Transportation Actions Included in State Climate Action Plans

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Presentation Roadmap

1. Overview of State Climate Action Plans
2. Transportation Mitigation Strategies – Quantification Methods and Uncertainties
3. Impacts and Adaptation
4. Key Opportunities for Involvement
What is a Climate Action Plan?

• Provides Distinct Strategies to Reduce GHG Emissions from Multiple Sectors

• Typical Components
  ▪ Emission inventory and forecast (baseline)
  ▪ Description of GHG mitigation strategies
  ▪ GHG impacts, costs, and cost-effectiveness of strategies
  ▪ Implementation steps
  ▪ Net impact of strategies, compared to baseline (BAU) forecast
The Climate Action Plan in Context

State Climate Action Plans Typically ARE:
- Strategy scoping documents
- Sketch-level emissions analyses

State Climate Action Plans Typically ARE NOT:
- Fiscally constrained
- Constrained by current limits on implementation authority
- Developed by agencies that would implement the plans
- Analogous to LRTPs
Status of State Climate Action Plans

<table>
<thead>
<tr>
<th>No CAP 12 states</th>
<th>CAP in progress 3 states</th>
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<tbody>
<tr>
<td>Georgia</td>
<td>Idaho</td>
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<td>Indiana</td>
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<td>Louisiana</td>
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<td>West Virginia</td>
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<tr>
<td>Texas</td>
<td>Wyoming</td>
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<table>
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<th>Completed CAPs 35 states</th>
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<tbody>
<tr>
<td>Alabama</td>
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<td>Virginia</td>
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<td>Washington</td>
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<td>Wisconsin</td>
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Source: Pew Center on Global Climate Change, “U.S. Climate Policy Maps – Climate Action Plans”, July 2010
Total Forecast State GHG Emissions (BAU)
Transportation Contribution to Total State GHG Emissions

Transportation at Percent of Total Forecast Emissions

- MN: 19%
- WA: 52%

States: MN, IA, MI, NM, UT, CO, MT, AR, PA, MD, NC, AK, SC, AZ, CA, NJ, NY, OR, VT, ME, WA, FL
GHG Reductions from Plan

Forecast GHG Emissions (MMtCO2e)

Emissions Reduced by Plan
Total Remaining Emissions

26% reduction

States: VT, IA, NM, FL, AR, SC, NC, MN, MI, AZ, PA, MT, CO, CA, NJ, AK, NY, IL, ME
Mitigation Strategies in 30 CAPs

- Smart Growth
- Alt. Fuels/Low Carbon Fuel Standard
- Transit and Alt. Modes
- LDV New Vehicle Emissions Standards
- LDV Clean Vehicle Purchase Incentives
- LDV and HDV Fleet-based Measures
- HDV Anti-idling Measures
- Traffic Speed/Flow Measures
- Commuter Benefits/Trip Reduction Programs
- Freight Systems Strategies
- Pay-As-You-Drive Insurance
- HDV Retrofit or Replacement
- Non-road Measures
- Other
- Public Education
- Integrate GHGs in Decision Making
- Parking, Road, and Fuel Pricing
- LDV Tires
- Vehicle and Fuels R&D
- LDV Efficiency Improvements

Number of CAPs
Effectiveness of Individual Mitigation Strategies

- LDV New Vehicle Emissions Stds.
- Alt. Fuels/Low Carbon Fuel Std.
- Combined Smart Growth/Transit
- Pay as You Drive Insurance
- Smart Growth
- LDV Clean Vehicle Purchase Incentives
- Transit and Alt. Modes
- Commuter Benefits/Trip Reduction
- Freight systems strategies
- HDV Retrofit or Replacement
- HDV anti-idling measures
- Non-road Measures
- Traffic Speed/Flow Measures
- LDV and HDV Fleet-based Measures

Percent Reduction from Transportation Baseline
Steps in Climate Action Plan Development (typical)

1. Create Emission Inventory and Forecast (baseline)
   - By sector; may be done in advance
2. Form Stakeholder Groups
   - Plenary group + 4-5 technical working groups
3. Review “Catalog” of Potential Strategies
4. Select Short List of Strategies for Evaluation
   - Typically 6-12
5. Analyze GHG Impacts and Costs of Select Strategies
6. Formulate Strategy Implementation Steps
7. Calculate Combined Impact of All Plan Strategies
8. Final Report
Part 2: Transportation Mitigation Strategies – Quantification Methods and Uncertainties
Real Impacts of CAP Strategies

• Actual GHG Reductions Will Depend On:
  - Enactment of strategies (Hurdle #1)
  - Implementation of strategies (Hurdle #2)
  - Variables that determine impact (Hurdle #3)

• Sources of Uncertainty Arise at Each
Requirements for Enactment (Hurdle #1)

- Public funding
- Legislation or rulemaking
- Major public agency initiative
- Private industry collaboration
Requirements for Enactment (Hurdle #1)

% of 84 Strategies

- Public Funding: 60%
- Legislation or Rulemaking: 77%
- Major Public Agency Initiative: 35%
- Private Industry Collaboration: 39%

% of 135 MMtCO₂e

- Public Funding: 29%
- Legislation or Rulemaking: 94%
- Major Public Agency Initiative: 25%
- Private Industry Collaboration: 20%
## External Factors Affecting Implementation (Hurdle #2)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Uncertainty for</th>
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<tbody>
<tr>
<td>Commercial Availability of Technology</td>
<td>Alternative fuel and technology strategies</td>
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<tr>
<td>Local Government Action or Coordination Among Government Agencies</td>
<td>Smart growth strategies, Infrastructure for bicycles, pedestrians, and transit</td>
</tr>
<tr>
<td>Market Forces</td>
<td>Transportation pricing strategies, Transit strategies</td>
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<tr>
<td>Land Use Changes</td>
<td>Smart growth strategies</td>
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## Variables that Determine Impact (Hurdle #3)

<table>
<thead>
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<th>Variable</th>
<th>Source of Uncertainty for</th>
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<tbody>
<tr>
<td>Affected population</td>
<td>Anti-idling strategies</td>
</tr>
<tr>
<td>Market Penetration</td>
<td>Most strategy types, except where penetration rate is mandated</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Traffic Speed/Flow strategies, Smart growth strategies</td>
</tr>
<tr>
<td>Timing</td>
<td>Strategies including large capital investments, such as Smart growth strategies, Transit strategies</td>
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Quantification Techniques

- Apply empirical results from studies of similar measures

- Set a reduction goal, supported by a local feasibility study

- Set a reduction goal, not supported by a local feasibility study
Part 3: Impacts and Adaptation
State Climate Change Adaptation Plans

In Progress or Completed:
- Alaska
- California
- Connecticut
- Florida
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New York
- Oregon
- Washington
- Virginia

Recommended in CAP
- Arizona
- Colorado
- Iowa
- Michigan
- South Carolina
- North Carolina
- Utah
- Vermont

Source: Pew Center on Global Climate Change, “U.S. Climate Policy Maps – State Adaptation Plans”, May 2010
Impact and Adaptation – Approaches

• Vulnerability Assessment
  ▪ Identifies existing stressors facing transportation systems and projects how climate change will introduce new stressors in the future

• Risk Assessment
  ▪ Evaluates the likelihood and consequence of climate-related impacts on transportation

• Adaptation
  ▪ Transportation management options available for effectively adapting to climate change impacts

Most state plans have not advanced beyond vulnerability
Part 4: Key Opportunities for Involvement
6 Points Where Involvement is Important

1. Formation of Stakeholder Groups
2. Inventory and Forecast (Baseline)
3. Selection of Strategies
5. Quantification of Strategy Impacts
6. Identification of Implementation Steps
1. Formation of Stakeholder Groups

- Working groups make recommendations to a plenary group
- Transportation TWG usually includes the DOT and/or MPO
- Plenary group does not usually include DOT or MPO
2. Inventory and Forecast (Baseline)

- Pay attention to growth factors for forecast years
- On-road gasoline and diesel forecast based on VMT projections
  - DOT vs. MPO projections

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<tr>
<td>Motor Gasoline</td>
<td>19.38</td>
<td>19.69</td>
<td>20.06</td>
<td>...</td>
<td>23.83</td>
<td>24.10</td>
<td>23.74</td>
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<td>Onroad Distillate Fuel</td>
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<td>4.24</td>
<td>4.75</td>
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<td>6.94</td>
<td>7.44</td>
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<td>0.57</td>
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<td>0.70</td>
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<td>0.37</td>
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<td>0.02</td>
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<td>8.7%</td>
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<tr>
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<td>0.17</td>
<td>...</td>
<td>0.37</td>
<td>0.49</td>
<td>0.47</td>
<td></td>
<td></td>
<td>16.7%</td>
</tr>
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Little or no uncertainty

High uncertainty
3. Selection of Strategies

**Catalog of Policy Options**

(30-50 options)

1. Vehicle technology
2. Vehicle operation
3. Alternative fuels
4. Smart growth
5. Demand management
6. System efficiency
7. Non-road

**High Priority List**

(8-10 options)

Balloting → analysis

*Multiple options may be “bundled” during or after balloting*
  - Details on individual strategies may be lost

**Backtracking discouraged**
  - Decisions are made on which strategies to include before analysis is done

Numeric goals for strategy effectiveness

Examples:

- Reduce light-duty VMT by 2% statewide by 2020
- Reduce fuel consumption from extended (overnight) idling of heavy-duty vehicles 50% by year 2012 and 95% 2020
- By 2010, all employers covered by a transportation authority with more than 100 employees will offer a commuter benefits program
- By 2010, ensure that 50% of employers who provide leased parking spaces to employees will offer parking cash-out.
- By 2020, 20% of drivers will be covered by mileage-based automobile insurance
- Increase the bicycle and walking mode share (all trips) in urban growth areas to 15% by 2020

Quantification of GHG impacts often directly tied to design goal

- Make sure Design Goals are realistic
5. Quantification of Strategy Impacts

• Questions to consider when reviewing quantification
  - Is impact quantified based on strategy goal? If so, is the goal supported by research?
  - What segments of travel are affected? (e.g., light-duty vehicles only, urban VMT only)
  - Are offsetting emissions quantified? (e.g., increase in transit emissions)
  - Are strategy overlaps accounted for?