Scenario Development

Agenda No. 3
Passenger Transportation and Goods Movement White Paper
Working Group
Joint Meeting
September 4, 2014
Developing Scenarios

- **Framework**
  - Develop a “core set” of scenarios for each sector
    1. Across-the-Board
    2. 100% Deployment of Most-Stringent Existing Standards
    3. Advanced Technology Penetration (would include Efficiency Actions that Reduce VMT, etc.)
    4. From (3), Develop Scenarios for Remaining Emissions:
       1. 100% Penetration Zero-Emissions
       2. 100% Penetration of Cleaner Technologies with 90% or Greater Emission Reductions
Developing Scenarios

- **Framework**
  - Develop Scenarios Where:
    1. Advanced Technologies May Have Greater Penetration
    2. Advanced Technologies May Have Less Penetration

- Develop Scenarios to Look at Trade-Offs Between Sectors
  1. Least-Cost for Engine Technology and Infrastructure
  2. Minimal Deployment of New/Advanced Technologies and Infrastructure
  3. Maximum NOx Reductions for each emission source
  4. Maximum NOx and GHG Reductions for each emission source
  5. Others?

- Develop Scenarios Looking Backwards from 2032 to 2023
Scenario Output Information

- Emissions
- Total Energy
- Population of Vehicles/Equipment Affected
- Other Information (Where Available)
  - Technology Costs
  - Operational Impacts
  - Others??
Example Scenario Output

**MAIN FACTORS**

- Vehicle Efficiency
- Fuels & Energy
- Including Infrastructure Development
- Advanced Tech.
- Operational Efficiency

**INPUTS**

- Vehicle population
- Vehicle miles traveled
- Vehicle sales
- Emission rates
- Infrastructure Development

**RESULTS**

- Total Emissions
- Total Energy
- Total Vehicles

Source: CARB (2012)
Example Proposed Output Format for Goods Movement Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>2032 Baseline NOx</th>
<th>75% Reduction</th>
<th>100% Existing Standard</th>
<th>Advanced Technology Penetration</th>
<th>Zero-Emission</th>
<th>90% Cleaner Technologies</th>
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<tbody>
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<td>On-Road Trucks</td>
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<td>Ocean-going Vessels</td>
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<td>Locomotives</td>
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<td>Cargo Handling Equipment</td>
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<td>Harbor Craft</td>
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# Example Proposed Output Format for Passenger Transportation Sources

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<tbody>
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<td>Passenger Cars, SUVs, etc.</td>
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Examples – Goods Movement

- “What If” Scenarios
  - Lower Number of Ocean-Going Vessel Calls are with Tier 3 Vessels
  - Locomotives Entering the South Coast Air Basin achieve greater reductions
  - Greater Penetration of Cleaner Combustion Engine Trucks
  - Implementation of Efficiency Measures (Offset Need for Additional Advanced Technology Penetration?)
  - Others??
Examples – Passenger Transportation

• “What If” Scenarios
  • Significant Number of Older Passenger Cars Remain in Use
  • Greater Mode Choice Actions
  • Implementation of Efficiency Measures (Reduce Congestion; ITS, etc.)
• Others??