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
Questions and Comments?

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