



Preliminary Approach to Scenario Modeling

**Economic Analysis Technical Stakeholder Workgroup
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Outline

- Description of Overall Approach
- Establishing a Reference Case
- How the Core Policies will be Modeled
- General Assumptions for the Five Preliminary Scenarios
- Questions

Overall Approach

- April 17th workshop will include a presentation of preliminary results for the following modeling runs:
 - Reference Case
 - Core Policies Run
 - Five Policy Scenarios

Defining a Reference Case

- Incorporate state policies through 2007.
- Incorporate federal energy policy through the Energy Independence and Security Act of 2007:
 - Updated CAFE standards
 - Increased use of biofuels
 - New building and device efficiency standards
- For the electricity sector:
 - Energy Efficiency included in 2007 CEC Demand Forecast
 - 20% Renewable Portfolio Standard

The Core Measures

- The following core measures will be included in all scenarios:
 - Greenhouse gas tailpipe emission standards
 - Low carbon fuel standard
 - Other discrete early actions adopted by the Board in 2007
 - Increased energy efficiency beyond current programs
 - Reductions in vehicle miles traveled

How Core Measures will be Modeled

- Greenhouse gas tailpipe emission standards
 - Increases in light duty vehicle efficiency beyond CAFE requirements.
- Low carbon fuel standard
 - Increased penetration of biofuels.
 - Increased penetration of electric vehicles.

How Core Measures will be Modeled

- Examples of other (non LCFS) discrete early actions adopted by the Board in 2007
 - Green Ports
 - Modeled as a reduction in diesel use and an increase in electricity use.
 - SmartWay Truck Efficiency
 - Modeled as heavy-duty vehicle efficiency improvements.
- Reductions of high-GWP gases not treated in preliminary work

How Core Measures will be Modeled

- Increased energy efficiency beyond current programs
 - GWh reduction in demand for electricity
 - BTU reductions for natural gas
- Reductions in vehicle miles traveled
 - Some percentage reduction exogenously determined and included in the model as an input.

Five Policy Scenarios

1. Additional direct regulations.

Three cap-and-trade scenarios:

2. Coverage of large point sources.

3. Coverage of large point sources with regional trading.

4. Coverage of large point sources, residential & commercial natural gas, and transportation fuels with regional trading.

5. A carbon fee applied to fuels throughout the California economy at the distribution level.

General Assumptions for Additional Direct Regulation Scenario

- Expanded versions of core policies
 - Example: further increases in light duty vehicle efficiency
- Measures beyond core policies
 - Primarily modeled as increases in device or process efficiencies outside of core policy coverage.
- Levels of feasible reductions will be established based on input from sector teams

General Assumptions for All Cap-and-Trade Scenarios

- Assumptions discussed today apply only to the initial modeling efforts.
 - Policy decisions on these issues will require more in-depth analysis in the future
- Sectors outside of the cap are required to make the same amount of reductions as expected in the direct regulation scenario.
- No offsets in preliminary modeling
 - Discussion of how to model offsets April 4th.

General Assumptions for All Cap-and-Trade Scenarios

- Phased in auction
 - 20% in 2012 to 100% in 2020.
 - Plan to return auction revenue directly to consumers in preliminary work.
 - Discussion of distribution of allowance value this issue in the afternoon session.
 - More detailed treatment of this issue in future phases of modeling.
- No banking or borrowing in preliminary modeling
 - Not well suited to evaluation in the model at this time.
 - Discussion of these issues on April 25th.

Setting the Cap for Cap-and-Trade Scenario Runs

- Cap in 2012 = emissions for capped sectors based on historical data.
 - Some level of reductions expected below 2012 reference case.
- Cap in 2020 = overall 1990 target – emission levels expected from sectors outside of the cap in 2020
- The cap will decline linearly between these two points

General Assumptions for Carbon Fee Scenario

- Applied based on carbon content for all fossil fuels.
- Applied to entities at the distribution level.
- Three levels of economy-wide carbon fee evaluated.
 - 10 \$/tonne
 - 30 \$/tonne
 - 50 \$/tonne

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Questions and Comments?

E-mail questions to CCPlan@arb.ca.gov