to participate in the market and be willing to be subject to the requirements set forth in this article.

(106) “Perfluorocarbons” or “PFCs” means a class of greenhouse gases consisting on the molecular level of hydrogen and fluorine.

(107) “Permanent” means, in the context of offset credits, for non-sequestration projects GHG reductions that are not reversible. For GHG sequestration projects where GHG avoidances or sequestration may be reversible, permanent means the atmospheric effect of their estimated reductions must endure for a period that is comparable to the atmosphere effect achieved by non-sequestration projects. The duration for this period is to be based upon current scientific findings that are widely accepted and followed. The current international standard of 100 years has been established by the United Nations Framework Convention on Climate Change.

(108) “Petroleum” means crude oil removed from the earth and the oil derived from tar sands, shale or coal.

(109) “Petroleum refining facility” or “refinery” means any facility engaged in producing gasoline, aromatics, kerosene, distillate fuel oils, residual fuel oils, lubricants, asphalt, or other products through distillation of petroleum or through re-distillation, cracking, rearrangement or reforming of unfinished petroleum derivatives.

(110) "Point of delivery" means a point on an electric system where a power supplier delivers electricity to the receiver of that electricity. This point can be an interconnection with another system or a substation where the transmission provider's transmission and distribution systems are connected to another system.

(111) "Positive verification opinion" means a verification opinion rendered by a verification body stating that the verification body can say with reasonable assurance that the submitted emissions data report is free of material misstatement and includes a qualifying statement that the emissions data report conforms to the requirements of this article*.

(112) "Power" means electricity, except where the context makes clear that another meaning is intended.

(113) "Proceeds" means monies generated as a result of an auction.

(114) "Process" means the intentional or unintentional reactions between substances or their transformation, including, but not limited to, the chemical or electrolytic reduction of metal ores, the thermal decomposition of substances, and the formation of substances for use as product or feedstock.

(115) "Process emissions" means a greenhouse emission occurring due to a chemical process other than combustion.

(116) "Producer" means any person who owns, leases, operates, controls or supervises a California production facility.

(117) "Project boundary" means, in the context of offset credits, all GHG emissions by sources of greenhouse gases under the control of the Offset Project Operator that are significant and reasonably attributable to the offset project. The boundary is limited to the physical project activity and not external sources of GHG reductions, avoidances or sequestration.

(118) "Propane" means a normally straight chain hydrocarbon that boils at - 43.67 degrees Fahrenheit and is represented by the chemical formula C_3H_8.

(119) "Property right" means any type of right to specific property whether it is personal or real property, tangible or intangible.

(120) "Purchase limit" means the maximum percentage of allowances that may be purchased by affiliated registrants at an allowance auction.

(121) "Regulation for the Mandatory Reporting of Greenhouse Gas Emissions" or "MRR" means the California Air Resources Board's regulation requiring the reporting of and verification of greenhouse gas emissions from specified greenhouse gas emissions sources. (Subchapter 10, Article 2, Sections 95100 to 95133, Title 17, California Code of Regulations)

(122) "Quantifiable" means, in the context of offset credits, the ability to accurately calculate GHG reductions or avoidances, or sequestration from a set activity baseline while accounting for offset uncertainty and activity-shifting and market-shifting leakage risks.

(123) "Quantification methodology" means the procedure and/or document used to conduct the assessment of GHG reductions, avoidances, or sequestration achieved by an offset project against a credible activity baseline. Quantification methodologies must include any relevant data collection and monitoring procedures and must adjust for offset uncertainty and activity-shifting and market-shifting leakage risks associated with an offset project.

(124) "Quantitative usage limit" means a limit on the percentage of an entity's surrender obligation that may be met by surrendering offsets or other compliance instruments designated to be subject to the limit under this article.

(125) "Real" means, in the context of offset credits, that GHG reductions or avoidances, or GHG sequestration represents one metric ton CO_2e

that results from an offset project. The offset credit must be quantified using accurate and conservative quantification methodologies that account for all relevant greenhouse gas sources and sinks and activity-shifting and market-shifting leakage risks. Offset projects must result in direct emissions reductions or removals that take place at sources controlled by the Offset Project Operator.

(126) "Reasonable assurance" means a high degree of confidence that submitted data and statements are valid*.

(127) "Renewable energy" means energy from sources that constantly renew themselves or that are regarded as practically inexhaustible. Renewable energy includes, but is not limited to, energy derived from solar, wind, geothermal, hydroelectric, wood, biomass, tidal power, sea currents, and ocean thermal gradients.

(128) "Renewable Energy Credit" or "Renewable Energy Certificate" means a certificate of proof, issued through the accounting system established by the Energy Commission, that one MWh of electricity was generated and delivered by a renewable energy source.

(129) "Renewed crediting period" means, for an offset project that has been renewed, the crediting period that begins at the conclusion of the initial crediting period.

(130) "Reserve price" see "Auction reserve price".

(131) "Retire" or "retired" or "retirement" means the action taken by the Executive Officer to invalidate a compliance instrument such that the allowance or offset credit may never be sold or otherwise used again.

(132) "Sector-based credit" means a credit issued under a sector-based crediting system once the crediting baseline for a sector has been reached.

(133) "Sector-based crediting system" means an emission reduction crediting mechanism based on a target established for a particular sector in a specified region. The crediting baseline is set at the sector level below

the business-as-usual level. Sector-based credits are issued based on the overall performance of the whole sector. No credits are issued until the crediting baseline is reached.

(134) "Serial number" means a unique number assigned to each compliance instrument for identification within the California Cap-and-Trade Market Tracking System.

(135) "Source" means greenhouse gas source as defined in this section.

(136) "Standardized method" means that general criteria and emission factors are used to determine activity baselines, GHG reductions, avoidances or sequestration, monitoring and verification procedures, offset uncertainty and activity-shifting and market-shifting leakage associated with offset projects.

(137) "Standardized methodology" means an offset quantification methodology that consists of standardized methods.

(138) "Stationary" means neither portable nor self propelled, and operated at a single facility.

(139) "Sulfur hexafluoride" or "SF_6" means a GHG consisting on the molecular level of a single sulfur atom and six fluorine atoms.

(140) "Supplemental project specific" means attributes and processes that are relevant for a certain type of project or activity.

(141) "Surrender obligation" means the quantity of verified reported emissions for which a covered entity must submit compliance instruments to ARB.

(142) "Sustainable development value" means a focus on the importance of activities that can achieve economic and social development in ways that do not exhaust a country's natural resources and meets the needs of the present without compromising the ability of future generations to meet their own needs.

(143) "Uncertainty" means the degree to which data or a data system is deemed to be indefinite or unreliable*.

(144) "Unilateral linkage" means the approval of compliance instruments from an external GHG emissions trading system or a GHG offset crediting system to meet surrender obligations under this article.

(145) "Verifiable" means, in the context of an offset credit, that a GHG reduction, avoidance or sequestration, or assertion thereof, is well documented and transparent such that it lends itself to an objective review by an accredited verification body.

(146) "Verification" means the process used to ensure that an operator's emissions data report or emission reductions data report is free of material misstatement and complies with ARB's procedures and methods for calculating and reporting GHG emissions*.

(147) "Verification body" means a firm or Air Quality Management District/Air Pollution Control District, accredited by ARB that is able to render a verification opinion and provide verification services for covered entities subject to this article*.

(148) "Verification opinion" means the final opinion rendered by a verification body attesting whether a covered entity's emissions data report is free of material misstatement and a qualifying statement whether the emissions data report conforms to the requirements of the MRR*.

(149) "Verification services" means services provided during verification, including but not limited to reviewing an operator's emissions data report, verifying its accuracy according to the standards specified in this article (MRR), assessing the operator's compliance with this article (MRR), and submitting a verification opinion to ARB*.

(150) "Verification statement". To be defined at a later date. This term would replace the definition for "verification opinion" in the MRR to support offsets.

(151) "Verifier" means an individual accredited by ARB to carry out verification services*.

(152) "Western Climate Initiative" or "WCI" means a collaborative effort of the U.S. states and Canadian provinces that comprise the WCI Region to reduce greenhouse gas emissions in their respective jurisdictions.

(153) "WCI Partner" or "WCI Partner jurisdiction" means any of the U.S. states and Canadian provinces whose governors and premiers have signed on to the Western Regional Climate Action Initiative Agreement and any successor agreements; as of publication of this Article, the WCI Partners included the Canadian provinces of British Columbia, Manitoba, Ontario, and Quebec, and the U.S. states of Arizona, California, Montana, New Mexico, Oregon, Utah and Washington.

(154) "Wholesaler" means, in the context of Natural Gas Liquids, any entity that purchases quantities of natural gas liquids for resale or distribution.

(155) "WREGIS" means Western Renewable Energy Generation Information System.

(b) For the purposes of Sections 95801 through 96550, the following acronyms apply:

(1) "ARB" means the California Air Resources Board.

(2) "CAR" means Climate Action Reserve.

(3) "CEC" means California Energy Commission.

(4) "CFR" means code of federal regulations.

(5) "CH_4" means methane.

(6) "CI" means carbon intensity.

(7) "CO_2" means carbon dioxide.

(8) "CO_2e" means carbon dioxide equivalent.

(9) "GHG" means greenhouse gas.

(10) "GWP" means global warming potential.

(11) "HFC" means hydrofluorocarbon.

(12) "IPCC" means Intergovernmental Panel on Climate Change.

(13) "ISO" means the International Organization for Standardization.

(14) "kW" means kilowatts.

(15) "kWh" means kilowatt hours.

(16) "LCFS" means Low Carbon Fuel Standard.

(17) "LPG" means liquefied petroleum gas.

(18) "MRR" means the Air Resources Board's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

(19) "MT" means metric tons.

(20) "MSW" means municipal solid waste.

(21) "MW" means megawatts.

(22) "MWh" means megawatt hours.

(23) "N_2O" means "nitrous oxide".

(24) "PUC" or "CPUC"means California Public Utilities Commission.

(25) "PFC" means perfluorocarbon.

(26) "SAR" means the Intergovernmental Panel on Climate Change's Second Assessment Report.

(27) "SCF" means standard cubic foot.

(28) "SF_6" means sulfur hexafluoride.

(29) "WREGIS" means Western Renewable Energy Generation Information System.

(30) "WCI" means Western Climate Initiative.

Subarticle 3. Applicability

§ 95810 Covered Gases

(a) This article applies to the following greenhouse gases: CO_2, N_2O, CH_4, SF_6, HFCs, PFCs and NF_3.

§ 95820 Covered Entities

This article applies to all of the entities identified below in (a) through (e).

(a) An entity within California that has one or more of the following processes or operations has a surrender obligation as specified in Subarticle 7 of this article:

(1) Stationary combustion;

(2) Cement manufacturing;

(3) Cogeneration;

(4) Petroleum refining;

(5) Hydrogen production;

(6) Aluminum production;

(7) Facility operators calcining carbonates;

(8) CO_2 supplier or transfer recipient;

(9) Electricity generation;

(10) Glass production;

(11) Iron and steel production;

(12) Lime production;

(13) Natural gas transmission and distribution;

(14) Nitric acid production;

(15) Oil extraction field operation;

(16) Gas extraction field operation;

(17) Production of industrial gases;

(18) Pulp and paper production; and

(19) Soda ash production.

(b) *Electricity Deliverers*. A first deliverer of electricity delivered to the California Electricity Transmission and Distribution System.

(c) *Transportation Fuel Deliverers*. A producer or importer of one or more of the following transportation fuels:

(1) California reformulated gasoline;

(2) Diesel fuel; and

(3) Biomass fuels.

(4) [Placeholder] for other fuels.

(d) *Natural Gas Deliverers.* An entity that distributes or uses natural gas in California as described below:

(1) A public utility gas corporation operating in California; or

(2) An end user in California that receives natural gas directly from an interstate or intrastate pipeline not included in Section 95820 (d)(1); or

(3) An importer of compressed natural gas or liquefied natural gas that is not delivered to a public utility gas corporation.

(e) *Deliverers of Natural Gas Liquids.* A wholesaler of natural gas liquids operating in California.

(f) [Placeholder] for additional entities.

Discussion of Concept - Explanation of Points of Regulation by Sector

Facilities: For large stationary sources of greenhouse gas emissions (those that meet or exceed the 25,000 metric tons CO_2e/year threshold) the covered entity will be the facility operator. Staff believes these operators are the entities most likely to have the authority to plan and implement greenhouse gas reduction projects at these large stationary sources. This point-of-regulation approach is identical to that taken in ARB's current mandatory reporting requirements.

Electricity Delivers: A covered entity will be responsible for the emissions associated with delivering power to the California electric grid (when those associated emissions that meet or exceed 25,000 metric tons CO_2e/year). As required by AB 32, emissions associated with both imported power and power generated in state will be covered.

In the case of generators of electricity within California, the covered entity will be the facility operator. This approach is analogous to the point-of-regulation described above for other large stationary sources of GHG emissions within California. For emissions associated with imported electricity, the covered entity will be the first entity to place power onto the California grid.

This hybrid point-of-regulation approach is referred to as the 'first deliverer' or 'first jurisdictional deliverer' concept and is very similar to that taken in ARB's current mandatory reporting requirements.

Fuel Deliverers: The emissions associated with fuel combustion that are not captured in the above categories will be treated by applying a point-of-regulation 'upstream' of where the combustion occurs. Due to the fact that ARB's current mandatory reporting requirements do

not include these emissions, the appropriate point-of-regulation for these emissions has received significant attention in the cap-and-trade stakeholder process to date (most explicitly in a meeting held on June 23, 2009). Based on feedback from stakeholders, staff is contemplating that the appropriate covered entities for these emissions should be as follows:

- California Reformulated Gasoline – Refiners (producers) and importers of refined products
- California Diesel Fuel – Refiners (producers) and importers of refined products
- Liquid Biofuels – Producers and importers
- Natural Gas – Local distribution companies (LDC), end users when receiving gas by means other than an LDC, and importers of compressed or liquefied natural gas
- Natural Gas Liquids (e.g. Propane) – Wholesalers

§ 95830 Inclusion Thresholds for Covered Entities

(a) The inclusion threshold for each covered entity is based on the subset of emissions that generate a surrender obligation for that entity. If an entity's annual reported emissions from the categories specified in Section 95950 equal or exceed the thresholds identified below, that entity is classified as a covered entity in the data year for which the threshold is reached and for all future years until the requirements of Section 95830(b) are met.

(1) *Operators of Facilities*. The threshold for an operator of a facility is 25,000 metric tons CO_2e for the 2008 data year and every data year thereafter.

(2) *Electricity Deliverers*. The threshold for an electricity deliverer is 25,000 metric tons CO_2e for the 2008 data year and every data year thereafter.

(3) *Fuel Deliverers.* The threshold for a fuel deliverer is 25,000 metric tons CO_2e for the 2011 data year and every data year thereafter.

(b) *Effect of Reduced Emissions on an Entity's Surrender Obligation.* A covered entity has a surrender obligation until such time that its annual reported emissions from the categories specified in Section 95950 fall below the 25,000 metric tons CO_2e threshold for six consecutive data

years. Such an entity has a surrender obligation when its annual emissions again exceed the threshold in a future data year.

§ 95840 Opt-In Participants

(a) This article applies to the following opt-in participants that hold compliance instruments:

(1) an entity, which is not a covered entity, that voluntarily retires a compliance instrument;

(2) an entity, which is not a covered entity, that holds, purchases, or sells a compliance instrument;

(3) an entity operating an offset project that is registered with ARB pursuant to Subarticle 13; and

(4) members of a trading exchange selected by the Executive Officer to conduct trading of California allowances.

(b) The following opt-in participants cannot hold compliance instruments:

(1) an entity verifying greenhouse gas emissions of a covered entity;

(2) an entity verifying greenhouse gas reductions, avoidances, or sequestration from an offset project; and

(3) an entity approved by the Executive Officer to operate an over-the-counter clearinghouse for the trading of offsets, or a trading facility on which all secondary and derivative trades of registered compliance instruments must be transacted.

Subarticle 4. Compliance Instruments

§ 95850 Compliance Instruments Issued by the Air Resources Board

(a) *California Greenhouse Gas Emissions Allowances*

(1) The Executive Officer will create California GHG Allowances pursuant to the schedule set forth in Subarticle 6.

(2) A California GHG Allowance is issued by the Executive Officer, who assigns a unique serial number to the allowance that indicates the

annual allowance budget from which the allowance originates and places this instrument into a Holding Account.

(b) *Offset Credits Issued by ARB*

(1) The Executive Officer will issue offset credits pursuant to Subarticle 13.

(2) Surrender of offset credits shall be subject to the quantitative usage limit set forth in Section 95970.

(c) Each compliance instrument issued by the Executive Officer represents a limited authorization to emit up to one metric ton of CO_2e of any greenhouse gas specified in Section 95810, subject to all applicable limitations specified in this article. No provision of this article may be construed to limit the authority of the Executive Officer to terminate or limit such authorization to emit. A compliance instrument issued by the Executive Officer does not constitute any form of property or confer any property rights.

§ 95860 Compliance Instruments Issued by Approved External Greenhouse Gas Emissions Trading Systems

Discussion of Concept – Compliance Instruments Issued by External Programs

This article may determine that compliance instruments issued by an external greenhouse gas emissions trading system (external GHG ETS) or GHG offset crediting system should be allowed to meet a surrender obligation in California's cap-and-trade program. The criteria that an external program would have to meet to be approved are defined in Subarticle 12. In future drafts instruments that may be approved at the outset of the program will be listed in this section along with any explicit limits or other relevant details associated with these instruments.

Examples of instruments that are not issued by ARB but may be approved to meet a surrender obligation according to criteria established in Subarticle 12 include:

- Allowances issued by other WCI Partner Jurisdictions;
- Offset credits issued by other WCI Partner Jurisdictions;
- Certified Emission Reductions issued under the United Nations' Clean Development Mechanism; and
- Climate Reserve tons issued by the Climate Action Reserve

Subarticle 5. Registration and Tracking System

§ 95870 Registration and Tracking System

(a) *Requirements for Registration*

(1) The registrant must designate an authorized account representative.

(2) The registrant must identify their relevant activities specified in Subarticle 3 which cause the registrant to be subject to this article.

(3) The registrant must disclose the following affiliations with other registrants:

(A) all affiliated entities also registering; and

(B) the identities of all entities holding compliance instruments for the benefit of the registrant.

(4) [Placeholder]: Provisions to be developed.

(b) *Registration Dates*

(1) A registrant that is a covered entity as of January 1, 2012 must register by March 31, 2012.

(2) A registrant that becomes a covered entity after January 1, 2012 must register within 90 days of notification that it is a covered entity.

(3) An opt-in participant registering subject to Section 95840 may register at any time after January 1, 2012.

(c) *Approval of Registration*

(1) An entity cannot hold a California compliance instrument until the Executive Officer has approved the entity's registration and created a holding account for the entity.

(2) An entity must maintain a current and valid registration in order to continue to hold California compliance instruments.

(d) *Creation of Holding and Compliance Accounts*

(1) When the Executive Officer approves registration for an entity qualifying as an opt-in participant under Section 95840(a), the operator

of the California Cap-and-Trade Market Tracking System will create a Holding Account for the registered entity.

(2) When the Executive Officer approves registration for a covered entity or an entity qualifying as an opt-in participant under Section 95840(a)(1), the operator of the California Cap-and-Trade Market Tracking System will create a Compliance Account for the registered entity.

(e) *Suspension, Revocation, or Restriction of Holding Accounts*

(1) The Executive Officer may revoke, suspend, or restrict the Holding Account of an opt-in participant for violations of this article.

(2) The Executive Officer may place restrictions on the Holding Account of a covered entity for violations of this article.

(f) *Accounts Under the Control of the Executive Officer*

The operator of the California Cap-and-Trade Market Tracking System will create and maintain the following accounts under the control of the Executive Officer:

(1) A Holding Account containing the serial numbers of compliance instruments to be distributed by the Executive Officer; and

(2) A Compliance Account to which compliance instruments will be transferred to be retired by the Executive Officer.

Subarticle 6. California Greenhouse Gas Allowance Budgets

§ 95890 Annual Base Allowance Budgets for Calendar Years 2012-2020

Discussion of Concept – Annual Base Allowance Budgets

This subarticle identifies how the 'cap', or schedule of annual allowance budgets, will be set. The example base budget numbers are presented here purely for illustrative purposes and will be revised as part of the continued stakeholder participation process on cap setting. These example numbers assume California has not yet linked with its WCI Partners. A spreadsheet describing how these numbers were derived is available at http://www.arb.ca.gov/cc/capandtrade/meetings/121409/capcalc.xls

This subarticle also creates a placeholder for a description of how the cap would be set in the

post-2020 timeframe.

In future drafts this subarticle could contain an adjustment to the base budget numbers to account for greenhouse gas emissions displaced by voluntary renewable electricity investments. A concept box describing this option is included below for stakeholder discussion on this topic.

(a) The base budgets of California GHG Allowances are set as described in Table 1. The Executive Officer may issue allowances from any base budget at any time by assigning them a unique serial number and placing them into an entity's Holding Account.

Table 1. CA GHG Allowances Base Budget

Time Period		Annual Base Budget (Millions of CA GHG Allowances)
1PPst Compliance Period	2012	197.230
	2013	193.379
	2014	189.527
2nd Compliance Period	2015	421.025
	2016	409.820
	2017	398.615
3rd Compliance Period	2018	387.410
	2019	376.205
	2020	365.000

EXAMPLE CAP NUMBERS ONLY

Cap numbers in this table are preliminary and for illustrative purposes only

(b) The Executive Officer may modify this schedule based on the criteria set forth in Section 95910.

§ 95900 Annual Base Budgets for Calendar Year 2021 and Subsequent Calendar Years

(a) [Placeholder]: Provisions to be developed.

§ 95910 Modifications to the Annual Base Budgets

(a) *Administrative Adjustments*

Discussion of Concept – Administrative Adjustments to the Base Allowance Budgets

The stringency of the cap trajectory, composed of the annual allowance budgets, is one of the strongest drivers of the economic impacts and environmental effectiveness of the cap-and-trade system.

Staff has considered the option of creating an adjustment mechanism to prevent any severe under- or over-allocation of allowances. Any correction could be done through either an administrative adjustment to the base budgets based on criteria such as those described below or through some other mechanism (see related Discussion of Concept – Cost Containment in Section 96040).

Mechanisms for administrative adjustments to the base allowance budgets would need to be based on a set of focused criteria that could be written into this regulation. To stimulate discussion staff identifies the following reasons why administrative adjustments might be warranted:

- If a revised estimate of expected emission levels conducted by ARB after the adoption of this regulation demonstrates that emissions from covered entities are expected to be significantly different than the base budgets for the initial years of coverage (197,230,261 metric tons of CO_2e for narrow scope sources in 2012 using the example numbers);
- If a change in scope or thresholds for covered entities is expected pursuant to Subarticle 3 or Subarticle 7; and
- If addition or suspension of a linkage pursuant to Subarticle 12 impacts the scope of the program.

If any mechanism for administrative modifications to base budgets were incorporated into the program design, a stakeholder process could be conceived to release revised annual budgets for public comment.

(b) *Adjustments to the Base Budgets to Account for Voluntary Investment in Renewable Sources of Electricity Generation*.

Discussion of Concept – Adjustments to the Base Allowance Budgets for Voluntary Investment in Renewable Sources of Electricity Generation

For each compliance period, an estimate of voluntary renewable electricity purchases could be determined and the base allowance budgets adjusted according to the following steps:

- **Ex-ante Estimate of Budget Adjustment Needed:** For each compliance period, an estimate of voluntary renewable energy expected to be generated in California could be determined by ARB using National Renewable Energy Lab (NREL) data. To do this, ARB could calculate a commensurate amount of allowances representing reduced emissions due to this expected level of operation of voluntary renewable energy projects. This amount of allowances could then be withheld from the base budget (earmarked and held in ARB's Holding Account).

- **Submission of Claims**: During the compliance period any party could be allowed to submit a claim of investment in voluntary renewable electricity including an estimate of megawatt hours produced for a given compliance period. This information could be verified by ARB using the Western Region Electricity Generation System (WREGIS) and tracking of California generated Renewable Energy Credits (RECs). ARB could determine a methodology for calculating the amount of emissions displaced by the claimed megawatt hours of voluntary renewable electricity.

- **Ex-Post True-up of Budget Adjustments:** At the end of a compliance period ARB could retire (from the earmarked allowances in its Holding Account) an amount equivalent to the displaced emissions from the claimed amount of renewable electricity generation. In no event could the size of this adjustment exceed a pre-determined percent of the total allowances from the compliance period in question. Any earmarked allowances that resulted from the overestimation of expected reductions vs. claimed reductions could be released in the subsequent compliance period.

Subarticle 7. Surrender Requirements for Covered Entities

Discussion of Concept - The Compliance Cycle

A diagram depicting the compliance cycle is presented below. This figure shows the intended interaction between timing of market operations such as issuance of allowances, reporting, verification and surrender of compliance instruments.

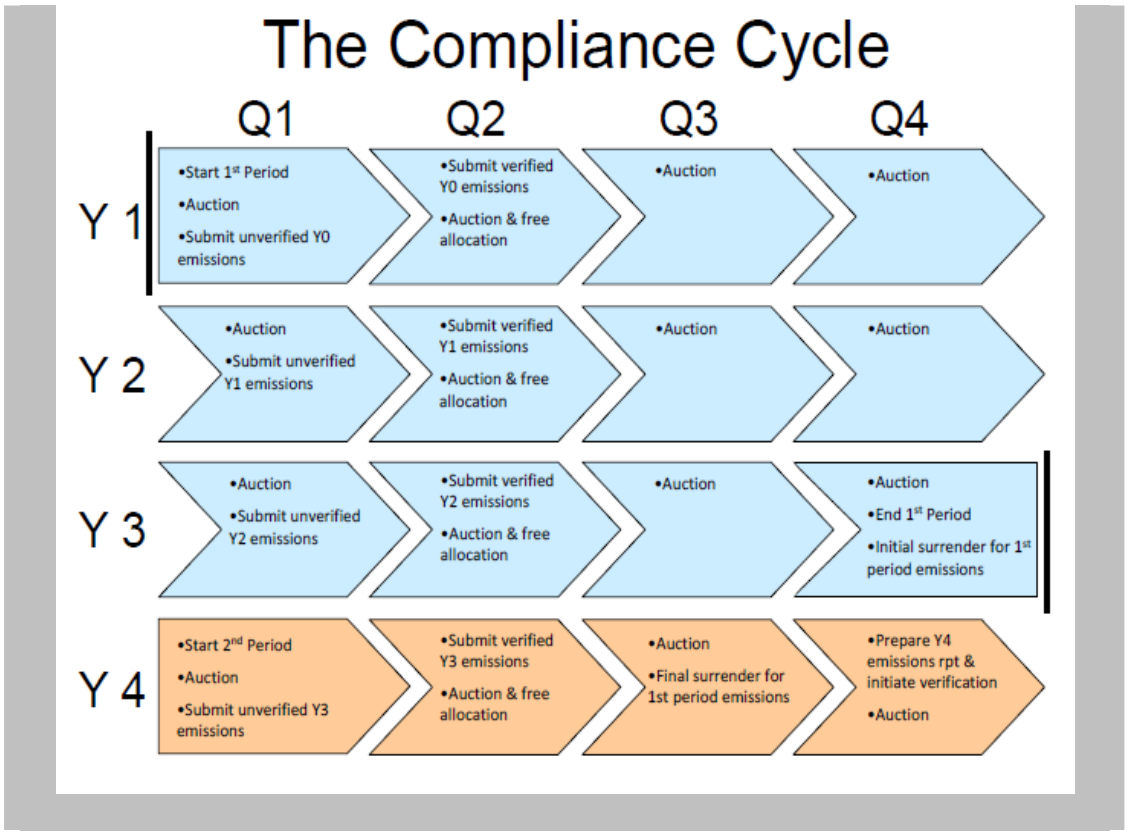
<u>Issuance of Allowances</u>: Allowances will be either auctioned or freely allocated. The compliance cycle could include quarterly auctions as well as one free allocation date in Quarter 2 of each year.

Reporting: All covered entities in the cap-and-trade system will report to ARB through the mandatory reporting process. The timing reflected here assumes revisions to the current schedule for mandatory reporting of greenhouse gases.

Verification: The program requires all annual emissions reports be verified by an independent accredited verifier. A verifier will check for inconsistencies in monitoring with the approved plan and any misstatement (omissions, misrepresentations and errors) in the emissions report. The verifier will produce an annual verification statement which must then be sent to ARB in Quarter 2 of each year. The proposed timing assumes revisions to the current verification schedule in the mandatory reporting requirements.

Surrender: Surrender of compliance instruments occurs in two steps. The first step (initial surrender) takes place in Quarter 4 of the third year of a compliance period. A true-up process (final surrender) occurs in Quarter 3 of the year following each compliance period. After final surrender covered entities will need to have submitted compliance instruments to match their verified emissions from all three years of the compliance period. Although not depicted in this diagram, ARB is considering requiring covered entities to cover a percentage of their reported emissions at specified intervals during the compliance period. This option is discussed further in the Discussion of Concept – Addressing Bankruptcy of Covered Entities box, found in Section 95960.

We seek feedback from stakeholders on the interactions between the timing of these compliance steps.



§ 95920 General Requirements

(a) *Reporting Requirements*.

Each covered entity identified in Section 95820 is subject to ARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

(b) *Record Retention Requirements*

Each covered entity must retain all of the following records for at least 10 years and must provide such records within 15 calendar days of receiving a written request from the Executive Officer:

(1) copies of all data and reports submitted to the Executive Officer under this article; and

(2) records used to calculate a surrender obligation.

(c) Records must be retained at the covered entity's designated place of business within California.

§ 95930 Duration of Compliance Periods

(a) The first compliance period starts on January 1, 2012 and ends on December 31, 2014.

(b) The second compliance period starts on January 1, 2015 and ends on December 31, 2017.

(c) The third compliance period starts on January 11, 2018 and ends on December 31, 2020.

§ 95940 Phase-in of Surrender Obligation for Covered Entities

Discussion of Concept - Potential Inclusion of Fuel Deliverers in 2012

The ARB stakeholder process for both the Scoping Plan and the cap-and-trade program has thus far discussed a phase-in, or staggered approach with respect to the timing of when covered entities would have a surrender obligation.[1]

The 'narrow scope' of the program has been discussed as including electricity deliverers and industrial facilities (when these entities exceed the 25,000 million metric ton CO_2e threshold). These narrow scope sources will be immediately covered when the program begins in 2012.

The 'broad scope' of the program has been discussed as including electricity deliverers, industrial facilities, and deliverers of fuels combusted in transportation, residential and commercial uses. The Scoping Plan and the WCI Design Recommendations both indicate that the obligation for fuel deliverers would begin in 2015.

Some stakeholders have commented that the program should begin with coverage of all these sources in 2012, rather than the phase-in approach taken in this PDR. ARB is requesting comment on whether to accelerate the upstream inclusion of providers of residential, commercial, and transportation fuels into the program based on a desire for a broader market and inclusion of all opportunities for lower-cost emissions abatement at the outset of the program. Rather than beginning inclusion in 2015, fuel deliverers could be included at the onset of the program in 2012.

[1] See page 31 of California's **Climate Change Scoping Plan** (December 2008). Available from: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm

§ 95950 Emission Categories Used to Calculate Surrender Obligations

(a) *Operators of Facilities*

(1) An operator of a facility has a surrender obligation for every metric ton of CO_2e of GHG emissions reported as either a process emission or a stationary combustion emission.

(2) Carbon dioxide emissions from the stationary combustion of biomass fuels are excluded from the calculation of a surrender obligation, with the following exceptions:

(A) [Placeholder]: Provisions to be developed.

(b) *Electricity Deliverers*

(1) An electricity deliverer has a surrender obligation for every metric ton of CO_2e of GHG emissions resulting from the generation of electricity that is delivered to the California Electricity Transmissions and Distributions System and reported as either a process emission at a facility within California, a stationary combustion emission at a facility within California or an emission associated with electricity imported into California from a jurisdiction where a GHG emissions trading system has not been approved by the Board according to Subarticle 12.

(2) Carbon dioxide emissions from the stationary combustion of biomass fuels are excluded from the calculation of a surrender obligation, with the following exceptions:

(A) [Placeholder]: Provisions to be developed.

(c) *Fuel Deliverers*

Discussion of Concept - Calculating Surrender Obligation for Fuel Deliverers

California's cap-and-trade program is a multi-sector policy that encompasses the emissions associated with stationary fuel combustion in the industrial, commercial and residential sectors as well as mobile fuel combustion in the transportation sector.

In general, staff aspires to create a consistent accounting framework for calculating a surrender obligation for GHG emissions associated with combustion of a given fuel type across all

possible end-uses of that fuel.

For calculating the surrender obligation for fuel deliverers in the cap-and-trade program, staff's starting point has been to consider the direct emissions that occur when that fuel is combusted. This approach forms the backbone of the accounting framework in ARB's current mandatory reporting requirements.

Due to ARB's work on a Low Carbon Fuel Standard (LCFS), staff has an appreciation for the necessity of creating the correct incentives to encourage low-lifecycle greenhouse gas fuel use choices. The most optimal way to ensure that the correct fuel use choices are encouraged is to develop a full lifecycle accounting framework (as the LCFS has done).[1]

The LCFS is a sector-specific transformational policy designed to create new opportunities for low-carbon alternatives to penetrate the market for transportation fuels.[2] The aggressive targets of this program mean that the LCFS is expected to be the dominant policy that will drive fuel use choices toward low-lifecycle GHG transportation fuels in California for the near term. This expectation may be an important consideration when evaluating possible accounting frameworks for transportation fuels in the cap-and-trade program.

Based on the pathways analyzed under the LCFS program, the fuels expected to play a significant role in the transportation sector in the near future include:

- Gasoline
- Diesel
- Liquid biofuels
- Electricity
- Hydrogen
- Natural gas

In general, gasoline, diesel, and liquid biofuels are primarily used in mobile applications; therefore they are grouped together as 'transportation fuels' for the purposes of this preliminary draft regulation.

The other fuels described above (electricity, hydrogen, and natural gas) are primarily used in

[1] For a recent high-level overview of this topic staff suggests the following:
Fixing a Critical Climate Accounting Error Searchinger et. al., Science, Vol. 326. no. 5952, pp. 527 – 528 (October 2009) http://www.sciencemag.org/cgi/content/short/326/5952/527

[2] For a discussion on the interaction between cap-and-trade and low carbon fuel standards staff suggests the following:
Policy Options for Reducing GHG Emissions from Transportation Fuels Pew Center on Global Climate Change (August 2009)
http://www.pewclimate.org/brief/transportation-fuels-policy-options/Aug2009

Addressing Biofuel GHG Emissions in the Context of a Fossil-Based Carbon Cap DeCicco University of Michigan (October 2009)
http://www.greencarcongress.com/files/Biofuels%20in%20Context%20jmd%20Oct%202009.pdf

stationary applications, and are thus not included in the category of transportation fuels. Treatment of the emissions associated with use of these fuels would not be transportation-specific; rather, emissions from transportation use of these fuels would be accounted for consistently across all end-uses.

Staff recommends that the surrender obligation for all applications of electricity, hydrogen, and natural gas be assessed in the following ways, without any lifecycle accounting:

- Surrender obligation for emissions from electricity generation would be calculated for direct emissions at the point of generation by the electricity deliverers (as described above).
- Surrender obligation for emissions from in-state production of hydrogen would be calculated from the direct emissions at the production facility. (Treated as any other large stationary source of GHGs as described above).
- Emissions from the combustion of natural gas will be covered at upstream fuel providers or at the large stationary sources. The providers of natural gas will be responsible for the GHG emissions calculated from the carbon content of the fuel they sell multiplied by the quantity sold to all end-users who do not have a direct surrender obligation.

There are several options for calculating the surrender obligation for transportation fuels (gasoline, diesel, and biofuels):

1. Surrender obligation could be based on the net “carbon content” of the fuel. In this case, providers of gasoline and diesel would have an obligation for the direct combustion emissions of the fuel they sell. Biofuel deliverers would have no obligation for biofuels (under the assumption that biofuel carbon content is offset by feedstock carbon sinks). This approach would be consistent with the emissions accounting framework proposed for biomass derived fuels combusted at stationary sources.
2. Surrender obligation would be based on the direct combustion emissions for gasoline, diesel, *and* biofuels. Obligation for transportation fuel providers would be based on the ‘tailpipe’ emissions of fuels.
3. Surrender obligation would be based on the net "carbon content", as specified above, plus some portion of the fuel’s lifecycle emissions, such as direct and indirect land use emissions.
4. Surrender obligation would be based on the lifecycle carbon intensity factor (as determined by the LCFS) for gasoline, diesel, and biofuels. To avoid double-counting the same emissions from covered entities in the fuel pathway, the already-covered portion of the fuel production pathway would need to be netted out from the emissions factor.

ARB is soliciting input on the following questions related to the options presented above:

- What is the appropriate policy to address the portions of fuels’ lifecycles that are not directly covered in the cap-and-trade program?
- What is the relative importance of fuel-switching incentives, consistency

across sectors and end uses, scalability to a broader program,and reporting and administrative complexity?

§ 95960 Timing for Calculation of Covered Entity's Surrender Obligation

(a) An entity, that is a covered entity at the start of a compliance period, must calculate its surrender obligation for the entire compliance period.

(b) An entity, that is not a covered entity at the start of a compliance period but becomes a covered entity during the first or second year of a compliance period, must calculate its surrender obligation from the first day of the year in which it exceeded the threshold through the last day of the compliance period.

(c) An entity, that is not a covered entity at the start of a compliance period but becomes a covered entity during the third year of a compliance period, must calculate its surrender obligation from the first day of the year in which it exceeded the threshold through the last day of the next compliance period.

Discussion of Concept – Addressing Bankruptcy of Covered Entities

Compliance entities could emit GHGs and then declare bankruptcy or otherwise cease operation before fulfilling their surrender obligations at the end of the compliance period. Any compliance instrument that an entity owns at the time of bankruptcy could be included in their collection of assets for bankruptcy proceedings, thereby prohibiting claims by ARB. Under this scenario, this form of default would threaten ARB's ability to meet the cap.

To address this, ARB is evaluating two policy options which involve modifying the timing of surrender calculations contained in Section 95960. Neither option reduces the probability of bankruptcy occurring, but instead serves to reduce the magnitude of any potential default.

Option 1: Require covered entities to cover a portion of their annually-reported emissions by retiring compliance instruments at specific periodic intervals.

ARB could hedge against possible bankruptcies while minimizing the loss of flexibility to covered entities by requiring them to cover a percentage of their reported emissions at intervals during the compliance period. This "partial true-up" reduces the magnitude of any default of the surrender obligation.

The partial true-up has the advantages of being easy to implement and reducing the shortfall of compliance instruments in the system created by bankruptcy. The main disadvantage is that it reduces compliance flexibility afforded by the three-year compliance period. It is also inconsistent with the current WCI program design.

Option 2: Shorten the compliance period to one year.

Much of the concern voiced on the bankruptcy issue involves the three-year compliance period. ARB could instead rely on a shorter compliance period to an annual surrender. This option would remove some of the flexibility afforded by the three-year compliance period. However, flexibility could be retained by allowing covered entities to borrow allowances issued for the next annual compliance period. This approach is inconsistent with the Scoping Plan and the current WCI program design.

§ 95970 Quantitative Usage Limit on Designated Compliance Instruments

(a) Each covered entity must surrender compliance instruments in accordance with the following equation:

O/S must not be greater than or equal to L

Where:

O = Total number of offset credits issued and approved by ARB and all other compliance instruments that are designated as subject to this quantitative usage limit pursuant to Subarticle 4.

S = Covered entity's surrender obligation.

L = Quantitative usage limit, set at 0.0399.

Discussion of Concept – Quantitative Usage Limit on Offsets and other Similar Compliance Instruments

The Scoping Plan includes a limited use of offset credits in the cap-and-trade program. The Scoping Plan highlighted the need for cost-containment while maintaining a strong incentive for emission reductions from covered entities to ensure California transitions to a clean-energy, low-carbon economy.[3] The specific policy direction provided by the Plan was that the use of offsets (and allowances from other systems unilaterally linked to California's program) should be limited to no more than 49 percent of the required emission reductions in the cap-and-trade

[3] See page 37 of the **Climate Change Scoping Plan**

program.[4]

Staff believes that the most appropriate way to implement this policy goal is through a 'quantitative usage limit' on offsets. This means that the use of offsets will be fixed as a percentage of the total surrender obligation for each covered entity (the remaining obligation must be met by surrendering allowances). One potential approach by which the total emission reductions expected from the program can be translated into a quantitative usage limit is detailed in a spreadsheet developed by ARB staff and available here: http://www.arb.ca.gov/cc/capandtrade/meetings/121409/capcalc.xls

Using these example numbers staff calculates that allowing approximately 4 offset credits to be surrendered for every 96 allowances surrendered will ensure that the majority of emission reductions are made directly by covered entities. This ratio could change based on WCI membership.

Additional complexities are conceivable for calculating this limit. In the context of the WCI, there have been proposals for distributing the right to use the limited amount of offsets among covered entities. A framework for 'carry-over' of any difference between expected offset use and actual offset use to later compliance periods has also been discussed by the WCI.[5]

§ 95980 Surrender of Compliance Instruments by a Covered Entity

(a) A covered entity must surrender one compliance instrument for each metric ton of CO_2e of GHG emissions calculated pursuant to this subarticle.

(b) A covered entity must transfer from its Holding Account to its Compliance Account a sufficient number of valid compliance instruments to meet the surrender obligation set forth in Section 95950. This transfer shall be completed within the time period specified in Section 95980(e). Each compliance instrument placed in the Compliance Account must meet all

[4] The appendix of the Scoping Plan and the WCI design document clarified that this reduction should be defined relative to initial emission levels (e.g., 2012 emission levels) rather than against a business-as-usual emission trend for future years. See page 38 of the **Design Recommendations for the WCI Regional Cap-and-Trade Program** and page C-22 of the **Scoping Plan Appendices Volume I: Supporting Documents and Measure Detail** available from: http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf

[5] See **WCI Offset Limit Recommendation Paper: CSAD Task 5 Committee Recommendation to Partners** (October 2009) http://www.westernclimateinitiative.org/component/remository/func-startdown/145/

the requirements of this article, and the instruments in the aggregate must meet the requirements of the quantitative usage limit specified in Section 95970.

(c) A compliance instrument transferred into a Compliance Account during a compliance period may not be removed until after the surrender obligation for that compliance period is fulfilled pursuant to Subsection 95980(g).

(d) Entities that become covered entities in the last year of a compliance period are not obligated to surrender compliance instruments until the surrender deadline applicable to the subsequent compliance period.

(e) *Deadline for Initial Surrender*

No later than December 31 of the third year of a compliance period, the covered entity must transfer a sufficient number of compliance instruments into its Compliance Account to equal the sum of:

(1) its verified reported emissions over the first two years of the compliance period, and

(2) [Placeholder]: Specific language to be determined. A percentage of the annual average emissions calculated over the first two years of the compliance period.

(f) *Data Review, Reconciliation and Final Surrender*

(1) When a positive verification opinion for the third year of the compliance period is received, the Executive Officer will review the verification opinion and the validity and ownership of the compliance instruments surrendered.

(2) If the review determines the covered entity has surrendered excess valid compliance instruments, the Executive Officer will transfer the excess compliance instruments back into the covered entity's Holding Account.

(3) If the Executive Officer determines that an entity has failed to surrender a sufficient number of valid compliance instruments for its verified reported emissions:

(A) the covered entity must make one or more remedial transfers of compliance instruments into the Compliance Account to correct the deficit; and

(B) these remedial transfers must be completed no more than 30 days from the date the Executive Officer notifies the entity of the deficiency.

(4) Failure to make sufficient remedial transfers will constitute a single, separate violation of this article for each day after the 30-day deadline that sufficient remedial transfers have not been made.

(g) When the Data Review and Reconciliation Process has concluded, the Executive Officer will:

(1) retire the serial numbers of the valid compliance instruments surrendered; and

(2) inform systems to which California is linked pursuant to Subarticle 12 of the retirements.

Subarticle 8. Distribution of Allowance Value

Discussion of Concept - Informational Placeholder on Allowance Allocation

What is Allowance Value?
Conceptually allowance value is the economic worth of allowances issued by ARB. Distribution of this value is necessitated by the choice of cap-and-trade as a policy tool. This value can be embodied in the form of allowances themselves, or as proceeds resulting from the sale of allowances at auction.[1]

This Draft Contains a Placeholder for Allocation Decisions
In this draft, staff's goal is to provide stakeholders with additional information about allocation

[1] For more information about the 'allowance value' concept see the following references:
Allocation of Allowances in a Potential Greenhouse Gas Cap-and-Trade Program (ARB staff, March 2008) http://www.arb.ca.gov/cc/scopingplan/pgmdesign-sp/meetings/031708/pgrmdsgn_allocationpaper_pm_3_17_08.pdf

Distribution of Allowances Under the American Clean Energy and Security Act (PEW Center on Global Climate Change, August 2009) http://www.pewclimate.org/policy-memo/allowance-distribution-under-waxman-markey

issues, describe the relationship of the allocation process to related concepts such as recognition of early action, and provide an overview of the status of the Economic and Allocation Advisory Committee (EAAC) process.

In subsequent drafts, this subarticle will contain a detailed proposal delineating who would receive allowance value. Subarticles 9 and 10 will detail the mechanisms by which this value will be distributed to the intended recipients.

In crafting the allocation proposal in subsequent drafts staff will consider the recommendations of the EAAC and all public comment received during that process.[2] Additionally, after the EAAC process concludes, ARB staff will continue the opportunity for public comment on this topic.

Background on the EAAC Process

During the adoption of the Scoping Plan, the Board directed ARB to solicit expert input on key questions related to the distribution of allowance value[3]. In response, ARB and the California Environmental Protection Agency created the Economic and Allocation Advisory Committee.

This Committee has been deliberating, through a public process, about the potential claims to allowance value and the mechanisms by which allowance value could be distributed. The committee is in the process of finalizing a report containing a detailed recommendation on these issues. The first draft of this report was released on November 4th. The final report is expected in January 2010. [4]

What are the Potential Claims on the Allowance Value?

The EAAC process has identified three primary claims on allowance value:

- **Compensation for Harm**: Some allocation of allowance value may be justified to compensate those disproportionately impacted by the imposition of the cap-and-trade program and/or historically impacted by air pollution. Compensation debates include discussions of where the impact from the carbon price imposed by the cap-and-trade program is felt. This may be thought of as an examination of who bears the end costs and who receives end benefits from the implementation of this cap-and-trade program. The topic of compensation also encompasses discussions of

[2] For more information on the Economic and Allocation Advisory Committee Process see: http://www.climatechange.ca.gov/eaac/index.html

[3] See page 9 of the Scoping Plan Board Resolution (Resolution 08-47) available from: http://www.arb.ca.gov/cc/scopingplan/document/final_sp_resolution.pdf and page 36 of the Climate Change Scoping Plan available from: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

[4] Drafts of the EAAC report are available from: http://www.climatechange.ca.gov/eaac/documents/eaac_reports/index.html

[5] See pages 69-71 of ARB's Climate Change Scoping Plan (December 2008).

[6] See pages 35-36 of the Scoping Plan for a discussion on auction levels.

how the allowance value could potentially be used to minimize impacts on sectors at risk of emissions leakage.

- **Dividends and/or Tax Reductions to the General Public**: Allowance value could be provided to the public in the form of per-capita rebates or "dividends", or as cuts in individual income tax rates. A justification offered for the former is the assumption that all Californians have an equal claim on the common pool resource embodied by the allowances. Supporters of this claim argue that the allowance value is inherently owned by Californians and should be used for the benefit of this group. One justification for the latter is that lower tax rates help reduce the inefficiencies caused by the tax system and thus help boost after-tax incomes by more than the magnitudes of the tax reductions.
- **Financing Investments to Achieve the Goals of AB 32 and Related Public Spending Programs**: The third claim on allowance value is based on the argument that targeted public spending programs are necessary to achieve the requirements set forth in AB 32.

The Scoping Plan contained an inclusive list of potential uses of allowance value. The uses contained in this list can easily be placed into one or more of the three categories described above.[5]

<u>What are Possible Mechanisms for Distribution of Allowance Value?</u>
The EAAC deliberation to date has focused on two primary mechanisms of distribution of allowance value—free allocation of allowances and auction.

Inherent in the discussion of free allocation mechanisms thus far has been the assumption that the free allocation is being done primarily to compensate covered entities. This focus is to some extent historical, arising from the allocation choices made in other cap-and-trade programs such as the US EPA Acid Rain Program, RECLAIM and the first phase of the European Union's Emission Trading Scheme. Much academic work has been done to consider the implications of the different types of free allocation mechanisms to covered entities (e.g., grandfathering vs. benchmarking, updating vs. fixed, etc.).

In principle, free allocation mechanisms could also be designed to distribute allowance value to non-covered entities to address any of the claims outlined above. Entities receiving value in this fashion would then become one type of 'opt-in' participant in the California carbon market.

The WCI Design Recommendations called for a minimum of ten percent of the allowances from the first compliance period to be auctioned. The Scoping Plan stated that a transition to a 100 percent auction (with auction proceeds going to further the policy objectives of California's climate change program) was a worthwhile goal. ARB expects that California will auction significantly more than the WCI minimum levels.[6]

<u>Recognition and Appropriate Credit for Early Action by Covered Entities Relationship to Allocation Mechanisms</u>
Staff expects that the EAAC recommendations will treat the issue of how allocation choices

impact the recognition and appropriate credit for early action mandated by AB 32. The Scoping Plan guaranteed that the method for distributing allowance value chosen would not create a disincentive for early action. Further, the Plan discussed the potential of setting aside allowances from the initial compliance period to reward covered entities that make voluntary reductions prior to 2012.

Subarticle 9. Auction Design and Mechanisms for Distributing Auction Proceeds

§ 96030 Format for Auction of California GHG Allowances

Discussion of Concept – Format of Auction

ARB staff has actively researched auction design and sought public input on auction design features at a March 23, 2009 public meeting. Staff has also participated in the WCI auction design process. ARB staff anticipates making a recommendation after receiving EAAC recommendations on auctions and allocations.

The staff presentation at the March 23 stakeholder meeting may be accessed at http://www.arb.ca.gov/cc/capandtrade/meetings/032309pm/mar232presentation.pdf.

§ 96040 Auction Operation and Registration

(a) The Executive Officer may serve as auction operator or select an entity to serve as auction operator.

(b) The auction operator will:

(1) announce the schedule and administrative process for the auction;

(2) process applications and bids; and

(3) determine the winning bids and auction price or prices and inform the Executive Officer.

(c) At least 90 days before each auction the auction operator will provide notice of the following information to all registered entities:

(1) the date, time, and location of the auction;

(2) application instructions for applying to participate in the auction;

(3) the procedures for conducting the auction;

(4) the administrative requirements for participation; and

(5) the number of CA GHG Allowances that will be available at each auction.

(d) *Auction Registration Requirements*

(1) An entity that intends to participate in the auction must complete an auction registration at least thirty days prior to the auction.

(2) An entity registering as an auction participant must already be registered as a covered entity or opt-in participant as provided in Section 95840.

(3) The Executive Officer may deny participation to an entity whose Holding Account has been revoked, suspended, or restricted.

(e) [Placeholder]: ARB staff will make recommendations on the following auction design areas pending recommendations from the EAAC on auctions.

(1) Participation limits.

(2) Purchase limits.

(3) Submission of bids.

(4) Method of determining auction price or prices and awarding allowances.

(5) Use of a demonstration of financial security, and its calculation, as a bid guarantee to ensure financial integrity of the auction.

(6) Publication of information on auction results.

(f) Following each auction, the Executive Officer will:

(1) approve and publish the auction results;

(2) process financial transactions for winning bids and deposit the proceeds in the Air Pollution Control Fund;

(3) transfer CA GHG Allowances won by each entity to its Holding Account; and

(4) inform each approved external GHG emissions trading system and the associated tracking system of the allowances purchased at auction.

Discussion of Concept – Cost Containment

Cost containment mechanisms attempt to mitigate prices above a ceiling price or below a floor price. This is sometimes referred to as setting a "price collar." There are two types of price collars. "Hard collars" set maximum and minimum price controls. "Soft collars" adjust supply of compliance instruments in the market once price triggers are reached. ARB is considering four "soft collar" options which would activate above a ceiling price.

The first option is to use a reserve account to release additional allowances when prices are high. This mechanism fits within the PDR design but provides only limited cost containment.

The second option is to relax the quantitative usage limit on offsets. This increases the number of offsets which may be used, but at a cost of obtaining local emission reductions.

The third option is to expand the list of acceptable offset project types beyond what is currently discussed by the PDR. This option also increases the supply of available offsets at a possible cost to offset integrity.

The fourth option is to allow use of allowances from the next compliance period ("borrowing.") This increases the supply of allowances, but creates the risk of "cascading" shortages in future compliance periods.

Staff is considering options for setting a "soft" price floor. Among these options are funding a reserve through part of the annual allowances created, and using an auction reserve price to fund a reserve through allowances remaining unsold if the auction settles at a reserve price. ARB staff anticipates developing further provisions in this subarticle after receiving the recommendations of the EAAC on auctions and allocations.

Staff has focused on three key issues in developing these options:

1. Any attempt at price mitigation could limit price discovery and adjustment which are main benefits of a cap-and-trade program.
2. The mechanism must respect the integrity of the cap by not including a "safety valve."
3. The options may require changes in the PDR on offset quantitative limits, offset quality, and linking.

Subarticle 10. Free Allocation Mechanism

[Placeholder]: Provisions to be developed.

Subarticle 11. Trading and Banking

§ 96080 Trading

(a) *General Prohibitions on Trading*. The following practices involving any California compliance instruments are prohibited:

(1) a trade involving a counterparty whose identity is not disclosed to the Executive Officer;

(2) a trade or a series of trades that manipulates the value of a published market index;

(3) misreporting trade information used to calculate a published market index; and

(4) a trade involving, related to, or associated with:

(A) any manipulative or deceptive device in violation of this article;

(B) a corner or an attempt to corner the market for a regulated instrument;

(C) fraud, or an attempt to defraud any other entity;

(D) a false, misleading, or inaccurate report concerning information or conditions that affects or tends to affect the price of a regulated compliance instrument;

(E) an application, report, statement, or document required to be filed pursuant to this article, a statement which is false or misleading with respect to a material fact, or which omits any material fact required to be stated therein or necessary to make the contents therein not misleading; or

(F) any trick, scheme, or artifice to falsify or conceal a material fact, including use of any false statements or representations, written or oral, or documents made or provided to an entity on or through which transactions in regulated instruments occur, are settled or are cleared.

(b) *Holding Limit.* The Executive Officer will establish a market holding limit calculated as the maximum percentage of outstanding California

compliance instruments that may be held by a registrant or a group of affiliated registrants.

(1) In making this determination:

(A) holdings of affiliated entities will be considered as being held by a single entity; and

(B) beneficial holdings by an agent will be considered as part of the holding of the owner.

(2) A separate limit may be set for financial intermediaries holding instruments beneficially for other entities.

(c) *Restriction on Market Participants.* The Executive Officer may impose the following restrictions on market participants that violate market rules specified in this subarticle:

(1) the number of compliance instruments owned by a covered entity or opt-in registrant may be restricted to an amount sufficient to cover its reported emissions;

(2) covered entities may be subject to annual surrender requirements; and

(3) the registration of opt-in registrants under Section 95870 may be suspended or revoked.

Discussion of Concept – Use of Trading Facilities

Use of a Selected Trading Facility for Secondary and Derivative Market Transactions for CA GHG Allowances

ARB needs comprehensive and timely information on compliance instrument transactions in order to monitor the market. Staff believes the information available to regulators from exchange trading of secondary and derivative products is likely to be sufficient for monitoring trades on those venues. One issue relating to further development of this subarticle is how ARB might obtain similar levels of information for bilateral trades and non-exchange traded derivatives.

Staff is considering whether ARB should promote the trade of CA GHG Allowances on trading facilities selected by the Executive Officer. Selected trading facilities might be registered with ARB in order to obtain agreement on information disclosure. Members of a selected trading facility could be registered as opt-in participants.

The registration agreement might require the selected trading facility to report all transactions to the Executive Officer.

- The registration agreement could specify the frequency and content of transactions reporting. Staff expects reporting to allow real-time monitoring of market prices and ownership.
- The Executive Officer could then review transactions for compliance with ARB regulations and approve the transfer of serial numbers of the instruments between Holding Accounts of the counterparties.

These exchanges are regulated by the Commodity Futures Trading Commission (CFTC), which establishes market rules on position limits and reporting which are of interest to ARB. Federal regulation may limit any arrangements ARB could make directly with exchanges. ARB will also explore the potential to establish information-sharing arrangements directly with the CTFC.

ARB is interested in working with stakeholders on transaction disclosure rules for bilateral trades, with the objective of obtaining the same level of information that is available for exchange-based trades.

Discussion of Concept – Use of Clearing Facilities

Use of a Selected Clearing Facility for Bilateral Trades of Offset Credits

Offsets present a unique problem in trading since there is a possibility that the GHG reductions could be reversed. Staff does not have a reliable estimate of how likely reversals will be, only that they could occur. Staff is recommending that the covered entity submitting offsets that are found on review to be deficient be held responsible for replacing them. Staff expects that market participants will deal with the issue through "make whole" contracts between offset developers and purchasers. It is likely that these contracts may not be standardized when the system begins operation, and thus the contracts cannot be traded on exchanges. Staff therefore recommends that bilateral trades of offset contracts be cleared through a commercial clearing mechanism to maintain contract documentation until standardized contracts are developed suitable for exchange trading.

§ 96090 Banking

(a) *Allowances issued for a current or previous compliance period*. A CA GHG Allowance or an allowance approved pursuant to Subarticle 12 may

be held or used to meet a surrender obligation if it has been issued from an allowance budget year within a current or previous compliance period.

(b) *Allowances issued for a future compliance period*. A CA GHG Allowance or an allowance approved pursuant to Subarticle 12 may be held but not be used to meet a surrender obligation if it is issued from an allowance budget year within a future compliance period.

(c) *Voluntary Retirement of Compliance Instruments*. Any entity may voluntarily submit any compliance instrument to the Executive Officer for retirement.

(d) *Offset Credits.* An offset credit issued or approved by ARB pursuant to Subarticle 13 may be held or used to meet a surrender obligation if it has been verified.

(e) *Expiration of Compliance Instruments*. A California compliance instrument does not expire and is not removed from the tracking system until:

(1) it is surrendered by a covered entity and retired by the Executive Officer;

(2) an entity voluntarily submits the instrument to the Executive Officer for retirement; or

(3) the instrument is retired by an approved external GHG emissions trading system to which the California system is linked as provided in Subarticle 12.

Subarticle 12. Linkage to External Trading or Offset Crediting Systems

§ 96150. General Requirements

(a) Compliance instruments issued by an external greenhouse gas emissions trading system (GHG ETS) or a greenhouse gas offset crediting system may be used to meet the requirements of this article only if the GHG ETS or GHG offset crediting system has been approved by the Board as provided in this subarticle.

(b) To be linked to the California cap-and-trade system established by this article, an external GHG ETS or GHG offset crediting system must enter into a Memorandum of Understanding (MOU) as provided in Section 96190.

§ 96160. Requirements for Approval of External Greenhouse Gas Emissions Trading Systems

(a) *Emissions Trading Systems for Purposes of Linkage.* In order for an external GHG ETS system to be linked to the California cap-and-trade system, the Board must approve the external GHG ETS for purposes of linkage. The Board must also specify if the link between California and the external GHG ETS is a unilateral or bilateral linkage. Compliance instruments issued by an external GHG ETS that is approved by the Board may be used to meet a surrender obligation. The Board will make the determination for approval following its evaluation of such a system based on the requirements described in this subarticle, and after providing public notice and an opportunity for public comment.

(b) *Design Requirements for External Greenhouse Gas Emissions Trading Systems*. In order for an emissions trading system to be approved for purposes of linkage, an external GHG ETS must:

(1) be operated by a sub-national, national or supra-national government;

(2) commit to a binding and annually declining aggregate total greenhouse gas emissions cap that covers one or more economic sectors in the system boundary;

(3) include mechanisms that prevent allowances from being issued that would exceed its aggregate total greenhouse gas emissions cap;

(4) contain mechanisms and provisions to ensure that offset credits accepted into the system provide equal or greater assurance of the integrity of such offset credits to that required by Subarticle 13;

(5) restrict the use of offset credits comparable to the quantitative usage limit established in Section 95970;

(6) provide for comparable monitoring, reporting, verification, compliance, and enforcement of its greenhouse gas emissions and emission reductions to that set forth in this article;

(7) provide for compliance instruments that, when voluntarily retired or used to meet a surrender obligation in any GHG ETS, are disqualified from further use in any system.

(c) *Requirements for External GHG ETS for Registration, Market Tracking, Enforcement and Information Transfer*. In order for an emissions trading system to be approved for purposes of linkage:

(1) The system must have a comprehensive registration requirement for all market participants and be capable of transferring information on all registrants between systems. The system must be able to:

(A) transfer between systems information on creation, approval, and retirement of compliance instruments;

(B) serve as a permanent repository of ownership information on all transactions involving approved compliance instruments from the time they are created or approved to the time they are retired, including prices, counter-parties, and other documentation; and

(C) provide a complete history of ownership of all approved compliance instruments to the agencies in linked systems that may retire the instruments.

(2) The system must have an enforcement mechanism that can:

(A) provide general market surveillance, identifying suspect transactions, undertaking investigations and enforcement actions;

(B) ensure consequences for noncompliance are substantially the same in all linked systems;

(C) respond in a timely manner to requests by enforcement agencies in linked systems for information on market participants under investigation by those agencies; and

(D) transfer between systems in a timely manner a complete record of all enforcement actions undertaken by the system's jurisdictional enforcement authority.

(3) The system must be capable of transferring between systems market sensitive information necessary to monitor market trends on a regional basis, including:

(A) prices, aggregate emissions, positions of major market participants and expected issuance of offset credits; and

(B) information between linked systems that can be released to the public in a coordinated and consistent manner.

§ 96170. Requirements for Approval of GHG Offset Crediting Systems

(a) In order for a GHG offset crediting system to be approved for purposes of linkage, the system must:

(1) be a regulatory or voluntary GHG offset crediting system;

(2) the system operator must enter into a MOU with ARB as provided in Section 96190;

(3) have publicly published standards, quantification methodologies, and protocols that require that credited GHG emission reductions, avoidances, or sequestration are real, additional, quantifiable, permanent, verifiable, and enforceable as defined in Article 5 (or in Section 96220);

(4) have developed and approved offset quantification methodologies and standards for the relevant approved project types pursuant to Section 96240 that provide equal or greater assurance of the integrity of such offset credits to that required by Subarticle 13;

(5) have developed through a public process standards, quantification methodologies, and protocols for offset project types;

(6) require that all greenhouse gas emission reductions or avoidances, or greenhouse gas sequestrations be verified by an accredited third-party verification body;

(7) require that each issued offset credit is registered in a publicly accessible registry, with individual serial numbers assigned to each offset credit;

(8) be capable of transferring information on all transactions between systems;

(9) have a tracking system which serves as a repository of issuance, ownership, and retirement information on all offset credits it issues;

(10) ensure that no offset credit is issued for an activity that the program administrator or representative, has funded, solicited, or served as a fund administrator for the development of an offset project that resulted in offset credits issued under its system; and

(11) ensure that an offset credit is disqualified from further use in any system when that credit is voluntarily retired or used to meet a surrender obligation in any program.

§ 96180. Types of Linkage

(a) *Unilateral Linkage.* A unilateral linkage must be approved by the Board prior to linkage. Once a unilateral linkage is established, compliance instruments issued by a Board approved external GHG ETS or GHG offset crediting system may be used to meet a surrender obligation. Under a unilateral linkage, the use of compliance instruments issued by a Board approved external GHG ETS or GHG offset crediting system are subject to the quantitative usage limit specified in Section 95970.

(b) *Bilateral Linkage*. A bilateral linkage must be approved by the Board. Once a bilateral linkage is established, compliance instruments issued by

a Board approved external GHG ETS or GHG offset crediting system may be used to meet a surrender obligation. An allowance issued by a Board approved external GHG ETS is not subject to the quantitative usage limit specified in Section 95970. An offset credit issued by a Board approved external GHG ETS or GHG offset crediting system is subject to the quantitative usage limit specified in Section 95970.

§ 96190. Agreement

(a) In the case of either a unilateral and bilateral linkage, the Executive Officer shall enter into a MOU with a Board approved external GHG ETS or GHG offset crediting system to ensure that such program:

(1) is notified of ARB's approval under this subarticle;

(2) provides appropriate enforcement provisions including verification of emissions, verification of offset credits based on approved offset quantification methodologies, sufficient tracking and registration systems and related infrastructure that record and track emission and compliance instruments; and

(3) provides for the disqualification of the issued compliance instrument for subsequent use under any system, whether such use is a sale, exchange, or submission to meet a surrender obligation.

§ 96200. Eligible Allowance Vintages

(a) The Board shall determine which vintages for allowances issued by an external GHG ETS may meet a surrender obligation under this article.

§ 96210. Suspension of Linkage

Discussion of Concept – Suspension of Linkage

ARB needs to develop criteria for suspending linkages to jurisdictions or programs that subsequently fail to meet ARB's requirements for linkage under this subarticle.

Subarticle 13. Offset Credits

Discussion of Concept – Creation of Offset Credits

This subarticle involves complex legal, enforcement, and administrative issues that require public comment and staff consideration. ARB must be able to ensure the environmental integrity of the offset program, even if conducted by a separate authority. In this context, ARB is soliciting public comment on the conceptual approach and regulatory structure for how an offsets system might be administered by either ARB or an independent entity that reports to the Board.

Regardless of whether ARB creates offset credits, or approves offset credits issued by external programs, all GHG reductions that occur as a result of an offset project, would need to meet AB 32 and ARB criteria for what constitutes an offset credit for compliance purposes.

The approach laid out in this PDR calls for ARB to become a credit issuing body that will also approve offset credits that are issued by external programs. For some of the administrative functions of the credit issuing body ARB may choose to either contract out or designate an outside entity to perform those tasks. The following describes the context of the preliminary draft regulatory language which follows and reflects ARB's current thinking for the implementation of the offset system. We invite comment on whether this is the right role for ARB to play in the offset market.

Creation of Offset Credits
An offset credit used for compliance purposes must represent a reduction or avoidance of GHG emissions, or GHG sequestration that is real, additional, quantifiable, permanent, verifiable and enforceable.

Offset credits are created for GHG reductions, avoidances or sequestration that have been quantified, verified and recorded by a credit issuing body. A credit issuing body reviews all project quantification and verification information to determine if a reduction, avoidance or sequestration of GHGs has occurred. Once the credit issuing body determines that the reduction occurred, they create (or issue) an offset credit, which represents a ton of GHG reduction, by assigning a unique serial number for that specific ton. In the California offset system offset credits created by many different credit issuing bodies may be approved for use.

Role of ARB in the Offset Market
There are several roles that ARB could play as the administrator of an offsets system. In determining how to design and implement an offsets system in California, ARB would need to determine if it would become a credit issuing body for offset credits, approve offset credits issued by external programs or some combination of the two. A credit issuing body, whether internal or external, would provide specific roles during the offset credit creation process including: approving offset quantification methodologies, reviewing and approving offset projects for registration in the system, overseeing the monitoring and recordkeeping of project activities and reviewing verification statements from third-party verifiers to make the determination of whether offset credits should be issued and, if so, how many.

§ 96220. General Requirements for Offset Credits

(a) All offset credits issued by ARB and all offset credits issued by a Board approved external program must:

(1) represent a reduction or avoidance of greenhouse gas emissions, or greenhouse gas sequestration that is real, additional, quantifiable, permanent, verifiable and enforceable;

(2) be registered by ARB in the compliance instrument tracking system; and

(3) be subject to the quantitative usage limit pursuant to Section 95970.

(b) An offset credit issued by ARB must;

(1) result from the use of an offset quantification methodology adopted by the Board pursuant to Section 96230;

(2) result from an offset project that is registered pursuant to Section 96260 and 96280;

(3) follow the monitoring, reporting and recordkeeping requirements pursuant to Section 96290;

(4) be verified pursuant to Section 96300;

(5) be issued pursuant to Section 96330; and

(6) be registered pursuant to Section 96370.

(c) An offset credit issued by a Board approved external program must meet the relevant requirements of Sections 96400 through 96430.

§ 96230. Approval of Offset Quantification Methodologies

(a) Offset quantification methodologies and updates to approved offset quantification methodologies will be approved by the Board as provided in Section 96230 and after public notice and the opportunity for public comment.

Discussion of Concept – Requirements and Approval of Offset Quantification Methodologies

For offset credits that ARB would issue, all offset quantification methodologies would be adopted by the Board. Board adopted methodologies could also be used by external offset crediting systems. In order for offset credits issued by an external GHG offset crediting system to be used for compliance purposes, the Board would need to approve that program based on criteria described in Subarticle 12.

Due to potential future updates in scientific data and quantification methods, the offset quantification methodologies themselves will not be written into the cap-and-trade regulation. The regulation will set out the process by which the Board can approve and amend offset quantification methodologies based on criteria spelled out in the regulation.

ARB staff would prepare an annual item to be considered by the Board, which would include any new offset quantification methodologies or any revisions to Board-approved quantification methodologies. Before ARB staff would bring the update to the Board, a public stakeholder process would be conducted to develop, review and revise the offset quantification methodologies that would be brought forward that year. A process would also be established for the periodic review of offset quantification methodologies to ensure that they reflect the current regulatory environment and scientific information.

The Board would adopt standardized methodologies which quantify reductions based on general criteria and emissions factors pre-established in the offset quantification methodologies. This approach would result in streamlining the estimation of project baselines and determining the additionality of projects using standard eligibility criteria. Beginning in 2007, the Board began adopting offset quantification methodologies according to this approach.

§ 96240. Requirements for Approval of Offset Quantification Methodologies.

(a) To be approved by the Board an offset quantification methodology must consist of standardized methods and meet the requirements of this section.

(b) *Measurement and Quantification*. The standardized methodology must determine, with a high level of offset accuracy, the extent to which greenhouse gas emission reductions or avoidances, or greenhouse gas sequestration, are achieved by an offset project of that type. The quantification method in the standardized methodology:

(1) must be replicable for an offset project of that type;

(2) must establish that an offset project of that type will result in greenhouse gas emission reductions or avoidances, or greenhouse gas sequestration that exceeds a relevant activity baseline; and

(3) must include plans for monitoring and reporting consistent with an offset project of that type.

Discussion of Concept - Offset Project Types

Under the approach laid out in the regulatory language, ARB would only approve offset quantification methodologies for project types that:

- accurately quantify GHG emission reductions or avoidances or GHG sequestration and emissions baselines;
- account for scientific and quantification method uncertainty associated with monitoring;
- address any public health, welfare, social, economic, or energy effects;
- address activity-shifting and market-shifting leakage;
- address direct emissions reductions;
- generate GHG emission reductions or avoidances, or GHG sequestrations that are permanent; and
- result in verified reductions according to rigorous standards including those established in this Article for compliance offset credits.

Discussion of Concept – Ozone Depleting Substances

Ozone-depleting substances (ODSs) are high global warming potential GHGs, but are not among the GHGs specifically mentioned in AB 32. Production of ODSs is being phased out through the Montreal Protocol, but there are significant banks from which these gases will be emitted in coming years unless they are destroyed. ODS destruction has stratospheric ozone benefits in addition to climate benefits. ARB is considering whether to allow offset project types that reduce GHGs that are not specifically called out in AB 32 (such as destruction of ODSs that are no longer in production).

(c) *Additionality*. The standardized methodology must determine the additionality of greenhouse gas emission reductions or avoidances, or greenhouse gas sequestration, achieved by an offset project of that type. The determination of additionality in the standardized methodology must be replicable for an offset project of that type. The standardized methodology must ensure, at a minimum, that any greenhouse gas emission reductions or avoidances, or any greenhouse gas sequestration, is considered additional only to the extent that it results from activities that:

(1) are not required by or undertaken to comply with any federal, state or local law or ordinance, including any regulation, consent order, and Memorandum of Understanding;

(2) are not considered common practice or would not have occurred under a business-as-usual scenario;

(3) have an offset project commencement date after December 31, 2006; and

Discussion of Concept – Offset Project Eligibility Date for Additionality

Establishing the eligibility date for an offset project is critical to determining the additionality of offset projects. For the issuance of offset credits ARB is proposing that offset projects which commence after December 31, 2006 be eligible. This date reflects the implementation of AB 32 and makes the bounds more clear for ARB to determine if an offset project was implemented to achieve AB 32 goals. California will continue to work with stakeholders and our WCI Partners to select a date that is appropriate for California and the WCI region.

(4) exceed the activity baseline calculated by the standardized methodology.

(5) Any portion of GHG emission reductions or avoidances, or any GHG sequestration resulting from public grants or government grants will not be considered additional.

(d) *Activity Baselines*. The standardized methodology for activity baselines must do the following:

(1) establish how the activity baseline is calculated for an offset project of that type;

(2) establish that the baseline in the standardized methodology is replicable for an offset project of that type;

(3) reflect a conservative estimate of business-as-usual performance or practices for the relevant type of activity; and

(4) be calculated based on all relevant greenhouse gas sinks and sources in the offset project boundary.

(e) *Accounting for Activity-Shifting and Market-Shifting Leakage*. The standardized methodology must account for and mitigate potential activity-shifting and market-shifting leakage, from an offset project of that type.

(f) *Accounting for Offset Uncertainty*. The standardized methodology must account for any offset uncertainty with respect to the greenhouse gas emission reductions or avoidances, or greenhouse gas sequestration, from an offset project of that type.

(g) *Permanence*. The standardized methodology must ensure that any greenhouse gas emission reductions or avoidances, or greenhouse gas sequestration achieved by an offset project of that type results in a permanent reduction or avoidance, or a net increase in sequestration, and that full account is taken of any actual or potential risks of reversal with an adequate margin of safety.

(h) *Requirements for No Net Harm.* The standardized methodology must ensure that the offset project type does not cause or contribute to adverse effects on human health or the environment.

(i) *Crediting Periods*. The standardized methodology must determine the crediting period for an offset project of that type. The crediting period must be no fewer than 5 and no greater than 10 years for any project type other than a project type involving greenhouse gas sequestration. The

crediting period must be no fewer than 10 and no greater than 30 years for any project type that involves greenhouse gas sequestration.

(j) *Requirements for Monitoring and Reporting*. The standardized methodology must include monitoring requirements to quantify baseline and GHG emission reductions, avoidances or sequestration with a high level of accuracy. The standardized methodology must ensure that enough data is collected to provide information on the conformance of an individual offset project with the monitoring methods in the standardized protocol. It must also provide transparent calculations of any GHG emission reductions, avoidances or sequestration.

(k) *Requirements for Supplemental Project Specific Verification.* The offset quantification methodology may define specific requirements for verification of an offset project of that type. An offset project must meet any verification requirements approved in the offset quantification methodology as approved pursuant to Section 96230 in addition to those verification requirements in Section 96300.

§ 96250. Requirements for Offset Project Operators

(a) Before an offset project can be registered with ARB the Offset Project Operator must be identified.

(b) The Offset Project Operator must register for a Holding Account, pursuant to Section 95870.

§ 96260. Registration of Offset Projects for ARB Issued Offset Credits

(a) *Offset Project Registration Requirements*. In order for an offset project to be registered with ARB the project must meet all of the following criteria:

(1) the project must use an offset quantification methodology that has been approved by the Board;

Discussion of Concept – Current Board Approved Offset Quantification Methodologies

Beginning in 2007 the Board began adopting offset quantification methodologies according to a top-down approval process. ARB believes that the quantification methods for calculating emission reductions in the Board approved offset quantification methodologies are of the highest quality and should be integrated into the compliance system. For the verification of offset credits issued according to these quantification methods, the reductions will need to be subject to regulatory verification requirements as implied in AB 32.

(2) the project must meet the additionality requirements specified in this subarticle;

(3) [Placeholder]: The project must be located in a geographical area in which ARB will issue offset credits;

Discussion of Concept – Where Should California Issue Offset Credits?

Through the Scoping Plan process ARB decided that it would not geographically limit where offset credits can come from. Staff is currently evaluating whether ARB issuance of offset credits should be limited to California, North America or not at all. There are 4 major options for limiting the location of offset projects where California will issue project-based offset credits. This does not include limiting the geographic location of offset credits issued by an external body and approved by ARB.

1. ARB issues offset credits only for projects located in California.
2. ARB issues offset credits only for projects located in the United States.
3. ARB issues offset credits for projects located in the United States, Canada and Mexico (reflects WCI recommendation).
4. ARB issues offset credits for projects internationally.

The smaller the geographic area in which ARB issues offset credits, the more dependent California becomes on the supply of offset credits issued by external programs. Limiting the geographic area for which California would issue offset credits would not preclude ARB from accepting offset credits from other parts of the world, if issued by a Board approved external program.

Conversely, the smaller the geographic area in which California issues offset credits, the more practical oversight ARB has over the offset credits it issues. More control, however, would also require more ARB staff resources to administer.

The larger the geographic area in which California issues offset credits, the more resources

are needed to review offset projects, verification statements and the assertions for offset credit issuance.

For projects outside of California where there is not the same level of regulatory stringency for certain emitting activities, staff is evaluating whether a benchmark for additionality should be set at the California regulatory level.

ARB invites comment on which option should be pursued and whether a benchmark should be set at the California regulatory level.

(4) the offset project must comply with all local, state and federal laws that apply to the project; and

(5) the Offset Project Operator must not be subject to any applicable Holding Account restrictions imposed pursuant to Section 96460.

(b) *Determination for Approval of Offset Project Registration.* In order for an offset credit to be issued by ARB the Offset Project Operator must register the offset project. An offset project may be considered for registration with ARB when the Offset Project Operator submits the following information:

(1) an application for offset project registration;

(2) identification of the Offset Project Operator;

(3) the offset quantification methodology that will be used to quantify, monitor, report and verify the GHG emission reductions, avoidances or sequestration resulting from the offset project;

(4) location of the offset project and the project boundaries;

(5) the date of offset project commencement;

(6) demonstration of additionality of the project;

(7) description of environmental impacts of the project;

(8) information on the sources of public funding for the project; and

(9) demonstration that the offset project is otherwise lawful and complies with all local, state and federal laws.

(10) [Placeholder]: Provisions to be developed.

(c) *Timing for Offset Project Registration Application*. An application to register an offset project must be submitted by the applicant no later than

the time at which an offset project's first verification statement is submitted to ARB.

(d) *Notice of Receipt of Offset Project Registration Documentation*. After submittal of the application for offset project registration and the necessary documentation pursuant to Section 96260(b), the applicant will receive within 30 days notice by ARB of receipt of the documentation.

(e) *Notice of Completion of Petition for Offset Project Registration*. Within 60 days of providing a notice of receipt, the applicant will be notified, after review by ARB, if the petition and documentation submitted pursuant to Section 96260(b) are complete and can be processed.

(f) *Notice of Determination of Offset Project Registration*. Not later than 180 days after ARB notification that the application and documentation is complete, the applicant will be notified by ARB if the offset project registration has been approved or rejected. If the offset project registration is rejected, the applicant will be provided the reasons for denial. After an offset project is registered, the Offset Project Operator will not be required to resubmit documentation for the registration of an offset project, except as provided in Section 96280.

(g) *Determination for Timing and Duration of Initial Crediting Period*. The initial crediting period begins with the date that the first verified emission reductions took place according to the first annual verification statement that is received by ARB. The length of the crediting period will be specified in the Board approved offset quantification methodology and may vary based on offset project type.

§ 96270. Approval of a Renewed Crediting Period

(a) *Determination for Approval of Renewed Crediting Period*. An Offset Project Operator may be granted a renewed crediting period, based on determination by the Executive Officer, to commence after the conclusion

of the initial crediting period. An offset project may be considered for a renewed crediting period when it submits the following information:

(1) an application for renewed crediting period;

(2) the offset quantification methodology that will be used to quantify, monitor, report and verify the GHG emission reductions, avoidances or sequestration resulting from the offset project;

(3) demonstration of additionality of the project;

(4) description of environmental impacts of the project;

(5) information on the sources of public funding for the project; and

(6) demonstration that the offset project is otherwise lawful and complies with all local, state and federal laws.

(7) [Placeholder]: Provisions to be developed.

(b) *Timing for Renewal of Crediting Period.* ARB will consider the renewal of a crediting period application no sooner than 18 months and no later than 9 months before the conclusion of the initial crediting period.

(c) *Notice of Receipt of Renewal of Crediting Period Documentation*. After submittal of the application for renewal of crediting period and the necessary documentation pursuant to Section 96270(a) the applicant will receive within 30 days, notice by ARB of receipt of the documentation.

(d) *Notice of Completion of Petition for Renewal of Crediting Period*. Within 60 days of providing a notice of receipt, the applicant will be notified, after review by ARB, if the application and documentation submitted pursuant to Section 96270(a) are complete and can be processed.

(e) *Notice of Determination of Renewal of Crediting Period*. Not later than 180 days after notice that the application and documentation is complete the applicant will be notified by ARB if the renewed crediting period has been approved or rejected. If the renewed crediting period is rejected, the applicant will be provided the reasons for denial.

(f) *Limitations for Renewal of Crediting Period*. A crediting period may not be renewed if the offset project or offset project type no longer meets the

requirements for additionality. Additionality will be assessed as of the date ARB notifies the applicant that the petition for renewal of the crediting period is complete.

§ 96280. Renewal of Registration for Renewed Crediting Period

(a) In order for an ARB offset credit to be issued for a renewed crediting period, the registration of the offset project must be renewed with ARB. The registration renewal will occur when the Offset Project Operator submits the following information:

(1) an application for renewal of offset project registration; and

(2) the notification by ARB of approval of renewed crediting period.

(3) [Placeholder]: Provisions to be developed.

(b) After an offset project is registered for the renewed crediting period, the Offset Project Operator will not be required to resubmit documentation for the registration of an offset project during the offset project's renewed crediting period.

§ 96290. Monitoring, Reporting and Record Retention Requirements for Offset Projects

(a) *General Requirements for Monitoring Equipment for Offset Projects.* The Offset Project Operator must employ procedures for monitoring measurements for non-sequestration offset projects with an offset uncertainty of no more than ±5 percent. For sequestration offset projects offset uncertainty levels will be determined in the offset quantification methodology approved by the Board for an offset project of that type. All monitoring measurement devices must be maintained and calibrated in a manner and at a frequency required to maintain this level of measurement uncertainty.

(b) *Supplemental Project Specific Requirements for Monitoring Equipment for Offset Projects.* An Offset Project Operator must put in place all

monitoring equipment or mechanisms required by a Board approved offset quantification methodology for that offset project type.

(c) *General Requirements for Reporting for Offset Projects*. An Offset Project Operator will report the following information within 6 months of the end of the first calendar year after which the GHG emissions reductions, avoidances or sequestration takes place:

(1) activity baseline;

(2) emission reductions; and

(3) [Placeholder]: Provisions to be developed.

(d) *Supplemental Project Specific Requirements for Reporting for Offset Projects*. An Offset Project Operator must report to ARB any information required by a Board approved offset quantification methodology for that offset project type (could include underlying data used to quantify reductions.

(e) *Requirements for Record Retention for Offset Projects*. An offset project operator must retain documents related to the design, development and maintenance of an offset project in paper, electronic or other usable format for 10 years following submission of each year's emission reduction data report. The retained documents must be sufficient to allow for the verification of each year's emission reductions. Upon request by ARB the Offset Project Operator must provide within 15 days to ARB all documents including data used to develop an emission reduction data report.

§ 96300. Verification of GHG Reductions, Avoidances or Sequestrations from Offset Projects

(a) *General Requirements*. For an offset project that has been registered by ARB the Offset Project Operator must submit verification statements, prepared by a verification body accredited by ARB.

(b) *Schedule for Verification*. The verification of GHG emission reductions, or avoidances, or GHG sequestration must be performed no less than annually and no more than every 6 years.

(c) *Verification Statement Requirements*. A verification statement from an ARB accredited verification body must be received by ARB for the issuance of offset credits.

(d) *Timing for Submittal of Verification Statements to ARB*. The verification statement must be received by ARB within the first 6 months of the current calendar year for the verification of GHG emission reductions or avoidances, or GHG sequestration for the previous calendar year.

(e) *General Offset Verification Requirements*

Discussion of Concept – General Offset Verification Requirements

The process for verification of offset projects would be similar to the process described in Section 95131 of the mandatory reporting requirements. Additional requirements for general offset verification will be added to the mandatory reporting requirements to support the offsets system in Spring 2010, such as verification of activity baselines.

(f) *Supplemental Project Specific Verification Requirements.* In addition to the verification requirements in this section, GHG emission reductions, avoidances, or GHG sequestration resulting from an offset project must meet any verification requirements for an offset project of that type if specified in the offset quantification methodology approved by the Board pursuant to Section 96230.

§ 96310. Verifier and Verification Body Accreditation

Discussion of Concept – Accreditation of Offset Verifiers

Requirements for verifiers and verification bodies of offset project reductions would be similar to those described in Section 95132 of the mandatory reporting requirements. Additional requirements for accreditation may be added to the mandatory reporting requirements to support the offset system in Spring 2010, including requirements that specific offset project types require a verifier specialized in that particular activity or sector.

§ 96320. Conflict of Interest for Offset Projects

Discussion of Concept – Conflict of Interest Requirements for Offset Projects

Conflict of interest requirements for offset projects would be similar to those described in Section 95133 of the mandatory reporting requirements. Additional requirements for conflict of interest for offset projects may be added to the mandatory reporting requirements in Spring 2010.

§ 96330. General Requirements for Issuance of Offset Credits by ARB

(a) One offset credit will be issued to an Offset Project Operator by ARB for each ton of CO_2e that the Executive Officer determines has been reduced, avoided, or sequestered during the period covered by a verification statement submitted pursuant to Section 96300(c), only if:

(1) ARB has registered the offset project pursuant to Sections 96260 or 96280; and

(2) the relevant GHG emission reductions or avoidances, or GHG sequestration have already occurred and been verified during the relevant offset project crediting period.

§ 96340. Issuance of Offset Credits in an Initial Crediting Period

An offset project registered in an initial crediting period may only be issued an offset credit by ARB for the duration of the initial crediting period and according to the Board approved offset quantification methodology for that particular offset project type at the time of registration of the offset project.

§ 96350. Issuance of Offset Credits in a Renewed Crediting Period

An offset project registered in a renewed crediting period may only be issued an offset credit by ARB for the duration of the renewed crediting period and according to the Board approved offset quantification methodology for that particular offset project type at the time of registration of the offset project.

§ 96360. Issuance of Offset Credits by ARB

(a) An offset credit will be issued by the Executive Officer to the Offset Project Operator no later than 30 working days after a verification statement for those reductions is accepted by ARB. The Executive Officer will issue one offset credit for every ton that is verified pursuant to Section 96300.

(b) *Notice of Determination of Issuance of Offset Credits.* Not later than 30 days after determination is made by the Executive Officer for the issuance of offset credits, the Offset Project Operator will be notified by ARB of the issuance of offset credits and the amount thereof.

(c) *Receipt of Offset Credits*. Within 14 working days of notice of determination of issuance of offset credits, ARB will transfer the offset credits into the Offset Project Operator's Holding Account.

§ 96370. Registration of Offset Credits Issued by ARB

(a) An offset credit issued by the Executive Officer will be registered by:

(1) creating an ARB unique serial number; and

(2) transferring the serial number to the Holding Account of the registered Offset Project Operator.

§ 96380. Ownership and Transferability of Offset Credits Issued by ARB

Initial ownership of an offset credit will be with the registered Offset Project Operator. An offset credit issued by ARB may be sold, traded, or transferred, unless the offset credit has been retired or used to meet a surrender obligation in any system.

§ 96390. Cancellation of Offset Credits

(a) If ARB determines that an offset credit issued or approved by ARB is invalid after it has been used, the offset credit will be cancelled in the tracking system and removed from any Holding or Compliance Account. If the cancelled offset credit has been used to meet a surrender obligation

under this article, the user of that offset credit must replace each ton of CO_2e with another compliance instrument.

(b) An offset credit could be determined to be invalid if a failure in the monitoring equipment or verification process is determined after the issuance of offset credits.

Discussion of Concept – Reversals of Offset Credits

ARB staff is evaluating enforcement and assessment of penalties that might be imposed if an offset credit is reversed or found to be invalid after issuance or acceptance by ARB. ARB's preferred approach would be to require the covered entity using the flawed offset credit to meet its surrender obligation by making the system whole and replacing the lost tons. The covered entity would then take recourse with the Offset Project Operator through contracts. Staff expects covered entities to enter into "make whole" contracts with offset suppliers so that the market appropriately values offset quality. This is already being observed in the voluntary offsets market.

Placing the point of enforcement on covered entities removes incentives for them to seek deficient offset credits, which should cost less. Placing the point of enforcement on offset project developers enhances the incentive.

No matter where the point of enforcement is placed, ARB has the legal authority to take action against California covered entities, first deliverers, offset project developers, and third-party verifiers. There may be practical limits in taking action against out-of-state entities and opt-in participants.

§ 96400. Offset Credits Issued by External Programs

(a) In order to be used to satisfy a requirement under this article, offset credits issued by an external program must:

(1) represent a GHG emission reduction or avoidance, or GHG sequestration that is real, additional, quantifiable, permanent, verifiable and enforceable;

(2) be issued for an offset project with an offset project commencement date after December 31, 2006; and

(3) be issued by an external program that has been approved by the Board as provided in Subarticle 12.

(4) [Placeholder]: Provisions to be developed.

Discussion of Concept – International Offset Credits and Sector-Based Crediting

The Scoping Plan committed California to working at the international level to reduce GHG emissions globally and finding ways to support the adoption of low-carbon technologies and sustainable development in the developing world.

To help achieve these goals, the Scoping Plan proposes to allow covered entities to use a limited number of offset credits to meet their surrender obligations under the cap-and-trade system. Allowing offset credits internationally will both foster GHG emission reductions in developing countries and control the costs of compliance.

Currently the international community is discussing and planning the development of a sector-based crediting mechanism to achieve emission reductions in the developing world. Sector-based crediting systems can increase participation in international efforts to control GHGs, and also help concerns about international competitiveness and emissions leakage by providing a more level playing field for some internationally competitive sectors.

In developing regulatory provisions for international offsets, ARB staff is considering how international offsets could affect carbon prices and innovation in California. Staff has been following the progress of the international negotiations leading up to the fifteenth Conference of the Parties (COP 15) to the United Nations Framework Convention on Climate Change (UNFCCC) in Copenhagen, as well as the development of the European Union Emissions Trading Scheme (EU ETS) Phase 3 in order to learn from others that are grappling with the same issues as California. Staff will consider the outcomes of COP 15 in developing regulatory provisions for the use of international offsets in the California cap-and-trade system.

Further, in exploring and participating in discussions with the international community, California is hoping to design a model international offsets program that will pave the way for the post-2012 international climate change agreement, which is the target of COP 15. The version of federal climate change legislation that passed the U.S. House of Representatives earlier this year recognizes early offsets from state approved programs, as does proposed language in the U.S. Senate. High-quality California-approved international offsets may eventually have value in a future federal program.

Currently, the primary mechanism for generating international offsets in the world is the Clean Development Mechanism (CDM) under the Kyoto Protocol. GHG emission reduction projects completed under the CDM generate Certified Emission Reductions (CERs), issued by the intergovernmental CDM Executive Board. CERs can be used as compliance offsets by entities regulated under cap-and-trade programs. While the CDM has created a vibrant market for international offsets, its project-based approach has not fostered significant policy changes in developing countries. Further, some questions have been raised about the sustainability and additionality of certain projects and project types.

As a result, the international community is discussing and planning the development of new sector-based crediting mechanisms to replace or reform the CDM. These mechanisms would allow developing countries, or their states or provinces, to generate credits for GHG emission reductions achieved across specific climate-related sectors, such as cement, iron and steel, and power generation. Credits could be sold for use as compliance offsets under cap-and-trade programs, much as CERs are today.

Sector-based crediting mechanisms are intended to "scale up" levels of support to developing countries and achieve greater emission reductions by fostering broader changes, such as higher environmental standards for facilities, across covered sectors. In this way, they can help reduce concerns about international competitiveness and provide a more level playing field in internationally competitive sectors. By focusing at the sectoral-level, rather than on individual projects, these mechanisms also will better ensure additionality and reduce emissions leakage between facilities in a way that the CDM cannot.

Given these advantages, California would like to utilize a sector-based crediting mechanism for international offsets, and move beyond project-based systems like the CDM. A number of requirements must be met before such a mechanism can be established, however.

First, a sector-based crediting system requires a crediting baseline, which could be an absolute GHG emission level, intensity target (GHG emissions per unit of production), or technology standard. To ensure additionality, this baseline must be established below the projected business-as-usual performance level for the target sector. Establishing baselines will require data collection and technical analysis as well as negotiations with the responsible developing country, or its state or province, to arrive at a proper level than ensures additionality.

Second, under a sector-based crediting mechanism credits are earned based on the GHG emissions reduced beyond the established baseline for the sector. In the case of an absolute GHG emissions target, credits are equivalent to the additional tons of GHG emissions reduced beyond the baseline. In the case of an intensity target or technology standard, the quantity of GHG emissions must be calculated based on the reduced emissions per unit of production or compared to those that would have occurred without installation of cleaner technologies, respectively. No credits may be earned until the crediting baseline is reached and surpassed. To ensure that this precondition is met, it is essential that adequate monitoring, reporting and verification (MRV) systems be in place. Developing cooperative Memorandums of Understanding (MOUs) for verification and enforcement with the developing countries participating in the sectoral programs will be especially important for California since sectoral activities will occur beyond the state's borders.

Some options for enabling cooperative MOUs for enforcement is to establish a joint MRV program between California and interested developing country states or provinces. For example, an MRV committee could be established in the developing country, state, or province that could include some California representatives to help guide the process and establish the rules. Once the crediting baseline is reached, there could also be third party independent

verification to ensure reductions achieved beyond the crediting baseline are real, additional, quantifiable, permanent, verifiable and enforceable.

Third, in order to reach the crediting baseline, the developing country, or its state or province, would need to employ policies and measures designed to achieve it. Currently many developing countries lack the capacity to institute the policies and measures necessary to support a sector-based crediting mechanism. Thus, it will be important for California to encourage and support early capacity building in these countries. In the short-term, opportunities may exist at the subnational level with more progressive and advanced states and provinces in developing countries that are able to build their capacities more quickly. California is interested in exploring these prospects and ways in which working at the subnational level might help build capacity for eventual sector-based crediting mechanisms in developing countries at the national level.

Finally, in order for sector-based crediting mechanisms to succeed, it will be important to engage the private sector. To generate credits, individual facilities must reduce their emissions, but crediting will not occur until the entire sector, which may cover many different facilities, meets its established baseline. Further, once the crediting baseline is achieved, credits will accrue to the developing country, or its state or province, rather than to the facilities directly. Thus, the private incentive to reduce emissions will be muted without appropriate policies. Such policies must be structured to incentivize individual facilities (and international investors) to reduce their GHG emissions. This could potentially be achieved through policies that ensure crediting baselines are met and providing for profit-sharing once that occurs. Domestic enforcement of policies needed to meet crediting baselines is essential for crediting certainty and to facilitate private funding for emission reduction projects.

While California wants to foster and support policy change in developing countries through sector-based crediting mechanisms, these mechanisms are still being developed internationally, and may not be ready when the California cap-and-trade program begins in 2012. Because appropriate cost control mechanisms will be needed for regulated entities at the outset of the program, an early supply of international offsets may be needed from other sources. In order to establish an early supply, ARB staff is considering allowing entities to use a limited amount of CERs issued under the CDM, or other approved project-based credits from other systems, for compliance purposes for a limited period of time. Other limitations could apply in regards to project types or geographic areas to ensure that these offsets meet additionality requirements and provide sustainable development benefits. For example, offset projects in least developed countries, which are likely to be both additional and sustainability-enhancing, should be encouraged. Project-based credits could be phased out over time as sector-based crediting mechanisms become more widely available.

California International Forestry Efforts: Deforestation accounts for approximately 20 percent of global GHG emissions. In 2008, at the Governors' Global Climate Summit, California along with the states of Illinois and Wisconsin entered into a Memorandum of Understanding (MOU) with states in Brazil and Indonesia to cooperate on a range of forest sector activities. These activities include Reducing Emissions from Deforestation and Degradation in Developing

Countries (REDD), sequestration of additional carbon through the restoration and reforestation of degraded lands and forests, and through improved forest management practices. Pursuant to this MOU, California along with the states of Illinois and Wisconsin are working with states and provinces in the Brazilian Amazon (Para, Mato Grosso, Amazonas, Amapa) and Indonesia (Aceh and Papua) to continue to build capacity to reduce emissions from the international forest sector. ARB is working to determine how to fit international forestry efforts into the overall framework of the cap-and-trade program.

§ 96410. Requirements for Offset Credits Issued by an External Program for Projects Located in the United States or Canada

(a) The approval of an offset credit issued to projects located in the United States or Canada will be determined by ARB based on the evaluation of the criteria consistent with those in this section.

(b) *General Requirements*. ARB will approve an offset credit issued to an offset project located in the United States or Canada if the external program issuing the offset credit has been approved by the Board pursuant to Subarticle 12.

(c) *Determination for Approval of Offset Project Types for Offset Projects Located in the United States or Canada*. The Board will approve offset project types for offset projects located in the United States and Canada, after public notice and opportunity for public comment. The Board will not approve project types for the United States and Canada that reduce emissions covered by the cap-and-trade program.

(d) *Agreement*. An offset credit issued by an external program for an offset project located in the United States or Canada may be approved by ARB if a cooperating regulatory agency from the state or province has entered into a MOU with California to carry out certain obligations relative to offset projects located in their jurisdiction. This includes, but is not limited to, the obligation to perform audits of offset project sites, and to report and enforce against violations of this subarticle.

(e) *Retirement Offset Credits Issued to Projects Located in the United States or Canada.* When an offset credit issued to projects located in the United

States or Canada is approved for use under this article, ARB will work through MOUs, arrangements or technical cooperation with the country, state, province or program that issued the offset credit to ensure that such body:

(1) is notified of ARB's retirement; and

(2) provides for the disqualification of the offset credit for subsequent use in any program.

§ 96420. Requirements for Offset Credits Issued by an External Program for Projects Located in Developing Countries

(a) The approval of an offset credit issued to projects located in a developing country will be determined by ARB based on the evaluation of the criteria consistent with those in this section.

(b) *General requirements.* ARB may approve a developing country offset credit if:

(1) the offset project is located in a developing country;

(2) the country, state or province, or international program issuing the developing country offset credit is approved by the Board pursuant to Subarticle 12; and

(3) the particular offset project type has been approved by the Board.

(c) *Offset Projects Located in Least Developed Countries.* Preference will be given to the approval of offset credits from offset projects located in least developed countries as defined by the United Nations.

(d) *Determination for Approval of Developing Country Offset Project Types*. The Board may approve offset project types for offset projects located in a developing country after public notice and opportunity for public comment. Preference will be given to project types with a high sustainable development value.

(e) *Agreement*. An offset credit issued by an external program for an offset project located in a developing country may be approved by ARB if a cooperating regulatory agency from the country, state or province has

entered into a MOU with California to carry out certain obligations relative to offset projects located in their jurisdiction. This includes, but is not limited to, the obligation to perform audits of offset project sites, and to report and enforce against violations of this subarticle.

(f) *Retirement of Offset Credits Issued for Projects Located in a Developing Country.* When an offset credit issued for a project located in a developing country is approved for use under this article, ARB will work through MOUs, arrangements or technical cooperation with the country, state, province or program that issued the offset credit to ensure that such body:

(1) is notified of ARB's retirement under this article; and

(2) provides for the disqualification of the developing country offset credit for subsequent use in any program.

§ 96430. Requirements for Sector-Based Crediting

(a) The approval of a sector-based credit will be determined by the EO based on the evaluation of the criteria consistent with those in this section.

(b) *General Requirements*. The EO may approve a sector-based credit if:

(1) the credit is generated in a developing country;

(2) the country, state, province or program issuing the sector-based credit is approved by the Board pursuant to Subarticle 12; and

(3) the country, state, province or program issuing the sector-based credit has implemented substantive and procedural requirements for the relevant sector that provide equal or greater assurance of the integrity of such sector-wide GHG reductions or avoidances, or GHG sequestration as is provided by the requirements for other offset credits approved under this article.

(c) *Determination for Approval of Sectors*. The Board may approve a sector of a specific developing country, or state or province in such country, after

public notice, opportunity for public comment and evaluation based on the following criteria:

(1) the homogeneity of sources within the relevant sector;

(2) the ability to establish a credible projection of business-as-usual GHG emissions and associated baseline for sector-based crediting of the relevant sector;

(3) the capability of accurately measuring, monitoring, reporting, and verifying the performance of sources across the relevant sector;

(4) the degree to which the relevant sector provides products or services that are sold in an international market and/or contributes GHGs to the atmosphere; and

(5) the risk of emissions leakage in the relevant sector is greater if an international offset credit is issued on an individual project basis.

(d) *Crediting Baseline for Sector-Based Crediting*. A quantitative crediting baseline must be established for a sector approved by the Board, using the following criteria:

(1) the crediting baseline must either be an absolute GHG emissions level, a GHG emissions intensity level calculated as GHG emissions per unit of production, or a technology standard;

(2) in the case of an absolute GHG emissions level, the crediting baseline for the relevant sector must be established at a lower level of GHG emissions than would occur under a business-as-usual scenario;

(3) in the case of a GHG emissions intensity level, the crediting baseline for the relevant sector must be established at a lower level of GHG emissions per unit of production than would occur under a business-as-usual scenario, and it must be possible to calculate specific quantities of GHG emissions abated as a result of reduced GHG emissions intensity below this crediting baseline;

(4) in the case of a technology standard, the crediting baseline must be established at a higher technology standard or higher percentage of

adoption of a particular technology in the sector than would occur under a business-as-usual scenario, and it must be possible to calculate specific quantities of GHG emissions abated as a result of adoption of technology above this crediting baseline;

(5) to set the crediting baseline, the country, state, province or international program issuing the sector-based credit must take into account the relevant current and historical trends in the sector as well as domestic and international policies or incentives to reduce GHG emissions, sequester GHG, or improve technology adoption; and

(6) the additionality and the performance of the sector will be based on the crediting baseline established under this subsection.

(7) [Placeholder]: Provisions to be developed.

(e) *Agreements for Sector-Based Crediting*. ARB must establish a MOU with the jurisdiction in which the GHG reduction activities occur, which will specify the quantification and issuance of sector-based credits. ARB will work through an agreement, arrangement or technical cooperation with an approved developing country or state or province in such country to ensure that such program:

(1) is notified of ARB's approval of its crediting program;

(2) provides appropriate enforcement provisions including verification of GHG emissions and GHG emission reductions, sufficient tracking and registration systems and related infrastructure that will record and track GHG emissions and GHG emissions reductions; and

(3) provides for the disqualification of credits issued by that system for subsequent use under any system whether such use is a sale, exchange, or submission to meet a surrender obligation in any GHG ETS.

Subarticle 14. Enforcement and Penalties

Discussion of Concept – Enforcement and Penalty Provisions

ARB is committed to developing enforcement efforts and penalty-setting mechanisms sufficient to deter non-compliance. At a stakeholder meeting on March 23, 2009, ARB reviewed existing penalty setting authority and options for setting penalties, as well as penalty systems used in other emissions trading programs. ARB is continuing to explore these options and will welcome stakeholder comments as staff designs specific language.

ARB expects to add provisions to this subarticle to specify particular enforcement provisions for separate requirements in the regulation. These provisions would include methods for calculating the number of violations and consequences for non-compliance. ARB is trying to find a combination of penalty levels and number of violations that would deter non-compliance by removing any economic benefits of non-compliance.

For example, ARB is considering whether to specify that the transfer or surrender of each compliance instrument is a separate transaction with the effect that any non-compliance with the rules for transferring ownership of compliance instruments or for surrendering instruments at the end of the compliance period would result in a number of violations equal to the number of allowances and offsets involved.

Another possible addition may be to Subarticle 7 to specify that a the requirement for surrender of compliance instruments would be to include a multiplier so that if the surrender deadline is missed, the entity would be required to surrender more allowances than it would if it had met the deadline. ARB is interested in receiving comments on these concepts and other possible approaches to scaling the number of offenses or amount of the penalty to the nature of the non-compliance.

§96500 Jurisdiction.

Any of the following actions conclusively establishes a person's consent to be subject to the jurisdiction of the State of California, including but not limited to the administrative authority of ARB and the jurisdiction of the Superior Courts of the State of California:

(a) voluntary registration with ARB pursuant to Subarticle 5;

(b) the purchase, ownership or holding of a compliance instrument issued by ARB;

(c) receipt of compensation of any kind, including but not limited to sales proceeds and commissions, from any transfers of allowances or offset credits issued by ARB; or

(d) certification or verification of an offset credit issued by ARB.

§96501 Authority to Suspend, Revoke or Modify

(a) The Executive Officer may suspend, revoke, or place any reasonable restrictions on the Holding Account of an Opt-in participant determined to be in violation of any provision of this article.

(b) The Executive Officer may place restrictions on a Holding Account of a covered entity determined to be in violation of any provision of this article or of article 2 of this subchapter.

(c) The Executive Officer may suspend, revoke, or modify any Executive Order issued under this article or under article 2 of this subchapter, including but not limited to an order accrediting a verifier, for a violation of any provision of this article.

§96502 Injunctions

Any violation of this article may be enjoined pursuant to Health and Safety Code Section 41513.

§96503 Penalties

Penalties may be assessed pursuant to Health and Safety Code Section 38580 for any violation of this article.

§96504 Violations

(a) Each day or portion thereof that any report required by this article remains unsubmitted, is submitted late, or contains incomplete or inaccurate information is a separate violation of this article;

(b) Except as otherwise provided in this section, each day or portion thereof in which a violation of this article occurs is a separate offense;

(c) The violation of any condition of an Executive Order that is issued pursuant to this article is a violation of this article.

Subarticle 15. Other Provisions

§ 96540 Severability, Effect of Judicial Order

Each provision of this article shall be deemed severable, and in the event that any provision of this article is held to be invalid, the remainder of this article shall continue in full force and effect.

§ 96550 Reserved Provisions

[Placeholder]: Provisions to be developed.

Subchapter 10, Article 2, Sections 95100-95199 – Amendments to Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

Amendment to the Regulation for

The Mandatory Reporting of Greenhouse Gas Emissions

The Regulation for the Mandatory Reporting of Greenhouse Gas Emissions was approved by the Board on December 6, 2007 and became effective on January 1, 2009. The practice of amending the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions is to support the reporting requirements set forth in the proposed Article 5: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms. Six documents are attached here to facilitate discussions of the amendment of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions:

Attachment 1. Anticipated Changes to Reporting: A bulleted list of areas that are expected to change, with preliminary draft language for enforcement section .

Attachment 2. Draft Table of Contents for the Revised Mandatory Reporting Regulation

Attachment 3. Preliminary Draft Amendments to Section 95107, Enforcement

Attachment 4. A tentative calendar for the public process

Attachment 5. Evaluation of the Relationships between Emissions Quantification, Scope and Points of Regulation for the cap-and-trade program: A description of what considerations will be examined for inclusion of an emissions source within the scope of the cap-and-trade program.

Attachment 6. Detailed Scope Table: Describes preliminary staff thinking on which emissions generate a surrender obligation, includes proposed additional sources, pollutants, and potential thresholds that would be included in the MRR revisions.

Attachment 1. Anticipated Changes to California's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions to

Support the Proposed Cap-and-Trade Regulation

- ARB staff will propose modifying the reporting threshold to be based on CO_2 equivalent emissions (CO_2e), rather than the current CO_2 only emissions.

- ARB staff will propose lowering the reporting threshold to 10,000 metric tons CO_2e, rather than the current 25,000 metric tons CO_2, only to monitor emissions below the facility cap threshold. Third-party verification would not be proposed for facilities emitting between 10,000 MT and 25,000 MT CO_2e.

- ARB staff will propose annual verification of emissions data reports for all facilities above the cap threshold of 25,000 MT CO_2e. Third-party verification would not be proposed for emissions data reports for facilities below the cap threshold.

- ARB staff will propose requirements for additional reporting of industrial process and fugitive emissions, and for reporting of emissions by upstream suppliers of fuels and industrial gases. Quantification methods for combustion sources will be consistent by fuel type rather than dependent on industrial sector.

- Electricity sector reporting requirements will be revised, in consultation with the California Public Utilities Commission and the California Energy Commissions, to facilitate reporting by first deliverers. Requirements developed for a load-based point of regulation will be modified to be consistent with the first deliverer approach. Changes to emissions distribution requirements for cogeneration systems may be proposed.

- The deadlines for reporting and verification are subject to change based on market needs and reporting deadlines. The amount of time between reporting and verification deadlines is likely to be reduced to facilitate timely allowance settlement.

- To reduce duplicative reporting, ARB will work with U.S. EPA to facilitate a single reporting mechanism to satisfy both state and federal mandatory reporting requirements. ARB staff may propose changes to California's reporting requirements to make them consistent with the final federal rule for GHG reporting. Some options in the federal rule may be limited to

assure consistency and rigor in emissions accounting for the cap-and-trade program.

- Additional changes to general provisions, definitions, quantification methods, and verification requirements will be considered to assure the reporting regulation provides the consistency and rigor needed to support the cap-and-trade program.

- Finally, ARB plans to revise the existing enforcement language in Section 95107 to provide more comprehensive rules about how the number of violations will be calculated, with the goal of ensuring adequate data collection and accurate and timely reporting and verification. Preliminary draft language containing some of the amendments under consideration for this section is presented below.

Attachment 2. Draft Table of Contents for Revised Mandatory Reporting Regulation

[Subarticles and sections in italics will be considered for addition in 2010. Existing sections would contain revised language.]

Subchapter 10, Article 2, Sections 95100 to *95199*, title 17, California Code of Regulations

Subarticle 1. General Requirements for Greenhouse Gas Reporting
95100 Purpose
95101 Applicability
95102 Definitions
95103 Greenhouse Gas Reporting Requirements
95104 Greenhouse Gas Emissions Data Report
95105 Document Retention and Record Keeping Requirements
95106 Confidentiality
95107 Enforcement
95108 Severability
95109 Incorporation by Reference

Subarticle 2. Requirements for the Mandatory Reporting of Greenhouse Gas Emissions from Specific Types of Facilities *and Entities*
95110 Data Requirements and Calculation Methods for Cement Plants
95111 Data Requirements and Calculation Methods for Electricity Generating Facilities, *Electricity* Retail Providers, *and Electricity* Marketers
95112 Data Requirements and Calculation Methods for Cogeneration Facilities
95113 Data Requirements and Calculation Methods for Petroleum Refineries
95114 Data Requirements and Calculation Methods for Hydrogen Plants
95115 Data Requirements and Calculation Methods for General Stationary Combustion Facilities

Subarticle 3. Calculation Methods Applicable to Multiple Types of Facilities
95125 *Calculation Methods for Stationary Combustion*
95126 *Additional Calculation Methods*

Subarticle 4. Requirements for Verification of Greenhouse Gas Emissions Data Reports and Requirements Applicable to Emissions Data Verifiers

95130 Requirements for Verification of Emissions Data Reports
95131 Requirements for Verification Services
95132 Accreditation Requirements for Verification Bodies, Lead Verifiers, and Verifiers
95133 Conflict of Interest Requirements for Verification Bodies

Subarticle 5. Requirements for the Mandatory Reporting of Greenhouse Gas Emissions by Additional Types of Facilities

95140 Data Requirements and Calculation Methods for Aluminum Production Facilities
95141 Data Requirements and Calculation Methods for Glass Manufacturing Facilities
95142 Data Requirements and Calculation Methods for Iron and Steel Production Facilities
95143 Data Requirements and Calculation Methods for Lime Manufacturing Facilities
95144 Data Requirements and Calculation Methods for Miscellaneous Uses of Carbonates
95145 Data Requirements and Calculation Methods for Nitric Acid Production Facilities
95146 Data Requirements and Calculation Methods for Oil and Natural Gas Systems
95147 Data Requirements and Calculation Methods for Pulp and Paper Manufacturing Facilities
95148 Data Requirements and Calculation Methods for Soda Ash Manufacturing Facilities

Subarticle 6. Requirements for the Mandatory Reporting of Greenhouse Gas Emissions by Upstream Suppliers of Fuels and Industrial Gases

95170 Data Requirements and Calculation Methods for Suppliers of Petroleum Products
95171 Data Requirements and Calculation Methods for Suppliers of Natural Gas and Natural Gas Liquids
95172 Data Requirements and Calculation Methods for Suppliers of Industrial Greenhouse Gases
95173 Data Requirements and Calculation Methods for Suppliers of Carbon Dioxide

Attachment 3. Preliminary Draft Amendments to Section 95107, Enforcement

Discussion of Concept – Enforcement Section in Mandatory Reporting Regulation

ARB will amend the existing enforcement provisions in the reporting regulation as part of its adoption of a cap-and-trade program. In the existing regulation, Subsection 95107(a) was included to specify that each day in violation of Health and Safety Code Section 42402.4, which prohibits knowing submission of a false document with intent to deceive, Is a separate violation. The existing regulation does not specify a calculation of daily offenses for other violations of the Health and Safety Code, such as submission of incorrect information without an intent to deceive. ARB intends to change this subsection so that all submissions of incorrect information – not just those covered in HSC Section 42402.4 – are computed as separate daily violations for as long as the false information remains uncorrected. This change will make the provision more consistent with other ARB regulations. This and other possible changes to more specifically delineate what constitutes a violation and how the number of violations are computed are set forth in the draft amendment language below.

In addition to the changes indicated in the regulatory text, ARB expects to consider additional provisions relating to calculation of the number of violations and penalties, and how violations and penalties will be applied to specific requirements in the reporting regulation. One of the ideas under consideration would specify that each metric ton of carbon dioxide equivalent that is emitted during a reporting year but not reported to ARB would constitute a separate offense under this article. ARB is interested in receiving comments on this concept or on other possible approaches to scaling the number of offenses or size of penalty to the magnitude of an entity's failure to report actual emissions.

§ 95107. Enforcement.

(a) SS~~Knowing s~~Submission of ~~false~~incorrect information~~, with intent to deceive,~~ to the Executive Officer or a verification body~~, shall~~ constitutes a ~~single,~~ separate violation ~~of the requirements~~ of this article for each day in violation, ~~after~~beginning on the day the ~~false~~incorrect information is submitted ~~has been received by the Executive Officer~~ and ending on the day that all the information is corrected.

(b) Failure to submit any report by a deadline specified in this article ~~or to include in a report all information required by this article,~~ or late submittal of any report~~, shall~~ constitutes a ~~single,~~ separate violation of this article for each day or portion thereof after the deadline that the report ~~has~~is not ~~been~~ submitted ~~beyond the specified reporting date~~. Failure to include in a report all information required by this article constitutes a separate violation of this article for each day beginning on the day the report is submitted and ending on the day the report is amended to include all required information. For the purposes of this section, "report" means any emissions data report, verification opinion, or other ~~document~~record required to be submitted to

the Executive Officer by this article.

(c) Each failure to measure, collect, record or preserve information needed for the calculation of emissions as required by this article or that this article otherwise requires be measured, collected, recorded or preserved constitutes a separate violation of this article, except to the extent such failure is specifically addressed in, and is consistent with, a procedure that has been approved by the Executive Officer pursuant to Section 95103(a)(10).

(d) With respect to requirements of this article that are not described in Section 95107(a), (b) or (c), above, each day or portion thereof on which a violation occurs constitutes a separate offense.

(e) Penalties may be assessed for any violation of this article pursuant to Health and Safety Code Section 38580.

(f) Any violation of this article may be enjoined pursuant to Health and Safety Code Section 41513

(g) The Executive Officer may revoke or modify any Executive Order issued pursuant to this article as a sanction for a violation of this article.

(h) The violation of any condition of an Executive Order that is issued pursuant to this article is a violation of this article.

Note: Authority cited: Sections 38510, 38530, 38580, 39600, 39601 and 41511, Health and Safety Code. Reference: Sections 38530, 38580, 39600 and 41511, Health and Safety Code.

Attachment 4. Tentative Calendar for Public Process:

2010 Revision of the California Mandatory Reporting Regulation

January/February 2010: Workshops to present expected revisions to reporting requirements and collect public input.

Late March/Early April: Release of Draft Regulatory Language.

April/ May 2010: Workshops to discuss Draft Regulatory Language for GHG reporting requirements and collect public input.

Late August/Early September: Release of Regulatory Proposal, including Initial Statement of Reasons (Staff Report) for Cap-and-Trade Regulation and Modifications to the California Mandatory Reporting Regulation. Formal public comment period begins.

Thursday, October 21: Board considers Cap-and-Trade and revised Mandatory Reporting Regulations.

Attachment 5. Evaluation of the Relationships between Emissions Quantification, Scope and Points of Regulation for the AB 32 Cap-and-Trade Program

Issue Summary

ARB has held an extensive public process, in conjunction with the Western Climate Initiative (WCI), to determine which sources of emissions should be covered by the cap-and-trade program. Both the Scoping Plan and the WCI Design Recommendations contain a summary of the scope of the program.[7]

ARB needs greater detail to determine who is a covered entity in the program as we prepare the cap-and-trade regulation. ARB staff has compiled the attached table to provide a crosswalk between ARB's current mandatory reporting requirements, the WCI Essential Requirements of Mandatory Reporting, and the anticipated changes to ARB's Mandatory Reporting Regulation to support the scope of the cap-and-trade program as presented in this PDR.[8]

We are providing this discussion to explain the preliminary staff thinking included in the attached table. Staff will continue to work with stakeholders to determine which emissions sources will be included in the scope of the cap-and-trade program.

Background on Scope and Point of Regulation Decisions for the Cap-and-Trade Program

The term 'scope' defines the greenhouse gas (GHG) emissions that are covered by the cap-and-trade program, including:

- The emissions sources that fall under the cap.
- The greenhouses gases that fall under the cap.
- The point(s) of regulation where the program would be enforced.

The "point of regulation" is a portion of the scope definition that identifies the covered entities that have the obligation to surrender compliance instruments (emission allowances or allowable offsets credits) equal to their GHG emissions.

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[7] **Climate Change Scoping Plan** page 31 (December 2008)
http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm
Design Recommendations for the WCI Regional Cap-and-Trade Program pages 1-3 (September 2008)
http://www.westernclimateinitiative.org/the-wci-cap-and-trade-program/design-recommendations

[8] Information about ARB's mandatory reporting program for GHG emissions is available here:
http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
The WCI's **Final Essential Requirements for Mandatory Reporting** is available here:
http://www.westernclimateinitiative.org/component/remository/Reporting-Committee-Documents/Final-Essential-Requirements-for-Mandatory-Reporting/

Several key terms are used to describe the point of regulation:

- **Downstream, at the point of emission:** The point of regulation can be where the emissions occur, such as where coal is combusted. This point of regulation is typically referred to as "downstream." Examples of downstream points of regulation include: (a) stationary source combustion of coal, natural gas, and oil; and (b) process and fugitive emissions from industrial facilities.
- **Upstream, where carbon enters the California economy:** The point of regulation can be at the point where carbon enters into the economy. This point is typically referred to as "upstream." Examples of upstream points of regulation for fossil fuels include: (a) where natural gas is processed and upgraded to pipeline quality; (b) where oil products are refined or imported; and (c) where coal is mined. For some high global warming potential (GWP) gases (such as sulfur hexafluoride, SF_6), an upstream point of regulation may be the point at which the gas is manufactured.
- **Midstream:** The point of regulation can be between the upstream and downstream. This is referred to as midstream. Midstream regulation for fossil fuel may be where the fuel is distributed, examples include: (a) natural gas transmission pipelines; (b) natural gas local distribution companies (LDCs); and (c) gasoline and diesel terminal racks, fuel distributors or wholesalers.

From the scope and point of regulation definitions, any covered entity must be able to tell whether it has a surrender obligation under the cap, and which of its emissions are subject to this obligation.[9] The attached detailed scope document compiles this information for all sources in a concise tabular form. Preliminary staff thinking on program scope is based on the principles discussed below.

Evaluating Quantification Methodologies for Inclusion in the Scope of the Cap-and-Trade Program

To ensure that the cap-and-trade program meets the AB 32 criteria of 'quantifiable', ARB staff developed the following principles for evaluating whether individual quantification methodologies are appropriate for calculating 'surrender obligation' within the scope of the cap-and-trade program[10]:

[9] This discussion of scope is borrowed from the **WCI Draft Program Scope Recommendations** (March 2008). Available from: http://www.midwesternaccord.org/Meeting%20material%20pages/Scope%20and%20Electricity%20Meeting%201/Draft_WCI_Scope_Recommendation.pdf

[10] AB 32 requires that all Greenhouse Gas Emission reductions achieved be real, permanent, quantifiable, verifiable, enforceable, and additional.

- The quantification methodology provides accurate and consistent quantification of emissions across all reporters
- The methodology facilitates third-party verification
- The methodology is enforceable by ARB
- The methodology is related to a meaningful portion of the GHG emissions emitted by California
- The methodology facilitates implementation of the intended incentives of the cap-and-trade program
- Emissions can be cost-effectively measured or calculated and reported using the quantification methodology

Provide Accurate and Consistent Quantification of GHG Emissions

Emission accounting methodologies should provide an accurate measure of the current magnitude of GHG emissions from a source. Reliable methods must capture and incorporate the variability in key input parameters over the course of the reporting period. In addition, it is critical to the success of a cap-and-trade program that the methods provide the same level of accuracy of source emissions after emission reduction strategies have been implemented.

False emission reductions which could unintentionally result from a shift between alternate quantification methodologies must be avoided to the extent feasible.[11]

In short, methods must accurately quantify both current and future emissions from a source. Wherever possible, reporters should use the same quantification methodology for each source to ensure consistency across reporting entities.

Provide Verifiable GHG Emissions Data

Consistent and reliable verification of all GHG emissions is an essential part of a viable regulatory cap-and-trade program. Participants must have confidence that a common metric is employed (i.e. a ton of carbon is a ton of carbon) as they buy and sell allowances. Reporting regulations must provide independent third party verifiers with the ability to confidently judge the veracity of facility emissions reports. Reporting regulations based on accepted quantification methods (e.g. ASTM, ISO) provide verifiers with a standard with which to objectively judge the validity of reported emissions. Consistent and accurate accounting requires that as little as possible is left to the verifier's subjective judgment.

[11] These emission reductions are sometimes labeled as 'paper reductions' because reductions appear to have resulted 'on paper' due to the accounting methodologies employed but no actual environmental benefit occurs.

Provide Enforceable Methodologies

Reporting regulations must be formulated and written to provide enforcement bodies with the ability to identify and potentially prosecute any infractions in facility emission reports. Reporting methods must provide concrete and unambiguous criteria against which the validity of the report may be judged.

Quantify Most Meaningful Sources of GHGs

In selecting the quantification methodologies that apply in the cap-and-trade program staff places a priority on methods that can be used in a consistent fashion across a variety of sources.

In addition, the point of regulation will be moved upstream for GHG sources that are difficult to regulate at the point of emission (e.g., combustion of transportation fuels in passenger vehicles). The result of this upstream regulation may lead to a decrease in accuracy or precision due to greater reliance on default emission factors rather than direct measurement at the emissions source. Also, upstream regulation may lead to different quantification methodologies for the same fuel type in different end uses.

Creation of the Correct Incentives to Motivate GHG Emissions Reduction

A trade-off may exist between striving for accuracy and precision in emission quantification and creating the correct incentives for low-lifecycle emissions from products with complex supply chains. This may be especially true where a significant portion of the emissions associated with delivering a product to the end consumer exist outside of California.

In general the cap-and-trade program has not taken a ‘full lifecycle’ accounting approach to emissions quantification. ARB may consider a form of lifecycle emissions accounting in some cases to create the correct incentives for a switch to low-lifecycle emissions products.

Cost-effectiveness

To balance accuracy with reporting costs we must consider the costs associated with any quantification methodology. An example is the frequency of fuel carbon content sampling. More frequent sampling increases accuracy of emissions calculations but also increases the costs of the specified quantification methodology.

Attachment 6.

Detailed Scope Table

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Narrow Scope Sources in Current ARB Reporting Regulation						
Stationary Combustion (Section 95115 in current ARB Reporting Regulation)						
Operators of All Facilities with Stationary Combustion Emissions						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Stationary Combustion					Staff expects to propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Fossil Fuel Combustion (CO2)	Y	Y	Y	Y	
	Biomass-Derived Fuel Combustion (CO2)	N	Y	Y	Y	
	Fuel Combustion (CH4, N2O)	Y	Y	Y	Y	
Cement (95110)						
Cement Manufacturing Facility Operator						
Reporting Threshold			No Threshold	Y	10 k/year CO2e	Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff expects to propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Clinker Production (CO2)	Y	Y	Y	Y	
	TOC Content (CO2)	Y	Y	Y	Y	
Electricity Generating Deliverers (95111a)						
Electrical Generating						

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Facility Operator						
Reporting Threshold			2.5 k/year CO2 and > 1 MW	Y	10 k/year CO2e	
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
	Process					Staff to review for consistency with federal reporting requirements, may propose modifications.
	Acid Gas Scrubbers (CO2)	Y	Y	?	Y	
	Fugitives					
	Coal Storage (CH4)	N	Y	?	Y	
	Cooling Units (HFCs)	N	Y	?	Y	
	Geothermal (CO2)	N	Y	?	Y	
	SF6 equipment	N	Y	?	N	Reporting requirements may defer to new SF6 regulation.
Electricity Importing Deliverers (95111b)						
First Jurisdictional Importing Deliverer (Retail Provider or Marketer)						
Reporting Threshold			No Threshold	?	No Threshold	Staff to consider threshold.
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
	Activity Downstream of Emissions					Staff to consider modifications as needed to support first jurisdictional deliverer point of regulation.
	Emissions Assigned to Imported Power Transactions (CO2, CH4, N2O)	Y	Y	Y	Y	
	SF6 equipment	N	Y	?	N	
Cogeneration (95112)						
Cogeneration Facility Operator						

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Reporting Threshold			2.5 k/year CO2 and > 1 MW	Y	10 k/year CO2e	
C&T Inclusion Threshold				Y		Recommend 25 k/yr CO2e
Include Distribution of Fossil CO2 to Electricity and Thermal Uses (per current regulation)?						Staff to consider changes to emissions distribution requirements to support cap-and-trade regulation and Scoping Plan objectives.
	Process					Staff to review for consistency with federal reporting requirements, may propose modifications.
	Acid Gas Scrubbers (CO2)	Y	Y	?	Y	
	Fugitives					
	Coal Storage (CH4)	N	Y	?	Y	
	Cooling Units (HFCs)	N	Y	?	Y	
	SF6 equipment	N	Y	?	N	
Petroleum Refining (95113)						
Refining Facility Operator						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff may propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Calciners (CO2)	Y	N	Y	N	
	Cat Cracking (CO2)	Y	Y	?	Y	
	Other Cat Regen (CO2)	Y	Y	?	Y	
	Process Vents (CO2, CH4, N2O)	Y	Y	?	Y	
	Asphalt production (CO2, CH4)	N	Y	?	Y	
	Sulfur Recovery (CO2)	Y	Y	Y	Y	
	Fugitives					

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	Wastewater (CH4, N2O)	N	Y	?	Y	
	Oil/Water seps (CH4)	N	Y	?	Y	
	Storage Tanks (CH4)	N	Y	?	Y	
	Equipment leaks (CH4)	N	Y	?	Y	
	Flares and destruction devices					
	Flares (CO2)	Y	Y	Y	Y	
	Destruction devices--low Btu gases (CO2)	Y	Y	Y	Y	
Hydrogen Production (95114)						
Hydrogen Production Facility Operator						
Reporting Threshold			25 k/year CO2	Y	10 k/year CO2e	Recommend lowering to 10k/year CO2e
C&T Inclusion Threshold				Y		Recommend 25k/yr CO2e
	Process					Staff may propose modifications consistent with federal reporting requirements. Some quantification options may be limited to assure consistency and rigor in emissions accounting.
	Process CO2	Y	Y	?	Y	
	Process Vent (CO2, CH4, N2O)	Y	Y	?		
	Sulfur Recovery (CO2)	Y	Y	Y	N	
	Flares and Destruction Devices					
	Flares (CO2)	Y	Y	Y	Y	
	Destruction devices--low Btu gases (CO2)	Y	Y	Y	N	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Additional Narrow Scope Sources Under Consideration (Not in Current ARB Reporting Regulation)						
Aluminum Production						
Aluminum Manufacturing Facility Operator						
	Process CO2	Y	N	Y	Y	
Glass Production						
Glass Production Facility Operator						
	Process CO2	Y	N	Y	N	
Iron and Steel Production						
Iron and Steel Manufacturing Facility Operator						
	Process CO2	Y	N	Y	Y	
Lime Production						
Lime Production Facility Operator						
	Quick Lime Production (CO2)	Y	N	Y	Y	
Magnesium Production						
Magnesium Production Facility Operator						
	Process (cover gas) SF6, HFC-134a, FK 5-1-12, fluorinated GHGs, CO2	Y	N	Y	N	
Miscellaneous Uses of Carbonates						
Facility Operators Calcining Carbonates						
	Process CO2	Y	N	Y	N	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Nitric Acid Production						
Nitric Acid Facility Operator						
	Process N2O	Y	N	Y	N	
Oil & Natural Gas Systems						
Oil and Gas Field Operators						
	Fugitive CH4	N	N	Y	N	
	CH4 from pipe blow downs	Y	N	Y	N	
Pulp and Paper Manufacturing						
Pulp and Paper Manufacturing Facility Operator						
	Recovery Furnace and Kiln Systems (fossil CO2)	Y	N	Y	Y	
	Recovery Furnace and Kiln Systems (bio CO2)	N	N	Y	Y	
	Wastewater treatment CH4	N	N	?	Y	
Soda Ash Manufacturing						
Soda Ash Manufacturing Facility Operator						
	Process CO2	Y	N	Y	N	
Suppliers and Recipients of Carbon Dioxide						
CO2 Supplier or Transfer Recipient						
	Fugitive CO2	?	N	Y	N	
Suppliers of Industrial GHGs						

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
Producers, Importers and Exporters of N2O or Fluorinated GHGs						
	N2O, fluorinated GHGs	?	N	Y	N	
INDUSTRIAL PROCESS EMISSIONS CATEGORIES IN THE FEDERAL REPORTING RULE THAT ARB DOES NOT INTEND TO INCLUDE IN CAP-AND-TRADE AND MANDATORY REPORTING REQUIREMENTS AT THIS TIME: Adipic Acid Production, Ammonia Manufacturing, Coal Mine Fugitive Emissions, Electronics Manufacturing, Ethanol Production, Ferroalloy Production, Food Processing, HCFC-22 Production and HFC-23 Destruction, Industrial Wastewater, Lead Production, Manure Management, Motor Vehicle Manufacturers, Municipal Solid Waste Landfills, Petrochemical Production, Phosphoric Acid Production, Silicon Carbide Production, Suppliers of Coal-Based Liquid Fuels, Titanium Dioxide Production, Zinc Production.						
Fuel Deliverers*						
Natural Gas and Natural Gas Liquids						
Local Distribution Company						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
	Activity Upstream of Emissions					
	(a) Total NG deliveries by volume	Y	N	Y	N	
	(b) Deliveries to narrow-scope facilities	N, subtract from (a)	N	Y	N	
	(c) Non-combustion use of NG	N, subtract from (a)	N	Y	N	
	(d) Biomass-Derived NG deliveries (landfill- or digester-derived)	N	N	Y	N	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	(e) LNG-derived deliveries	May have an additional obligation for upstream emissions from LNG liquefaction	N	?	N	
Interstate Pipelines	List of customers (and quantities delivered?)	N, used for reconciling narrow scope sources?	N	?	N	
End users from interstate pipelines	NG receipts	Y, if not already assessed for surrender obligation				
Transportation Fuels						
Refinery, blendstock importer, distribution terminal rack (TBD)						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
	Activity Upstream of Emissions					
	(a) CaRFG3 (gasoline) throughput/sales	Y	N	Y	N	
	(b) ULSD (diesel) throughput/sales	Y	N	Y	N	
	(c) Deliveries to narrow scope facilities with a surrender obligation for gasoline/diesel combustion	N, subtract from (a), (b)	N	Y	N	

Complying Entity Information	Emissions Source Description (GHG Type)	Current Staff Thinking: Generates a C&T Surrender Obligation?	In Current ARB Reporting Regulation?	Modification/Addition expected as part of ARB cap and trade regulation package?	In WCI Essential Reporting Requirements?	Other Current Staff Thinking
	(d) LCFS reporting for pathway emissions?	?	N	?	N	
Fuel Producers or Importers or Refineries (TBD)			N	Y	N	
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
	Activity Upstream of Emissions					
	(a) Quantity and composition of biofuel produced/sold	?	N	?	N	
	(b) LCFS reporting for pathway emissions?	?	N	?	N	
Propane						
Propane Provider (TBD)						
Reporting Threshold						Recommend setting at 10k/yr CO2e
C&T Inclusion Threshold						Recommend 25 k/year CO2e
	Activity Upstream of Emissions					
	Emissions Assigned to Total LPG deliveries by volume	Y	N	Y	N	

Notes:
* 'Broad Scope' Emissions = 'Narrow Scope' Emissions plus Emissions from 'Fuel Deliverers'

Public Workshop

Preliminary Draft Regulation (PDR) for a California Greenhouse Gas Cap-and-Trade Program

December 14, 2009
California Air Resources Board

Purpose of Today's Workshop on the PDR

1. Provide an overview of draft regulatory provisions and concepts for discussion
2. Invite stakeholder discussion and feedback
   - Stakeholders are asked to provide written comments to ARB by **January 11, 2010**

   (http://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=dec-14-pdr-ws&comm_period=1)

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Outline of Presentation

- Opening Remarks
- Overview of the Preliminary Draft Regulation (PDR)
- Review of Concepts for Discussion
- Comments and Questions

3

Timeframe for Cap-and-Trade Rulemaking

- **January 2010**: Economic & Allocation Advisory Committee (EAAC) final recommendations on allowance allocation
- **Spring 2010:** 2nd draft regulation for public comment
- **September 2010:** 45-day public review rule package begins (3rd draft)
- **October 2010:** Board consideration of regulation
- **2nd Half of 2011:** First auction of allowances
- **January 1, 2012:** First compliance period starts

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PDR Structure

- Preliminary Draft Regulation includes a mix of:
  - Preliminary regulatory language
    - Cap-and-trade process and structure
  - Narrative text
    - Concepts for discussion where specific regulatory language isn't yet developed
  - Placeholders
    - Areas for future language to be included
- ARB seeking comment on entire PDR

Applicability

- Covered Gases
  - CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3
- Covered Entities
- Opt-in Participants

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What Entities Would Be Covered and When?

Narrow Scope

Beginning in 2012

- Operators of Facilities
- Electricity Deliverers
  - Operators of in-state generating facilities
  - Importing deliverers
    - Retail Providers
    - Marketers

Beginning by 2015*

- Fuel Deliverers
  - Transportation fuel deliverers
    - Producers and Importers of Gasoline, Diesel and Biofuels
  - Natural gas deliverers
  - Deliverers of natural gas liquids

Broad Scope

*Issue discussed in later slide

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Who are Opt-In Participants?

- Opt-in participants are not covered entities but voluntarily participate in the cap-and-trade market in order to:
  - Retire, purchase, hold, or sell compliance instruments
  - Operate offset projects registered with ARB
  - Verify greenhouse gas emissions and emission reductions
  - Operate over-the-counter clearinghouses or trading facilities handling transactions of compliance instruments

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Proposed Threshold for Inclusion of Covered Entities

- 25,000 metric tons of CO_2e per year for all covered entities
- Only emissions that generate a surrender obligation are counted toward this threshold
  - Biomass combustion at stationary sources excluded
  - Most fugitive emissions excluded
  - Staff thinking detailed in PDR Scope Table

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Detailed Scope Table

- Outlines preliminary staff thinking on:
  - Which emissions generate a surrender obligation
  - Additional types of process emissions for stationary sources that will be reported
  - Coverage of fuel deliverers
  - Thresholds for inclusion in cap-and-trade and mandatory reporting
  - Comparison to WCI *Essential Reporting Requirements*

What Would a Covered Entity Need to Do?

1. Register with ARB
2. Report emissions during the compliance period
3. Acquire compliance instruments
4. Surrender compliance instruments to match surrender obligation

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Registration and Tracking

- Registration creates two types of accounts in the tracking system:
  - Holding Accounts
  - Compliance Accounts
- Registration required to hold a California compliance instrument
- Opt-in registration may be revoked for rule violations
- Restrictions may be placed on covered entity accounts for rule violations

When Does Registration Occur?

- Entities would register before holding California compliance instruments
- Registration Deadlines
  - Covered entities reporting GHG emissions under the MRR by January 1, 2012 would register by March 31, 2012
  - Covered entities subject to reporting under the MRR after January 1, 2012 would register within 90 days of notifying ARB of their reporting obligation
  - Opt-in participants may register at any time

Reporting Requirements for Covered Entities

- ARB will revise Mandatory Reporting Regulation (MRR) to harmonize with rules applicable to cap-and-trade provisions
- Staff will present MRR revisions to the Board in the same rulemaking package as the cap-and-trade regulation in October 2010

Some Anticipated Changes to MRR

- Reporting threshold to be based on CO_2 equivalent (CO_2e) emissions, rather than CO_2
- Lower reporting threshold to 10,000 MT CO_2e
- Annual verification of emissions data reports for all facilities above the cap threshold of 25,000 MT CO_2e
- Additional reporting requirements for industrial process and fugitive emissions, and reporting of emissions by upstream suppliers of fuels

Timing of the Compliance Cycle

(Example using a 3 year compliance period)

	Q1	Q2	Q3	Q4
Y 1	•Start 1st Period •Auction •Submit unverified Y0 emissions	•Submit verified Y0 emissions •Auction & free allocation	•Auction	•Auction
Y 2	•Auction •Submit unverified Y1 emissions	•Submit verified Y1 emissions •Auction & free allocation	•Auction	•Auction
Y 3	•Auction •Submit unverified Y2 emissions	•Submit verified Y2 emissions •Auction & free allocation	•Auction	•Auction •End 1st Period •Initial surrender for 1st period emissions
Y 4	•Start 2nd Period •Auction •Submit unverified Y3 emissions	•Submit verified Y3 emissions •Auction & free allocation	•Auction •Final surrender for 1st period emissions	•Auction

Compliance Instruments: What Could Be Traded?

Instruments Issued by CA

- ***CA Greenhouse Gas Allowances***
- CA Greenhouse Gas Offset Credits

Examples of Instruments Issued by External Programs that Could be Approved for Use*

- ***WCI Partner Jurisdiction Allowances***
- WCI Partner Jurisdiction Offsets
- Certified Emission Reductions (CERs)
- Climate Reserve Tonnes (CRTs)

Color Coding:

Would Not be Subject to the Use Limit

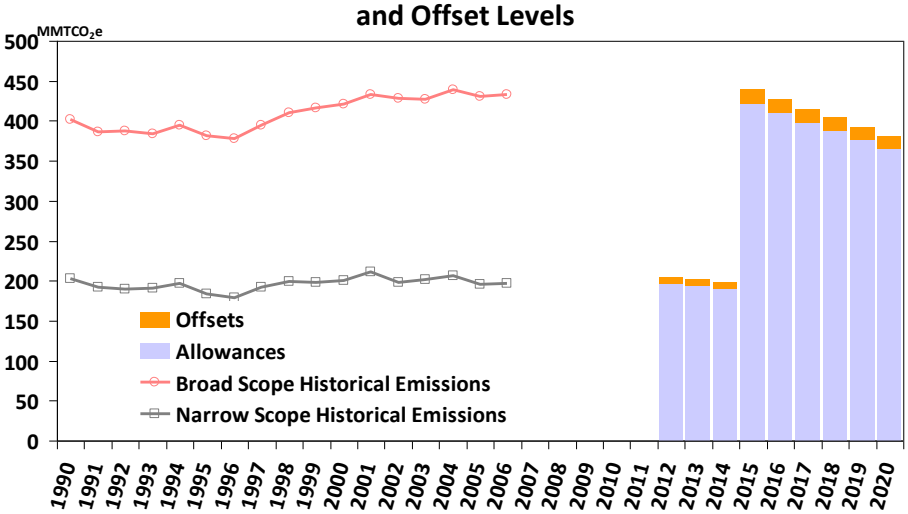
Would be Subject to the Use Limit

*** May be used if linkage to these systems is approved**

How Many Allowances Would Be Issued?

- PDR contains illustrative numbers that show relationship between allowances, offsets and historical emission levels
  - Presented graphically on the next slide
- Spring 2010 draft regulation to contain draft allowance budgets and offset limit level based on projected estimates
  - 2012 emissions estimates for all sources
  - 2015 emissions estimates for fuel providers

Historical Emission Trends Relative to Example Allowance and Offset Levels



Available from: http://www.arb.ca.gov/cc/capandtrade/meetings/121409/capcalc.xls

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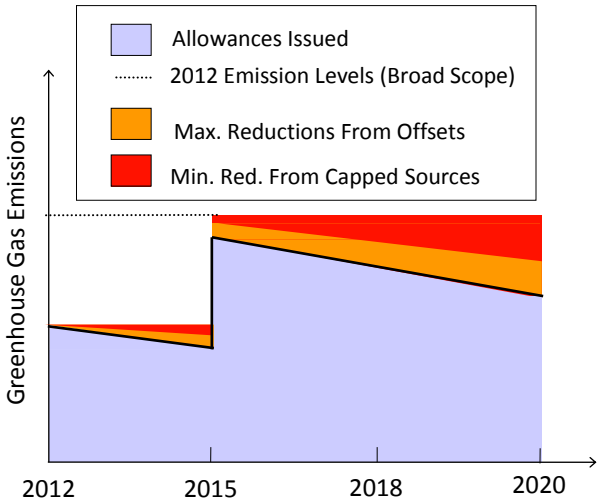
Allocation of Allowance Value

- PDR contains placeholder for allocation provisions
- PDR summarizes three claims to value of allowances discussed by the Economic and Allocation Advisory Committee (EAAC):
  - Compensation for harm
  - Californians' common claim on allowance value
  - Financing public spending related to the goals of AB 32
- Final recommendations from EAAC expected in January 2010

How Many Offsets Would Be Allowed?

- Scoping Plan Policy Goal:
  - Majority of reductions come from the covered entities
- Example implementation of the usage limit:

  O/S ≤ 4%
- **O** is the number of offsets surrendered
  - Shown in orange
- **S** is emissions
  - S must equal the compliance instruments surrendered (orange plus purple)



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Offset Credits

- PDR identifies rules for two types of offset credits:
  - Offset credits issued by ARB
  - Offset credits issued by an external program and accepted/approved by ARB
- Discusses whether the offsets system would be administered by ARB or an independent entity that reports to the Board
- Identifies approval process and requirements for offset quantification methodologies for offset credits issued by ARB

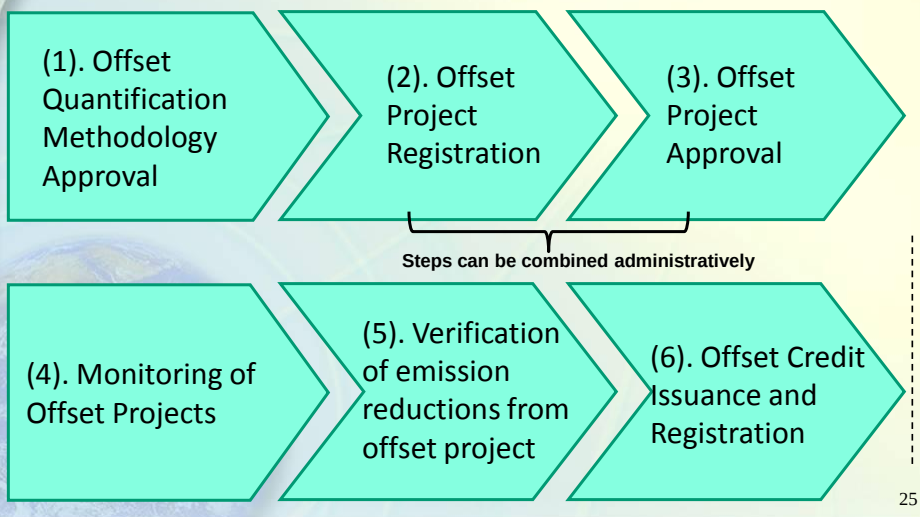
General Requirements for Offset Credits

- Reductions would need to meet all AB32 and ARB criteria (real, additional, quantifiable, permanent, verifiable and enforceable)
- Subject to a quantitative usage limit
- Offset projects would need to commence after 12/31/2006

Offset Credits Issued by ARB

- Offset projects would use a Board-approved offset quantification methodology and would be registered with ARB
- PDR discusses and asks for comment on where, geographically, ARB could issue offset credits
- PDR describes process for ARB credit issuance including:
  - Approving offset quantification methodologies
  - Reviewing/ approving offset projects for registration
  - Overseeing monitoring/recordkeeping of project activities
  - Reviewing verification statements from third-party verifiers
  - Determining the issuance and amount of offset credits

Process for Offset Credits Issued by ARB



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Offset Quantification Methodologies

- For offset credits issued by ARB, the Board would approve each offset quantification methodology
- Approved methodologies would consist of standardized methods for estimating project baselines and determining additionality
- PDR lays out requirements for methodologies including: quantification, additionality, baselines, accounting for leakage and uncertainty, no net harm, permanence, crediting periods, monitoring and reporting and verification

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What Other Compliance Instruments Could be Allowed?

- PDR identifies criteria and eligibility for linkage to external GHG emissions trading systems (ETS) and GHG offset crediting systems
- All linkages would be approved by the Board
- PDR identifies mechanisms needed for enforcement purposes, such as a MOU
  - ARB would formalize enforcement agreements for all phases of cap-and-trade program operations

Offset Credits Issued by External Programs and Approved by ARB

- Offset credits issued by other programs may be approved if they meet AB 32 criteria and are issued by a program that is approved by the Board
- Specific provisions for offset credits issued to projects located in the U.S., Canada, and developing countries
  - Project types must be approved by the Board
- Provisions for sector-based credits including approval of sectors and crediting baselines

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Concepts for Discussion

- Scope
- Cap Adjustments
- Offsets
- Cost Containment

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Scope: Inclusion of Fuels in 2012

- The Scoping Plan discussed staggered approach for program scope
  - Facility operators and electricity deliverers beginning in 2012
  - Fuel deliverers beginning in 2015
- ARB seeking comment on whether inclusion of fuel deliverers should be accelerated to 2012

30

Scope: Surrender Obligation for Transportation Fuels (1)

- PDR includes four options for calculating surrender obligation for gasoline, diesel, and biofuels:
  1. Net “carbon content”
  2. Tailpipe combustion factor
  3. Net “carbon content” plus some portion of lifecycle emissions
  4. Emission factors based on lifecycle carbon intensity factor (per LCFS)

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Scope: Surrender Obligation for Transportation Fuels (2)

- ARB is requesting comments on these options, as well as the relative importance of:
  - Fuel-switching incentives
  - Consistency of accounting across end uses
  - Scalability to a broader program
  - Reporting/administrative complexity

32

Cap Adjustments: Voluntary Renewable Electricity Generation

- Policy Goal: Maintain current incentives for voluntary investment in renewable power
- Estimate amount of voluntary renewable power (MWh) expected in a period
  - Calculate amount of emissions from fossil power expected to be displaced by this power
- Withhold allowances from the budgets to account for this expected voluntary renewable power
- Measure actual amount of voluntary renewable power occurring
- Retire held allowances (adjust the allowance budget) to account for demonstrated emission reductions

Offsets: Geographic Issuance of ARB Offset Credits

- Staff evaluating where ARB should issue offset credits
  - Options include limit to projects located in CA; in the U.S.; in North America; or internationally (no limits)
- Project oversight is more manageable with a smaller geographic area, but could lead to greater dependence on offsets issued by other programs
- For projects outside CA where there is less regulatory stringency for certain emitting activities, ARB is evaluating whether a benchmark for additionality should be set at the CA regulatory level

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Offsets: Current Board-Approved Offset Methodologies

- Beginning in 2007 the Board began adopting quantification methodologies for voluntary purposes
  - Endorsed only the quantification methodologies as the highest standard for carbon accounting
- ARB has not yet adopted any verification requirements for reductions resulting from these methodologies
- To be considered for compliance purposes, reductions from the use of these methodologies would be subject to regulatory verification and enforcement requirements

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Offsets: Enforcement of Offset Credits

- ARB may take enforcement action against third-party verifiers, offset project developers, and offset users
- Offsets determined to be ineligible after issuance or acceptance would result in revocation of the credit for compliance use
- Covered entities that surrender offsets later deemed ineligible are responsible for replacing the lost tons
  - Covered entities could take recourse with the project developer through “make-whole contracts” to replace lost tons

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Cost Containment: Price Mitigation Principles

- Staff focusing on the following principles when considering cost containment options:
  1. Any attempt at price mitigation limits price discovery and adjustment, which are main benefits of cap-and-trade
  2. Mechanisms must ensure the environmental integrity of the cap by not including a “safety valve”

Cost Containment: Price Collars

- Stakeholders have expressed concern over compliance instrument prices that are either too high or too low
- ARB is considering cost containment options based on target prices known as “Price Collars”
  - “Hard” collars are price controls
  - “Soft” collars mitigate prices by changing the supply of instruments in the market
  - ARB staff believe “soft” collars would distort the market less than “hard” collars

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Cost Containment Option: Auction Reserve

- ARB could set a minimum auction price ("Reserve Price") below which allowances could not be sold at auction
  - This would not set a minimum price for secondary trades
  - Unsold allowances could be held in a Reserve Holding Account
  - Account could be augmented through direct allocation
- Allowances could be released from the Reserve during times of high prices
- ARB requesting comment but will not make a recommendation until receiving EAAC report

Cost Containment Options: Soft Price Ceilings

- Public discussions on cost containment focused on four options that would increase the number of instruments in the market:
  1. Release allowances from a Reserve
     - Does not require changes to PDR
     - Provides only limited increase in credit supply
  2. Relax quantitative use limit for offsets
     - Reduces direct reductions within California
  3. Expand acceptable offset projects by type or location
     - May reduce offset quality
  4. Allow limited borrowing from next compliance period
     - Must avoid "cascading" borrowing

Cost Containment: Length of Compliance Periods

- PDR proposes three-year compliance periods
  - Through 2020: 2012-2014, 2015-2017, 2018-2020
- A three-year compliance period could increase the magnitude of potential defaults
- PDR considers two options for mitigating the size of potential defaults:
  - Require covered entities to cover a portion of emissions by surrendering compliance instruments at periodic intervals
  - Shorten compliance period to one year with borrowing from the following year

Special Thanks to:

- California Energy Commission
- California Public Utility Commission
- ARB Enforcement Division, Legal Office, Planning and Technical Support Division, Research Division, and Stationary Source Division

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Cap-and-Trade Program Development Team

Sam Wade, Mary Jane Coombs, Dave Allgood	Cap setting
Matt Zaragoza, Mihoyo Fuji, Ashley Dunn, Sam Wade	Allocation strategy
Ray Olsson, Matt Botill, Ashley Dunn	Market operations and oversight
Brieanne Aguila	Offsets, linkage, and cap-and-trade project manager
Claudia Orlando, Bill Knox	Electricity and energy efficiency
Manpreet Mattu	Reporting
Bruce Tuter, **Mihoyo Fuji**	Industrial sectors
Stephen Shelby	Offsets and linkage
Barbara Bamberger	International forestry
Karin Donhowe	Broad scope fuels
David Kennedy, Stephen Shelby, Mihoyo Fuji, Dave Allgood, Matt Botill, **Jeannie Blakeslee**, **Candace Vahlsing**	Impact analyses (environmental, economic, localized, small business, public health)
Yachun Chow	Regulation coordination

***Lead Contact**

Now It's Your Turn

- Comments and questions

The Role of Offsets in Cap-and-Trade

Consideration of a Process for the Adoption of Offset Accounting Protocols for Compliance Purposes

February 25, 2010
California Air Resources Board

What Is Cap-and-Trade?

- A statewide limit on greenhouse gas emissions from covered sources that declines over time to achieve an emission reduction goal
- Allowances are tradable permits that give one-time permission to emit a metric ton of greenhouse gases
- Each year, California will issue allowances equal to that year's cap
- Other cap-and-trade programs we link to (e.g., WCI partner programs) would also issue allowances that California sources can acquire to meet their compliance obligations

What's Tradable in the Program?

- "Compliance Instruments" that can be traded include:
  - Allowances issued by California
  - Offsets issued by California
  - Allowances and offsets from linked programs, e.g., WCI

What is an Offset in the Context of a Cap-and-Trade Program?

- An offset is a credit for a verified emission reduction from a source outside the cap-and-trade program
- Offsets can be used by covered entities to meet their cap-and-trade obligations instead of using emission allowances or reducing on-site emissions

What Role Do Offsets Play in Cap-and-Trade?

- Reduce compliance costs for covered entities
- Spur emission reductions in sectors not covered by the program
- Encourage the spread of clean, low carbon technologies outside California
- Provide environmental, social and economic benefits

5

Offsets in the Scoping Plan

- All offsets must meet high quality standards
  - Real, additional, quantifiable, permanent, verifiable and enforceable
- Limit on amount of offsets that can be used
  - Encourage emission reductions by California covered entities
  - Transition California to a clean-energy, low-carbon economy
- No geographic limits on offset projects

6

Public Process for Stakeholder Involvement

- ARB public meetings on offset-related topics
  - Quantitative use limits
  - Criteria for compliance-grade offsets
  - Offset review/approval process
  - Linkage to other GHG trading programs
  - International offsets
- Working with WCI to develop consistent offset approach

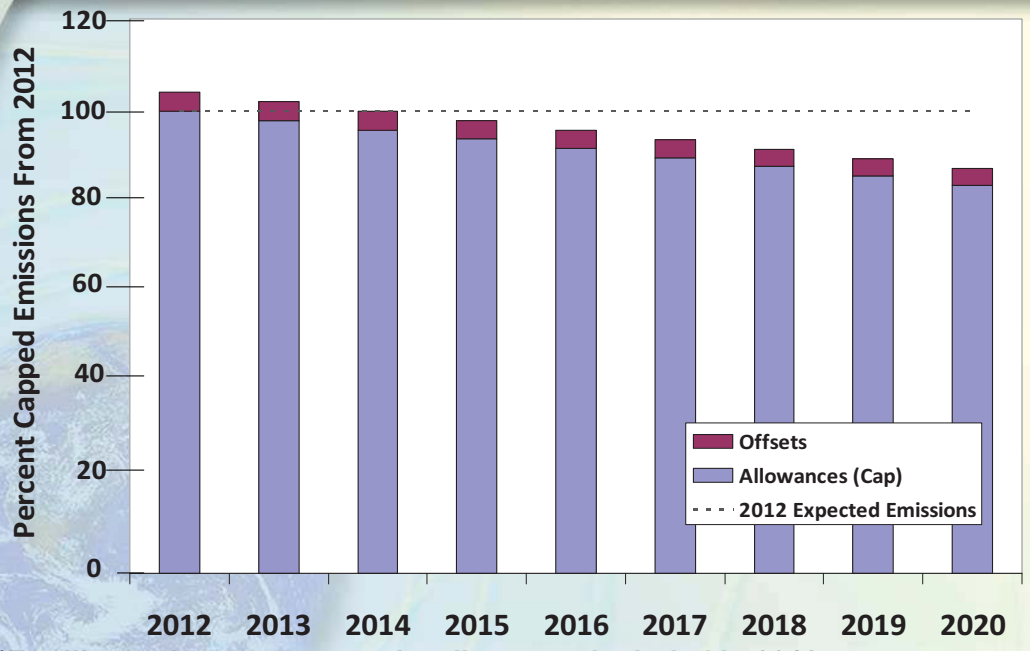
Preliminary Draft Regulation (PDR)

- Released for public review and comment in November 2009
  - Advances dialogue on regulatory design features, including offsets
- Includes both preliminary regulatory language and concepts for public comment on the issuance, approval and use of offsets
- Staff will continue to work with stakeholders to refine program design and draft regulation

Proposed Limits on Offset Use

- Offsets limited to no more than 49% of program reductions
- PDR proposes a method to quantify this limit for each covered entity
  - 49% of *program reductions* translate to 4% of a facility's *emissions* that can be covered by offsets
  - 4% use limit strikes balance among program goals, including stringency and need for cost containment
  - Staff continues to analyze offset limit options

Visualizing Allowances and Offsets Limit Within the Cap*



*For illustrative purposes only, all sectors included in 2012 cap

How Would the Proposed Limit on Offsets Affect Program Costs?

- Offsets are expected to cost less than allowances and provide an additional supply of compliance instruments in the market
  - Net effect is reduced compliance costs for covered entities
- Updated economic analysis for the Scoping Plan is evaluating economic effect of offsets on program
  - Updated economic analysis to be released and presented to the Board in March

11

How Are Offset Credits Created?

- Offset credits must be created, <u>or issued</u>, by a credit issuing organization
- The credit issuing organization ensures that emission reductions are correctly quantified, monitored, and verified

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Who Could Issue Offsets?

- Offset credits issued by ARB
  - Offset projects use an ARB-approved and publicly available offset methodology
- ARB accepted/approved offset credits issued by an external program
  - Programs would need to be approved by ARB through public process
  - Examples could include the Climate Action Reserve, Clean Development Mechanism, or WCI Partner Jurisdictions

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Ensuring Compliance with Offset Program Requirements

- Environmental integrity of the overall program is key
- Those subject to the regulation are accountable
- Reciprocity with jurisdictions where offset project are located

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Action Item

Voluntary Offset Protocols

- Climate Action Reserve (CAR) adopted protocols for the voluntary offsets market
- The Board adopted 4 CAR voluntary protocols
  - Recognized rigor of voluntary accounting procedures for voluntary offsets
  - Since ARB's adoption, CAR has continued to update these protocols

Moving Towards Compliance-Based Offsets

- ARB is transitioning to a regulatory cap-and-trade program
- Focus on protocols for compliance program
- Perform environmental analysis on compliance protocols
- Comply with AB 32 verification and enforcement requirements
- Voluntary protocols will continue to be used in the voluntary market

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Process for Adoption of Compliance Protocols

- Evaluate Board-approved voluntary protocols for compliance purposes
- Perform an environmental analysis on compliance protocols
- Beginning in April, hold public workshops on evaluating protocols for compliance prior to Board consideration
- Bring compliance protocols to the Board for approval

Previously Issued Voluntary Offsets

- CAR has approved projects and issued voluntary offsets under ARB approved voluntary protocols
- Staff will evaluate these projects and determine verification and enforcement requirements that would be needed for ARB to accept credits from these projects for compliance purposes

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Recommendation

- Withdraw adoption of the voluntary accounting protocols
- Approve the process outlined by Staff

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State of California
AIR RESOURCES BOARD

Resolution 10-22

February 25, 2010

Agenda Item No.: 10-2-9

WHEREAS, the California Global Warming Solutions Act of 2006 (AB 32) made findings that global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California;

WHEREAS, AB 32 creates a comprehensive multi-year program to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020, and designates the Air Resources Board (ARB or Board) as the State agency charged with monitoring and regulating sources of GHG emissions that cause global warming;

WHEREAS, AB 32 directs ARB to identify opportunities for emission reduction measures from voluntary actions, including, but not limited to, carbon sequestration and best management practices;

WHEREAS, AB 32 requires ARB to ensure that entities that have voluntarily reduced their GHG emissions prior to the implementation of regulations receive appropriate credit for early voluntary reductions;

WHEREAS, the Board-adopted the Climate Action Reserve's Forest Project Protocols versions 2.1 and 3.0, the Livestock Project Reporting Protocol version 2.1, and the Urban Forest Project Reporting Protocol version 1.0 as non-regulatory quantification methodologies for the purposes of voluntary GHG accounting and to encourage early emission reductions;

WHEREAS, the quantification methodologies in these Board-adopted voluntary protocols are technically sound and are designed to ensure that registered emission reductions are real, additional, permanent, quantifiable, and verifiable;

WHEREAS, registered emission reductions from projects developed in accordance with these Board-adopted voluntary protocols will be considered for potential compliance use as part of the cap-and-trade rule development process;

WHEREAS, all such protocols are updated from time to time to reflect new information, best practices, updated science, and improved clarity;

WHEREAS, the Board-adopted Livestock Project Reporting Protocol version 2.1 has therefore since been updated by the Climate Action Reserve's version 2.2;

WHEREAS, the Board-adopted Forest Project Protocol version 2.1 has also been updated by the Climate Action Reserve's version 3.0, which has been further updated by version 3.1;

WHEREAS, the Forest Project Protocol version 3.1 is currently undergoing further revision by the Climate Action Reserve;

WHEREAS, Health and Safety Code section 38571 requires ARB to adopt regulations for the verification and enforcement of any voluntary GHG emission reductions used to comply with GHG emission limits;

WHEREAS, ARB staff is in the process of developing a proposed regulation for a California cap-and-trade program, including criteria for verification and enforcement of emissions reductions that may be used for compliance and general provisions for compliance offset protocols; and

WHEREAS, the voluntary protocols adopted by the Board must be updated to reflect changes made since adoption and be evaluated for determining applicability in a compliance program.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby withdraws its adoption of the Climate Action Reserve's Forest Project Protocols version 2.1 and version 3.0, the Livestock Project Reporting Protocol version 2.1, and the Urban Forest Project Reporting Protocol version 1.0.

BE IT FURTHER RESOLVED that the Board directs ARB staff to evaluate these voluntary protocols, prepare an environmental analysis, and propose for Board consideration, GHG emission reduction protocols for compliance purposes in ARB's cap-and-trade program.

BE IT FURTHER RESOLVED that the Board directs ARB staff to hold public workshops on the evaluation of GHG offset project protocols prior to proposing Board adoption of protocols for compliance purposes.

BE IT FURTHER RESOLVED that the Board directs ARB staff to evaluate these voluntary protocols to identify any verification and enforcement requirements that would be needed to accept for compliance purposes voluntary offset credits that were generated using these protocols prior to Board adoption of protocols for the compliance offset system.

I hereby certify that the above is a true and correct copy of Resolution 10-22, as adopted by the Air Resources Board.

Sandra Bannerman, Clerk of the Board

AB 32 Economic Analysis Update

March 25, 2010
California Air Resources Board

1

Updated Economic Analysis

- Completed based on Board direction
- Estimates the state-level economic effects of implementing the Scoping Plan measures
- Not a substitute for, but will inform measure-specific analyses such as the cap-and-trade regulation

2

What's Different About this Analysis?

- New Business-as-Usual projection
  - Updated forecasts reflecting recent economic downturn
  - Pavley regulations
  - 20% RPS
- Uses a dual modeling approach
  - Energy 2020 model
  - E-DRAM model
- Sensitivity analysis
  - 4 additional modeling cases

3

Working with EAAC

- Economic and Allocation Advisory Committee (EAAC) formed to advise ARB
- Staff has worked closely with EAAC to refine methodologies and discuss results
- Staff will continue to consult with members of EAAC as part of the cap-and-trade program development

4

Key Measures Analyzed

The modeling focuses on several key Scoping Plan measures

- Electricity and natural gas energy efficiency programs and standards
- 33 percent Renewable Energy Standard
- Increased use of combined heat and power
- Regional VMT reduction targets
- California's clean car standards (LEV III)
- Goods movement measures
- Low Carbon Fuel Standard
- Cap and Trade

5

Energy 2020

- ENERGY 2020 is a detailed energy analysis system that simulates the supply, price, and demand for all fuels
- Useful for analysis of key Scoping Plan measures and certain aspects of the cap-and-trade program

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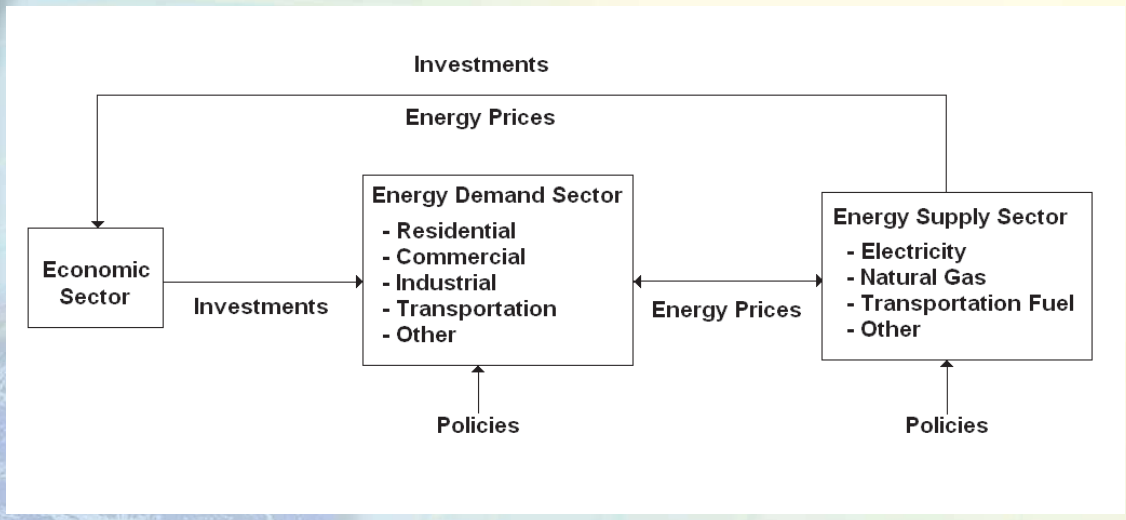
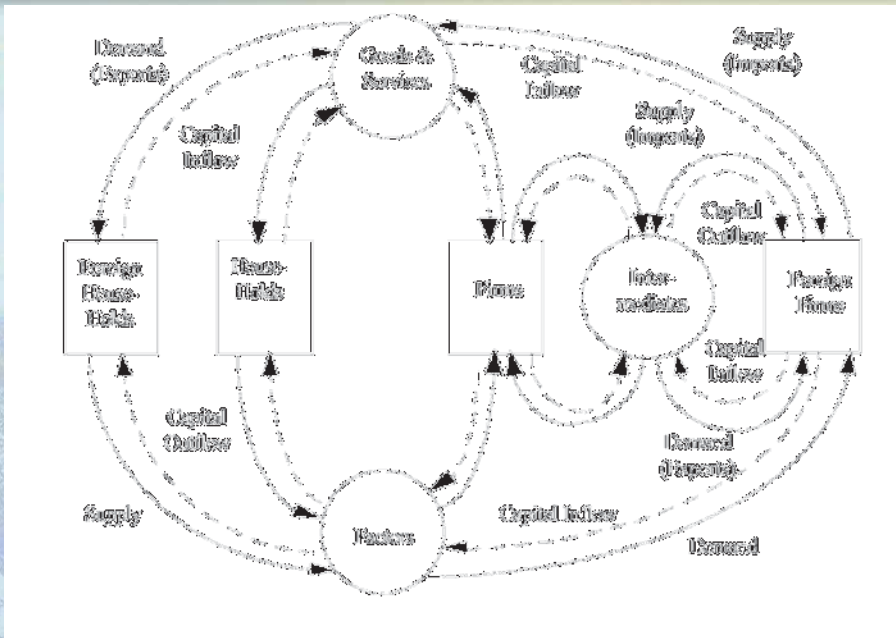
Energy 2020



E-DRAM

- E-DRAM is a computable general equilibrium (CGE) model of the California economy
- CGE models are standard tools of empirical analysis that are widely used to analyze the impacts of policies whose effects are transmitted through multiple markets

E-DRAM



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Combining the Models

Energy 2020

1. CO_2 price
2. Energy demand investments
3. Energy supply investments
4. Fuel expenditures

E-DRAM

1. Sector-level output
2. Personal income
3. Population

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Scoping Plan Policy Case (Case 1)

- Electricity and Natural Gas Measures
  - Energy efficiency programs and standards
  - 33 percent Renewable Energy Standard
  - Increased use of combined heat and power
- Transportation-related GHG measures
  - Regional VMT reduction targets
  - California's clean car standards (Pavley I)
  - Goods movement measures
  - Low Carbon Fuel Standard
- Cap-and-Trade with 4% offsets

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Sensitivity Cases (Cases 2-5)

Case 2: No offsets in cap-and-trade; full complementary policies

Case 3: Fewer reductions from transportation measures

Case 4: Fewer reductions from electricity and natural gas measures

Case 5: Combination of Cases 3 and 4

Note: AB 32 target achieved in all cases

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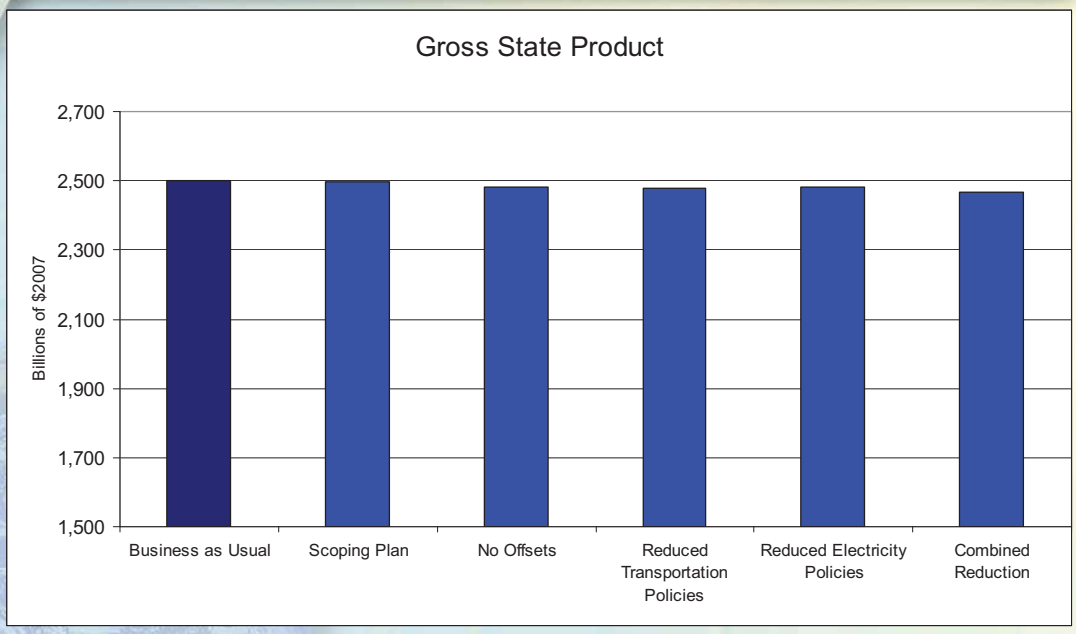
2020 Economic Effects



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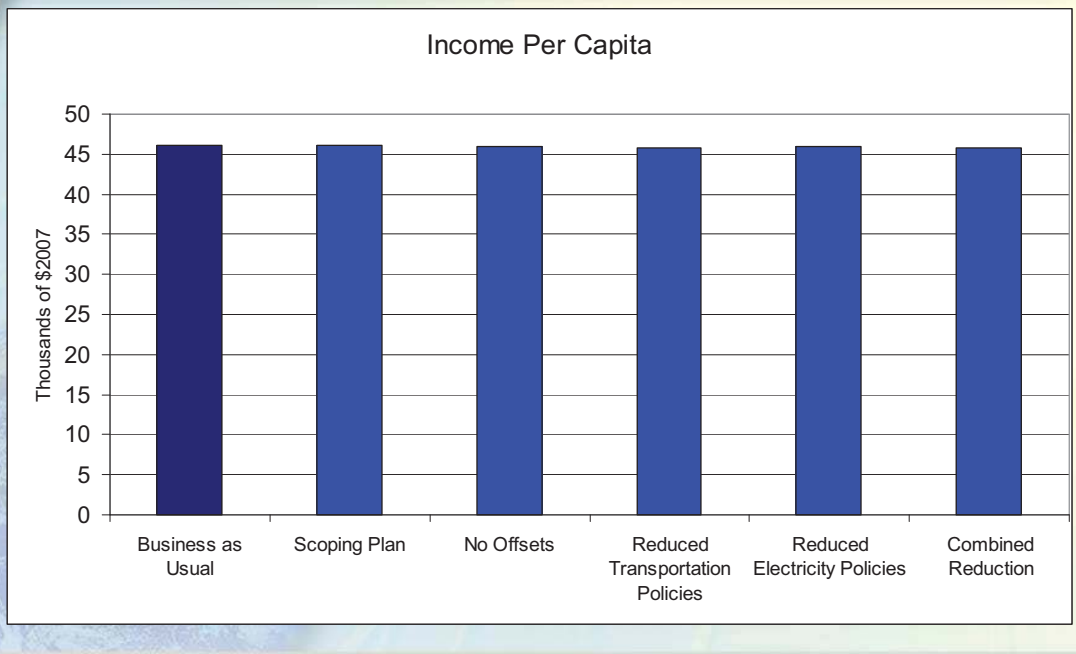
2020 Economic Effects



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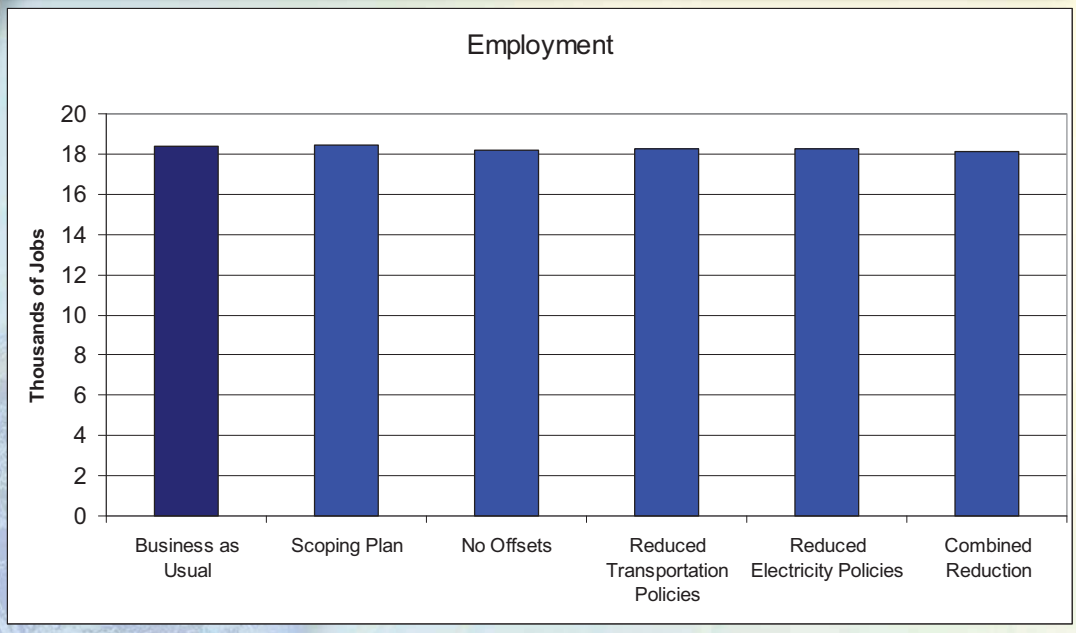
2020 Economic Effects



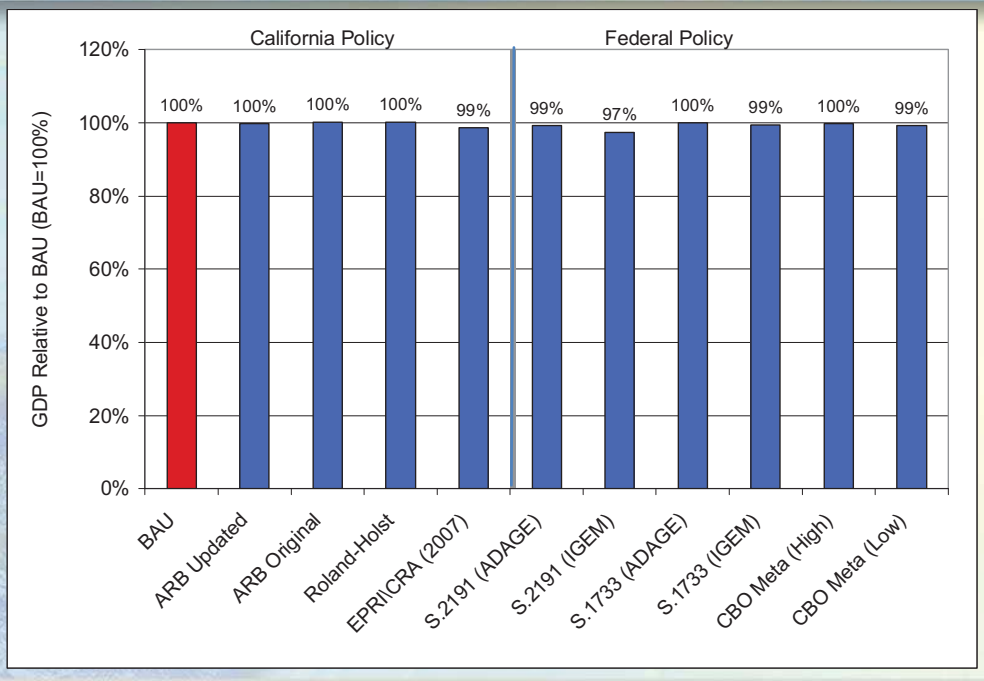
Study Results

- California's emissions target could be achieved while maintaining economic growth
- Less effective implementation of some complementary measures could increase costs
- Offsets reduce costs

Comparison with Other Economic Analyses

- ARB results are consistent with other economic analyses of AB 32 and federal climate change proposals
- Modeling approaches vary but reach similar conclusions – impacts on GDP are small relative to projected growth between now and 2020

Comparison with Other Economic Analyses of Climate Policy



Small Business Analysis

- Indicates that there are unlikely to be significant adverse or disproportionate impacts on small business
- ARB will work with small business to design programs and provide opportunities for California small businesses

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Achieving AB 32 Goals

- Analysis demonstrates the Scoping Plan strategy for reducing greenhouse gases represents a cost-effective approach to implement AB 32
- Individual implementation of Scoping Plan measures will be informed by this economic analysis

20

Next Steps

- April discussion
- Continue working with EAAC
- Analyses to support individual AB 32 measures

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Public Workshop

Greenhouse Gas Cap-and-Trade Regulation Status Update

May 17, 2010

California Air Resources Board

Agenda

- Cap-and-trade Regulation Status Update
  - Initiating a new series of program design workshops
- Allocation of Allowances
  - Current staff thinking on allocation
  - Identifying and addressing leakage risk
  - Developing emissions benchmarks by industrial activity

2

Principles for Program Design

- Create a gradual transition to a low carbon economy
  - Protect California consumers
  - Keep California industry competitive
  - Reward those who have invested in energy efficiency and greenhouse gas reduction
  - Encourages continued investment in efficiency and clean energy

3

Work Completed to Date

- Preliminary Draft Regulation process
  - 132 comments received and reviewed
- Economic and Allocation Advisory Committee process
  - 136 comments received and reviewed
- Completion of updated economic analysis of the Scoping Plan
- Interaction with federal cap-and-trade bill development

4

Working with WCI

- Detailed program design document expected by early July
- Partner jurisdictions aiming at 2012 start embody approximately 70% of emissions from all WCI Partners
  - Expect to link with those partners at start of program; bring others in as they are ready

5

Current Rulemaking Status

- Working on next draft of regulation based on input to date
  - Plan had been to release a working draft of the regulation for public comment in April
  - Revised plan is to air staff thinking on key issues for public discussion before releasing next draft
- Remain on track to take regulation to Board by end of 2010 and to start program in 2012

6

Cost Containment

- Many comments on the need for mechanisms to contain costs
- Cost containment mechanisms in November draft included:
  - Banking of allowances
  - Three year compliance period
  - Allowance reserve
  - Use of offsets
- Will continue to look at need for additional cost containment mechanisms

7

Allowance Allocation Issues

- EAAC recommendations included heavy reliance on auction
- Many have expressed concern with auction approach:
  - Paying for allowances could compete with investment in emission reductions
  - Businesses might not be able to pass along costs
  - Potential for emissions leakage
  - Effects on small business and consumers

8

Allowance Allocation Approaches

- Afternoon session will highlight staff thinking on allowance allocation approaches for the industry and electricity sectors
  - Use of benchmarks tied to output to help address leakage
  - Need for system that does not interfere with near-term investment in emission reductions
  - Need for transition assistance to prevent harm to California economy

9

Moving Forward

- Planning public discussion on other issues, including:
  - Cost containment mechanisms
  - Offset demand and supply
  - Offset protocols
  - Compliance scenario studies
  - Monitoring and enforcement
  - Mandatory reporting
- Discussions start this afternoon with leakage and allowance allocation

10

Stakeholder Comment

- Stakeholders are asked to provide written comments to ARB by **June 7, 2010**

(http://www.arb.ca.gov/cc/capandtrade/comments.htm)

11

Public Workshop

Current Staff Thinking on Allowance Allocation

May 17, 2010

California Air Resources Board

Purpose of Today's Workshop

- Provide a high-level overview of an approach for allowance allocation in the cap-and-trade system
- Invite stakeholder discussion and feedback
  - Stakeholders are asked to provide written comments to ARB by **June 7, 2010**

(http://www.arb.ca.gov/cc/capandtrade/comments.htm)

13

Summary of Economic and Allocation Advisory Committee's Allocation Recommendations

Matt Zaragoza-Watkins

14

Important Concepts

- **Allowance Value-** The economic worth of allowances, either as allowances themselves, or as revenues from the sale of allowances at auction
- **Leakage-** A reduction in emissions of greenhouse gases within the state that is counterbalanced by an increase in emissions of greenhouse gases outside the state

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Economic and Allocation Advisory Committee Background

- Formed in May 2009 by ARB and Cal/EPA to advise on allowance allocation and economic analysis
- 16 members
  - Economic, financial, and policy experts
- In March 2010 the EAAC presented final allocation recommendations to the Board
  - Available from: http://www.climatechange.ca.gov/eaac/

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EAAC Evaluation Criteria

- Cost Effectiveness
- Fairness
- Environmental Effectiveness
- Simplicity/Transparency

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Allocation Involves both Policy Choices and Mechanism Choices

Policy Choices

- Who are the intended recipients of allowance value?

Mechanism Choices

- How is the allowance value distributed to the intended recipients?

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Summary of EAAC Allowance Distribution Recommendations

- Provided recommendations on mechanisms to distribute allowances:
  - Free allocation only if needed for leakage prevention
  - Auction is an efficient distributional mechanism
  - Recommended a double-sided auction

Mechanism Choices

- Many stakeholders interpreted EAAC as recommending 100% auction from the start
  - Not what the committee recommended
  - ARB is strongly considering the need for free allocation to address both leakage and transition assistance

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Summary of EAAC Allowance Value Recommendations

- Devote value to:
  - Preventing adverse impacts
  - Investing in GHG reductions
  - Returning value to consumers

Policy Choices

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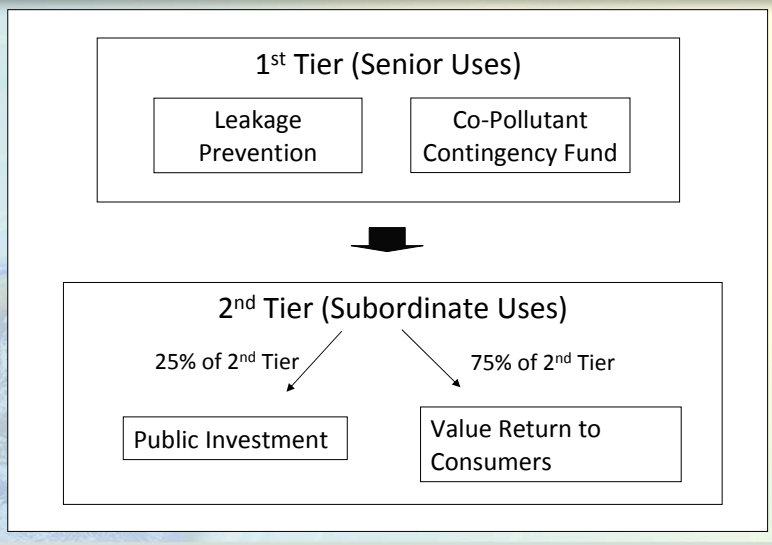
EAAC Allowance Value Flow Diagram



Next Steps

- ARB has reviewed the EAAC recommendations and all stakeholder comments received on allocation
- Current approach to allowance allocation:
  - Incorporates some of the key components of the EAAC framework
  - Focuses more heavily on the need to facilitate smooth transition into the program
- The next presentation explains staff's thinking on the allowance allocation approach in detail

Current Staff Thinking on Allowance Allocation

Sam Wade

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General Approach

- Adapt and expand the EAAC framework
- Major changes from EAAC recommendations:
  - Increased free allocation to industry for leakage prevention and transition assistance
  - Value to utilities for renewable energy investment
  - Combine ‘co-pollutant contingency fund’ and ‘community benefits fund’
  - In later years, return value to consumers through a rebate program or similar mechanism

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Staff Allowance Value Flow Diagram

1st Tier (Senior Uses)

Price Mitigation Allowance Reserve

Industry Transition & Leakage Prevention

2nd Tier (Subordinate Uses)

Targeted Public Investment

- Renewable Power
- California Carbon Trust
- Community Benefit Fund

Consumer Rebate Program

25

Goals Related to Allocation and The Carbon Price Signal

- Remember the conceptual goal of cap-and-trade
  - Establish a uniform economy-wide 'carbon price signal'
- Recognize who bears the end cost of the program
  - In some cases compliance costs can be passed up or down the supply chain
- Strive for a gradual transition
  - In the early years, avoid significant economic gain or loss solely due to allocation decisions

26

Incidence of the Carbon Price

	Electricity	Industry	Dispersed Natural Gas	Dispersed Gasoline and Diesel
Primary Incidence of Carbon Price	• Retail consumers of electricity	• Product consumers (for industry with low leakage risk) • Shareholders (for industry with high leakage risk)	• End consumers of fuels	• End consumers of fuels
Certainty of Incidence	• Certain (due to utility rate-making)	• **Highly uncertain**	• Certain	• Fairly certain
Considerations for Allocation	• Regulators control how any value given to utilities is used • RES policy likely to increase the price of electricity	• Free allocation can be used to minimize leakage • Disagreements about cost pass-through ability	• Regulator controls how any value given to utilities is used	

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1st Tier Uses of Allowance Value

1st Tier (Senior Uses)

Price Mitigation Allowance Reserve

Industry Transition & Leakage Prevention

2nd Tier (Subordinate Uses)

Targeted Public Investment

- Renewable Power
- California Carbon Trust
- Community Benefit Fund

Consumer Rebate Program

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Allowance Reserve for Price Mitigation

- Goal: mitigate unexpectedly high or low allowance prices
  - Small portion of overall allowances initially dedicated to a strategic reserve and forward auctioning
  - If allowance prices are higher than anticipated reserve allowances are released into the market
  - If allowance prices are lower than anticipated some allowances are held back from auction
    - Increases the reserve size
  - Reserve potentially supplemented through increased use of offsets (if needed)

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Industry Transition Assistance and Leakage Prevention

- Goals of free allocation to industry:
  - Short-term: Provide a transition period to smooth market start-up and address uncertainty in evaluation of leakage risk
  - Long-term: Reduce to a level of free allocation needed to prevent leakage
- Free allocation to industry will, to the extent feasible:
  - Be based on output-based GHG efficiency "benchmarks"
  - "Update" to reflect changes in production each year for industry with leakage risk

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Output Based Free Allocation

Conceptual Allocation

$$A = \frac{\text{Allowance Value}}{\text{Output}}$$

Allocation in Practice

$$A = \frac{\text{Allowances}}{\text{Tons Clinker}}$$

- For each industrial activity:
  - Amount of value allocated
  - Appropriate product metric or metrics
- Challenging to move from a theoretical discussion to practical factors by activity
- Detailed discussion later today

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2nd Tier Uses of Allowance Value

1st Tier (Senior Uses)

Price Mitigation Allowance Reserve

Industry Transition & Leakage Prevention

2nd Tier (Subordinate Uses)

Targeted Public Investment

- Renewable Power
- California Carbon Trust
- Community Benefit Fund

Consumer Rebate Program

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Targeted Public Investment: GHG Reductions from Renewable Power (1)

- Conceptual goal of cap-and-trade:
  - Economy-wide carbon price
  - Carbon price in electricity rates should be consistent with carbon price seen in other sectors
- Electric utilities comments to ARB:
  - 33% Renewable Electricity Standard could increase retail rates while reducing the carbon price seen by other sectors
  - Allowance value to retail providers needed to offset the rate increases associated with investment in renewable power and harmonize the carbon price seen by all sectors

33

Targeted Public Investment: GHG Reductions from Renewable Power (2)

- Staff concept:
  - Retail providers receive allowances on behalf of their customers
    - Offset some of the 'above market' carbon price embodied in retail rates due to the RES
  - Retail providers receive allowance directly but will have to monetize these allowances at a double-sided auction
    - No discrimination between utility owned and merchant owned power generation
  - Allocation could be based on 'retail sales' or something more complex
    - Need stakeholder input

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Public Investment: Community Benefits Fund (1)

- Concept:
  - ARB competitive grant program to fund activities related to the **community protection** goals of AB 32
- Likely project types:
  - Projects that reduce GHGs and co-pollutants
  - Adaptation/preparedness for climate change health impacts
  - Improvements to mass transit & land use planning
  - Natural resource conservation

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Public Investment: Community Benefits Fund (2)

- Likely applicants:
  - Local governments
  - Affordable housing associations
  - Other community institutions
- Priority placed on funneling investment toward the most disadvantaged communities in California

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Public Investment: California Carbon Trust

- Concept:
  - ARB competitive grant program related to the **energy innovation** goals of AB 32
- Project types:
  - Research, development and demonstration projects in zero or low GHG technologies
  - Help bring promising and high potential technologies to market
  - Support a green technology workforce training program
- Likely applicants: small businesses, research institutions, vocational training programs

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Rebate Program for Californians

- In later years (2nd compliance period and beyond) a mechanism to return value to Californians is needed
- One possible approach:
  - Rebate available to all Californians
- Very basic eligibility requirements (CA resident, etc.)
- Application bundled with informational material about climate change
  - Explain opportunities to reduce consumers' carbon footprints
  - Create an incentive for further voluntary reductions
- Rebates could begin during the 2nd compliance period
  - Match with coverage of emissions from dispersed fuel use where consumers most clearly face the incidence of the carbon price

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Summary of Staff Thinking on Allocation: Sector-by-Sector Perspective

- Industrial Sources:
  - Free allocation to minimize leakage risks and provide a transition to a carbon constrained economy
  - Where possible ARB will use an approach based on emission intensity benchmarks per unit of output
- Electricity Deliverers:
  - No free allocation to generators
  - Allowance value to retail providers to offset the costs of investment in renewable power on behalf of their customers
- Fuel Deliverers:
  - Fuel deliverers internalize a carbon price in fuel prices
  - Allowance value used to achieve AB 32 goals or rebated to consumers

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Value Distribution Mechanisms

Proposed Value Use	Proposed Distribution Mechanism	Double Sided Auction Requirement?
Industry Assistance	Free allowances on an output basis	No
Investment in Renewable Power	Free allowances to retail providers on a retail sales basis (offered at a double-sided auction)	Yes
California Carbon Trust	Competitive grants offered as either $ or allowances	Maybe
Community Benefit Funds	Competitive grants offered as either $ or allowances	Maybe
Consumer Rebate Program	Allowance or $ offered on an application basis (per household or per capita)	Maybe

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Addressing Emissions Leakage

Mihoyo Fuji

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Part 1: Identifying the Sectors Exposed to Emissions Leakage Risk

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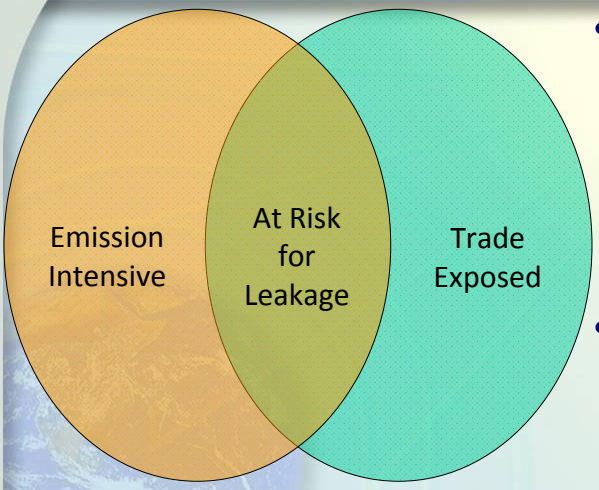
Identifying Leakage Risk



- Emission Intensive
  - Imposition of a carbon price may have a large impact on the prices of goods produced
  - Could include impacts from both direct and indirect emissions
- Trade Exposed
  - Competition with regions with no carbon price may leave firms unable to pass the carbon price to consumers

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Staff Approach to Establish Identification Methodology

- Reviewed methodologies for other cap-and-trade schemes
  - EU ETS
  - ACES (Waxman-Markey)
  - Australia CPRS
- Used actual data for US/California to understand the implications of the methodologies for California program

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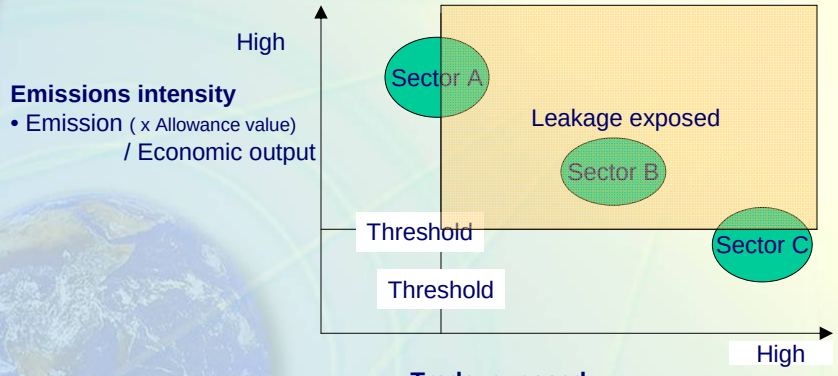
Identification Methodology: Other Programs



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Emissions Intensity Metrics: Reviewing Other Programs

- Emissions intensity metrics proposed by other programs
  - Numerator
    - (Direct + Indirect emissions), or
    - (Direct + Indirect emissions) x Assumed Allowance price
  - Denominator
    - Value added, or
    - Shipment (revenue)
- Data plugged into the metrics
  - GHG emissions (MRR 2008 results)
  - Value Added (State level - US Economic Census 2002/2007)

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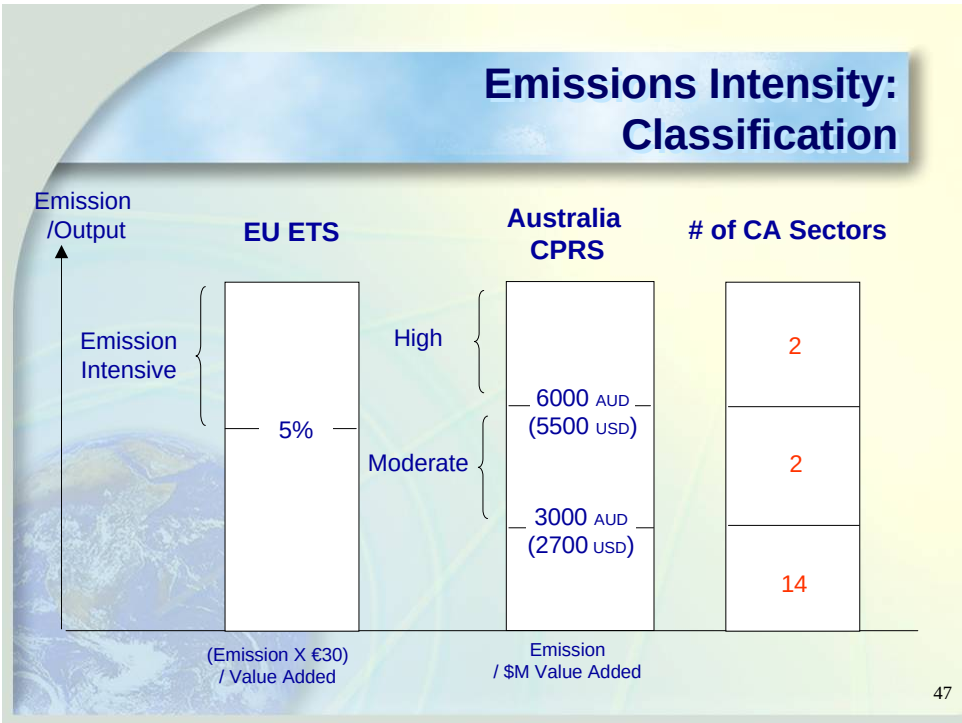
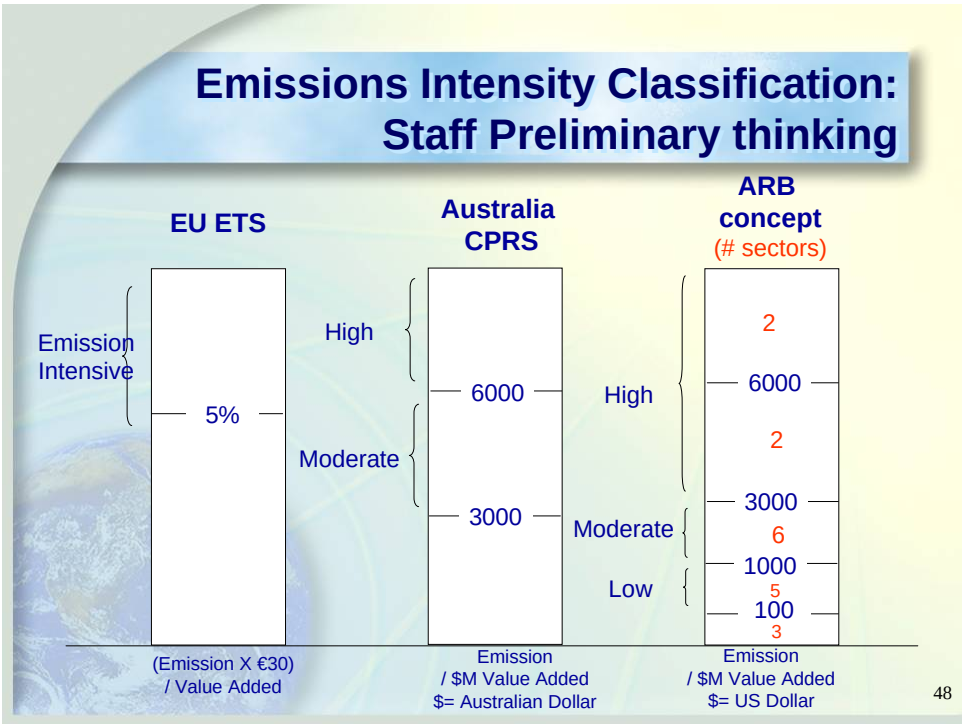

Emissions Intensity: Classification
Emission /Output
EU ETS
Australia CPRS
# of CA Sectors
Emission Intensive
5%
High
Moderate
6000 AUD (5500 USD)
3000 AUD (2700 USD)
2
2
14
(Emission X €30) / Value Added
Emission / $M Value Added
47


Emissions Intensity Classification: Staff Preliminary thinking
EU ETS
Australia CPRS
ARB concept
(# sectors)
Emission Intensive
5%
High
Moderate
6000
3000
High
Moderate
Low
2
6000
2
3000
6
1000
5
100
3
(Emission X €30) / Value Added
Emission / $M Value Added $= Australian Dollar
Emission / $M Value Added $= US Dollar
48

Trade Exposure: Objective of the Analysis

- To reduce uncertainty in sector-by-sector carbon price pass-through
- Consider "what will happen if 100% cost have to be absorbed by covered sectors"
- Research how much "cost pass-through ability" covered sectors may have

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International Trade: General Trend

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Trade Exposure: Reviewing Other Programs

- Established to assess international trade exposure
- California program must analyze state-to-state competition
  - State level trade information is not available in a standardized format for all sectors
- Data plugged into the metrics
  - Import/export data from US Census Bureau
  - Shipment from US Census Bureau

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Trade Exposure Metrics: Reviewing Other Programs

EU ETS

- (imports + exports) / (total value of turnover + imports) >10%

ACES (Waxman/Markey)

- (imports + exports) / (total value of shipments + imports) > 15%

Australia CPRS

- (imports + exports) / (domestic production) > 10%

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Trade Exposure: Using ACES Trade Exposure Metrics

- Staff applied national data in ACES metric
- Average of 2003-2008

Trade Intensity	# of CA Sectors
>20%	**4**
15%~20%	**4**
10%~15%	**2**
<10%	**1**
Data N/A	**3**
Not assessed	**4**

ACES Threshold

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Trade Exposure: Considering other indicators

- Economic situation in the past few years
  - 2002-2007/8: Robust domestic demand
  - After 2008: Demand declined sharply
- Trade intensity may differ before/after 2007/8 for many sectors
- Other indicator to support the analysis
  - Producer Price Index
    - Measures the average change over time in the selling prices received by domestic producers
    - Used to calculate price inflation, reveals the pressure put on producers by the costs of their raw materials

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Trade Exposure Classification: Staff Preliminary Thinking

Trade Exposure	ACES Threshold	Producer Price Index	# of CA Sectors
High	>15%	<200	7
Moderate	>15%	>200	1
	<15%	<200	1
	Tentative (further information needed)		3
Low	<15%	>200	2

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Sectors at Leakage Risk: Preliminary Classification

Leakage Risk	ARB Classification	NAICS
High	Sawmills	321113
	Flat glass manufacturing	327211
	Glass container manufacturing	327213
Moderate	Oil and gas extraction*	211111
	Potash, Soda, and Borate Mining*	212391
	Food manufacturing	311
	Breweries	312120
	Paper (except Newsprint) Mills	322121
	Paperboard mills*	322130
	Cement manufacturing	327310
	Mineral wool manufacturing	327993
	Petroleum product manufacturing	324
	Steel and aluminum processing	331
Low	Gypsum Product Manufacturing	327420
	Pharmaceutical and Medicine Manufacturing	325412
	Turbine and Turbine Generator Set Units Manufacturing	333611
	Aircraft Manufacturing	336411

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* Limited information available

Sectors Not Included in Initial Assessment

•ARB staff needs more information to conduct analysis

NAICS	Sector description
211112	Natural Gas Liquid Extraction
212312	Crushed and Broken Limestone Mining and Quarrying
212399	All Other Nonmetallic Mineral Mining (diatomaceous earth)
321219	Reconstituted Wood Product Manufacturing
324191	Petroleum Lubricating Oil and Grease Manufacturing
325188	All Other Basic Inorganic Chemical Manufacturing
326140	Polystyrene Foam Product Manufacturing
32712	Clay Building Material and Refractories Manufacturing

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Establishing Identification methodology: Further Analysis on Trade Exposure

- Focus
  - Review the sectors at moderate leakage risk with high emissions intensity
    - Emissions intensive sectors are sensitive to carbon costs
    - Needs to be evaluated in more depth
  - Review the sectors with significant state-to-state competition

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Further Analysis: Staff Preliminary Thinking for Indicators

- Compare the trend of trade through California ports to:
  - Product price
  - Domestic demand / consumption
  - Domestic producers' performance
  - To understand the degree of cost pass-through opportunities
- Use sector-specific regional data
  - US Energy Information Administration
  - California Energy Commission
  - US Geological Survey Mineral Year Book
  - Stakeholder suggestions solicited

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Further Analysis: Interagency Report

- The effects of H.R. 2454 (ACES) on international competitiveness and emissions leakage in energy-intensive trade-exposed industries
- Released December 2009
- Analyze ACES provisions and its effects on emissions leakage
- Identifies factors that may influence competitiveness of industries

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Further Analysis: Staff Preliminary Thinking for Indicators

- Factors that may influence competitiveness
- Identified in the Interagency report
  - Product differentiation
  - Transportation costs
  - Existing cost advantages
  - Fixed plant costs
  - Estimate total global production capacity and current capacity utilization
  - Agglomeration economies

http://www.epa.gov/climatechange/economics/economicanalyses.html#interagency

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Questions for Stakeholders

- Comments sought on proposed methodology
  - Approach
  - Data source
- Suggestions on the data/information that can be provided to ARB to support the analysis
  - Quantitative
  - Verifiable

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Part 2: Choosing the Mechanism to Address Emissions Leakage

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Addressing Emissions Leakage

- A mechanism has to be chosen based on the degree of leakage risk determined through leakage analysis
- Alternatives:
  - Assign Carbon Price to Imports (border tax adjustments, first-deliverer concept, full lifecycle accounting)
  - Subsidize continued in-state production using allowance value (output based free allocation)

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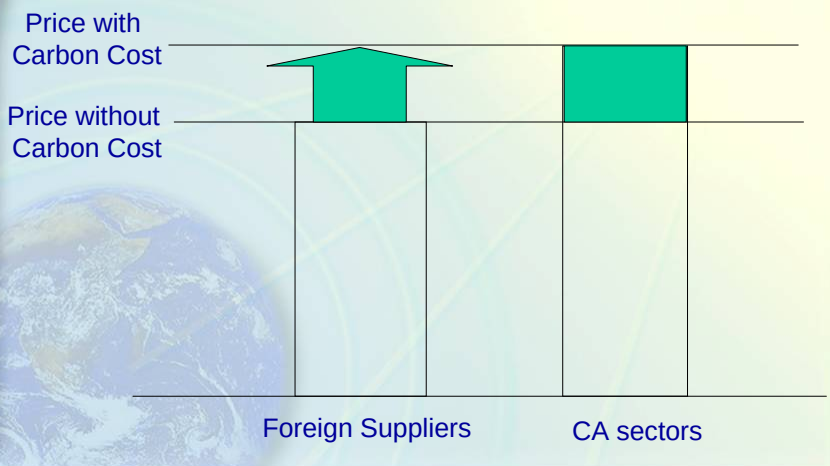
Border Adjustments



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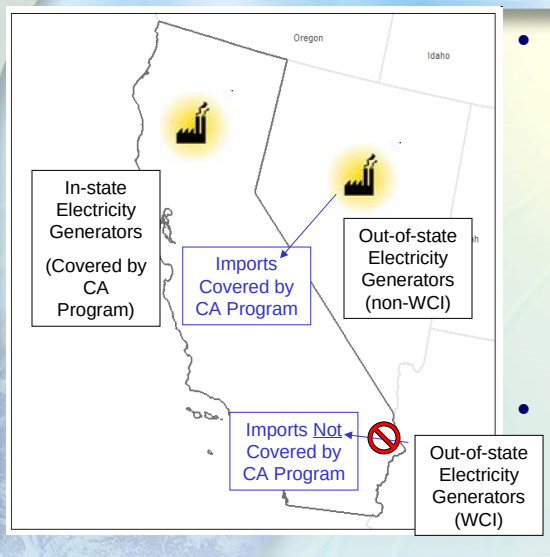
"First Deliverer" Concept - Electricity



- "First Deliverer" covers all deliverers of electricity to the CA grid, regardless of origin of generation
  - In-state generators
  - Entities delivering imported electricity from known and unknown sources
- Assigns a carbon price to imports to prevent leakage

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Staff Preliminary Thinking: Leakage Prevention for Significant Sectors

Activity Potentially Exposed to Leakage	Method of Leakage Prevention
Electricity Generation	Electricity 'first jurisdictional deliverer' border adjustment
Industrial Production	Output-based updated free allocation using emissions factor benchmarks

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Updating Output-based Free Allocation for Industrial Sources

Sam Wade

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Output Based Free Allocation

Conceptual Allocation

$$A = \frac{\text{Allowance Value}}{\text{Output}}$$

Allocation in Practice

$$A = \frac{\text{Allowances}}{\text{Tons Clinker}}$$

- For each industrial activity:
  - Amount of value allocated
  - Appropriate product metric or metrics
- Challenging to move from a theoretical discussion to practical factors by activity
- Approach needs to be reasonable, maintain the incentives to make reductions, and avoid unnecessary complexity

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Why Updating Output-based Free Allocation?

- Output based emissions efficiency benchmarks
  - Provides the correct incentives to produce a given product in the cleanest way possible
  - Rewards early actors that have reduced their emissions intensity per unit of output
- Updating the measurements of output
  - Reduces the opportunity for windfalls
  - Helps to maintain incentive for in-state production
  - Less critical to update in sectors with less leakage risk

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Conceptual Principles

- Benchmarks based on direct emissions as measured by the mandatory reporting regulations
- No corrections for plant size, age, raw material quality etc.
- No technology-specific benchmarks for processes producing the same product
- No fuel-specific benchmarks
- Separate benchmarks for intermediate products may be necessary (especially if intermediates are traded)

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Detailed Formula for Updating Output-based Free Allocation (1)

Emission Intensity Benchmark
- Per unit output
- Constant over time

Cap Adjustment Factor
- Declines over time in proportion to decline in allowance budgets

Free Allocation
- Annual number of allowances received

$$A = O \times B \times a \times C$$

Assistance Factor
Combination of
- Leakage prevention (fixed until risk is gone)
- Transition assistance (declines over time)

Output
- Updates based on production from the prior year

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Detailed Formula for Updating Output-based Free Allocation (2)

$$A = \boxed{O} \times B \times a \times C$$

- Output
  - The amount of product from a defined activity (e.g. tons of clinker vs. tons of cement)
- Staff thinking
  - Appropriate metric will be chosen for each activity
  - Output information will be reported to ARB through the mandatory reporting regulation
  - Any updating free allocation will be based on output from the prior year

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Detailed Formula for Updating Output-based Free Allocation (3)

$$A = O \times \boxed{B} \times a \times C$$

- Emissions efficiency benchmark
  - Established for each activity
    - 'x' tons of CO2e per ton of product output
- Staff Thinking
  - Choose the benchmarks to provide the correct incentives to produce a given product in the cleanest way possible

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Policy Bases for Benchmark Levels (1)

- Many possible bases for benchmarks
  - Emissions intensity of an average facility
  - 'Best available technology' concept or industry best practices
- Considerations
  - Sector-level ranges in efficiency
  - Geographical scope of facilities sampled
  - Level of stringency impacts on need for gradual imposition of carbon price

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Policy Bases for Benchmark Levels (2)

- EU ETS
  - Setting benchmarks at the average emissions to produce a given product from the 10% most efficient plants EU wide
- Washington State
  - Developing benchmarks based on "industry best practices, reflecting emission levels from highly efficient, lower emitting facilities"
- Waxman-Markey
  - Benchmarks based on industry averages that would evolve over time

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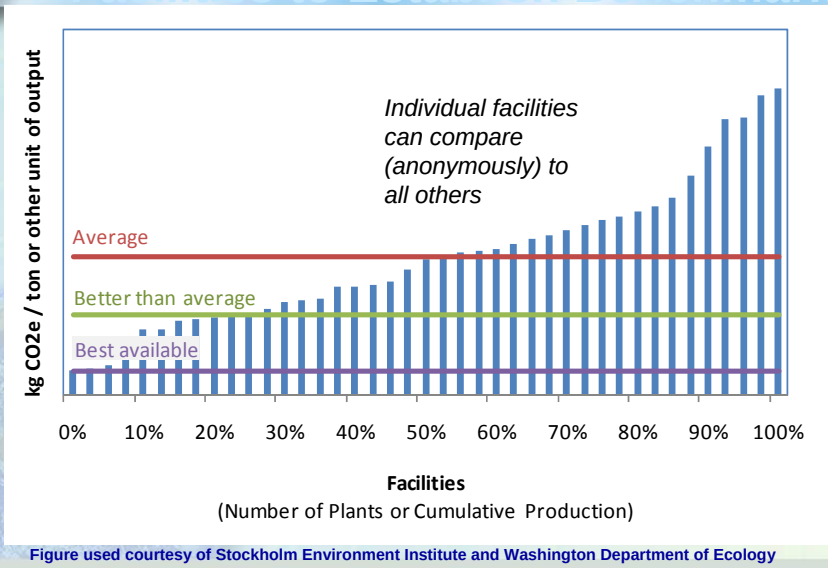
Conceptual Comparison Between Facilities to Establish Benchmark



77

Figure used courtesy of Stockholm Environment Institute and Washington Department of Ecology

Defining the Benchmark Defines Initial Buyers and Sellers

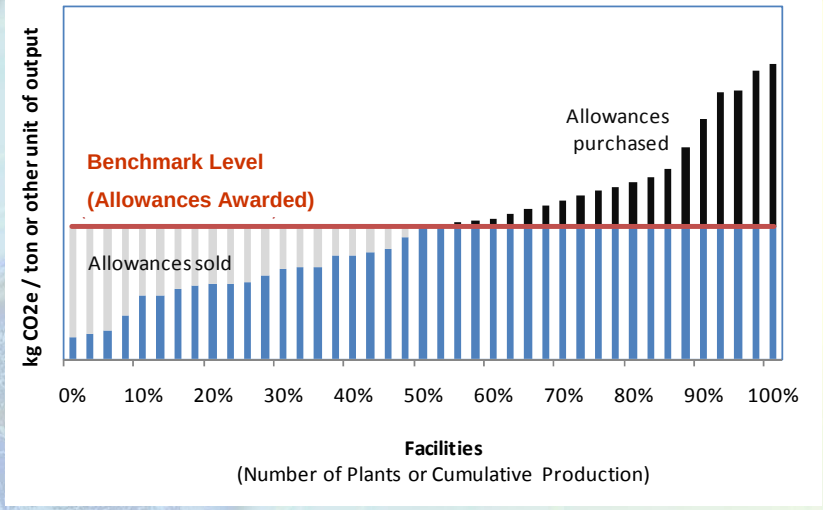


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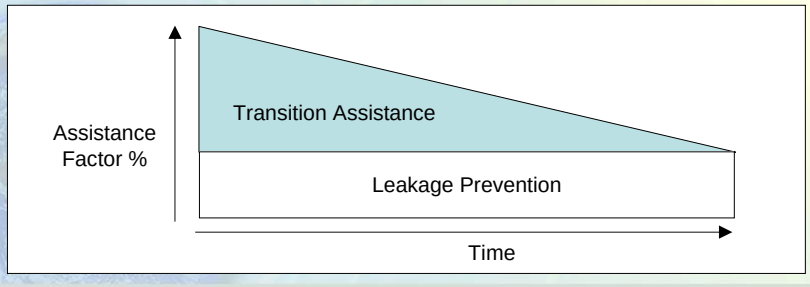
Figure used courtesy of Stockholm Environment Institute and Washington Department of Ecology

Detailed Formula for Updating Output-based Free Allocation (4)

$$A = O \times B \times \boxed{a} \times C$$

- Assistance Factor = Leakage Prevention + Transition Assistance
- Assistance Factor is expressed as a percentage



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EU Assistance Factors

Classification	Assistance Factor for Free Allocation (a)
'Significant Leakage Risk'	100% for all years 2013-2020
'Not at Risk for Leakage '	80% in 2013 transitioning to 30% in 2020 with a goal of 0% in 2027

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Staff Preliminary Thinking: Assistance Factors

Leakage Risk	Emission Intensity	2012-2014	2015-2017	2018-2020
High	All	100%	100%	100%
Moderate	High	100%	TBD, based on sector-by-sector analysis	TBD, based on sector-by-sector analysis
	Moderate Low	100%	75%	50%
Low	All	100%	50%	30%

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Detailed Formula for Updating Output-based Free Allocation (5)

$$A = O \times B \times a \times \boxed{C}$$

- Cap Adjustment Factor
  - Accounts for the decline in the overall amount of allowances available
- Staff thinking:
  - Cap adjustment factor is expressed as a %
  - Represents a reduction level from the 2012 starting point (for the narrow scope)

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Comparison of EU Approach and ARB concept

	EU Approach	Current ARB Staff concept
Fixed or Updating?	•Fixed (all sectors)	•Updating (high-moderate leakage risk) •Fixed (low leakage risk)
Amount of Allowances per Unit of Product	•Benchmark policy = Average emissions from 10% most efficient plants by sector •Sectors at risk for leakage get 100% of the benchmark •All others get a declining percentage of the benchmark (from 80% in 2013 to 30% in 2020)	•Benchmark policy = TBD •Short-term: Begin at 100% of the benchmark •Long-term: Free allocation proportional to leakage risk
Product Metrics	•Defined in detail by sector	•Consider EU metrics as appropriate
No Appropriate Output Metric?	•Use Fall-back methods	•Consider similar fall-back methods as EU

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Sectors for California Benchmarking

Oil and gas extraction
Mining
Sawmills
*Paper manufacturing
*Paperboard manufacturing
*Petroleum refineries (and hydrogen plants)
*Glass container manufacturing
*Flat glass manufacturing
*Mineral wool manufacturing
*Cement manufacturing
*Gypsum Product Manufacturing
*Metal

* Sectors with benchmarks under development in the European Union Emission Trading System

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Example EU ETS Draft Activity Metrics and Benchmarks

Sector Name	Activity Metric	Sample Benchmark Value
Cement	Tonne Clinker	780 kg CO_2/t clinker
Refining	CO_2 Weighted Tonne	30 kg CO_2/CWT
Glass	10 Output Metrics (Flat, Cast/Rolled, etc.)	Still Under Development
Pulp and Paper	Highly Complex	Still Under Development
Chemicals	Metrics for 8 Chemicals (Nitric Acid, Hydrogen, Soda Ash, etc.)	Hydrogen tied to refining benchmark approach
Iron and Steel	4 Output Metrics (Coke, Sintered Ore, Hot Metal, EAF Crude Steel)	0.058 kg CO2/t EAF crude steel

Information available at: http://ec.europa.eu/environment/climat/emission/benchmarking_en.htm

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CA Sectors Less Suited to Output Benchmarking

- Complex to develop output benchmark in sectors with:
  - Limited number of facilities in CA/WCI
  - No benchmark work elsewhere
  - Produce diverse products
- Need default methods or 'fall back approaches' for these sectors

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EU ETS Proposed Fall-Back Approaches

- Where no product metrics are proposed the EU is pursuing three alternatives:
  - **Heat production benchmark** for combustion activities where an intermediate heat carrier (e.g. hot water, steam) is produced and monitored
  - **Fuel mix benchmark** for combustion activities where heat or mechanical energy used cannot be monitored
  - **Grandfathering for non-combustion** related process emissions

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Other Potential Fall-back Approaches

- Facility specific benchmarks
  - Could be developed using emission per output of previous years for a specific plant
  - Potentially apply a discount factor to recognize desire to reward efficiency
- Suggestions?

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Questions for Stakeholders

- What activities should benchmarks be developed for?
  - Suggestions for approaches where product output metrics are not feasible?
- What is the appropriate policy basis for the CA benchmark terms?
  - Example: Average emissions per unit product from the 10% most efficient plants in California
  - Reasons to vary by sector?
- How should assistance factors decline for sectors as a function of leakage risk?

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Benchmark Stakeholder Process: Next Steps

- Sector specific consultation process
  - Define activity
  - Determine output metric
  - Determine methodology to establish benchmark stringency
- Targeted Sectors
  - Oil and gas extraction
  - Mining
  - Sawmills
  - Paper manufacturing
  - Paperboard manufacturing
  - Petroleum refineries (and hydrogen plants)
  - Glass container manufacturing
  - Flat glass manufacturing
  - Mineral wool manufacturing
  - Cement manufacturing
  - Gypsum Product Manufacturing
  - Metal

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Links and References

- EU ETS Benchmarking
  http://ec.europa.eu/environment/climat/emission/benchmarking_en.htm

- WCI Partner Benchmarking
  - Washington (benchmarking symposium on 5/19!)
    http://www.ecy.wa.gov/climatechange/GHGbenchmarking.htm
  - Ontario/Quebec
    http://www.ene.gov.on.ca/en/air/climatechange/benchmarking.php

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Public Meeting

Cost Containment Options in a California Cap-and-Trade Program

June 22, 2010
California Air Resources Board

Comments

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments are requested by July 13th; please submit comments to: (**http://www.arb.ca.gov/cc/capandtrade/comments.htm)**

2

Cost Containment Options in a California Cap-and-Trade Program

Raymond Olsson

Cost Containment Objectives

1. Cost containment mechanisms must reduce the risk that unacceptably high costs are incurred
2. Mechanisms should be transparent and should not create market uncertainty
3. Mechanisms must not compromise the environmental integrity of the program
4. Mechanisms should preserve the ability to link with other rigorous cap-and-trade programs

4

Cost Containment Principles

Staff are focusing on the following principles when considering cost containment options:

1. Any attempt at price mitigation limits price discovery and adjustment, which are two main benefits of cap-and-trade
2. Mechanisms must ensure the environmental integrity of the cap by not including a “safety valve”

Price Collars

- ARB is considering options based on target prices that have the effect of “Price Collars”
  - “Hard” collars are price controls
  - “Soft” collars mitigate price movements by changing the supply of instruments in the market
  - ARB staff believe “soft” collars would distort the market less than “hard” collars

6

Soft Price Floor

- ARB plans to set a minimum auction price ("Reservation Price") below which allowances would not be sold at auction
  - Reservation prices are common features in auction design to prevent collusion
- Unsold allowances would be held in a Reserve Holding Account
- Stakeholders have suggested setting reserve price high enough to incent direct reductions and offset projects

7

Options for Soft Price Ceilings

Three Categories of Mechanisms to Increase the Supply of Instruments

- Relax quantitative use limit for offsets
- Allow limited use of future vintage allowances from next compliance period
- Release allowances from a Reserve

8

Temporarily Relax Quantitative use Limit for Offsets

- PDR included a quantitative use limit for offsets at 4% of the compliance obligation
- Relaxation may reduce direct reductions in California
- Mechanism:
  - Increase the offset limit up to 8% based on a trigger price
  - Return to 4% when high prices abate
- Problems with relaxing the offset limit:
  - Additional offset supply may not be available
  - Projects may need assured future access to the market to be viable

Use Future Vintage Allowances Already in Circulation

- ARB anticipates auctioning of future vintage allowances along with current allowances
- Mechanism: Allow use for compliance of future vintage allowances already purchased when price triggers exceeded
- Problems:
  - Borrowing indicates direct reductions lag cap decline
  - Results in fewer allowances available in next period
  - Could create a need for continuous borrowing

10

Use of an Allowance Reserve

- There are many proposals for reserves, but they involve four common steps:
  - Create a reserve pool of allowances
  - Define the conditions under which allowances will be released
  - Release allowances using specific mechanisms when the conditions occur
  - Replenish the reserve

11

Use of an Allowance Reserve

Step 1 Create and Fill a Reserve With:

- Allowances unsold when an auction resolves at the Reserve Price
- Allowances directly allocated from annual budget
- Future vintage allowances allocated from future annual budgets

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Use of an Allowance Reserve

Step 2 Define conditions for releasing:

- Define price trigger or triggers.
- Define the portion of the reserve that would be released at each trigger.
- Monitor market prices to determine if the trigger prices are reached (required for some release mechanisms)
- Release parts of reserve when the price triggers are reached

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Use of an Allowance Reserve

Step 3 Choose a Release Mechanism

- Release parts of reserve to auction when a series of price triggers are reached
- Make reserve available for direct purchase by covered entities at a “window”
  - Window approach requires allocation method when demand for reserve allowances exceeds reserve supply
- Directly allocate reserve to covered entities
- Options may include rules on allowable use (e.g., to prevent resale)

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Use of an Allowance Reserve

Step 4 Reasons to Replenish the Reserve

- Ability of reserve to mitigate prices depends on size of reserve
- A reserve provides only limited cost containment as it does not add to the market supply of instruments.
- Cascading borrowing problem exists for future vintage reserve unless backfill method exists to increase supply of instruments from outside the system.
- Creating reserve may itself create high prices by reducing supply of compliance instruments to market

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Use of an Allowance Reserve

Step 4 Options to Replenish the Reserve

- Increase direct allocation of current or future vintage allowances to the reserve
  - To match number of allowances released from reserve, or
  - As a permanent fixed annual replenishment
- Increase the supply of offsets to prevent replenishment from increasing market prices:
  - Allow additional offsets above use limit equal to number of allowances allocated to reserve
  - Annual cap is maintained based on allowances not in reserve plus additional offsets.

16

Mechanisms No Longer Under ARB Consideration

- ARB supplements reserves by:
  - Purchasing offsets on the market using auction or reserve sale proceeds
  - Contracting with offset developers to produce new offset projects

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Next Steps

- ARB welcomes your input on:
  - Choice of mechanisms (more than one can be included in the system)
  - Preference for use of a trigger price mechanism versus a “window” sales approach
  - How much to expand the supply of instruments in each mechanism
  - The tradeoffs between each cost containment mechanism and the goals of AB 32

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Public Meeting

Update on Offsets and Linkage in a California Cap-and-Trade Program

June 22, 2010
California Air Resources Board

Comments

- Questions during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on preliminary staff thinking are requested by July 13th; please submit comments to: (**http://www.arb.ca.gov/cc/capandtrade/comments.htm)**

2

Update on Offsets and Linkage

Brieanne Aguila

Offsets and Linkage

- Offsets
  - Strict criteria (AB 32 requirements)
  - Limited use
  - No geographic limits
- Linkages
  - Strict criteria for linked program
  - Requires Board action (regulation)
  - Agreement of cooperation with linked program

4

Types of Offset Credits

Two types of offset credits:

1. Offset credits issued by ARB
   - Pros: high integrity, alleviates many enforcement concerns
   - Cons: may limit supply, may require more effort to develop and approve protocols
2. Linkage: Offset credits issued by an external program and accepted/approved by ARB
   - Pros: potential large supply, may be less staff intensive than developing/approving individual protocols
   - Cons: stakeholder concern over environmental integrity, enforcement challenges

5

Staff Thinking: Process for Offset Credits Issued by ARB (1)

- Offset project operator (OPO) uses an approved ARB offset protocol
- OPO submits project description and all required information to ARB
- ARB lists “proposed” offset project information on publicly available and transparent webpage
- OPO reports on project activities
- OPO utilizes an ARB-approved third-party verifier to verify emission reductions from their project
- ARB reviews verification statements before issuing offset credits for verified reductions

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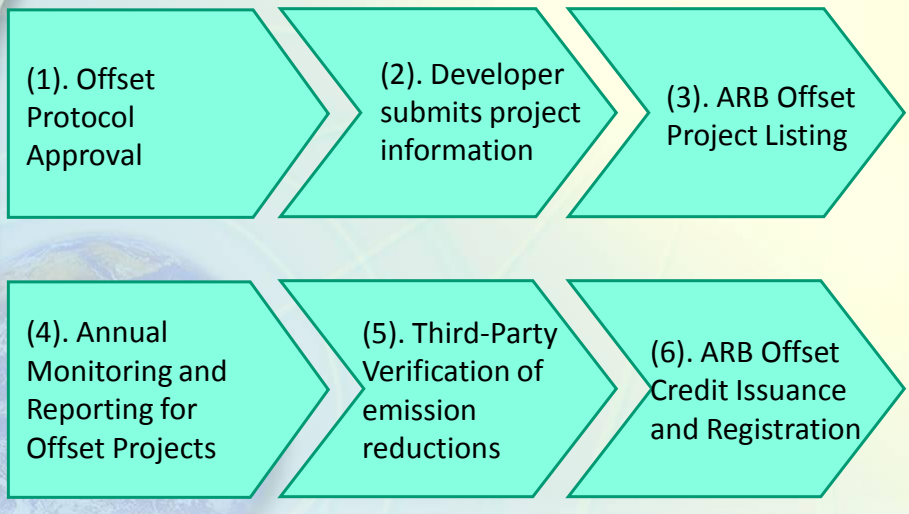
Staff Thinking: Process for Offset Credits Issued by ARB (2)



7

Staff Thinking: ARB Protocols

- Board would approve protocols for ARB-issued offset credits
- Approved protocols would consist of standardized methods for estimating project baselines and determining additionality
- AB 32 exempts protocols from rulemaking provisions of the Administrative Procedures Act
  - Offset protocols will not be contained in the regulation

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Staff Thinking: Requirements for ARB Protocols

- Offset protocols approved by the Board establish the following for the applicable project type:
  - Activity baselines and additionality based on the principle of conservativeness and defined business-as-usual
  - Project boundaries and the reductions or removals that are calculated within that boundary and for how long (crediting periods)

9

Current Process for ARB Protocol Development

- ARB is in the process of developing offset protocols that could be used for compliance
- Staff workshop tomorrow, June 23rd
- Protocols include:
  - Forestry sector
  - Manure management digesters
  - Urban forests
  - Ozone depleting substances

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Staff Thinking: Additionality

- For additionality, ARB is starting with AB 32 provision:
  - The emission reduction must be "in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any greenhouse gas emission reduction that otherwise would occur"
    HSC §38562(d)(2)
- No strict financial additionality test required for all project types due to performance-standard approach
- Evaluating requirements for regulatory additionality benchmarking

11

Staff Thinking: Crediting Periods and Renewals

- Range for crediting period length specified in regulation, actual length established within that range in the ARB-approved protocol
- Non-sequestration projects
  - 5-10 years with the possibility for 1 renewal period
- Sequestration-based projects
  - 10-30 years with unlimited renewal possibilities as long as project meets program criteria

12

Staff Thinking: Eligibility Date/ Start Date

- Offset projects going through the ARB process would need to commence after 12/31/2006
  - In the case of linkage, the eligibility/start date may differ from this, depending on evaluation of the individual program

13

Staff Thinking: Geographic Location for ARB-Issued Offsets

- Offset projects must be located in the United States, Canada, or Mexico for ARB to issue credits for the project
  - In the case of linkage, depending on the external program, the geographic location may not be limited to North America

14

Staff Thinking: Ensuring Permanence (1)

- ARB is still working on definition of permanence
- Ensuring permanence requires either:
  1. that reductions or removals are not reversible or
  2. when reductions or removals may be reversible
     - mechanisms are in place to replace any reversed carbon
     - must ensure credited reductions endure for a period comparable to the atmospheric lifetime of anthropogenic CO_2 emissions

15

Staff Thinking: Ensuring Permanence (2)

- *Illustration*
  - Offsets allow 1 ton of CO_2 emissions from capped sources for each ton sequestered
  - If sequestered ton is released while the emitted ton is still in the atmosphere, net increase in emissions

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Staff Thinking: Verification

- AB 32 requires a regulation for the verification of compliance offsets
- Verification program under MRR will be expanded to include offset verification
- Require verification by an ARB-approved third-party verifier
- May include project specific verification requirements

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Requirements for Linkage

- Approval by Board after rulemaking process
  - The regulation will include linkage to programs once they are established
- Linkage agreement
- Process for suspension, probation and de-linkage

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Staff Thinking: Process for Linkage

- For ARB to accept compliance instruments from external programs the program would need to be approved by the Board
- Regulatory action that requires a rulemaking process including a public process and associated staff reports
- Each external program would be evaluated based on criteria established as part of the cap-and-trade rulemaking

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Staff Thinking: Potential Short-Term Linkage Opportunities (1)

Western Climate Initiative Partners

- Some Partners may be ready to implement a program that CA can link to by 2012
- ARB will discuss these opportunities for linkage in the staff report
- May be a potential to include linkage language in the C&T regulation in 2011

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Staff Thinking: Potential Short-Term Linkage Opportunities (2)

Recognizing Early Action in California

- ARB may consider allowing CAR credits issued in CA under 3 voluntary protocols to be used for compliance
  - Forestry 2.1 and 3.0
  - Livestock 2.0
  - Urban forestry 1.0
- Recognizing early action and the need for early supply, ARB could allow vintages from 2005-2014
- Recognize that credits have undergone CAR verification but additional ARB desk review may be needed to meet regulatory requirements

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Staff Thinking: Potential Medium Term Linkage Opportunities

International RED (reducing emissions from deforestation) credits

- CA signed MOU in 2008 with states and provinces to address deforestation and climate change
  - Established GCF (Governor's Climate Task Force)
- ARB could link to GCF Partners to bring in international RED credits
- CA continuing to work with GCF Partners to develop readiness and MRV to get Partner programs up and running
- Credit supply could begin in 2014 with linkage to 1 GCF Partner
- Continue to work on potential linkage in 2011

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Additional Linkage Opportunities

- ARB will continue to evaluate additional linkage opportunities and look at other existing programs

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Staff Thinking: Enforcement and Liability for Offset Credits

- ARB may take enforcement action against third-party verifiers, offset project developers, and offset users
- Offsets determined to be ineligible after issuance or acceptance would result in revocation of the credit for compliance use
- In the case of a reversal, covered entities that surrender offsets later deemed ineligible are responsible for replacing the lost tons (medium-term reversal mechanism)
- Another option is to establish a buffer pool
  - Can be used as a long-term reversal mechanism and combined with buyer liability

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ARB Preliminary Offset Supply Analysis

Areas for Potential Offset Supply

ARB evaluating following supply options:

- Supply available through protocols currently being developed by ARB
- Supply that could be brought in through additional protocols ARB could evaluate
- Supply that could be brought in through linkage to external programs

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Supply forecasts for ARB Protocols

ARB Protocol	2012-2014 total	2012-2020 total	Cost/ton
Forestry incl. IFM (CA only)	2.1 MMT	6.3 MMT	$7-10
Urban Forestry (U.S.)	0 MMT	0 MMT	$100+
Methane Digesters (U.S.)	0.9 MMT	2.7 MMT	$7-10
ODS Ozone Depleting Substances (only outside CA)	30 MMT	90 MMT	$5-10
TOTAL	**33 MMT**	**99 MMT**	**$5-10**

Values based on CAR estimates

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Staff Thinking: Additional Areas for ARB Protocol Development

Some protocols that ARB could consider developing in 2011 include:

- Projects that could occur in CA and may have limited supply potential
  - Fugitive emissions from natural gas transmission
  - Waste water sector
- Projects that could not occur in CA and may have large supply potential
  - Coal mine methane
  - Landfills (direct regulation in CA)

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Staff Thinking: Additional Areas for Potential Offset Supply (1)

- Western Climate Initiative
  - Some Partners may be issuing offsets under their programs beginning in 2012
    - Rely on WCI jurisdiction's regulatory authority for enforcement and oversight
- Clean Development Mechanism
  - ARB would be selective with the types of CDM that would be allowed to come into CA, for example:
    - Credits from Least Developed Countries (LDCs)
    - Projects that reduce black carbon emissions
  - Supply for CA unknown due to competition with EU
  - Monitoring and enforcement challenges for ARB

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Staff Thinking: Additional Areas for Potential Offset Supply (2)

- Additional GCF Partner linkages
  - Uncertain of timing for implementation
    - Programs could be ready by 2015
  - Potential large supply for CA
  - Monitoring and enforcement challenges for ARB
- Additional credits from voluntary programs
  - ARB would need to ensure compliance grade criteria and technical accuracy of voluntary programs and protocols
  - For voluntary programs there would need to be regulatory verification and enforcement – presents oversight and enforcement challenges
  - Potential large supply

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Staff Thinking: Offset Supply

1. Continue to develop four protocols and take them to the Board this year for adoption
2. Evaluate additional protocols to take to the Board for adoption in 2011
3. Propose linkage to some existing programs in the cap-and-trade regulation this year
4. Evaluate developing programs for linkage opportunities in 2011

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Next Steps

- Compliance Offset Protocol Workshop June 23
  - Propose four protocols for Board adoption coincident with cap-and-trade program
- Workshop on International RED development in early July
- Continued discussion on enforcement

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For More Information…

- ARB's Cap-and-Trade Web Site
  - www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - www.arb.ca.gov/listserv/listserv_ind.php?listname=capandtrade
- Western Climate Initiative
  - www.westernclimateinitiative.org

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Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

Update Regarding the Proposed Offset Component of the California Cap-and-Trade Program

July 29, 2010

As part of developing a cap-and-trade regulation, the California Air Resources Board (ARB) staff has proposed that offset credits can be used for compliance. On June 22 and 23, 2010, ARB held two workshops to discuss how offset credits could be used for cap-and-trade compliance. This document provides an update on how ARB staff is approaching the design of the offset system for California's cap-and-trade program and reflects stakeholder comments received during and following the workshops.

The Role of Emission Reductions from Offsets

ARB recognizes that emission reductions from offsets can reduce the cost of compliance in a cap-and-trade program. Offsets are greenhouse gas emission reductions from sources outside the cap-and-trade program. Because offsets can cost less than some potential emission reductions in capped sources they can reduce the cost of achieving the overall emissions target. Economic analyses, including ARB's recent analysis, underscore the effectiveness of offsets as a cost control mechanism, even when offsets are used in limited quantity as proposed by ARB.

The Importance of Quality

To maintain the environmental integrity of the cap-and-trade program, emission reductions from offsets must be high quality. To assure quality, ARB is:

- Conducting analyses to ensure that compliance-eligible offset credits meet all AB 32 requirements.
- Ensuring the cap-and-trade program meets all California Environmental Quality Act requirements.
- Taking a conservative approach to ensure that all offsets used in the program are real, additional, permanent, verifiable, and enforceable.
- Proposing that all emission reductions from offset projects be verified by third-party verifiers accredited by ARB.

The Importance of Supply

ARB staff proposed the idea of promoting the supply of compliance-eligible offsets in November 2009, and is continuing to consider multiple paths for generating offset credits in 2010, including: (a) ARB issuing offset credits for projects using ARB-approved protocols; and (b) ARB recognizing offset credits from ARB-approved offset programs. These could include sectoral programs such as those reducing emissions from deforestation and forest degradation in developing countries (REDD). Offset credits from ARB-approved linked cap-and-trade programs (such as WCI Partner jurisdictions) are also proposed to be compliance-eligible in California's cap-and-trade program.

ARB staff is planning to incorporate provisions in the cap-and-trade regulation that would allow multiple methods to be used to make offset credits available following Board approval of specific protocols or programs. To develop the approach to issuing compliance-eligible offset credits based on specific protocols, ARB staff is:

- Proposing to work with qualified third-party offset programs to bring emission reductions from new projects into the offset system: ARB recognizes that third-party offset programs (such as the Climate Action Reserve) have existing capabilities and infrastructure that can be deployed quickly to enhance the supply of compliance-eligible offsets. ARB is exploring the conditions and processes by which third-party offset programs can use the ARB-adopted protocols to help generate compliance-eligible offsets.

- Relying on the Climate Action Reserve (CAR) work on four protocols: forestry, manure management digesters, urban forestry, and ozone depleting substances (ODS): ARB recognizes the extensive contributions that stakeholders and experts have made to the CAR protocols, including fashioning effective solutions to difficult problems. Accordingly, ARB is relying on this work to help support ARB's offset quality objectives as well as provide continuity and stability for offset projects both within California and other parts of the United States. As part of its evaluation of these protocols, ARB staff is examining several aspects for potential adjustment, including:

    - Evaluating mechanisms for ensuring permanence in forestry projects to ensure that they are effective and enforceable by ARB.
    - Reviewing technical details to determine whether to incorporate minor adjustments, such as whether to require credits for the ODS protocol to be limited to destruction at facilities with Resource Conservation and Recovery Act permits.

- Recommending minor modifications to each protocol to align with requirements of the cap-and-trade program, such as aligning project start eligibility dates and crediting periods, or alignment of terms and definitions.

- Proposing to recognize emission reductions from existing CAR projects under the four protocols: ARB staff is developing a process so emission reductions from qualified existing CAR projects can be brought into the compliance system and become compliance eligible. Recognizing existing projects will help to create an initial supply of offset credits for the cap-and-trade program. The definition of the eligible start date for existing projects is under consideration. The process must be adopted by the Board as part of the cap-and-trade rulemaking and be consistent with applicable verification and enforcement provisions of the final regulation.

- Proposing to review and adopt additional protocols. ARB staff will evaluate additional offset project types and protocols in the future. Protocols developed by third parties will be reviewed and, if acceptable, be considered for adoption by ARB.

Rulemaking Requirements

ARB's offset program is being developed as part of the cap-and-trade rulemaking. The rulemaking will include the requirements for a verification program that is consistent with international standards and subject to ARB oversight. This oversight includes verifier accreditation, requirements for verification services, and conflict of interest requirements. The rulemaking will also include enforcement provisions that would apply to parties that participate in the offset program. Those parties may include project developers, verifiers, and compliance entities. Finally, the rulemaking also will include a process for cooperation with qualified third-party offset programs.

For additional information, contact Kevin Kennedy, Assistant Executive Officer, at (916) 322-6964, or by e-mail at kmkenned@arb.ca.gov.

News media inquiries can be directed to Stanley Young, ARB's Communications Director, at (916) 322-1309, or Lindsay VanLaningham, Cal/EPA's Acting Communications Director, at (916) 445-3123.

###

Transitioning to Compliance Protocols

(AB 32 Quantification Methodologies)

June 23rd, 2010

Webcast Questions

coastalrm@calepa.ca.gov

Workshop Materials

http://www.arb.ca.gov/cc/protocols/protocols.htm

Agenda

- Overview of Compliance Offset Program
- Overview of Protocol Transition Process
- Ozone Depleting Substances, Livestock, Urban Forestry
- Forestry

General Requirements for Offsets

- Reductions from offsets need to meet all AB 32 mandated criteria (real, additional, quantifiable, permanent, verifiable and enforceable)
- Subject to a quantitative usage limit
- Must meet regulatory verification and enforcement requirements

Current Process for ARB Protocol Development

- ARB is in the process of developing offset protocols that could be used for compliance
- Protocols include:
  - Forestry
  - Manure management digesters
  - Urban forests
  - Ozone depleting substances

ARB Protocols

- Board would approve protocols
- Approved protocols would consist of standardized methods for estimating project baselines and determining additionality
- Activity baselines and additionality would be based on the principle of conservativeness and defined business-as-usual
- Project boundaries would be established, as well as the reductions or removals that are calculated within that boundary and for how long they are allowed to be credited (crediting periods)

Regulatory Requirements for Protocols

- AB 32 exempts protocols from rulemaking provisions of the Administrative Procedures Act
- Verification and enforcement must be regulatory
- All protocol related form information must be in regulation

Current Staff Thinking: Additionality

- No strict financial additionality test required due to performance-standard approach
- Evaluating requirements for regulatory additionality benchmarking
- ARB working definition for additional:
  - "GHG emission reductions or removals that exceed any GHG reductions or removals otherwise required by law or regulation, or any GHG reductions or removals that would otherwise occur in a conservative business-as-usual scenario"

Defining Conservative

- ARB working definition of conservative:
  - "Utilizing activity baseline assumptions, emission factors, and methodologies that are more likely than not to understate net GHG reductions or removals for an offset project to address uncertainties affecting the calculation or measurement of GHG reductions or removals"
  - E.g. ARB staff may need to set emission factors using a principle of conservativeness to account for leakage to outside the project boundary

Defining Business-as-Usual (BAU)

- ARB working definition of BAU for offsets:
  - "BAU scenario means the set of conditions reasonably expected to occur within the offset project boundary in the absence of the financial incentives provided by offset credits, taking into account all current laws and regulations, as well as current economic and technological trends"
    - Includes voluntary agreements with regulatory agencies, e.g. CEQA mitigation
    - Includes planned equipment replacements

Defining Activity Baseline

- ARB working definition of activity baseline:
  - "the scenario that reflects a conservative estimate of business-as-usual GHG emissions or removals within the offset project boundary for the relevant type of activity or practice"

Defining Offset Boundary

- ARB working definition of offset project boundary:
  - "defined by and includes all GHG emission sources, sinks or reservoirs that are affected by an offset project and under operational control of the offset project operator. GHG sources, sinks or reservoirs not under operational control of the offset project operator are not included in the offset project boundary"
  - Only direct emission reductions or removals that occur within the offset project boundary will be credited with an offset

Staff Thinking: Crediting Periods and Renewals

- Range for crediting period length specified in regulation, actual length established within that range in the ARB-approved protocol
- Non-sequestration projects
  - 5-10 years with the possibility for 1 renewal period
- Sequestration-based projects
  - 10-30 years with unlimited renewal possibilities as long as project meets program criteria

Staff Thinking: Eligibility Date/ Start Date

- Offset projects going through the ARB process would need to have commenced after 12/31/2006
  - In the case of linkage, the eligibility/start date may differ from this, depending on evaluation of the individual program

Staff Thinking: Ensuring Permanence

- ARB is still working on definition of permanence
- Ensuring permanence requires either:
  1. that reductions or removals are not reversible or
  2. when reductions or removals may be reversible
     - mechanisms are in place to replace any reversed carbon
     - must ensure credited reductions endure for a period comparable to the atmospheric lifetime of anthropogenic CO_2 emissions
- *Illustration*
  - Offsets allow 1 ton of CO_2 emissions from capped sources for each ton sequestered
  - If sequestered ton is released while the emitted ton is still in the atmosphere, net increase in emissions

Staff Thinking: Enforcement and Liability for Offset Credits

- ARB may take enforcement action against third-party verifiers, offset project developers, and offset users
- Offsets determined to be ineligible after issuance or acceptance would result in revocation of the credit for compliance use
- In the case of a reversal, covered entities that surrender offsets later deemed ineligible are responsible for replacing the lost tons (medium-term reversal mechanism)
  - In addition, could establish a buffer pool to be used as a long-term reversal mechanism and combined with buyer liability

Questions?

Overview of Protocol Transition Process

Introduction

- February, 2010, Board directed staff to transition to a compliance offset system
- Board rescinded previously adopted Livestock, Forestry, and Urban Forestry Protocols
- Initial compliance package includes previously board adopted protocols and Ozone Depleting Substances protocol

Purpose for Transition

- Regulatory Program Needs
  - Certainty
  - Enforceability
- Climate Action Reserve
  - Sound accounting
  - Allows for flexibility

Transition Process

- Today's workshop
- Informal written comment period
- Release of detailed changes
- Release of Proposed Protocols
- Fall, 2010 – Board Consideration

Regulatory Requirements Proposed Cap & Trade Rule

- Rule includes key offset parameters and definitions
  - Crediting periods, start dates, renewal criteria, additionality tests, etc.
- Align with Cap and Trade Rule

Regulatory Verification Requirements

- No issuance before verification
- Expand existing regulatory verification requirements
- Only ARB recognized verification bodies
- Strict conflict of interest requirements

Environmental Review

- CEQA Review
- Tiered CEQA analysis of proposed Cap and Trade program
- CEQA review included in the 45-day package for the proposed Cap and Trade Regulation

General Changes

- Extract quantification methods
  - Contain rigorous accounting
- Alignment of project start eligibility dates and crediting periods in the protocols with those in the proposed Cap and Trade Regulation
- Alignment of terms and definitions with offset criteria in Cap and Trade Regulation
- Updates to emission factors

Questions

Protocol Specific Changes

Ozone Depleting Substances(ODS) Project Description

- Destruction of ODS sourced from and destroyed within the U.S.
  - Refrigerants and foam blowing agents
- Destruction is not required
  - Reclamation and recycling is baseline for refrigerants
  - Landfilling is baseline for foams

ODS covered by Protocol

- Eligible ODS:
  - Refrigerants: CFC-11, CFC-12, CFC-114, & CFC115
  - Foams blowing agents: CFC-11, CFC-12, HCFC-141b, & HCFC-22
- Phase-out of production and importation:
  - All CFCs phased-out: 1/1/1996
  - HCFC-141b phased-out: 1/1/2004
  - HCFC-22 phased-out for non-refrigeration purposes: 1/1/2010
  - All can be recycled and reused

Crediting

- Point of crediting - Incineration Facility
- Conservative assumptions for quantification

Proposed Changes

- Limit incineration facilities to Resource Conservation and Recovery Act (RCRA)
- 5 out of 6 US ODS destruction facilities have this permit
- Update GWP factors to SAR

Environmental Review

- Incineration facility impacts
  - Will be required to meet MACT standards if limited to RCRA
  - ODS destruction studied by EPA and UNEP
- No new facilities likely
- Will be beneficial to reducing stratospheric ozone depletion

Livestock "Manure Digester" Project Description

- Covering a manure lagoon to capture and destroy methane that would have otherwise been emitted
- No additional proposed changes

Environmental Review

- Some project types can increase NO_x emissions

Urban Forestry Project Description

- Urban tree planting projects by municipalities, educational campuses, utilities, and partner organizations.

Urban Forestry Propose Changes/Issues

- Document tree growth algorithms.
- Remove quantification and reporting of indirect GHG reductions.
- Remove language on prototype methods under development.
- Clarify definitions, language.

Environmental Review

- Impacts of emissions from project vehicles and equipment.

Questions?

Forest Project Protocol

Background

- Transition of latest CAR Forest Project Protocol – version 3.1
- Three forest project types
  - Reforestation
  - Improved Forest Management
  - Avoided Conversion

Forest Project Crediting

- Crediting of increased stored carbon or avoided emissions relative to baseline
  - Annual accounting
  - Only incremental emission reductions or removal enhancements credited
- Reductions must be maintained after crediting to ensure permanence
  - Current approach: 100 year monitoring obligation in addition to 100 year project crediting period

Staff Proposed Changes

- Proposed changes to align with compliance offset criteria and administrative framework
  - Baseline Modeling
  - Accounting boundaries & required carbon pools
  - Leakage risk factors
  - Crediting Periods

Additionality & Baseline Modeling

- *Issue*
  - AB32 additionality definition requires crediting only above what would otherwise occur
  - Goes beyond regulatory additionality
  - PDR requires conservative BAU modeling
- *Current approach*
  - Requires baseline modeling of all legal and regulatory constraints
  - Existing voluntary agreements excluded

Additionality & Baseline (cont'd)

- *Current Proposal*
  - Existing agreements must be included in baseline modeling
    - Sustainable Yield / Option A Plans
    - Habitat Conservation Plans & Safe Harbor Agreements

Accounting Boundaries Required Carbon Pools

- *Issue*
  - Some carbon pools currently optional
  - Creates accounting inconsistencies
  - Accounting methods for some optional pools may not be appropriate for compliance offset crediting
- *Current Proposal*
  - All carbon pools would be required or excluded
  - Based on availability and accuracy of accounting methods, significance of carbon pool, principle of conservative crediting

Accounting Boundaries Required Carbon Pools (cont'd)

- **Lying Dead Wood**
  - Currently an optional pool
  - Sound accounting method already in protocol
  - Significant carbon pool in many forest systems
  - *Current Proposal*
    - Would be required for all projects

Accounting Boundaries Required Carbon Pools (cont'd)

- **Understory, Litter and Soils**
  - Accounting methods less accurate, more expensive
  - Not expected to have significant impact on carbon accounting for most projects
  - *Current Proposal*
    - Would be excluded for most projects
    - Required only for projects with intensive site preparation or harvest methods
    - How to best quantify it?

Leakage

- *Issue*
  - Need to conservatively account for risk of increased emissions outside project boundary as a result of project activity
- *Current Approach*
  - Applies standard discount factors for significant leakage risks
- *Current Proposal*
  - Maintain current approach
  - Modify two factors to ensure conservative accounting
    - Reduced harvest
    - Avoided conversion

Crediting Periods

- *Current Approach*
  - 100 year crediting period
  - Inconsistent with proposed PDR approach of 10-30 year renewable crediting periods
- *Current Proposal*
  - 25 year renewal crediting periods
  - Projects move to latest quantification methodology as condition of renewal

Areas of Potential Changes

- Areas of potential changes to align with compliance offset criteria and administrative framework
- Several options under consideration
  - Ensuring permanence
  - Harvested wood products
  - Even-aged management

Permanence

- *Issue*
  - Carbon must remain out of atmosphere for very long time periods to offset emissions
  - Mechanism needed to replace carbon released through unintentional reversal (fire, disease)
- *Current approach*
  - Projects contribute credits to a **buffer-pool** used to compensate for reversals

Permanence (cont'd)

- *Options under consideration*
  - **Buffer-pool**
    - Reversal risk shared among forest projects
  - **Buyer liability approach**
    - Offsets cancelled when reversal occurs
    - Consistent with PDR enforcement language
  - **Project developer liability**
    - Manage risk individually – insurance, setting credits aside

Post-Project Permanence

- *Issue*
  - Need to ensure long-term permanence of reductions after project termination
  - ARB may not define 100 years as permanent
- *Current approach*
  - Must monitor and replace reversed carbon for 100 years post-project
  - Enforced by legal agreement (PIA)

Post-Project Permanence (cont'd)

- *Options under consideration*
  - Require post-project monitoring and verification of carbon stocks
    - How long?
  - Require **conservation easement** for projects on private lands
    - Project lands stay as forest in perpetuity
    - Include language on maintaining sustainable harvest levels
    - Protects against conversion and mitigates risk of avoidable reversals

Accounting Boundaries Wood Products

- *Issue*
  - ARB recognizes long-term storage of some carbon in wood products
    - What is appropriate for compliance offsets?
  - Only direct emission reductions within project boundaries eligible for crediting in PDR
    - Wood products leave project boundary
    - Cannot be accurately monitored & verified
    - Past data cannot accurately predict future decay
  - Potential for competing ownership claims

Wood Products (cont'd)

- *Current approach*
  - Baseline harvesting levels modeled
  - Crediting of increases and debiting of decreases in wood product carbon relative to baseline using national factors
- *Options under consideration*
  - Revision of wood product factors to ensure conservative crediting
    - How long must carbon stay in wood products?
  - Exclusion of harvested wood product accounting and crediting
    - Minor impact expected on project accounting

Even-aged Management

- *Issue*
  - Limits on even-aged management a controversial topic
  - Relates to natural forest management provisions, not carbon accounting
- *Current approach*
  - Based on CA Forest Practice Rules
  - Primarily affects out of state projects
  - Harvesting limited to 40 acres
  - Projects must comply with state laws and regulations

Even-aged Management (cont'd)

- *Options under consideration*
  - No revisions to current language
  - Align language on limits more closely with CA Forest Practice Rules
    - 20-30 acre limits in some cases based on harvest technique and slope
  - Restrict even-aged management where not a pre-existing practice
    - Addresses concern projects could switch to even-aged management

Environmental Review

- Numerous environmental benefits expected from forest projects
- Includes safeguards against managing for carbon at expense of other values
  - Must promote and maintain diversity of native species and age classes, no broadcast fertilization
- Some potential to decrease landscape and species diversity
- Even-aged management
  - Provides incentive to decrease harvest frequency
  - Restrictions based on CA Forest Practice Rules

Questions

Next Steps

- Workshop written comments
  - Due by July 9th
  - Email: Staff leads, or managers
- Mid Summer – Release of detailed changes
  - Comment Period
- Fall – Release of proposed protocols
- Fall – Board consideration

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GHG Offset Quantification Methodology Website
http://www.arb.ca.gov/cc/protocols/protocols.htm

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Sector-Based Crediting & Subnational Reducing Emissions from Deforestation and Degradation (REDD)

July 30, 2010
Barbara Bamberger
Office of Climate Change

California Air Resources Board
California Environmental Protection Agency

Sector-Based Crediting & Subnational Reducing Emissions from Deforestation and Degradation

ARB Staff Presentation

Overview

Today's Presentation - Overview

- Sector-based offset crediting
- Discuss specific sector-based approach for Reducing Emissions from Deforestation and Degradation (REDD)
- Preliminary staff thinking on subnational REDD program elements
- Present key questions on REDD framework for stakeholder input
- Submit comments by 6 pm, August 20, to: **http://www.arb.ca.gov/cc/capandtrade/comments.htm**

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What is sector-based crediting

- Scope
  - International and specific to developing countries
- Geographical Area/Region
  - Subnational (state/province) jurisdictions in developing countries
- Crediting Pathway
  - Credits generated from projects in a sector-based program
- Unique Features
  - Reduction across a state's or province's entire sector (addressing additionality and leakage)

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The GCF and Sector-Based Crediting

- Governor's Summit 2008
  - MOU to address deforestation and climate change
- Governors' Climate and Forest Task Force (GCF)
  - Collaboration between 14 states and provinces in the U.S., Brazil, Africa, Mexico, and Indonesia
  - Purpose to establish subnational REDD Program based on "Common But Differentiated Responsibilities" principle

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ARB Rulemaking Process

- Cap and trade regulation this fall expected to include general framework for sector-based crediting
- California has played a leading role in GCF process
- ARB has been an active participant in GCF
  - Developing requirements that could allow credits from a subnational program that is taking action to reduce emissions through a Reducing Emissions from Deforestation program
  - Further work and additional Board action needed before credits from a REDD program could enter the market

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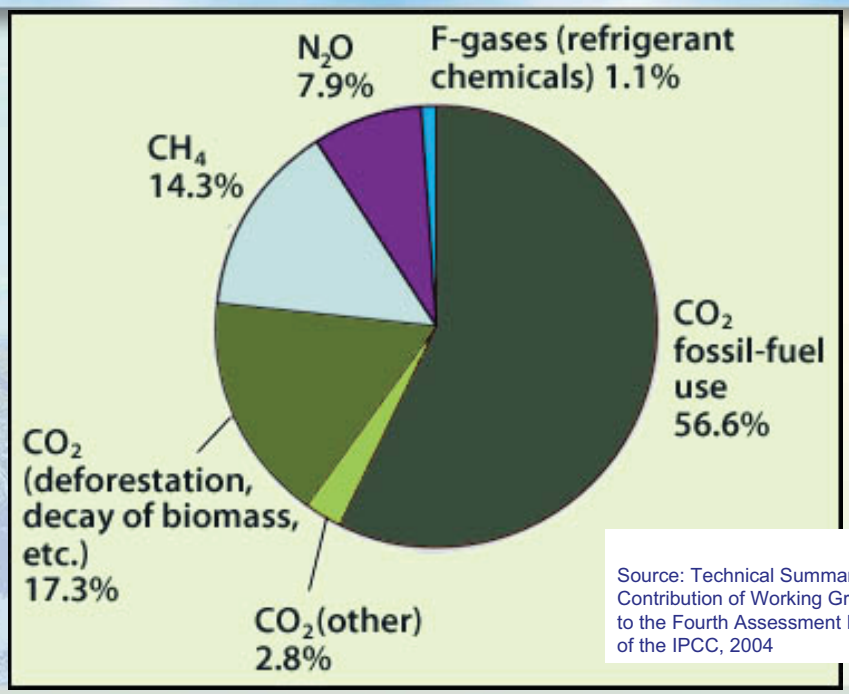
Distribution of Global GHG Emissions 2004



Source: Technical Summary, Contribution of Working Group III to the Fourth Assessment Report of the IPCC, 2004

Role of sector-based offset credits in Cap-and-Trade Program

- ARB could recognize sector-based offset programs after:
  - Establishing a process to develop general rules for sector-based offset credits
  - Establishing rules for a particular sector
  - Conducting specific evaluation to determine whether REDD program meets key requirements

Recognition of sector-based offset credits

- ARB would only accept credits from a sector-based program following review and Board approval of the program
- Program would need to meet all criteria tailored to the specific sector (REDD, Cement, etc)
- Requirements for REDD would include:
  - Inventory and MRV (combination of remote sensing and ground-based forest carbon inventory & monitoring)
  - Reconciliation of accounting (projects with state-level inventory)
  - Verify carbon ownership and return of carbon value (benefit sharing)
  - Safeguards: protection & participation, dispute resolution, transparency

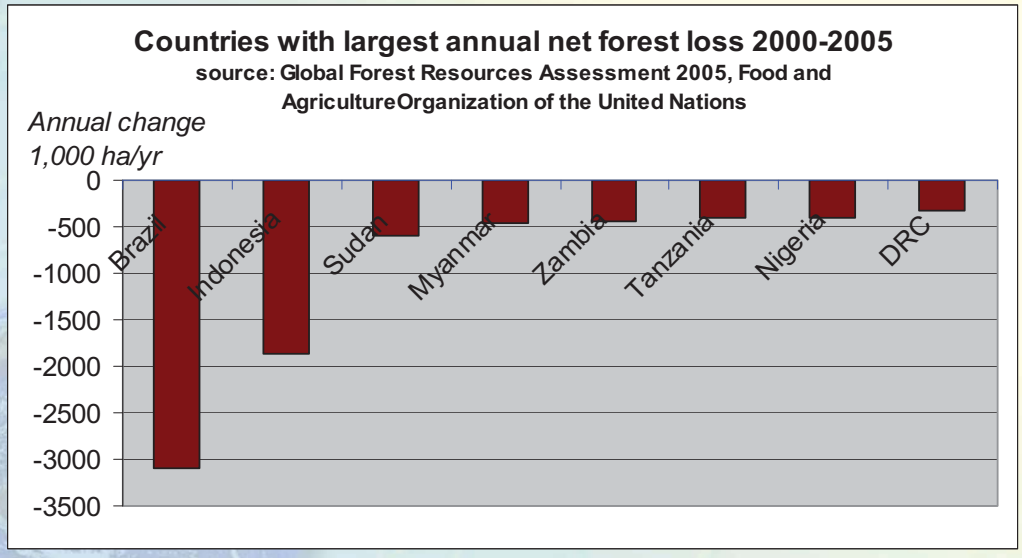
Phase-In

Program Elements in a Nested Framework

Possible Phase-In Approach

- **Start with Avoided Deforestation**
  - cover avoided deforestation only in first phase
  - does not include components addressing:
    - Degradation
    - Reforestation, Improved Forest Management (IFM) projects
    - Must meet requirements for "REDD Readiness"
- **Focus on High Deforestation States/Provinces**
  - Phasing-in high deforestation & frontier areas where deforestation is or potentially could be a major contributor to economy-wide emissions
- **Nested System**
  - Combines forest sector accounting at the state/province level to take advantage of existing infrastructure for project-based activities

Deforestation by region



Program elements in a nested framework

- Sector-level requirements
  - Baselines: Reference Levels, Crediting Baseline
  - Trajectory
  - Inventory and MRV
  - Safeguards (Benefit sharing)
  - Enforcement and consideration for reversals
- Project-level requirements
  - Additional, quantifiable, verifiable, real
  - Quantitative methodology
  - Inventory and Baseline
  - Verification (3rd party)
- Reconciliation
  - between project and sector-based inventory, accounting, and monitoring

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REDD Program Criteria

- General Criteria
  - Reference Level
  - Crediting baseline (meet or exceed)
  - Transparent inventory and accounting to reconcile state/project level inventory
  - MRV and registry
  - Social Safeguards (FPIC, dispute resolution, transparency for financial flow of funds)
  - Benefit-sharing for local communities

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Timeline

2010:	Cap-and-Trade rule goes to Board; expected to include general approach to sector-based crediting
2011:	Continued work with GCF to develop program criteria for a REDD program (or subset)
2012-13:	Potential evaluation of specific REDD program(s)
2015:	Potential to begin accepting credit from avoided deforestation program

Current Staff Thinking

Program Elements

Current Staff Thinking: Program Elements

- ARB participated in recent GCF meetings discussing possible program elements
  - GCF Work Groups
  - Climate Summit (Sept 2009)
  - GCF meeting (Sept 2009)
  - Technical meeting (Feb 2010)
  - GCF partner meeting (May 2010)
- The following slides summarize current staff thinking based on those discussions

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Current Staff Thinking: Sector-Based Credits and Offset Limit

- All offset credits subject to overall quantitative limit
- Sector-based offset credits would be limited to a portion of overall offset limit

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Current Staff Thinking: Program Elements – Reference Level (1)

- Setting the Reference Level - Options
  - Historic
  - Modeled/Projected
  - Historic and projected

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Current Staff Thinking: Program Elements – Reference Level (2)

- Historic annual deforestation rate
- Averaged over 10 years
- Adjusts every 10 years
- Data from spatially-explicit activity (remote sensing) & ground-level measurements
- Use of carbon emission factors for forest classes (IPCC Good Practice Guidance)
- Consideration for adjustment to include low-deforestation states with near-term threat

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Current Staff Thinking: Program Elements – Crediting Baseline

- **Crediting Baseline**
  - Establish at a lower level of GHG emissions than would occur under a BAU (RL) scenario
  - Take into account relevant historic trends and policies or incentives to reduce GHG emissions
  - Additionality and performance of the sector is based on its crediting baseline

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Current Staff Thinking: Program Design Elements

- **Crediting Baseline**
  - Establishing benchmarks by which REDD partners must reduce emissions from avoided deforestation prior to credits being issued
  - Considering two benchmarks:
    - ❑Crediting baseline at 25% below RL for portion of credits to become eligible for compliance.
    - ❑Crediting baseline at 50% reduction below RL for all remaining credits to be eligible for compliance.
- **Trajectory and Target**
  - Crediting baseline trajectory based on a 'net zero'; with 15 or 20 years under consideration as the target date for net 0 emissions.

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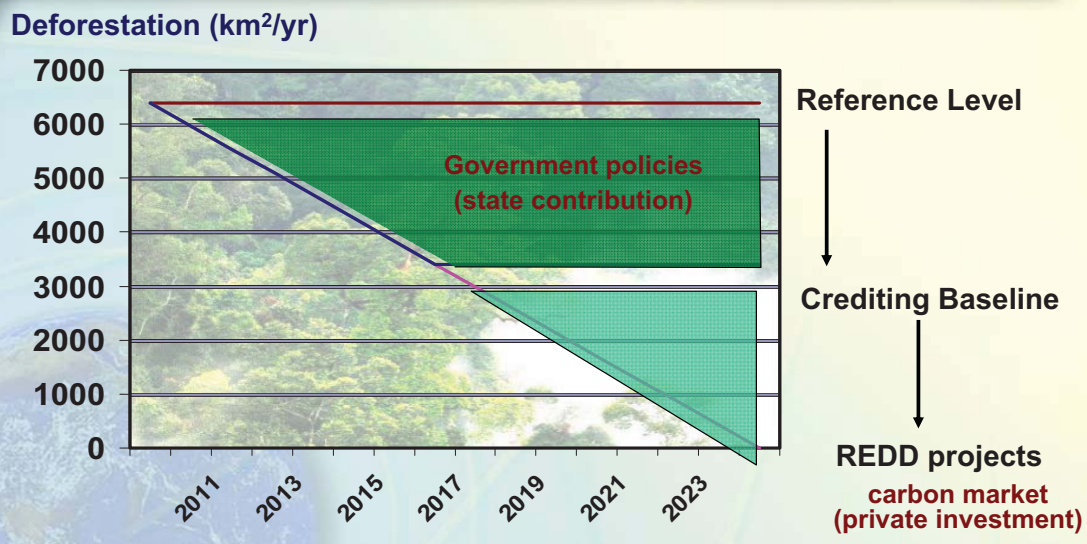
Current Staff Thinking: Reference Level & Crediting Baseline example



Current Staff Thinking: Preliminary Program Design Elements

- **Infrastructure needed to implement nesting framework**
  - Ongoing, transparent reconciliation of inventory and monitoring between state and projects
  - Tracking system as repository for issuance, ownership, retirement
  - Public access, dispute process, FPIC, stakeholder participation, transparency
  - Assignment of serial numbers
  - Links to national registries (if relevant)
  - Third-party verification

Future Issues

Overall Infrastructure
- Analysis on reference level and crediting baseline
- Accounting for nested system

Permanence
- Risk and reversals at project and sector level
- Liability

Measureable
- Monitoring, Reporting, Verification
- Accounting for nested system

Verifiable
- Social and Environmental Safeguards: Community-level benefit-sharing, Tenure validity/ assurance, Free prior informed consent, dispute resolution, public participation

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Contact and Comment Information

Submit comments by 6 pm, August 20, to:

http://www.arb.ca.gov/cc/capandtrade/comments.htm

For more information:

California's Climate Change Website:

http://climatechange.ca.gov

Contact (Office of Climate Change):

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Questions for discussion

Sector-based credits

1. Should credits coming from a sector-based crediting program be limited within the offset portfolio?

REDD program

2. What is the best method to establish sector-wide reference levels for host states?
3. Where should the crediting baseline be set relative to the reference level baseline?
4. How much should the host states be expected to reduce emissions before CA entities can use credits from compliance?
5. How to establish safeguard criteria that can be tracked and verified?

Terms and Definitions

REDD

Terms and Definitions: REDD (1)

- Sector-based Crediting Program
  - Jurisdictional level sector-wide GHG reduction program established in a state or province in a developing country
  - Emission reductions shared by both state-level action in developing country and use of credits in a compliance market
- REDD
  - Reducing Emissions from Deforestation and Degradation in developing country
  - REDD+ adds the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (Bali Action Plan)
- Deforestation
  - Direct human-induced conversion of forested land to non-forested land (Marrakech Accords)

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Terms and Definitions: REDD (2)

- REDD Readiness
  - Efforts by a jurisdiction to build capacity and become ready for operating a REDD program
  - Readiness may include inventory, REDD policy and planning, public consultation, monitoring, reporting and verification (MRV) procedures , testing and evaluation of REDD strategies, and registry development. These activities occur prior to start-up for full scale-up REDD program implementation
- Nested Approach
  - Allows project-level activity to be nested in a state-run REDD sector-based program
  - Projects would be subject to specific requirements and criteria to be considered for compliance use
  - State must meet its sector target prior to generating offset credits

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Terms and Definitions: REDD (3)

- Reference Level
  - Deforestation rate for entire state or province over a predefined period of time (also referred to as business-as-usual)
  - Reference levels can be established by historical trends, projections of future trends, or historic combined with adjustment factors
- Crediting Baseline
  - Establishes a performance level of avoided deforestation below the reference level
  - Establishes the point at which nested projects can begin to be credited