Oil and Gas TWG
Teleconference Meeting #1

June 4, 2008 9:30-11:00am

Governor’s Climate Change Sub-Cabinet
Center for Climate Strategies
Welcome and Introductions

- Technical Working Group (TWG) members
- Sub-Cabinet advisors
- TWG facilitation team
- Public
Today’s Agenda

• Roll call
• Purpose and goals
• Part 1: Purpose of Mitigation Advisory Group and Technical Working Group
• Part 2: Alaska Emissions Inventory and Forecast
• Part 3: Catalog of state actions
• Next steps for TWG
• Public input and announcements
• Agenda, time and date for next meeting
Part 1

- MAG and TWG process
Purpose & Key Outcomes

• Purpose of Mitigation Advisory Group
  – Develop recommendations for achieving the goals laid out in Administrative Order 238

• Duties of MAG
  – Review and approve state greenhouse gas (GHG) inventory and forecast
  – Review and assess recent actions taken and impacts on goals
  – Identify actions to meet 2020 goals for GHG emissions, job creation, fuel savings
  – Evaluate opportunities for regional collaboration
  – Identify state lead-by-example opportunities
  – Identify ways to coordinate state and local GHG reduction actions
  – Inform and involve the public

• Report to Sub-Cabinet on Climate Change
## Mitigation Advisory Group

<table>
<thead>
<tr>
<th>Member</th>
<th>Institution</th>
<th>Advisor</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scott Anaya</td>
<td>AK Building Science Network</td>
<td>Paul Klitzke</td>
<td>St. David's Episcopal Church and Interfaith Light &amp; Power</td>
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<tr>
<td>Bob Batch</td>
<td>BP</td>
<td>Byron Mallott</td>
<td>FAI (former AK Perm Fund and First Alaskan Institute)</td>
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<tr>
<td>Steve Colt</td>
<td>UAA</td>
<td>Greg Peters</td>
<td>Alyeska Seafoods</td>
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<tr>
<td>Jeff Cook</td>
<td>Flint Hills Resources</td>
<td>Chris Rose</td>
<td>Renewable Energy Alaska Project</td>
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<tr>
<td>Brian Davies</td>
<td>Nature Conservancy (Former BP)</td>
<td>Jon Rubini</td>
<td>JL Properties</td>
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<tr>
<td>Steve Denton</td>
<td>Usibelli Coal Mine</td>
<td>Sean Skaling</td>
<td>Green Star</td>
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<tr>
<td>Karen Ellis</td>
<td>FedEx</td>
<td>Jamie Spell</td>
<td>3nd Wing Elmendorf AFB</td>
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<tr>
<td>Joe Everhart</td>
<td>Wells Fargo</td>
<td>Stan Stephens</td>
<td>Stan Stephens Charters</td>
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<tr>
<td>Rick Harris</td>
<td>Sealaska</td>
<td>Curt Stoner</td>
<td>Totem Ocean</td>
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<tr>
<td>Jack Hébert</td>
<td>Cold Climate Research Center and Hébert Homes</td>
<td>Kate Troll</td>
<td>Alaska Conservation Alliance</td>
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<tr>
<td>David Hite</td>
<td>Hite Consulting</td>
<td>Kathy Wasserman</td>
<td>Alaska Municipal League</td>
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<tr>
<td>Kate Lamal</td>
<td>Golden Valley Electric</td>
<td>Randy Virgin</td>
<td>Municipality of Anchorage</td>
</tr>
<tr>
<td>Meera Kohler</td>
<td>Alaska Village Electric Coop</td>
<td>Dan White</td>
<td>UAF</td>
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Mitigation Advisory Group and Climate Change Challenge

- Climate Change Sub-cabinet oversees and coordinates process
- MAG makes recommendations to Sub-Cabinet
- MAG provides guidance to the Technical Working Groups (TWG)
- TWGs assist the MAG
- CCS & Information Insights provide facilitation, technical support and analysis
- Public provides input and review
MAG and TWGs

- **Mitigation Advisory Group (MAG)**
  - Review existing and planned state actions
  - Identify potential options for design and priorities for analysis
  - Recommend actions to achieve the AO goals

- **Technical Working Groups (TWG)**
  - Analysis, review and early ranking of options
  - Develop initial straw proposals for design
  - Input and review of MAG recommendations and reports
  - Review state GHG inventory and forecast

- **TWG process is fully integrated with the MAG**
  - TWGs serve in an advisory role to MAG
  - MAG membership on the Technical Working Groups
TWG Focus Areas

• Oil & Gas
  – Production, processing and transportation/distribution of oil, natural gas, coal and coalbed methane

• Energy Supply & Demand
  – Heat and power generation, supply, transmission/distribution, and use

• Transportation/Land Use
  – Vehicle efficiency, alternative fuels & demand reduction programs and associated land use

• Forest, Agriculture and Waste
  – Forest restoration, sustainable forest management, wood energy, sequestration
  – Biofuels, waste reduction, recycling & energy recovery, solid waste management

• Cross-Cutting Issues
  – GHG sources that overlap two or more focus areas
Timing

• MAG meetings – every two months approx.
  – July 15, 2008 (Fairbanks)
  – September 22, 2008 (details coming)
• TWG calls
  – Regularly scheduled
  – Two 1.5-2 hour calls between MAG meetings
• Final Product
  – Report to Sub-Cabinet
  – Following last MAG meeting in April 2009
Ten Step Work Plan

• Develop initial GHG inventories and forecasts
• Identify possible GHG mitigation options
• Identify initial priorities for evaluation
• Evaluate supply potential, cost effectiveness; additional and feasibility issues as needed
• Identify barriers, alternative policy design needs
• Modify, add or subtract options as needed
• Evaluate cumulative results of options
• Iterate to consensus, with votes as needed
• Aggregate options into implementation scenarios
• Finalize recommendations and report language
TWG Next Steps

• Review and revise Alaska greenhouse gas (GHG) inventory and forecast
• Identify “priorities for analysis” from catalog of states actions
  – Add existing and new options as needed
  – Rank and screen options
  – Suggest initial “priorities for analysis” to the MAG
Decision Criteria

• GHG Reduction Potential (tonnes CO2e)
• Cost or Cost Saved Per Tonne GHG Removed
• Energy, Commerce and other co-benefits
• Feasibility Issues
End Product/Final Report

• Executive Summary
• Background, Purpose And Goals
• Policy Recommendations & Results
  – Oil & Gas
  – Energy Supply & Demand
  – Transportation/Land Use
  – Forestry, Agriculture and Waste
  – Cross-Cutting Issues
• Appendices
Part 2

• Review Greenhouse Gas Inventory and Forecast
Alaska GHG Emissions

- Draft Inventory and Reference Case Projections
- Initial analysis by CCS for discussion and final revision
  - Inventory of historical emissions from 1990 to most recent data year (2000-2005, depending on sector)
  - Projection of emissions to 2020
Coverage

• Six gases per USEPA and UNFCCC guidelines
  – Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O),
    Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs),
    Sulfur Hexafluoride (SF6)
  – Black Carbon may be considered separately
• All major sources and sinks
  – Transportation
  – Electricity Generation
  – Residential, Commercial, Industrial Fuel Use
  – Fossil fuel production (fugitive emissions)
  – Agriculture
  – Forestry
  – Industrial Processes and Other Sources
Inventory Approach

- Based on standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Alaska or regional data, where available
Projection Approach

• Reference case assumes no major changes from business-as-usual
  – Does not include impact of recent policies

• Growth assumptions from existing sources
  – Alaska Department of Natural Resources production forecasts
  – AK Population Forecast
  – Federal Aviation Administration flight forecasts
  – US Energy Information Administration
  – US Bureau of Labor & Statistics
Alaska & US Gross GHG Emissions By Sector, Year 2000 (draft)

Alaska
- Transport 35%
- Industrial Process 0.4%
- Waste 2%
- Agric. 0.1%
- Electricity 7%
- Res/Com Fuel Use 9%
- Industrial Fuel Use 41%
- Fossil Fuel Ind. (CH4) 7%

US
- Transport 26%
- Industrial Process 5%
- Waste 4%
- Agric. 7%
- Res/Com Fuel Use 9%
- Industrial Fuel Use 14%
- Fossil Fuel Ind. (CH4) 3%
- Electricity 32%
Alaska Gross GHG Emissions By Sector (draft)
(excludes forestry and soil sequestration)

RCI: direct fuel use in residential, commercial and industrial sectors.
ODS: ozone-depleting substance

www.climatechange.alaska.gov
Alaska Gross GHG Emissions Growth (draft)

![Graph showing Alaska Gross GHG Emissions Growth](image-url)
Industrial Sector GHG Emissions from Fuel Consumption

Covers all industry, fuel consumption from oil and gas operations need to be split out.
Fossil Fuel Production GHG Emissions from Fugitive Sources

Coal mining emissions too small to be seen in chart
Key Points

• Methodology and data gaps currently under review
  – Energy consumption emissions need to be disaggregated from industrial sector (completed for 2002)
  – In other states, discrepancies have been found between EIA estimates and oil and gas industry data on energy consumption
  – Fugitive emissions are based on industry averages
  – Fraction of entrained CO2 in natural gas is uncertain
  – Challenges in projecting future production of fossil fuels

• Projected emissions savings from recent actions to be estimated separately
Key assumptions

- Average annual growth rates in energy consumption (all industry)
  - EIA energy + AK employment projections

<table>
<thead>
<tr>
<th></th>
<th>1990-2004&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2005-2010&lt;sup&gt;b&lt;/sup&gt;</th>
<th>2010-2015&lt;sup&gt;b&lt;/sup&gt;</th>
<th>2015-2020&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>natural gas</td>
<td>2.3%</td>
<td>1.4%</td>
<td>2.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>petroleum</td>
<td>2.2%</td>
<td>3.2%</td>
<td>1.7%</td>
<td>1.1%</td>
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- Average annual growth rates in fossil fuel production
  - Natural gas production declines 3.9% per year
  - Oil production declines 1.3% through 2015 then 4.8%
  - Source: Alaska Department of Natural Resources Oil and Gas Annual Report 2006

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ADEC refinements to Alaska GHG Inventory

- In March 2007, Trustees for Alaska requested ADEC require large emitters of GHG to quantify & report their emissions.
- ADEC committed to refine the GHG emission estimates for major industrial and transportation sources.
- ADEC conducted GHG emissions inventory for Title V (major) air permits in Alaska using 2002 fuel usage data.
### ADEC Title V GHG Emissions Inventory Results 2002

<table>
<thead>
<tr>
<th>ADEC Source Category</th>
<th>GHG Emissions (MMTCO$_2$eq)</th>
<th>Percentage of Total GHG Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity Production</td>
<td>2.18</td>
<td>11%</td>
</tr>
<tr>
<td>Military</td>
<td>0.97</td>
<td>5%</td>
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<tr>
<td>Mining</td>
<td>0.017</td>
<td>1%</td>
</tr>
<tr>
<td>Municipal</td>
<td>0.012</td>
<td>1%</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>15.26</td>
<td>73%</td>
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<tr>
<td>Other</td>
<td>1.76</td>
<td>8%</td>
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<tr>
<td>Seafood</td>
<td>0.16</td>
<td>1%</td>
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<tr>
<td>Totals</td>
<td>20.63</td>
<td>100%</td>
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Part 3

- Draft Potential GHG Mitigation 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
Public Input and Announcements
Next TWG Call

- **Agenda:**
  - Discuss potential priorities for analysis of policy options
  - Further review the emissions inventory and projection if/as needed

- **Proposed date/time for Call #2:**
  - Wednesday, June 25, 9:30 – 11:00 AM (tentative)