Alaska Climate Change Mitigation Advisory Group

Transportation & Land Use Technical Working Group Meeting #1

June 5, 2008
2:00 – 4:00 PM
Office of the Governor
The Center for Climate Strategies
Welcome and Introductions

- State Agencies
- TLU Technical Work Group (TWG) Members
- Members of the Public
- Center for Climate Strategies
Agenda

• Introductions
• Purpose and Goals
• Review of TWG Process
• Review and Discussion of the Catalog of State Actions
• Review of the AK Draft Emissions Inventory & Forecast
• Agenda, Date, and Time for Next Meeting
• Public Input and Announcements
AK CCMAG Purpose & Goals

• Purpose
  – Achievement of Administrative Order #238

• Goals
  – Review and approval of a current and comprehensive inventory and forecast of greenhouse gas (GHG) emissions in Alaska from 1990 to 2020;
  – Development and recommendation of a comprehensive set of specific policy recommendations and associated analyses to reduce GHG emissions and enhance energy and economic policy in Alaska by 2020 and beyond;
  – Development and recommendation of a set of recommended statewide GHG reduction goals and targets for implementation of these actions; and
  – Issuance of recommendations in the form of a final report to the Sub-Cabinet convened by the Governor.
Part 1

TWG Process
AK CCMAG Roles & Responsibilities

- CCMAG Process convened by Governor Palin
- Oversight and coordination by the Chair
- CCMAG makes recommendations to the Climate Change Sub-Cabinet
- TWGs provide informal guidance to CCMAG
- Public input and review for stakeholders
- CCS provides facilitation, technical support, final report
TWG Roles

• Assist CCMAG
  – Review and assist with the state GHG inventory and forecast
  – Identify potential state actions
  – Identify potential priorities for analysis
  – Suggest straw policy designs
  – Assist with analysis and review of options
  – Assist with development of policy alternatives
  – Assist with input to and review of CCMAG reports
TWG Composition

• Oil and Gas
  – Exploration, production and refining / processing

• Energy Supply and Demand
  – Clean and renewable energy, combined heat & power, etc.
  – Energy efficiency and conservation, industrial processes, water supply and treatment, etc.

• Transportation & Land Use
  – Vehicle efficiency, alternative fuels, demand management, air, marine, and railroad measures

• Forestry, Agriculture, and Waste Management
  – Forest management, forest restoration, land protection, bioenergy, wood products, waste reduction, recycling

• Cross-Cutting Issues
  – Reporting, registries, public education, goals
Ground Rules

• Supportive of the process
• Attendance at meetings
• Equal footing
• Stay current with information
• No backsliding
• Do not represent the CCMAG or TWGs
• Make objective contributions
Timing: CCMAG Meetings

Meeting 1 - May 15-16 in Anchorage
Meeting 2 - July 15-16 in Fairbanks
Meeting 3 - September 22-23 TBD
Meeting 4 - November 6-7 TBD
Meeting 5 - February 5-6 in Anchorage
Meeting 6 - March 4-5 (tentative) TBD
Meeting 7 - April 29-30 (tentative, if needed) TBD

Between meetings: At least two TWG calls.
Stepwise Planning Process

1. Develop inventory and forecast of emissions
2. Identify a full range of possible actions
3. Identify initial priorities for analysis
4. Develop straw proposals
5. Quantify GHG reductions and costs/savings
6. Evaluate externalities, feasibility issues
7. Develop alternatives to address barriers
8. Aggregate results
9. Iterate to final agreements
10. Finalize and report recommendations
Coverage Of Issues

- All GHGs
- All sectors
- All potential implementation mechanisms
- State and multi-state actions
- Short and long term actions
Decision Criteria

• GHG Reduction Potential (MMtCO$_2$e)
• Cost or Cost Saved Per Ton GHG Removed
• Co-benefits
• Feasibility Issues
Catalog of State Actions

- Over 300 actions taken by US states
- Existing, planned, and proposed state level actions
- Wide variety of US states
- Wide variety of implementation mechanisms
- Includes key AK actions
- CCMAG will add new potential actions
- Starting place for identification of CCMAG priorities
Screening of Potential Actions - TLU Sample

<table>
<thead>
<tr>
<th>Option No.</th>
<th>GHG Reduction Policy Option</th>
<th>Potential GHG Emissions Reduction</th>
<th>Cost per Ton</th>
<th>Externalities, Feasibility Considerations</th>
<th>Priority for Analysis</th>
<th>Notes / Related Actions in AK</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1</td>
<td><strong>ON-ROAD VEHICLE TECHNOLOGY</strong></td>
<td></td>
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<tr>
<td>1.1</td>
<td>Clean Car Program (“Pavley” GHG standards for autos)</td>
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<tr>
<td>1.2</td>
<td>Fuel-Efficient Tires</td>
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<td>1.3</td>
<td>Heavy-Duty Vehicle Fuel Efficiency Improvements</td>
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<tr>
<td>1.4</td>
<td>Vehicle Purchase or Registration Incentives</td>
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<td></td>
<td>Federal Tax Code provides tax credits for alternative fuel vehicles</td>
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<tr>
<td>1.5</td>
<td>Incentives to Retire or Improve Older High-GHG Vehicles (passenger or freight)</td>
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<tr>
<td>T-2</td>
<td><strong>VEHICLE OPERATION AND SYSTEM EFFICIENCY</strong></td>
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<tr>
<td>2.1</td>
<td>Lower and/or Enforce Speed Limits</td>
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<tr>
<td>2.2</td>
<td>Vehicle Maintenance, Driver Education (e.g., tire inflation)</td>
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</tbody>
</table>
Policy Design Proposals

• TWGs start with Catalog of state actions, screen options, and recommend priorities for AK
• CCMAG identifies about 50 draft potential priority options for further development
• TWGs develop initial policy option designs (“straw proposals”)
  – Timing
  – Goals
  – Coverage
• CCS quantifies and presents for review
• CCMAG revisits list of potential priorities, as needed
Policy Option Template

- Policy Description (Concept)
- Policy Design (Goals, Timing, Coverage)
- Implementation Methods
- Related Programs and Policies (BAU)
- Estimated GHG Savings and Costs Per MMtCO$_2$e
  - Data Sources, Methods and Assumptions
  - Key Uncertainties
- Additional (non-GHG) Benefits and Costs, as Needed
- Feasibility Issues, if Needed
- Status Of Group Approval
- Level of Group Support
- Barriers to Consensus, if any
Final Report

- Executive Summary
- Background, Purpose And Goals
- AK Emissions Inventory & Forecast
- CCMAG Recommendations & Results
  - Forestry, Agriculture, & Waste Management
  - Energy Supply & Demand
  - Oil & Gas
  - Transportation & Land Use
  - Cross Cutting Issues
- Appendices
Part 2

Potential GHG Policy Options
CCS Catalog of State Actions

• Actions undertaken or considered by a wide variety of US states
• Many actions provide GHG reductions coincidentally or as a co-benefit
• Cover all economic sectors
• Cover many implementation mechanisms
• Add to or revise as needed for AK
TLU Catalog of State Actions

• *Please see separate Catalog and Catalog Descriptions handout.*
Part 3

Draft GHG Emissions Inventory and Forecast
Inventory Approach

- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Alaska data, where available
- Consumption and production-basis emissions from electricity generation
  - Very simplified approach used for initial analysis
Projection Approach

• Reference case assumes no major changes from business-as-usual (BAU)
  – Includes approved policies and actions to the extent possible

• Growth assumptions from existing sources
  – State population and employment forecasts
  – US Census and Bureau of Labor & Statistics
  – US Energy Information Administration
Coverage

- Six gases per USEPA and UNFCCC guidelines
  - Carbon Dioxide (CO$_2$), Methane (CH$_4$), Nitrous Oxide (N$_2$O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF$_6$)
- All major emitting sectors
  - Electricity Supply & Demand (Consumption Based)
  - Residential, Commercial, Industrial (RCI) Fuel Use
  - Industrial Non-Fuel Use Processes
  - Transportation (onroad and nonroad)
  - Natural gas pipeline transmission & distribution
  - Agriculture, Forestry, and Waste
- Emissions expressed as CO$_2$ equivalent
  - 100-year global warming potentials
    - CO$_2$ = 1; CH$_4$ = 21; N$_2$O = 310; HFC-23 = 11,700; SF6 = 23,900
Key Points

• Preliminary draft for CCMAG and TWG review and revision, as needed
• Helpful for diagnosis of GHG emissions, but not a baseline for modeling or compliance for individual options
• Consumption and production methods
• Net and gross methods
Alaska & US Gross Emissions By Sector, Year 2000

Alaska
- Transport: 35%
- Industrial Fuel Use (CH4): 7%
- Res/Com Fuel Use: 9%
- Industrial Process: 0.4%
- Agric.: 0.1%
- Electricity: 7%
- Fossil Fuel Ind.: 7%

US
- Transport: 26%
- Industrial Process: 5%
- Waste: 4%
- Agric.: 7%
- Industrial Fuel Use: 14%
- Fossil Fuel Ind. (CH4): 3%
- Electricity: 32%
Per Capita and GSP/GDP Gross GHG Emissions, 1990-2005

- US GHG/Capita (tCO2e)
- AK GHG/Capita (tCO2e)
- US GHG/$(100gCO2e)
- AK GHG/$(100gCO2e)
Alaska Gross GHG Emissions By Sector, 1990-2020
Alaska Gross Emissions Growth (MMtCO2e Basis)
Transportation Inventory & Forecast

- Jet Fuel
- Aviation Gasoline
- Boats and Ships-Ports
- Boats and Ships-Offshore
- Onroad Gasoline
- Rail and Other
- Onroad Diesel

MMtCO2e

Transportation Inventory & Forecast

• Data Sources
  – Onroad Diesel and Gasoline: Western Region Air Partnership (WRAP) Mobile Source Inventory and EIA AEO2006
  – Other Onroad Fuels: EIA
  – Aviation: jet fuel prime supplier sales volumes in Alaska from EIA
  – Marine Vessels: ADEC commercial marine inventory, Commission for Environmental Cooperation in North America inventory, EIA, EPA’s National Emissions Inventory, Waterborne Commerce Statistics Center (Army Corps)
  – Rail and Other: SGIT and fuel consumption from EIA
Transportation Inventory & Forecast

• Projection Methods
  – Onroad Diesel and Gasoline: Total VMT projections from WRAP, distributed to vehicle types by AEO2006 figures, adjusted by AEO2006 fuel efficiency projections.
  – Other Onroad fuels: regional fuel consumption projections from AEO2006 apportioned by population
  – Aviation: FAA aircraft operations forecasts by facility, adjusted by aviation fuel efficiency forecasts from AEO2006
  – Marine Vessels: projected using historical growth factors from ADEC inventory
  – Rail and Other: Historical trends and USDOE regional projections
Transportation Inventory & Forecast

• Key Assumptions
  – Ethanol consumption assumed to remain at the 2002 level. Biodiesel and other biofuels not considered.
  – No growth in rail emissions, consistent with historical pattern

• Key Uncertainties
  – Future year vehicle mix
  – Future biofuel consumption
  – Aviation fuel for international travel
  – Aviation fuel efficiency forecasts
  – Consistency of multiple sources for marine fuels
Next TWG Meeting

• Agenda:
  – Add missing actions to catalog
  – Review TWG suggested updates to the Alaska emissions inventory and projection
  – Prepare to identify initial priorities for analysis

• Time and Date: June 24, 2008; 2:00-4:00 PM
Public Input, Announcements