

# **Appendix K**

## **Compilation of Mitigation Advisory Group Meeting Summaries**

This appendix contains the full text of the Meeting Summaries for the nine sessions held by the Mitigation Advisory Group (MAG). Meeting 6 was held in two parts, referred to as Meeting 6 and 6a.

Each summary was reviewed and approved by the MAG, except Meetings 7 and 8. Since Meeting 7 was the last full meeting, the MAG did not meet to approve it later. Meeting 8 was a comment and feedback session on the draft final report. The MAG made no substantive decisions on options and did not review and approve this summary afterward.



## **Alaska Mitigation Advisory Group**

### **Meeting 1 Summary**

Anchorage, Alaska

May 15, 2008

#### **1. Attendees**

- A. Mitigation Advisory Group Members:** Bob Batch, Steve Colt, Steve Denton, Karen Ellis, Joe Everhart, Steve Gilbert, Rick Harris, Jack Herbert, David Hite, Kate Lamal, Greg Peters, Chris Rose, Jon Rubini, Sean Skaling, Jamie Spell, Stan Stephens, Kate Troll, Kathie Wasserman, and Dan White
  
  - B. Public:** Tim Bradner, Paula Cullenberg, Scott Dickinson, Russ Douglas, Steve Gilbert, Sammy Glascock, Steve Heiml, Gwen Holdmann, Andy Jones, Sean Lowther, Becky Schaffer, Curt Stoner, Chip Treinan, Jeff Walker, and Lance Wilber
  
  - C. State Participants:** Mike Black, Alice Edwards, Clint Farr, Larry Hartig, Susan McNeil, Kolena Momberger, and Jackie Poston
  
  - D. Consultants:** Ken Colburn, Brian Rogers, **Error! Reference source not found.**, and Jason Vogel
- 2. Welcome:** Brian Rogers welcomed the Mitigation Advisory Group (MAG) members and gave an overview of the agenda. He explained that issues of sustainability and adaptation get linked to mitigation but the focus of this group will be only on mitigation. He asked members to leave their affiliations at the door and to think in terms of benefits for Alaska as a whole.
- 3. Overview of the Alaska Climate Change Adaptation Advisory Group Planning Process**  
*Brian Rogers, Acting Chancellor, UAF and Ken Colburn, Center for Climate Strategies*
- They stressed an open process, with agendas, summaries, presentations and other materials are posted on the web. This process is non-binding, flexible, informal, and consensus-driven.

A greenhouse gas (GHG) inventory and forecast has been completed, now, we identify potential policy options by sector while ensuring they complement policies and programs already in place in Alaska. Stakeholders with diverse expertise are represented on the Advisory group and on Technical Working Groups.

A stepwise planning process and its design were presented. The goal for this process is to develop policy recommendations that are comprehensive and quantifiable when possible. A comprehensive catalog of states' actions will allow the AAG to select key Alaska actions to reduce GHG emissions.

Each advisory group will have TWG's analyze information before making recommendations to the advisory groups for their consideration. Decision criteria and examples of mitigation policy recommendations were listed. TWGs for the Mitigation Advisory Group (MAG) are: Oil and Gas; Energy Supply and Demand; Transportation and Land Use; Forestry, Agriculture and Waste Management; and Cross-Cutting Issues.

The TWG's will identify and recommend +/-50 draft options for further development. TWGs will screen, prioritize and propose initial policy options, which include goals, timing, coverage, parties, and implementation mechanisms. The MAG will have final decision authority on all recommendations.

Six advisory group meetings will be held; a seventh if needed. After all meetings conclude, the consultants will compile a final report for the MAG and AAG to present to the Climate Change Sub-Cabinet.

MAG members were asked to review the catalog of potential state actions, and to review Alaska GHG Emissions Inventory and Forecast to prepare for discussions about priority policy options for analysis.

#### **4. Review of Alaska Greenhouse Gas Emissions Inventory and Forecast**

*Alice Edwards, DEC and Steve Roe, Center for Climate Strategies*

The presentation on Alaska's Greenhouse Gas Inventory is available at [www.climatechange.alaska.gov/mt.htm](http://www.climatechange.alaska.gov/mt.htm). Greenhouse gases methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons are measured in carbon dioxide equivalents.

The emissions inventory identifies sources from human activities, energy, industry, transportation, agriculture, forestry, and waste disposal, over time. Alaska's 2005 GHG emissions grew by 13% from 1990 to 2000; the US average was 14%. Emissions by sector were presented; industrial fuel use (41%) and transportation (35%) were the largest emitters. Standardized protocol doesn't exist but a common practice is to have inventories capture at point of fuel sale, not the use point. Anchorage is a major refueling stop for cargo aviation transportation. Since the inventory uses fuel purchases in calculations, the report should discuss this emission because most aviation fuel sold in Alaska is burned elsewhere. Similarly ships fuel elsewhere but use electricity when in port.

The draft inventory is an iterative document to be refined and adjusted as the process moves forward. One of the major steps in the process is to improve on inventory, better data, more sound assumptions, and so on.

One potential criteria is to ascertain what Alaska as a state can affect. For example, to affect air travel, a policy recommendation requiring landing fees could incentivize remanufacturing of engines and processes. Although natural and anthropogenic sources like forest fires are not included now, perhaps they can be. Emissions and pollutants from Asia and Russia are active research areas, but are not included in the inventory. Perhaps Alaska's natural gas exports could be used to mitigate other areas of GHG emissions.

Melting fresh water flushes sediment into ocean waters. The full effect of additional fresh water on fishing industry and habitat is important to know. This question can be sent to adaptation or the Research needs Working Group.

## 5. Mitigation Practices Brainstorming (some proposed, some active):

### *Current Mitigation*

- Weatherization
- LEED
- Green building
- Use local materials
- Energy efficiency programs
- Rebates for high efficiency appliances
- State energy efficiency policy draft
- Hydro
- Smart meters
- CHP at residential scale
- Wind power AVEC
- HB 152 renewable energy fund
- Tree give away
- Emission reductions

### *Energy*

- Reduced flaring
- Convert diesel to natural gas or electricity
- Combined heat and power (CHP)
- Equipment to more energy efficient models
- Recycling
- Green waste recovery
- Waste to energy
- Geothermal
- Wind
- Tidal
- Wave
- In-river hydro
- Encourage demonstration projects
- Small nuclear reactors
- MSW energy and heat
- CTC BTU coal gas
- Biomass
- Sequestration
- Education in general how to conserve

### *Transportation*

- Changing air speed
- Aircraft diesel to electricity and more efficient models
- Cruise ships – hydro at dock
- Fuel cells- distribution once generated
- Battery improvements
- Changing prop design in ships and boats
- Level of management – fisheries and in general
- Outlawing two-cycle engines (proposed)
- Fleet conversion
- Jet biofuel alternatives

### *Other*

- Company incentives to bike to work
- Develop hydro to sell to neighbors

- Upgrade bicycle paths
- Mass transit
- Industrial efficiency
  - Video conferencing
- Denali Green Tags
- Energy research
- Q- incentive

## 6. Purpose and Goals: Overview of Administrative Order 238 and Structure of Climate Change Sub-Cabinet's Efforts in Alaska

*Larry Hartig, DEC Commissioner*

Commissioner Hartig introduced the goals of the climate change planning process. He stated several huge issues face Alaska: climate change; energy costs; natural gas pipelines; resource development in general; and sustainability, especially of rural communities. Issues will be difficult to separate since they are all interrelated. He asked the advisors to capture all thoughts but to stay focused on climate change.

The Governor appointed this committee because:

- No debate on climate change, it's now
- Relatively small changes in atmosphere have significant effect on the environment.
- Warming will have effects on habitats
  - Less sea ice
  - More intense forest fires, more insects
  - Change in distribution of species
  - Appearance of new species.
- Our world shares one atmosphere – there's no opting out
- We can build strategy from ground up, without unintended consequences
- We all must take responsibility
- The inventory shows the effects Alaska can have are unique and shows opportunities
- Emissions reductions may not be difficult and there could be many ancillary benefits
- If we fail to act there could be repercussions in the market
- State lead-by-example will be an important part of state government leadership
- Governor wants info and analysis of cap-and-trade, how it affects residents of Alaska

Administrative Order 238 established the Alaska Climate Change Sub-Cabinet comprised of five cabinet members - Departments of Commerce, Community and Economic Development; Environmental Conservation; Natural Resources; Fish and Game; and Transportation. The Sub-Cabinet is supported by the University of Alaska (for research and modeling) Buck Sharpton, and John Katz, liaison for the Governor on federal matters. This order applies to all sources and all opportunities.

Immediate Action Work Group identified most at-risk communities and brought together reps from each village. Recommendations were forwarded; legislators put up 1/3 of money needed (\$10.6M) to address those needs, the rest may come from federal government.

The Commissioner stated the State has no intention to steer or control this process. He likely will attend all meetings; use him as a resource. Recommendations will be taken very seriously; the Governor will assess and carry them forward to the legislature.

Western Climate Initiative (WCI) (Alaska is observer); participants listen to each other, each playing to their own strength and contributing what they can. Since WCI is focused on cap-and-trade, the Governor doesn't think Alaska was prepared to join yet.

## **7. Discussion**

Introduction to Center for Climate Strategies and process for the coming year, refer to <http://www.climatechange.alaska.gov/mit.htm>, Workgroup Documents and Links, click on the power point titled Mitigation Advisory Group Planning Process.

To find other state plans for their overview structure and information:  
[www.\(stateabbreviation\)climatechange.us](http://www.(stateabbreviation)climatechange.us)

Definition of mitigation is activities that reduce greenhouse gas emissions.

If individual items need action, meetings can be arranged outside this process to jump start programs. A process can be initiated to recommend important elements to the Governor before the budget cycle is complete.

One corporation started looking at reduction goals through sequestration. Each company should start with internal savings first. The group needs to pay attention to what's already going on and how Alaska fits. The Farm Bill and Energy Bill are both addressing carbon sequestration, recommending large grants. State dollars may be used to match or draw federal funds. We need to look for opportunities to move to the head of the line.

This process dovetails with the state energy plan. We can ask the Regulatory Commission of Alaska to participate on the Energy Supply TWG.

Suggestions are welcome for other informational needs that can be met through presentations at upcoming meetings or papers.

- The Governor asked every agency to list adaptation needs. Larry will lead the effort to query departments about what they are doing or like to see done for mitigation.
- Have Energy Plan leader come to future meeting to bring us up to speed.

## **8. Key Meeting Dates**

May 15, 2008 (1st Meeting): Launch Process; Review Inventory - Anchorage

July 15, 2008 (2nd Meeting): Review and approve progress on Catalog of Potential Policy Options - Fairbanks

September 22, 2008 (3rd Meeting): Approve Policy Options Catalog and initial rankings as available. (some TWG's may need more time for balloting – TBD as process continues)

November 6, 2008 (4th Meeting): Approve Final Priority Policy Options and straw proposals as available.

February 5, 2009 (5th Meeting): Approve remaining Straw Proposals and initial quantifications (prepared by TWGs)

March 4, 2009 (tent.) (6th Meeting): Approve Quantification of Options and framework of final report.

Seventh meeting possible.

## **9. Closing Comments:**

Larry Hartig appreciated the ideas and enthusiasm around the room. He recognized the large investment in time, and stressed the importance of this process.

## **10. Ideas for catalog**

- Focus on young people and provide appropriate education
- Innovative funding incentives
- Calculate and track what is being spent across state agencies on climate change
- Requirements for state selecting bidders that are energy savvy rather than just the lowest builder
- Energy audits required on existing buildings, but don't know that it's being done
- Could mandate built to LEED level, not necessarily go through certification process
- No state building codes, no state energy codes – being done by municipalities, but no money for enforcement.

## **11. Public Comments**

Becky Schaffer from Cascadia Green Building Council (WA, OR, AK) thinks the state has technical expertise necessary to design green buildings using LEED and Living Building Program (net zero energy). She suggested some type of competition, like the X Prize, which will jump start the green building phenomenon. State agencies could lead with schools.



## MEETING SUMMARY

### Alaska Climate Change Mitigation Advisory Group

Meeting #2, July 15, 2008

9:00 AM – 4:30 PM

#### Attendance:

##### Mitigation Advisory Group Members (MAG):

Bob Batch, Steve Colt, Jeff Cook, Brian Davies, Steve Denton, Karen Ellis, Ron Wolfe, Jack Hebert, David Hite, Paul Klitzke, Meera Kohler, Greg Peters, Chris Rose, Jon Rubini, Jamie Spell, Curt Stoner, Kate Troll, Dan White

##### Alaska Department of Environmental Conservation (DEC):

Clint Farr, Larry Hartig, Susan McNeil, Jackie Poston

##### Center for Climate Strategies (CCS):

Ken Colburn, Ira Feldman, Gloria Flora, Katie Pasko; Alison Bailie/Greg Powell (*by phone*), Steve Roe/Brad Strobe (*by phone*), Nancy Tosta/ Lydia Dobrovolny(*by phone*), Chris James/Alice Napoleon (*by phone*), Jeff Ang-Olson/Frank Gallivan (*by phone*)

##### Public:

Janet Bonds, Bruce Botelho Henry Cole, Scott Dickenson, Sami Glascott, Jim Hornaday, Andy Jones, Lewis Kozisek, Marilyn Leland, Andy Lewis, Chris Maisch, Pat Pitney, Jeff Short, Sean Skaling, Bob Swenson, , Sarah Trainor

Brian Rogers welcomed all attendees and provided an overview of the meeting structure. He led a round of introductions, including attendees by telephone.

Larry Hartig welcomed the group to this meeting. He emphasized the importance of the Advisory Group members to ensure a successful process. While the process may appear standard, it will be tailored to Alaska's special needs throughout the upcoming year.

It is critical that members remain engaged in the process, both at the Advisory Group (MAG) level and at the Technical Working Group (TWG) level. The members have been hand-picked to reflect the diversity of Alaska and the special skills and knowledge that each member will bring. The specific affiliation of individual members is less important than the critical thinking and judgment based on past experience and knowledge.

Commissioner Hartig emphasized that, rather than spending time debating the contribution of humans to GHG emissions and that relationship to climate change, efforts must be made at all levels of the state to move away from fossil fuel dependence and to recognize the impacts of climate change. There is extensive national and regional debate on this topic that can be independently reviewed by individual members.

Several state agencies will be supporting the work of the Sub-Cabinet, the Mitigation Working Group and the Adaptation Working Group (AAG). The Departments of Environmental Conservation, Natural Resources, Transportation, Commerce and Economics will all be providing staff support. In addition, John Katz is the liaison to the Governor, and Buck Sharpton is the Vice Chancellor of the University of Alaska, Fairbanks.

Ken Colburn reviewed the stepwise process that the Advisory Group will follow. This process is outlined on the power point presentation, slides 4-5, on the website, [www.akclimatechange.us](http://www.akclimatechange.us). He emphasized that this is a collaborative process, with participation encouraged and expected of all members.

He explained that this meeting will focus on potential state actions for inclusion in the catalog, on a sector, or TWG, basis. The goal is to identify the full range of possible options, which will be reviewed by the responsible TWG. Each facilitator will lead the discussion with contributions by TWG members.

The Inventory and Forecast Report remains open so that any relevant input and comments can be incorporated.

After the complete list of priority options is approved by the MAG, each TWG will begin to complete the Policy Option Template as shown on slide 9. This stepwise process will result in completed, 'fleshed-out', Policy Option Descriptions at the end of the process. At each step, the MAG will review and approve the continuation of the work of the TWG on each option.

It was asked if and how the total GHG reduction goal is set. There are several options to determine this goal:

- ◆ The Sub-Cabinet can set the goal for the MAG or decide not to have an over-arching goal.
- ◆ The MAG can recommend setting one, and/or recommend the parameters of the goal.
- ◆ The Cross Cutting TWG can be assigned the task of developing a well-researched and debated recommendation to the MAG. This could be assigned by the MAG as a priority option, to be worked on before other options, or in conjunction with the remainder of the policy options.

Members of the MAG agreed to a preference for aspirational goals rather than easily reached targets.

The facilitator team will provide technical expertise for the quantification phase of the process. TWG members will recommend the assumptions used for the basis of quantification, to be reviewed by the MAG. Members of both groups will review the calculations several times.

The MAG approved the summary from Meeting 1, with two changes:

- ◆ Change the spelling of Jack Herbert to Jack Hébert
- ◆ Add Jeff Short to the list as present.

### **General Comments:**

Members of the MAG are encouraged to send any additional items for catalogs to TWG facilitators and/or members. Any known recent actions and/or current programs and policies should be forwarded to the facilitators for inclusion in the catalog.

Suggestions for general criteria for evaluation of catalog items will be collected and distributed by CCS staff. However, all members of the MAG and TWGs are asked to use their own experience and knowledge as the primary tool for evaluation.

It is important that all thoughts and suggestions are captured at this stage of the process. Viable concepts will be assigned to the relevant TWGs later.

It was suggested that a separate TWG for economic analysis and vetting be created. Larry Hartig responded that economic experts are assigned to all the groups at present. If there are questions beyond their expertise, then a technical expert(s) could be called upon for assistance. The experts currently assigned will be in communication with each other to ensure consistency. The MAG will be asked to assign the discount rate and timeframe to be used for all quantifications, as well as any other specific direction necessary. This will be used to ensure that Alaska specific values are used. It was requested that Alaska-experienced economists be used for oversight.

## **Forestry, Agriculture and Waste – Unanimously approved to move forward**

Steve Roe provided an overview of the recommended criteria for prioritization, as shown on the first page of each catalog. He provided a brief description of each option currently in the catalog.

Members made suggestions for additions to the catalog:

### **General –**

- ◆ Emphasize education throughout all TWGs, note specifically homeowners and individuals for this TWG.
- ◆ MAG Members should send recent actions, programs and policies to TWG facilitators, Gloria Flora or Jackie Poston for inclusion in the catalog and, if applicable, the Policy Option templates.

### **Forestry –**

- ◆ Land clearing as part of forest management to increase terrestrial sequestration and increase productivity. Include the concept that younger forests sequester carbon at faster rates than established forests.
- ◆ Wildfire Management - Revise option 2.5 to include fires as a natural part of forestry practice
- ◆ Woody biomass from firebreaks can be used for heat, energy and synthetic gas.
- ◆ Calculate impact of GHG emissions from fires. Traditional carbon sinks become emitters when burned.
- ◆ Investigate impact of insect damage to forests
- ◆ Add to the Notes column –
  - For option 1.2: Processors
  - For option 1.5: Bethel

## **Agriculture –**

- ◆ Nurseries are more significant than farms, both produce and livestock operations, in agriculture component.
- ◆ Greenhouse operations need better energy efficiency.
- ◆ Investigate the use of CO<sub>2</sub> in greenhouses to increase production without adding energy.

## **Waste –**

- ◆ Add a 9.1 – Use of waste for Waste to Energy plants
- ◆ Investigate microsolutions for village landfill and sewage treatment
- ◆ Add plastic bags to the Source Reduction Strategies section, as well as commercial operations
- ◆ Expand the yard waste section
- ◆ Seafood waste management - Grinding up seafood waste increases BOD and ocean carbon levels without significant benefits to other environmental sectors. Could it be used as a source of other energy?
- ◆ Tundra management for methane emission control

## **Cross-Cutting – Unanimously approved to move forward**

Presented by Nancy Tosta and Lydia Dobrovlny

The TWG had very good participation at its first call, but is also asking the MAG for its input to the catalog. The CC Options descriptions document provides an overview of the options in the catalog.

Members of the MAG expressed concern about the overlap of policy options from one TWG to another throughout the process. Colburn explained that the Cross-Cutting TWG doesn't typically quantify its options. Any policy options that require quantification will be assigned to the appropriate TWG for calculations.

Members of the MAG will be reviewing all policy options at the meetings and are encouraged to review topics of interest throughout the process, as well as communicating with other TWGs as well.

Concern was expressed that there is duplication of proposed policy options between catalogs. Colburn explained that, at this point, duplication is acceptable, as the goal is to capture all concepts and ideas for all the TWGs. Duplications will be resolved as options are selected for further analysis.

Catalog sections CC-1, CC-2 and CC-3 all depend on the Inventory and Forecast as well as trends over time. The TWG is considering consolidation of some or all of these options.

There was extensive discussion of CC-5 'Lead by Example'. This concept impacts many aspects of policy and regulation in Alaska. The City of Homer is a good model for smaller municipalities.

Trends of climate change programs over time should be analyzed and included in the catalog. The TWG is including finance and business issues in its catalog. Items suggested by the MAG are:

- ◆ Financial policies that stimulate markets surrounding climate change mitigation.
- ◆ Job creation and new industries should be reviewed
- ◆ Investments, both public and private, as well as business-to-business partnerships should be investigated.

CC-5 Lead by Example -

- ◆ Conduct an Energy Audit of a well-known public building such as the Governor's Mansion
- ◆ Include climate change in public school curricula, especially the concepts surrounding carbon sequestration
- ◆ Ensure that implementation recommendations include specific techniques

CC-10 Education and Outreach

- ◆ Recognize that this area impacts almost all initiatives at some level.
- ◆ Emphasize many different education opportunities for children.
- ◆ Public education regarding efforts by airlines in Alaska to reduce emissions and to save fuel and energy.
- ◆ Add climate change education of cruise ship passengers, ie. the importance of small actions at home that will work to save the Alaskan environment.

Liabilities of proposed policy options should be included in the report.

## **Energy Supply and Demand – Unanimously approved to move forward**

Chris James presented an overview of the work of the TWG to date. The focus of the TWG members has been on the Inventory and Forecast, especially in locating Alaska specific data. MAG members are asked to forward data sources to the facilitation team.

This TWG will work on energy supply (generation) issues, as well as demand (usage). As noted for all TWGs, on-going efforts and current programs and policies should be noted in the catalog.

Members noted that the Oil and Gas TWG has the most expertise regarding carbon sequestration issues at this time. However, sequestration methods beyond petroleum-based technologies will be required in policy option development. The leadership is asked to review this need and suggest changes to membership as needed. This may also impact the TWG assignment of CCSR related policy options.

### **General Comments –**

Sector specific evaluation criteria should be outlined by the TWG for prioritization of policy options. Consideration should be given, when developing and quantifying options, to the following:

- ◆ Environmental, economic and social impacts of proposals. This can also be expressed as a comparison of the community benefit versus the energy cost of proposed policy options, especially in small communities.
- ◆ Scalable technology, meeting 'x' percentage of consumption possible from current generation sources and the total energy package.
- ◆ economies of scale in cost analyses
- ◆ speed-to-market of new technologies in assessing potential options. This may also impact the continued use of existing technology.
- ◆ Projections of future energy requirements. This data will be incorporated in the Inventory and Forecast.'
- ◆ The cost of continuing the use of one technology and conversion costs to newer technologies at a later date, rather than early conversion.
- ◆ Housing heating fuels need to be included in all analyses.

**Additions to Catalog – Energy Supply:**

- ◆ Electrical transmission infrastructure review
- ◆ Smart grids to manage load and energy
- ◆ Advocacy at the federal level should be pursued for energy and climate policies.
- ◆ Supply options should include geo- and hydro-electric sources as well as other alternative energy sources. This is also dependent on the definition of “renewables” in the state RPS.
- ◆ Investigate incentives support for renewable energy sources.
- ◆ Investigate a moratorium on new coal-fired plants.
- ◆ Energy audits should be conducted on all generation facilities.
- ◆ Consider electric production from local sewage lagoons and landfills.
- ◆ Investigate fuel tank vaporization controls.
- ◆ Investigate tidal energy opportunities, such as in Cook Inlet, and wave generation opportunities.
- ◆ Investigate the potential and impact of microhydro (household) and small scale hydropower and other renewables. Many homes have small streams on the property that can be utilized for this purpose. Add to ESD – 2.3
- ◆ Incorporate riverine in-stream generators and instrumentation needs in designs.
- ◆ The impact of climate change on energy production, including renewable sources, ie., adaptation of mitigation measures.
- ◆ Review of new carbon sequestration technology, such as CO<sub>2</sub> injection into saline aquifers, which have been proven to work in Norway.
- ◆ Sequestration strategies that are not based on enhanced oil recovery should be investigated.

- ◆ Position Alaska to lead and/or participate in carbon sequestration pilot programs. This also ties to Lead-by-Example issues in Cross Cutting.
- ◆ Transmission review should include DC transmissions.

### **Additions to Catalog - Energy Demand (RCI):**

- ◆ Buy-back policy on old oil-fired and wood-burning stoves
- ◆ Buy-back programs should include all appliances, so that inefficient appliances are not just “moved out to the garage” and remain in use.
- ◆ Interest rate reductions on new energy efficient construction, as well as other market incentives
- ◆ Building codes that look at efficiency, durability and health
- ◆ Add to RCI - 2.5 - Geo-polymers and Mg sulfite technology
- ◆ RCI-8 IT focus for data centers, PCs and HVAC savings
- ◆ Interest rate reductions and incentives on IT energy use reduction
- ◆ Public education for housing and financial community, including bankers and other lenders, realtors, housing appraisers and builders.
- ◆ Financial incentives should be developed to encourage older homes to be retrofitted to new energy efficiency standards.
- ◆ Reduce the use of energy by eliminating government policies that encourage energy use.

### **Oil and Gas – Unanimously approved to move forward**

Alison Bailie gave a brief introduction to the work of the TWG, with a brief overview of the catalog. There are five major categories, with a brief description of each catalog item included in the description document posted on the website.

Bob Batch also gave a presentation for the Oil and Gas TWG. He stressed the opinion of some members that Alaska should wait for federal action and adopt those standards for GHG emission and reduction goals. Another member of the MAG challenged this philosophy, stating that the emphasis should be consistency with federal policies, exceeding them if necessary, and evaluating the impact on jobs and the economy.

### **General Comments:**

The first two ‘policy options’ are actually overarching principles, to be used as criteria for evaluation, rather than options. The criteria need to be separated from policy options and delineated for use by the TWG and the MAG in evaluating policy options for analysis.

Criteria to be considered:

- ◆ Economic growth impact

- ◆ Economic cost
- ◆ GHG reductions – which specific groups will bear the cost of the proposed action, ie. federal, state, industry, commercial, consumers. Note that typically, these costs are defined over all society, not specific groups, therefore, data may not be available.
- ◆ Other societal costs and benefits – health, culture, lifestyle, diet, etc.
- ◆ Feasibility
- ◆ Scale of proposal, both by size and timeline
- ◆ Diversity and sustainability of the economy

**Additions to the Oil and Gas Catalog:**

- ◆ Include Carbon Capture and Storage as related to coal technology.
- ◆ Review differences in Alaskan refineries versus rest of industry.

**Transportation and Land Use – Unanimously approved to move forward**

An overview of the catalog was presented by Jeff Ang-Olson. Details are provided in the TLU Descriptions file on the website.

Members of the MAG suggested that the baseline should incorporate decreasing fuel usage in the future due to the increasing price of fuels.

**Additions to the TLU Catalog:**

- ◆ The largest component of transportation in Alaska is air travel. The state has little ability to force changes to the aircraft used commercially in the state. The federal government can be lobbied to implement change regarding aircraft design. However, the state can implement changes to airport layout and usage.
- ◆ Increase airport fuel efficiency through realignment of airplane taxi patterns, which can save up to 20% of the fuel usage of a plane.
- ◆ Military and commercial flights are the major sources of GHG emissions at airports. Investigate possible means of reductions, working with current industry and DOT efforts.
- ◆ Investigate restrictions on MD-80 aircraft
- ◆ Encourage improved air traffic control regulations to improve efficiency standards.
- ◆ Include current and future efforts for conversion to on-the-ground and/or outside sources of energy for aircraft, such as electric APUs, as opposed to using on-board jet fuel.
- ◆ Include tractor-towing of active aircraft to runways before firing engines in airport planning.
- ◆ Review current efforts by airlines to reduce weight and fuel use for widespread implementation.
- ◆ Review options for in-state use of smaller planes.
- ◆ Investigate long-term rail strategies, specifically South-central and Fairbanks area commuter rail.

- ◆ Encourage cruise ships to use renewable energy and to reduce energy usage, especially through lighting standards, both in and out of port.
- ◆ Use tugboats to move large ships in ports.
- ◆ Encourage increased telecommuting options.
- ◆ Encourage the development and enhancement of audio/video conferencing opportunities to decrease travel miles to meetings
- ◆ Support 'Buy Local' programs and products, such as Tolclat strawberries, to avoid and reduce freight miles.
- ◆ Support research for cold climate varieties to ensure adequate local food supplies with lower GHG impact.
- ◆ Encourage more 'green' fleet management, including air, land and water vehicles.
- ◆ Extend and include vehicle recommendations to ATVs, snowmobiles, personal aircraft, watercraft, etc.
- ◆ Review car lot regulations, especially leaving cars running while standing. Include standing on streets as well.
- ◆ Include 2-cycle versus 4-cycle vehicle and motor usage.
- ◆ Review incentives for car sharing and car pooling programs, such as HOV lanes.
- ◆ Research the actual needs served by the Anchorage Block Heater program.
- ◆ Investigate implementation of temperature sensitive winter plug-ins
  - Cycle on and off, rather than running continuously
  - Shut down above a set ambient temperature
- ◆ Investigate the impact of remote vehicle starters on GHG emissions.
- ◆ Include winglets as part of strategy.

## Next Steps

Ken Colburn explained the next steps for the TWGs and the MAG. Each TWG will hold two to three meetings before the September meeting of the MAG, during which they will compile the additions to the catalogs from this meeting of the MAG and evaluate the proposed policy options.

As part of this screening process, Recent Actions and Related Programs and Policies will be included in the catalog. Members will discuss the merits and drawbacks of the options. The goal is for each TWG to identify 6 to 10 priority policy options for recommendation to the MAG in September.

The MAG will complete the prioritization process in September.

### **Next Meeting**

The next meeting of the MAG will be held on Monday, September 22, 2008 in Anchorage. The meeting details will be determined later and posted on the website, as well as circulated to members.

### **Public Comment and Announcements**

There was no public comment at this meeting.

The Alaska Renewable Energy Fair will be held in Anchorage on August 5<sup>th</sup>.

Renewable energy will also be highlighted at the State Fair in Palmer.

Ira Feldman, CCS Facilitator, has had an article published recently.



**MEETING SUMMARY**  
**Alaska Climate Change Mitigation Advisory Group**  
**Meeting #3**  
**September 22, 2008**  
**9:00 AM – 4:30 PM**

**Attendance:**

**Mitigation Advisory Group Members (MAG):**

Bob Batch, Bruce Botelho, Michael Cerne (Captain), Jeff Cook, Steve Denton, Bryce Edgmon (Rep), Stan Foo, Amy Holman, Richard Glenn (by phone), David Hite, Meera Kohler, Kate Lamal, Peter Larsen, Bob Pawlowski, Greg Peters, Chris Rose, Jeffrey Short, Sean Skaling, Orson Smith, Jamie Spell, Bill Streever, Curt Stoner, Kate Troll, Kathie Wasserman

**Alaska Department of Environmental Conservation (DEC):**

Mike Black, Alice Edwards, Clint Farr, Larry Hartig, Susan McNeil, Kolena Momberger, Jackie Poston, Doug Vincent-Lang

**Center for Climate Strategies (CCS):**

Ken Colburn, Dick La Fever, Steve Roe/Brad Strode (*by phone*), Nancy Tosta (*by phone*), Chris James/Jeremy Fisher (*by phone*), Jeff Ang-Olson (*by phone*)

**ICF International:**

Randy Freed, Dick La Fever (representing both O&G for ICF & ESD for CCS)

**Technical Work Group Members and Public:**

Peter Crimp, Sami Glascott, Mark Hamilton, Steve Haagenson, Paul D. Kendall, Charles Knight, Marilyn Leland, Rick Rogers, Steve Rupp, Diane Shellenbaum, Mike Sfraga, Aves Thompson, Erin Uloth

Brian Rogers welcomed all attendees and provided an overview of the agenda. He led a round of introductions, including attendees by telephone.

Larry Hartig welcomed the group to this meeting and thanked everyone for participating. He provided an overview of the status of the project and explained the decision to shift state

resources over to Mitigation to be responsive to requests by AG members such as more local facilitation and in-person meetings. This was possible due to funding which came from EPA to support the Adaptation side. The Oil & Gas Technical Work Group (TWG) would also fall under that contract for facilitation support. He introduced Randy Freed and Fran Sussman, of ICF and Dick La Fever who will be taking over both Oil & Gas with ICF and Energy Supply & Demand with CCS. He assured everyone that the State is interested in hearing from everyone and encouraged them to feel free to bring any needs or concerns to his attention.

Questions & Comments for Commissioner Hartig yielded the following information:

- Think broadly regarding the type of information which should be directed to the Research Needs Work Group.
- The Climate Change Strategy should result in recommendations that don't have to be restricted to state agencies. The guidance should be based on best judgment.
- Governor Palin has been supportive of everything that the Commissioner has brought to her. She has been in the news a great deal since her selection to be the vice presidential running mate with Senator McCain. Many questions about climate change have been raised. Commissioner Hartig explained that the Governor has been asking appropriate questions on topics such as the effect of a Climate Change Strategy on various industries or how this process integrates with other planning efforts such as those focused on Energy, Transportation, and Sustainability. She appreciates the deliberative stakeholder process.
- One MAG member inquired as to how they will actually get to a final work product and would like a better understanding of the interface between the MAG and the TWGs. An explanation for "unanimous approval" which appeared in the draft of the last meeting would be arrived at. The Commissioner said they have been given a "working list" from which to develop their options. After the TWGs determine the five or so best candidates for inclusion in the draft strategy, they will be seeking approval and direction from the MAG. The MAG will eventually have to give them a green light and may also communicate direction such as a need to develop something further, drop something, or combine options. The TWGS will then develop straw proposals and then dig deeper into feasibility, rough costs, Pros & cons, and will continue to check with the MAG to reach satisfaction. We are trying to achieve a high level of consensus but not necessary 100% on decisions. We will acknowledge minority opinions in the report.

### **University of Alaska President Mark Hamilton:**

President Hamilton shared support personally and on behalf of the University for this process. He emphasized the need for public policy to be informed by sound science as opposed to bumper stickers. He stressed the importance for downscaling models and plans for Alaska and suggested that they be informed with every iteration of new data. The University has invested in the SNAP program to advance that cause (Scenarios Network for Alaska Planning.); they are beginning to compile information to be used as part of the Climate Change process.

The difference between scientists and public policy folks was pointed out. Whereas scientists tend to be very comfortable with ambiguity and uncertainty, public policy officials prefer to operate in a known set of circumstances in order to apply risk-matrix management to decisions.

President Hamilton closed with a statement about how significant threats due to a rapidly changing climate are and the attendant need for action and financial backing. He would like to see a "go forward plan" comprised of great ideas from people without constraints based on

funding. He feels it's the job of people in his position to find financial support to make these ideas a reality.

#### Scenarios Network for Alaska Planning (SNAP):

Dr. Scott Rupp introduced Dr. Mike Sfraga, the Director of the Geography at UAF where SNAP is housed. Scott presented an overview of SNAP's efforts to try to provide useful downscaled information to the Climate Change Technical Work Groups. The bulk of their work is collaborative and each project is based on stakeholder needs. He invited everyone to view the website for additional information. In support of Climate products, they are looking at various future scenarios of Alaskan conditions. They work with the most recent IPCC assessment (4<sup>th</sup> – Feb. 2007) and have determined that five of the 12 global circulation models (GCMs) perform best in Alaska and high latitudes. Although they looked at various global emissions scenarios for the future (all from 2000), current conditions exceed all predictions. Scott explained the ground-breaking work of Dr. John Walsh who has compared past data from three spatial resolutions and used PRISM (Parameter-Elevation Regressions on Independent Slopes Model) based on Climate Resolution Unit (CRU) historical data. This fall, all work will be updated to 0.8 km resolution from 1990 to 2007. They have compiled data so far on surface air temperature and precipitation. There is a report to the Governor's Sub-Cabinet on Climate Change on their website which shows a summary of the data. SNAP is looking for input on how to display the information so it is useful to decision-makers. Some issues to take into consideration are as follows:

- Uncertainty
- Capture and communication of precipitation, e.g. extreme events, average v. irregularities in events as that impacts flora and fauna
- Overlay of other information such as increased incidence in infectious disease, fire, subsidence, sea level changes, etc.

### **Forestry, Agriculture and Waste – Conditional Approval to Develop Straw Proposals on Priority Options**

Brad Strode provided an overview of the recommended priority options, as shown on the first page of each catalog. He provided a brief description of each option and invited discussion. If the MAG concurs, the FAW TWG may move forward and develop straw proposals taking into consideration input from the MAG.

The following points were discussed:

#### **General –**

- There was discussion about the overall purpose of the MAG and whether or not their purpose is to reduce emissions. It was confirmed that the goal of the MAG is to develop policies to reduce emissions and which are socially responsible, and economically feasible.
- The process will include an estimated look at cost effectiveness after the options are expanded on within the TWGs.

- Further clarification on the overall process confirmed that new options can be added to the catalogs for consideration. It is up to the Advisory Group to make them though, not the TWGs. Some AG members expressed a desire to make sure this is a dynamic process and all new ideas or key elements should be evaluated as well as options eliminated on a case by case basis.

#### **FAW Specific -**

- Six out of 10 TWG members voted.
- The TWG consolidated some like options from the catalog.
- The five highest ranked options received 5 votes. They were
  - Advanced Waste Reduction and Recycling, 9.3 & 9.5
  - Forest Management Strategies for Carbon Sequestration (2.5, 2.4, 2.3, 2.7)
  - Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production (1.1, 9.1, 4.1, 3.1, 3.2)
  - Expanded Use of New, Used, & Recycled Wood Products for Building Materials (1.5)
  - In-State liquid Biofuels Production (1.2, 4.2, 9.2)
- Medium priorities included
  - Promotion of In-state Forestry Products, 3.3
  - Promotion of Bioreactor Technology (Advanced Municipal Solid Waste Practices), 9.4
  - Decrease Emissions from Waste Collection, 9.9
  - Mixed MSW Composting, 10.4
- Low priorities were not recommended for further analysis at this time.
- There was discussion regarding the number of votes, the consensus of the TWG, and the dissension, if any.
- In addition to Curt Stoner, who also sits on the MAG, two TWG members were present – Charlie Knight and Rick Rogers. Rick expressed concern with the low level of participation by MAG members on the TWG and wondered if that was due to low interest in Agriculture. He also explained that even though some of number of ballots were low, by the time they were grouped together, it made up for that. TWG members present did not find any disagreement or lack of support for any of the priority options.
- Charlie raised the issue of Agriculture in Fairbanks and pointed out the relative insignificance of CO2 emissions. He also pointed out that some options could reside in multiple places, e.g. harvesting willows. Do you treat as Ag if they're farmed (siviculture) or as Forestry if they're wild?
- A MAG member inquired about how to address fire and insect infestations. What about the dead forests? Rick Rogers responded that if they had a silver bullet to stop the spruce bark beetle 20 – 30 yrs ago, they would have. He didn't think aforestation was an opportunity in AK, but there may be opportunities for forestation (fires) and shouldn't dismiss any opportunities.

- It was requested that since only 6 out of 10, or 60% of the TWG members balloted there be a process to go back to the TWG to try to boost that percentage. Jackie Poston will work with the TWG to pursue this.
- It was decided that the FAW TWG should move forward with development of straw proposals on options that receive a high level of consensus in the group.

### **Cross-Cutting – Review of Priority Options**

Nancy Tosta provided an overview of their progress which, to date, has reduced the number of options in their catalog from 64 to 26. They have added a “Government Lead By Example” column to their list. The TWG has gone through with initial balloting and had substantial conversations on the options which move ahead for further consideration. 7 out of 17 TWG members voted. They have divided the options into high, medium, and low priorities. They still wish to ensure that the overall catalog is complete.

Input from the MAG consisted of the following:

- Support for the format in which the priorities were displayed, as it reflected some insight into the rationale employed by the TWG members
- Would like to see a higher level of participation – methodology is important
- Cross-cutting options should not necessarily involve quantification of options

The CC TWG will re-ballot and attempt to increase the level of participation. If members have not been participating, they should not ballot. The TWG facilitator will make a note of that so the recommendations can accurately reflect only active participants. All TWG facilitators should follow suit.

### **Transportation and Land Use – Review of Options**

Jeff Ang-Olson provided an overview of the TLU Catalog and described some of the clumping together they did to streamline the options and achieve some consistency. They looked at a number of things related to motor-vehicles, e.g. clean car program, electric and natural gas vehicles, and improving engine efficiencies. The TWG will be focusing on reductions from the Aviation sector during the next TWG all-day meeting. They will also consider creation of a stand-alone option for marine transport as it relates to commercial fishing which is a major industry in Alaska. The TLU TWG plans to present its priority options at the next MAG meeting.

### **Energy Supply and Demand – Status Report**

Dick La Fever reported that he will be serving as a local Alaskan facilitator along with Chris James and Jeremy Fisher, both of Synapse Energy, who will continue on as technical experts. This TWG needs to continue finalizing its catalog before they can begin the balloting process. The TWG has requested a review of the overall process and would like to have Commissioner Hartig present at its next meeting on September 30<sup>th</sup>. They are also interested in learning more about how the options will be quantified regarding costs and benefits and how they will be implemented.

Various TWG members are working on fleshing out the options. Dick is contacting members who have not been active to encourage participation. Finally, they are planning a full day in-person meeting on October 16<sup>th</sup> in Anchorage. Chris James and Jeremy Fisher from CCS (Synapse Energy) will be traveling in to attend.

## **Oil and Gas – Status Report**

Dick La Fever introduced himself as the new facilitator for the Oil and Gas TWG. He will be subcontracting to ICF International who will be leading the Adaptation effort plus this TWG for the State's Climate Change Strategy from this point forward. The TWG has maintained an aggressive meeting schedule. They had a meeting on September 11<sup>th</sup> during which they met with Commissioner Hartig who provided a refresher on the overall process, the charge for this TWG, factors which should be considered in the process, available resources, and the proposed timeline for bringing forward prioritized options, and what success would look like. They understand that their recommendations need to be folded into a report to the MAG April/May 2009.

Kate Troll asked about the disposition of her earlier recommendation for this TWG to conduct an independent energy audit on the North Slope. She mentioned that this was submitted to the MAG at the July 15<sup>th</sup> meeting and inquired as to its status. She would like to see a task, outline and adopt a game plan. She also would like an explanation as to why it isn't in the O&G TWG catalog

## **Next Steps**

Ken Colburn explained the next steps for the TWGs and the MAG. The FAW TWG will continue making progress by fleshing out their strawmen after trying to boost the number of ballots. All other TWGs will try to do what they can to achieve a high level of participation. The State will help where needed. By the next MAG meeting on November 6<sup>th</sup>, the remaining 4 TWGs will attempt to have balloted and present priority options

As part of this screening process, Recent Actions and Related Programs and Policies will be included in the catalog. Members will discuss the merits and drawbacks of the options. The goal is for each TWG to identify 6 to 10 priority policy options for recommendation to the MAG in November.

The MAG will complete the prioritization process in November.

## **Next Meeting**

The next meeting of the MAG will be held on Thursday, November 6, 2008 in Anchorage. The meeting details will be determined later and posted on the website, as well as circulated to members.

## **Public Comment and Announcements**

There was public comment at this meeting by Mr. Paul D. Kendall who urged everyone to review his Energy Plan and take Hydrogen into serious consideration in the future to address energy costs and emissions. His PLAN was subsequently distributed to both Advisory Groups.

Jackie Poston reviewed some of the recent activities which were planned in response to needs and requests for information to Stakeholders. They included a September 11th briefing by EPA on the Advanced Notice of Proposed Rulemaking and the GHG Reporting Rule followed by a briefing by Alice Edwards, ADEC, and CCS. Upcoming events including the Alaska Tribal Conference on Environmental Management during which the State of Alaska Climate Change Strategy will be holding a session on October 27<sup>th</sup> and the Alaska Forum on the Environment scheduled for the week of February 2, 2009.



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**MEETING SUMMARY**  
**Alaska Climate Change Mitigation Advisory Group**  
**Meeting #4**  
**November 6, 2008**  
**Anchorage, Alaska**

**Attendees:**

*MAG Members:* Karen Ellis, Meera Kohler, Sean Skaling, Greg Peters, Dave Hite, Bob Batch, Rick Harris, Jeff Cook, Kate Troll, John Rubini, Dan White, Kate Lamal, Steve Denton, Ann Whitney, Paul Klitzke, Curt Stoner, Jamie Spell, Brian Davies

*Public (includes TWG members):* Peter Larson TNC, Lance Wilbur, [Kim...](#), Claire Fitzpatrick, Liz Glushenko (O&G), Chip Trauman (TLU), Jamie Norman (O&G TWG), Clint Adler (Research Needs Group), Donna Mears and Doug Buteyn (FAW), Janet Bounds (O&G TWG), Jane Williamson

*State:* Larry Hartig, Jackie Poston, Susan McNeill, Kolena Momberger, Diane Schellenbaum (DNR/O&G TWG), Dick Lefebvre (Subcabinet on Climate Change), Jim Pfeiffer (O&G), Scott Sloane (DEC)

*Joining by Phone:* Howard Wilmot, Sr. & Brad Inowa (Shismaref), Clint Farr (DEC), Katherine Heumann (DEC), Scott Sloane (DEC), Steve Colt (ESD TWG), John Mormon (O&G TWG)

*Facilitators:* Dick LaFever, Brian Rogers, Ken Colburn, Steve Roe, Gloria Flora, Jeremy Fischer, Nancy Tosta, Fran Sussman (AK-A/O&G),

**Intro-** Jackie Poston *on behalf of Commissioner Larry Hartig*

- Thanks to all TWG's and John Rubini for hosting the meeting and lunch.
- Update on Outreach: several activities for outreach to native peoples and Alaska citizens. ATCEM, consortium of 13 agencies seeking to provide more information on climate change.
- Process: Mitigation done balloting. Two Adaptation Technical Work Groups (TWG) still need to ballot.
- Other Information: Recent Arctic Net presentation on climate impacts. Forum on the Environment slated for first week of February.
- Comments from Dick LeFebvre – member of Subcabinet, thanks for contribution.

**Process** - Ken Colburn: Review of agenda and process.

- MAG Meetings: Next meeting Thursday, Feb 5. Will have text of draft straw proposals for MAG review. Meeting #6 scheduled for March 23<sup>rd</sup>. Meeting #7 tentatively April 29. Location TBD on both.
- Stepwise planning process overview
- I&F in draft on web [www.akclimatechange.us](http://www.akclimatechange.us) - comments welcome.

**Straw Proposal Review** - Gloria Flora

- Review of template for policy option descriptions
- Straw proposals describe the policy option; provide design details that include goals, timing, parties involved and other features germane to implementation.
- Further sections provide detailed information on the kinds of greenhouse gasses (GHG) targeted for emission reduction, quantification of the amount of GHG reduced and at what cost.
- Template also includes qualitative information such as additional costs and benefits and feasibility issues.
- Status of group approval is tracked throughout the process
- The level of group support (consensus, super-majority, majority) and any barriers to consensus are noted at the conclusion of the process.
- The template for policy option descriptions will be posted on the website and emailed to all MAG members. Facilitators will distribute populated option templates for their sector to their TWG members.
- No further prioritization is required. Once the list of policy options to be analyzed, either quantitatively or qualitatively, is established, they are all essentially equal. The analyses will show which ones have more "bang for the buck" but decision-makers and legislators will want to pick and choose the options that suit their situation and resources best. Charts and graphs as well as narratives in the final report will display the differences and values of the options.

### MAG Questions

Please clarify the consensus process, how is consensus achieved?

For today's meeting, as we go through the Straw Proposals, we will discuss each one individually asking for objections or concerns, all of which are recorded. If there is an objection, we will seek an alternative that addresses the objection, e.g. a better data set or another process improvement.

Why use the word 'mandate'? It's up to the TWG and MAG how to qualify and describe Implementation Mechanisms and tools to accomplish objectives.

How are philosophical concerns handled? Discussion and reference back to direction from Governor and Sub-Cabinet on expectations and framework.

## **Quantification Process –Ken Colburn:**

*This material is available on the website: [www.akclimatechange.us](http://www.akclimatechange.us)*

See “Quantification Memorandum” handout.

- Cost-effectiveness analysis, not a cost-benefit analysis. Planning process not a compliance process.
- Discussion of end date: currently 2020. MAG can suggest a longer timeframe. If it goes out to 2030 or longer, the numbers become less reliable. Some states have set two goals, a near term (ex.2025) for detailed analysis and then a longer term aspirational goal (ex. 2050). MAG recommends 2025. Inventory and Forecast will be adjusted accordingly. We have some flexibility, as there is no date/timeline in the Administrative Order.
- Geographic area - most analyses confined to within state except under circumstances where direct benefits accrue outside of state from actions taken by AK.
- Not all policy options can be quantified.
- Program-level caveats: not writing legislation or actual policy, but rather policy planning guide.
- Reviewed specific steps and how all analyses are transparently documented
- It would be important to make note of who pays for these investments (i.e., who buys the compact fluorescent).
- What’s the discount rate? 5% but this group could choose a different rate. Generally adhere to EPA’s approach so results can compare and contrast to other states
- Have any states used dual private discount rates? No, it removes the ability to compare between options.
- Who actually does the quantification? MAG provides overall direction (discount rate, target dates), TWG provides assumptions, data sources, sideboards, TWG Facilitators do the actual number crunching and documents process.

## **POLICY OPTION DISCUSSION AND RECOMMENDATIONS**

*Reference materials in handouts and posted on the website [www.akclimatechange.us](http://www.akclimatechange.us)*

*Examples from other states can be viewed on from links found on [www.climatechange.alaska.gov](http://www.climatechange.alaska.gov)*

### **Transportation and Land Use TWG: Jeff Ang-Olson**

Balloting conducted in August and reviewed by MAG in September. Nine recommended high priority options.

TLU 1 – Transit, Ridesharing, Commuter Choice – statewide, includes expanding intercity rail and bus; employer incentives (flexible work schedules, transit passes, etc.); MAG suggestion – include car-sharing (Flex-car, Share-car). Statewide.

TLU 2- Vehicle Idling – Any technology limitations, such as in cold weather? Not with modern engines, but most states with idling regulations have “escape clause” if temperatures reach

extremes. Technologies to sense engine block temperatures could be incorporated. Consider efficacy of engine idling restrictions in extreme cold environments. Consider including light duty vehicles.

TLU 3- Transportation System Mgmt –on-road highway speeds will be addressed, on-water or aircraft speed not regulated except in safety areas Air Traffic control dictates. Congestion points addressed. Traffic signal synchronization. MAG recommends including road surface/infrastructure conditions (Dalton Hwy, North Slope route for example)

TLU 4 – Promote Efficient Development Patterns (Smart Growth) – Coordinate with Alaska Municipal League work.

TLU 5 – Promotion of Alternative Fuels Vehicles – Fish oils and cooking oils have high potential for biodiesel production in AK. Cold temps provide a very challenging situation for alternative fuels (gel up).

TLU 6 – Vehicle Miles Traveled (VMT) and GHG Reduction Goals

TLU 7 – On-Road Diesel Engine Efficiency Improvements

TLU 8 – Marine Vessel Efficiency Improvements – Consider loans for vessel operators to upgrade to more efficient engines. Phase out 2-cycle or out-board engines.

TLU 9 – Aviation Emission Reductions – significant fuel savings from pilot choices and improving air traffic patterns (through federal Air Traffic Control). 130% efficiency improvements in last decade through self-motivation within industry. Take advantage of opportunity for showcasing Fed Ex or other airline actions, such as the phasing out 727s and shifting to 757s yields a 32% increase in efficiency. Huge national issue – AK reliance on air travel underscores importance here.

#### MAG Discussion:

- Some concern for number of options. 11 members voted. They had a catalog of about 50 options, they allowed for bundling. At end of day, they had 8 priority options but nothing related to air sector but they added it because of its significance.
- Two proposals to reduce options to 4 or 5. Supermajority of MAG did not agree.

#### MAG Recommendations:

- Look at combining the policies related to fuel efficiencies (TLU 7, 8 and 9)
- MAG asks for assurance that all options are “Alaskanized”, that is, considers extenuating circumstances related to transportation in a state this large with a dispersed populations and extreme climate challenges.
- Consider bio-diesel promotion and production (under TLU 5 or in FAW)

### **Energy Supply and Demand TWG**

ESD 0 -- Eliminate Policy Barriers – overarching policy option, focusing on state policies, applies to all options, some federal will be identified as well as local. Unquantifiable. Move to CC TWG.

ESD 1 - Transmission System Optimization and Expansion – includes Smart Grid, transmission capacity and outreach

ESD 7 – Energy Efficiency for Residential and Commercial Sectors

ESD 9 – Implementation of Renewable Energy

ESD 6 – Building Standards and Incentives. Should we be mandating or requiring building standards, or codes for energy efficiency? - concern from one member about mandates. It's up to the TWG to recommend required or voluntary measures. A pro and con list may be useful for the MAG.

ESD – 2: Should be moved up the list of priorities for consideration by the ESD TWG. ESD 12 - Small Scale Nuclear – MAG requests that this option be analyzed despite difficulties in siting and permitting.

ESD 13- Education on Energy Efficiency - Move to the Cross-cutting TWG to be incorporated in their overall Education and Outreach policy option. Continue to forward ideas and concerns regarding education to the CC TWG including resources, implementation mechanisms, etc.

MAG discussion: Energy is key to GHG reductions, should have more options analyzed. For example these top four do not address how to reduce carbon emissions in fossil fuels-based power generation. Energy Efficiency for Industrial Sector should be brought back in.

Small scale nuclear worth considering as there is one small project in the permitting process but there are national constraints to moving forward.

Any consideration of actions to reduce SF<sub>6</sub> (sulfur hexafluoride) emissions, the most powerful GHG gas? TWG looked at but total quantities of emissions are very small in AK.

What constitutes high, medium low in ranking in tons of GHG emissions reduced? For this part of the process, the nominal ratings served as guides to the assumed level of emission reduction and costs. Within sectors, these ratings were relative. Once priority policy options are selected, the actual quantification process should progress with verifiable assumptions.

Is it possible to bundle more options? Yes, but if they each are to be quantified, it does not streamline the work. It may be useful in adding more clarity by linking related options in one group.

#### MAG Recommendations:

- Bring all medium and high priorities forward for analysis. Bundling and reductions in options possible at discretion of TWG.
- Education important but can be covered in Cross-cutting TWG.
- Move ES-0 and ES-13 to CC TWG as unquantified options.
- Build off of ideas in 2008 Energy legislation. As part of analysis, review other effective policies being recommended or implemented

## Oil and Gas

Primary GHG emissions in AK are from the O&G industry from natural gas combustion. Thorough breakdown of sources, location and volumes in PowerPoint. Summary: Prudoe Bay largest emitter, primarily from compression of gas with high CO<sub>2</sub> content. Flaring and diesel in drilling rigs are other emission sources (diesel in vehicles is accounted for in transportation sector). Cook Inlet includes power production, refinery, and fields. Pipeline (Alyeska) very small contributor.

Overarching Policy Options: Balloting: 12 of 15 members voted, 3 abstained, consensus.

1. Evaluate how GHG regulation programs could impact industry.
2. Assure up-front planning for resource capacity to meet recommendations
3. Prepare for regional trade-offs (carbon and pollutants).
4. Streamline permitting for GHG-reducing projects
5. Inform policy makers of findings

O&G 8 - Evaluate Carbon Sequestration, Capture, Storage and Reuse (such as, Enhanced Oil Recovery [EOR]) as associated with existing oil and gas fields.

O&G 4 – Use Low Carbon Fuels (North Slope applicability – where CO<sub>2</sub> is high)

O&G 1 - Expand Statewide Distribution of Power to O&G Operations. Includes increased generation of energy on site and expansion of the grid.

O&G 2 – Improve Energy Efficiency at Oil and Gas Operations

O&G 6 – Renewable Energy for Oil and Gas Production

### MAG Discussion:

Is there any complete CO<sub>2</sub> sequestration occurring in AK now, or anywhere in the world? Yes, primarily associated with Enhanced Oil Recovery (EOR). Economics is a key consideration.

Value on gas and price of carbon could dramatically affect economics.

Most selected options appear to not be economically feasible today. Cost of carbon and changes in technology may make more feasible. Time frame in O&G industry for planning and implementation is necessarily longer than with other sectors.

Would like to see Option 9 (CO<sub>2</sub> Sequestration not associated with existing oil and gas fields) included as part of O&G 8, even if addressed qualitatively. TWG concern that finding suitable geologic sequestration reservoirs away from fields is difficult and expensive. State is researching this issue already. Can be option be used to support and enhance existing state program?

Option 10 – Fugitive Methane – why did this receive low rating when impact of methane is so much great than C? Appeared to be very small volume. But for a small investment, methane could be dealt with.

What is “economically feasible”? Suggestion for a screen not accepted. Bring all options forward, looking at what’s best for AK. Circumstances and pricing could change significantly during life of Plan.

MAG Recommendations:

- Add O&G 9 Carbon Sequestration (not associated with oil and gas fields) to O&G 8 as an unquantified subset.
- Add O&G 10 – Fugitive Methane
- O&G 1 and O&G 6 –optimizing energy transmission and using renewable energy... should these be in ES&D instead? Joint meeting of ES&D and O&G identified two different approaches to similar topic. Possible overlap. Move forward to next stage to more fully develop the policy description. Reevaluate at next meeting whether to merge or keep separate.

**Cross-Cutting TWG**

CC 1 – GHG Reporting and Inventory

CC 2 – GHG Emission Reduction Goal - can be aspirational but realistic.

CC 3 – Identify and Implement State Government Mitigation Actions

CC 4 – Coordinate with State Energy Planet Natural

CC 5 – Identify Incentives for GHG Reductions, Green Technologies, and Energy Efficiencies

CC 6 - Advocate for and Participate in Cap and Trade or Other Market-Based Systems(includes recommendation to join the Western Climate Initiative (WCI)).

CC 7 – Establish a State Coordinating Program for Addressing Climate Change – includes education, outreach and identifying specific agency responsibilities.

MAG Discussion:

Consumption vs. production not applicable in Alaska. Use direct vs. indirect. Small consumers are not required to participate in reporting and inventory programs. *Investing in Climate Protection Act of 2008* has a mandatory reporting system for those using the equivalent of 1mm gal of diesel or more, likely scale of required participation.

CC-1 - GHG Reporting and Inventory. Why were natural sources included? To establish a baseline but volume not included in reduction goals. Natural quantities can be established from science. But what constitutes natural vs. unnatural in, for example, GHG emissions from forest fires or melting permafrost. Distinction used by International Panel on Climate Change (IPCC) is: sources from managed landscapes count as anthropogenic (human-caused), emissions from unmanaged landscapes count as natural.

CC 2 – GHG Emission Reduction Goal. Goals can be bottom-up (after summation of all analyses), from top-down (set as target before analyses), or simply to recommend that Sub-Cabinet set a goal. Goals must be realistic. (*Note from previous discussion: Some states have*

set two goals, a near term (ex.2025) for detailed analysis and then a longer- term aspirational goal (ex. 2050).

CC 6 – Objections raised to advocacy and regional cap and trade or carbon tax as solutions for Alaska.

CC 7 –What would be the gain over education efforts that exist today? Coordination of all efforts. Not reinventing but increasing efficacy of existing efforts.

One member suggested joining the Western Governor’s Association Western Climate Initiative.

#### MAG Recommendations:

- CC 1 – include evaluation of a voluntary program for comparison with mandatory. Ensure no duplication with EPA. Drop the “natural” emissions reporting. Forward to Research Needs Group for further evaluation?
- CC2 - provide pros and cons of setting a goal to MAG before moving forward.
- CC 4 – Expand the option integrate the goals of Alaska Energy Plan, Climate Change Plan and any other plans related to energy.
- CC 5 – Shift to ES&D. Consider one-stop shopping concept.
- CC 6 - Shift emphasis to elucidating choices. Broaden to look at all market-based solutions, outlining pros and cons of each of the systems. Suggest establishing an expert committee to advise state. Change “advocate” to “inquire”
- CC 7 - Ensure more education emphasis at multiple levels. Assist consumers with carbon footprint calculations so they can make more informed choices. Expand beyond existing programs.

State will bring in a speaker at February meeting who is an expert in cap and trade and other market programs to show how Alaska might be affected.

#### **Forestry, Agriculture and Waste**

FAW 1 – Forest Management Strategies for Carbon Sequestration – this straw proposal is still under development but will be looking at changes in forest management that can achieve higher levels of terrestrial carbon sequestration (e.g. restoration projects, changes in stand rotation schedules) and/or protection (e.g. wildland fire risk reduction). The TWG expects different approaches will be applied in the coastal maritime forest and boreal forest.

FAW 2- Expanded Use of Biomass Feedstocks for Energy Production. From forest and municipal solid waste primarily. Analysis will show whether there are sufficient feedstocks and capacity to meet the suggested goals. For waste management feedstocks, this does include used cooking oil to create liquid fuels.

FAW 3 – Advanced Waste Reduction and Recycling – The TWG will use life-cycle analysis methods to quantify GHG reductions. There will be greater opportunity for reductions than from just looking at the Inventory and Forecast, which only considers the emissions that occur at the end of life waste management process (i.e. landfill or waste combustion). Important to note that the reductions will include those that occur both within and outside of the state boundaries due to lifecycle GHG reductions, while the inventory and forecast only captures in-state emissions. Goals are currently based on professional judgment of the TWG and subject to change but are rather conservative based on goals in other states. Includes reducing overall waste generation, not just diverting waste from landfills or combustion.

MAG Discussion:

Can there be some emphasis on day-lighting sourcing so one can make informed choices, as a method of reducing volume of waste stream? CCS notes that the methods for achieving the goals will be proposed during the next phase of policy development under the policy template section “Implementation Mechanisms”.

Clear differences between rural and urban parts of state.

MAG Recommendations:

- MAG approves reducing this sector to three options (The TWG had previously reduced the initial set of five options to three).
- Prior to beginning quantification, send final version of written policy (via email) to full MAG with a requested due date for responses. If anyone has objections or concerns they may respond in writing. Barring significant objections, that process will constitute approval to quantify options.

**Next MAG Meeting:** Thursday February 5 (in conjunction with the Alaska Forum on the Environment). State will try to bring in a speaker at February meeting who is an expert in cap and trade and other market programs to discuss how Alaska might be affected.



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## **Alaska Climate Change Strategy Mitigation Advisory Group Meeting 5 Summary**

February 5, 2009

### **Attendance:**

*Members of MAG:* Bob Batch, Brian Davies, Steve Denton, Rick Harris, Jack Hebert, Paul Klitzke, Meera Kohler, Kate Lamal, Greg Peters, Jon Rubini, Curt Stoner, Caitlin Higgins (for Kate Troll), Randy Virgin, Dan White

*Members of the Technical Working Groups:* Sami Glascott, Tom Lovas, Sean Lowther, Jim Pfeiffer, Diane Shellenbaum, Brad Thomas, Jane Williamson

*Members of the public:* Aubrey Baure, Rudy Bruggemann, Anne Marie Holen, John Lemons, Claire Mendelsohn, Elmer Ranson, Claire Schary, Denise Berry

*Members of the Leadership and Facilitation Team:* Commissioner Larry Hartig, Jackie Poston, Kolena Momberger, Susan McNeil, Rosemary Ritter, Brian Rogers, Gloria Flora, Dick LaFever, Nancy Tosta, Fran Sussman *From Center for Climate Strategies via phone:* Chris James, Jeremy Fisher, Steve Roe

*Members/public by phone:* Karen Ellis, Chris Rose, Janet Bounds

### **Opening Remarks:**

Larry Hartig: Thanks to all for the hard work. Watershed meeting. Time for reality check on the policy options. Is this the direction we want to go? Could bring in some additional resources if there's information or expertise missing, just ask. Timing – in context of D.C., not anticipating a bill on climate change until the end of the year. We should move forward expeditiously to craft a strategy that works for Alaska.

If Gov mandates actions, then we can determine the price and direction. Perhaps have someone from the Energy Plan come and talk with MAG at the next meeting.

Questions: What's the relevance of Governor Palin's AK Energy Plan release? Once Climate Change Action Strategy recommendations are finished, it goes back to the agencies for review to harmonize the options with the energy plan and other programs. The primary goal of the energy plan was reliable, sustainable, access to energy but did not directly

address greenhouse gasses (GHGs). The integration of Climate Change Action Strategy and Energy Plan is one of the options of the cross-cutting TWG.

What does the integrated resource plan do? A primary component will be the price of energy and carbon prices which will determine what is economic and feasible. Will coordinate between AEA and the DEC.

Is the Energy Plan goal of 50% renewables by 2025 feasible? Target is ambitious but attainable when you include hydropower (24% already generated by renewables, including hydro).

How does the spur line from North Slope impact our work? Need to review all options. Don't back off from mitigation options.

The quantifications will be done by technical teams backing up the facilitators. There are 6 economists spread among the TWGs who will review the assumptions used in other states and see if they are valid for AK. Not asking MAGs and TWGs to do this heavy economic analysis. Both cost/savings of the option and the amount of GHG reduction in metric tons will be analyzed. No indirect benefits will be included.

MAG members please communicate with TWGs.

Projections will go out to 2025. We work for consensus, but if not possible – we will record specific differing views.

Quantification overview presented in November will be reviewed with anyone interested at the close of the meeting.

\*\*\*\*

*MAG comments are in italics. Blue indicates status of approval. We strive for consensus but any opposing views will be noted.*

## **Transportation and Land Use**

### **TLU-1 – Transit, Ridesharing, and Commuter Choice - Unanimous**

Goals are generally consistent with the goals of the transit agencies in the Anchorage area. Goal of doubling number of riders by 2025, not necessarily the mode share of transit. Will likely be achieved due to population increase and increased transit share. University of Alaska Anchorage and Fairbanks are subsidizing ridership, resulting in significant number of rides in area.

*How much analysis has been done to test the practicality of goals?* Just benchmarked against similar efforts in the state. *What is “para-transit?”* Smaller vans, mini-buses, non-fixed routes, maybe serving seniors. *What does “integrate into coordinated regional system mean?”* Coordinated in each metro area. *Not a very ambitious goal, can you do better? Set as a percentage, it's hard to know the real effect. Set numeric goals instead of percentages. Cite numbers of actual transit users where known.*

**TLU-2 - Heavy Duty Vehicle Idling Regulations and/or Alternatives - Unanimous**

Reduce idling of heavy vehicles, primarily trucks and buses and ban long term unnecessary idling – set in place voluntary programs for outreach. Goal is 20% reduction of idling by 2012 and remaining vehicles equipped with alternative power unit (APU) by 2020. APU means small 4 hp internal combustion unit that provides auxiliary heat for cab and engine block which eliminates running hundreds of hp when only a small amount is necessary. AK DOT and PF can lead by example. Local government, schools, and private fleets could pursue similar goals.

*How does AK compare to similar states in lower 48? Much smaller magnitude.*

*As targets are set, what kind of analyses are being done to assess feasibility of goal? Based on national goals, APU assessments and implementation in other areas. Technologies and policies necessary. AK Trucking Association TWG member supports. Anti-idling can help address fuel costs too. Option particularly applicable on the Slope –there are vehicles running 24/7 that may be able to run less.*

*How much adoption of idle reduction technology and policy would occur without government support (market driven)? Inherent cost-savings are moving operators to adopt without government support.*

**TLU- 3 – Transportation System Management – Unanimous**

Increased efficiencies through various strategies – e.g., roundabouts, speed limits, synchronized traffic lights, incident mgt, clearing accidents more quickly. Hard to quantify this strategy.

**TLU -4 – Promote Efficient Development Patterns (Smart Growth) – 1 objection**

Goal - by 2020, at least 50% of AK's new residential and commercial development will occur within denser parts of urban areas through re-development, infill, and mixed uses. *Some concern that goal of higher density may not be appropriate for Alaska. This seems to be premised on forcing people to move closer together, this is not why most people live in Alaska. In rural areas, much new development is led/influence by housing authorities.*

*This seems like aspirational goal and would be hard to achieve as a state – beyond the scope of locals to stop development – would have to have very high financial incentives.*

*What is current new construction today? About 200 new residential units this year. About 100K sq ft of commercial which is 50% of all new development in the state. Who would lead implementation of this policy? A combination of state and local gov's most likely. Possible to distribute economic generation possibilities outside of main urban areas and reduce VMT's? That is part of goal. Encouraged TWG to think about whether goal should be stated as 50% of new urban development, as opposed to 50% of all development. Will clarify urban vs. rural which should address objection to achieve consensus.*

*How would this be implemented? TWG has not studied in detail.*

**TLU -5 Promotion of Alternative Fuel Vehicles - Unanimous**

*Electric and plug-in hybrid electric vehicles (PHEVs) should consider potential to access hydro power and other clean sources of power. Expected excess of electricity if large hydro goes in. The third bullet re alternative fuels should be the first and strongest (same issue as aviation).*

- *MAG requests the component related to alternative fuels R&D be moved to a new option, TLU-10.*

**TLU- 6 VTM and GHG Reduction Goals in Planning - Unanimous**

Suggestion by one MAG member that this be folded into either TLU-1 or TLU-4. This one is implementable by the DOT. Relocating villages seems to run counter to VMT reductions. Watch for and scrub out overlap.

**TLU -7 – On-road Heavy-Duty Vehicle Efficiency Improvements – 2 objections**

Increase participation in Smartway program: 30% of trucks by 2012 and 80% by 2020. Phase out older trucks. Encourage HDV fleets to reduce GHG emissions. *Phasing out diesel engines may have far greater applications beyond HDVs and perhaps should be addressed in Energy Supply and Demand TWG. Ultra-low sulfur diesel (ULSD) required in 2011 may automatically phase out older engines. There are additives that can allow older engines to burn ULSD. One concern that market forces will drive this, and therefore no need for government involvement. However others indicated that policy could provide incentives to speed conversion (loans, grants, tax breaks, etc).*

- *Request by the MAG to estimate how much adoption of fuel efficiency improvements will occur without government support (market driven) vs. how much gov't can accomplish.*

**TLU- 8 Marine Vessel Efficiency Improvements – 2 objections**

*Did you consider limiting vessel speed to hull speed? Most operators have come to recognize costs of fuel and need to stay within speed limits.*

*Similar to TLU-7, some concern that market forces will drive this, and therefore no need for government involvement. Market is pushing but capital investment could be helped along.*

- *Request by the MAG to estimate how much adoption of vessel efficiency improvements will occur without government support (market driven) vs. how much gov't can accomplish.*

**TLU-9 Aviation Emission Reductions - Unanimous**

Would like to see this expanded to a much stronger statement. Objective should be to develop in-state source of alternative aviation fuels to attract and retain aviation industry and U.S. Air Force presence in the state. Try to meet Department of Defense objectives. Strengthen third bullet.

- *MAG request to move the component related to alternative fuels R&D to a new option, TLU-10.*

## TLU-10 Research and Development of Alternative Fuels

*New policy option requested by MAG from parts of TLU-5 and TLU-9.*

### **Forestry, Agriculture and Waste**

#### **FAW-1 – Forest Management Strategies for Carbon Sequestration – Unanimous**

Addressed in 4 segments: Coastal, Boreal Mechanical Treatment, Community Wildfire Protection, and Boreal Reforestation. *How many acres are currently being thinned? Need to include that under baseline information. Under 1000 acres.*

*Address biomass, how it is to be put to beneficial use. Define terms such as biomass, pre-commercial and commercial thinning.*

*Add National Park Service and Bureau of Land Management to Parties Involved.*

**FAW-2** and **FAW-3** were [approved at prior meeting](#).

### **Energy Supply and Demand**

*Where are other diesel engines addressed, such as generators?*

#### **ESD-1 – Transmission System Optimization and Expansion - Unanimous**

AK basically four regions with different needs and capabilities: SE –hydro capabilities, SW - geothermal, Interior –expanding Railbelt, North – industrial.

Recognize these components in state energy policy: existing system optimization, transmission system expansion, renewable energy implementation, smart grid. *Is this consistent with Governor’s statements about energy transmissions?* There will be significant compatibility with Gov’s statements.

*How will this be quantified? Some data are already available. Do the quantifiers make assumptions – or does MAG have input? Quantifiers don’t make assumptions about this – they will produce what the MAG wants to know. The quantification won’t answer whether particular option should be implemented, but does provide a tool for describing relative bang for buck.*

*Is quantification feasible and what do we expect to achieve by it? Should we be focusing on policy or only those options that can be fully quantified? How do we compare one against another? Very significant knowledge and experience in the MAG and TWGs so the recommendations that come out of these groups are powerful. Just because options may not be fully quantifiable, doesn’t mean it’s a lesser value recommendation. Should expect state to supplement and support by offering carrots but also sticks, like carbon tax. Don’t rely on feds and state bailout.*

*Decentralized power production ought to be included. Use the savings from transmission line not being constructed to offset solar/wind at local level. Need to analyze that savings. Reference potential sources.*

Looking at all rural villages, expectations for significant savings from reduction in diesel use are low. Reducing 100 gallons of diesel would avoid a tonne (metric) of CO2 emissions. *If all diesel use were eliminated, 1 mmtCO2e would be eliminated.*

*Wouldn't electric consumption be market driven too, just like fuels? Public policy/benefit goals is to allow AK citizens a broader range of choices in energy supply.*

**ESD-2 – Energy Efficiency for Residential and Commercial Customers** - not done.

**ESD-3- Implementation of Renewable Energy** - **Unanimous**

Already have base \$100mm grant program being taken advantage of, expanding existing programs. *Any specific loan programs being considered?* HB 44 could allow for bonding authority, with good interest rates for loans going forward. *Production credits, bill already in for geothermal, can that be added?* Yes, not just tax credits since many utilities are non-profit, there should be some equivalent incentive like production credits. *Can TWG look at the difference between distributed energy and transmission grids especially looking at servicing small communities? Such as wood powered CHP?* May show up in TLU-2 and TLU-4.

*Is the TWG going to incorporate the Gov's benchmark into this?* Yes, that should be overarching strategy. *Could there be elements that look at cost of bringing in transmission lines and traditional sources?* Good idea to consider this (community in SE that has 800 people is looking at \$40M transmission line) – need to look at traditional costs and power that's more cost-effective. This again could be evaluated in ESD-2 and ESD-4.

**ESD-5 - Efficiency Improvements for Generators** – **Unanimous**

*Reduce consumption. Invest in efficiencies. Use production type pay-back, utilities have to be able to recoup capital costs. Capital costs could be repaid by savings in fuel costs – so no costs to rate payers.*

*Still needs more work.*

**ESD -6 – Energy Efficiency for Industrial Applications** - not done

**ESD-7 - Implementation of Small Scale Nuclear** - [See recommendations below](#)

**ESD- 8 – Research and Development for Cold-Climate Renewable Technologies** - not quantifiable. Have to explore new places. Small and large scale. [See recommendations below](#)

**ESD-9 – Implementation of Advanced Supply-Side Technologies**. [See recommendations below](#)

Need policy that reduces barriers and increases incentives that is regionally specific e.g., enhanced geothermal, hydro-kinetic. Also need easier permitting and opportunities from

vendors. Could consider bold initiatives but also need some research and development support to understand what's possible.

Enhanced geothermal Cost-effective supply. Ensure environmental impacts are limited. Geo-thermal energy efficiency has significant GHGs emission reductions (up to 70%) over conventional heat energy.

Combustion systems – Improve efficiency, boilers, engines, turbines, gasification, carbon capture and storage, enhanced oil recovery (EOR), batteries, energy storage. *Applaud bold initiative.* Difficult to quantify. Alaska is unique and has opportunity to be a leader. *Set stretch goal and allow for undertaking some risk. Get regulatory obstacles removed and build agency support for system testing.*

*One MAG member expressed concern that scope of option is beyond what AK could or should do. Suggest honing to what's unique and important to Alaska. (small-scale, remote, cold-climate, tidal). Conversely, storage to support sporadic generation is national problem.*

*One TWG member proposes to move ESD 7-8-9 to the Research Needs. Modified by other to leave the regulatory structure desires in but shift the rest to Research Needs Group. Alaska Center for Energy and Power at UAF would be logical place for research. Policy to support research would stay in the ESD TWG recommendations.*

## Oil and Gas

Enduring themes reviewed. Three general categories of options – conservation, thermal energy efficiency, carbon capture and sequestration (CCS). *Address in that order.*

Oil and gas industry responsible for 30% of total emissions in AK, most from North Slope operations. Of 52 mmtCO<sub>2</sub>e emissions in AK, 15 mmt from oil and gas operations and of that 12 mmt are from the North Slope (gas stream is ~ 12% CO<sub>2</sub>)

### OG- 1 - Best Conservation Practices – Unanimous

Reducing liquid fuel consumption is key. Could be significant with 10,000-12,000 people up at North Slope operations. Existing conservation efforts not well-organized. Huge opportunity. Interested in applying TLU recommendations. Likely smallest contribution of all options but still worthwhile.

### OG-2 – Reduction in Fugitive Methane Emissions – Unanimous

Need to identify actual sources which are not known at this time. Totals are speculative. Need to raise awareness, refine inventories, assess potential reductions and develop models.

### OG-3 – Electrification of Oil and Gas Operations with Centralized Power Production and Distribution – Unanimous

Overlap with energy supply and demand, but this is just oil and gas piece. 95% of OG emissions are power generation. Looking for centralization on North Slope. Need to tie together across fields and find efficiencies. Permitting and regulatory issues. Distributed electrical power needs on the order of 100 to 150 mW. Mechanical power necessary.

Could you switch to electric drive? Decrease whole footprint of development. 500 to 1000KW needed for centralized system.

*What's the order of magnitude?* If combined mechanical and electrical—looking at about 500 MW. Larger is more efficient. *Cost?* Uncertain.

OG-4 - Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment - Unanimous

Single cycle upgraded to combined cycle. Opportunity for large savings here.

(this is CC issue too – with ESD – could be wind, geothermal).

OG- 5 Renewable Energy Sources in Oil and Gas Operations - Unanimous

Need to use renewable energy sources. Wind could be a big opportunity. *Could consider vertical axis wind turbines which claim to operate regardless of temperature or wind direction.* Highly significant if you can get these kinds of efficiencies. Benefits could be up to 70% GHG reductions. Barriers – cost, cross-unit complications, piece-meal dispersion of sites, royalties, permitting and regulatory hurdles.

OG-6 Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery from High CO<sub>2</sub>, Fuel Gas at Prudhoe Bay – Unanimous

CCS untested in AK. Requires extra power to capture the emissions. Best not to generate emissions in the first place, that is, capture GHGs before combustion. CO<sub>2</sub> in pipelines corrosive, takes up too much volume. Enhanced Oil Recovery (EOR) is best use. *Any transferable knowledge or techniques?*

Natural gas in Prudhoe Bay has 10 to 12% carbon content so capture and removal necessary. – could save 1MmtCO<sub>2</sub> if captured. Sequester in large reservoirs for use in EOR. Secondary source, Prudhoe generators' post-combustion exhaust gas. Would be better to have one source of power vs. multiple generators.

OG -7 Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery in and near Existing Oil or Gas Fields – Unanimous

This is capture after combustion. Works best for sites near known geologic reservoirs.

OG-8 – Carbon Capture and Geologic Sequestration away from Known Geologic Traps. – Unanimous (do not quantify)

Doing pure sequestration without EOR is problematic. Bailout bill \$20 a ton. \$10 a ton for use in EOR. Some exploration wells could be used. Power generation will always call for some form of sequestration. Two-fold issue: have to have a place to put it and enough volume to warrant installation. State estimating the carbon sequestration potential based on the geology in Alaska to assess feasibility and volume that could be handled.

These are emissions from interior power plants, not from oil and gas operations. Ship CO<sub>2</sub> to known reservoirs (need to find). Considerations include: injection rules, permitting, pore space ownership, liability. *High costs so, is this practical? Emphasize EOR if feasible, define the benefits and savings.* Because timeline is 20 – 25 years, it could be viable

*Don't do detailed analysis. Does not seem feasible at this time. Perhaps discuss relevance and role in future of Alaska, as is likely to gain in importance over time. Is there anything that we need to know about Alaska's situation that will not be achieved from other studies? We should be committed as a state to be involved and informed on Carbon Sequestration issues. These issues are being handled elsewhere: at DoE, and companies, etc.*

Other Oil and Gas Recommendations: Research – short and long term value of carbon, short and long term value of natural gas, impact of various incentives to encourage major capital investments.

Technical studies - feasibility of producing power on the North Slope, CO<sub>2</sub> capture, renewable energy sources, feasibility of using hydrogen as a fuel, generate power and transport power.

Regulatory environment - need to assess barriers and incentives.

## **CROSS-CUTTING**

**Quorum no longer present, no options formally accepted.**

### CC- 1 Establish an Alaska Greenhouse Gas Emissions Reporting Program

Important component of mitigating GHGs. *Could you require that it be part of a mitigation program?*

*Include caveat that there will not be a duplicative reporting program if a federal program is promulgated. March/April may see EPA reporting requirements that start in 2011.*

### CC-2 Establish Goals for Statewide GHG Emission Reductions

Some MAG members felt Alaska should not be stepping out with goals prior to completion of this Climate Change Action Strategy. Some feel goals should be set at the end of the process rather than now. Invited Subcabinet to give a goal, not willing to at this time.

Some MAG members feel we do need aspirational goals.

Other goals should be investigated. Can they be based on something other than emissions? May not be a consistent and smooth reduction curve. May go up and down. Would not include new emissions from natural gas pipeline.

Goals should account and allow for growth. Difficulty in achieving goals compounded by elements state does not control such as aviation traffic.

### CC-3 Identify and Implement State Government Mitigation Actions.

Many actions listed and *encouraged to move forward.*

### CC-4- Integrate Alaska Climate Change Mitigation Strategy with the Alaska Energy Plan –

Insure that the Energy Futures Report released on Monday comports well with CC Plan. It's available on line. *Do a Climate Protection and Energy Plan combo? State of the State*

suggests that this all be brought together. *Should we do a summary of options in a cross-walk with the three?*

Recommend developing an Energy Data Base. *Need more detail. What's the objective? Find out if this is new or existing data. It would be used as a monitoring system for understanding consumption and production. Who would be the overseeing agency? MAG requests more detail on how this would be used and who would be using it.*

#### CC-5 – Explore Various Market-Based Systems to Manage GHG Emissions

TWG is encouraging exploration of how these might work in Alaska. Education important component.

#### CC- 6 Create an Alaska Climate Change Program that Coordinates State Efforts for Addressing Climate Change

Many agencies are hiring CC coordinators and developing outreach and education programs, etc. Concern that efforts even among state agencies are not coordinated. Education for schools has whole combination of activities.

RELATED TOPIC: Start and interim dates need to be established for quantification and goal setting for individual polices. Some policy options won't start until 2011, need to know relative time frames because it will guide effective implementation as MAG recommends and intends. Good planning tool. Five year increments shows regular progress.

**Interim dates - 2015 and 2020 suggested and approved.**

#### **Next Meeting:**

Start next meeting with an update on federal actions under the Obama administration. And have goals discussion from CC 2 early in the day when quorum present.

Set a dollar value for carbon and discount rate. Discount rate will be 5%.

If you have suggestions for speakers and more information forward those to Larry. Any programs education, coordination at lunch for next meeting? Any assistance you need within TWG, let Larry know.

**April 2 is next Mitigation Advisory Group meeting. Alaska Pacific University in Anchorage.**

#### **Other:**

Lunch Presentation Powerpoints available on request.



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**MEETING SUMMARY**  
**Alaska Climate Change Mitigation Advisory Group**  
**Meeting #6, April 2, 2009**  
**8:30 AM – 3:45 PM**  
**Anchorage, AK**

**Attendance:**

***Mitigation Advisory Group Members (MAG):***

|                                 |                                 |
|---------------------------------|---------------------------------|
| Larry Hartig, Chair             | Kate Lamal                      |
| Bob Batch                       | Greg Peters                     |
| Steve Colt                      | Sean Skaling                    |
| Jeff Cook                       | Jamie Spell ( <i>by phone</i> ) |
| Brian Davies                    | Curt Stoner                     |
| Steve Denton                    | Kate Troll                      |
| Karen Ellis ( <i>by phone</i> ) | Dan White                       |
| David Hite                      |                                 |

***Alaska Department of Environmental Conservation (DEC):***

Jackie Poston  
Sean Lowther  
Kolena Momberger  
Scott Sloane (*by phone*)

***Center for Climate Strategies (CCS):***

|                                   |              |
|-----------------------------------|--------------|
| Brian Rogers, UAF, Co-Facilitator | Dick LaFever |
| Ken Colburn, Co-Facilitator       | Fran Sussman |
| Gloria Flora ( <i>by phone</i> )  | Nancy Tosta  |
| Jeff Ang-Olson                    |              |

***Alaska Department of Natural Resources (DNR):***

Diane Shellenbaum

***Others:***

|                   |              |
|-------------------|--------------|
| Janet Bounds      | Ted Rockwell |
| Katharine Heumann |              |
| Caitlin Higgins   |              |

## Welcome and Meeting Overview

The meeting opened with an overview presentation of EPA's new GHG reporting regulations by EPA representatives Kitty Sibold, EPA D.C. and Madonna Narvaez, EPA Region 10. The goal of the EPA is to achieve reporting of 85-90% of US emissions, not 100%. There is no intention of pre-empting existing reporting requirements by states.

The GHG reporting regulations are intended to be policy neutral as related to cap-and-trade or carbon tax policies, etc. Region 10 will not serve an active role in developing these regulations. It is as yet undecided whether states will be required to engage in some level of mandatory reporting.

Ken Colburn reviewed the process of developing the policy options as outlined in the powerpoint presentation. The MAG is currently on the steps 5 and 6, quantification and feasibility issues.

*There were no objections to the Meeting 5 summary.*

## Review and Approve Policy Option Documents

### Cross-Cutting

#### **CC-1: Establish a Greenhouse Gas Reporting Emissions Reporting Program – *Placed on Hold***

The MAG agreed that, since the EPA has established a reporting system, to delay any recommendation of a state program until federal program has been implemented. The state should be fully prepared to address implementation of the federal program.

Records of levels of captured and sequestered carbon may be useful for trading programs. Currently, there are no proposals for a reporting threshold. The OG TWG recommends assessing the new federal program after a predetermined length of time so as not to have a duplicative reporting environment. A state reporting system should build from the federal program and add any missing necessary data.

Concerns about the costs of reporting programs were expressed. It is felt that such costs are likely underestimated.

Additional concerns were expressed that reporting could be a significant limitation on growth of certain industries.

#### **CC-2: Establish Goals for State GHG Emission Reductions – *TWG asked to return with more information***

The TWG recommends establishing aspirational, rather than conservative, goals for GHG reductions. Many states have established goals for GHG emission reductions as outlined in slides 12 & 13 of the powerpoint. Alaska's goals are based on realistic estimates based on what states are generally targeting and capable of achieving.

Prior to finalizing reduction goals, the MAG will have the opportunity to review the final quantification values against proposed reductions goals. NOTE: These goals are exclusive of gas pipelines.

Concerns were expressed that reporting could be a significant limitation on growth of certain industries.

Discussion involved inventory baseline dates. The TWG will review and recommend an appropriate year to use. EPA is using 2005 as the baseline inventory year. The question of using 1990 for Alaska was raised.

The TWG is asked to review the I&F to ensure that all suggestions for improvement to the methodology have been addressed.

**CC-3: Identify and Implement State Government Mitigation Actions - *Consensus to Adopt***

Double-sided copying is already required, as is Step 5. Many lead-by-example are covered in other TWG's.

**CC-4: Integrate Alaska's Climate Change Action Plan with the Alaska Energy Plan - *Consensus to Adopt***

There is a strong need to have a coordinated approach in implementing the Action Plan and the Energy Plan. This policy option includes establishing an energy data base in order to track production and consumption of energy, especially with the second phase of the State Energy Plan. The University of Alaska is working on this database at the present time.

**CC-5: Explore Various Market-Based Emissions - *Consensus to Adopt***

This policy option recommends a study of cap-and-trade, carbon markets, carbon tax, etc. There are no specific recommendations for implementation, as the impact of these programs on Alaska needs to be determined.

Two members suggest that this is too late, that the federal government will establish the rules. They proposed quicker action by the state, in the event that the feds do not move forward quickly on implementation.

Federal legislation is still resolving some important issues. Alaska should explore the differences in the approaches being taken to develop these programs, especially regionally. Current approaches, like cap-and-trade in Europe, are showing some problems.

**CC-6: Create an Alaska Climate Change Program that Coordinates State Efforts for Alaska Climate Change - *MAG wants more clarity on what is included; at least one objection***

This option includes education and outreach, also being addressed by the Adaptation Advisory Group. The Appendix to this policy option is based on work from the AAG. There are two other options on the Adaptation side:

- *Creation of a Knowledge Center to organize all information and data about climate change in one place.*
- *Create an office of Climate Change Coordination that focuses on rural villages. This could be an expansion of work currently being done by Jackie Poston. The costs include Full-Time Equivalent employees to run a small office to coordinate legislation and policy work. Modify the option to remove references to CC-1.*

There are some about pursuing this policy option since it may be duplicative. The MAG supports climate change education efforts but want to ensure that this program improves on-going efforts. The MAG is looking for a locus of knowledge to assist in aligning efforts, rather than repeating other work.

### **General Comments on Cross-Cutting:**

A number of recommendations recognize on-going activities, but others ignore work going on at universities, etc. The TWG needs to ensure that all on-going work is recognized.

*Note that the TWG does not have to locate funding, but can suggest potential sources.*

## **Forestry, Agriculture and Waste**

### **FAW-1: Forest Management Strategies for Carbon Sequestration – *Several objections to counting biomass in different way than we count fossil fuel***

There are multiple benefits to this option. While some of these benefits can be quantified, the unquantifiable benefits are often likely to be more beneficial. For example, biomass can be directed to beneficial uses, with a very broad beneficial use. Depending on feedstock, this may or may not be cost effective. Utilizing biomass feedstocks for energy is addressed and quantified in FAW 2.

**1a** – Pre-Commercial Thinning in Coastal Forest. The proximity to the end user is the pivotal point in the quantification of the biomass. The benefits of such thinning include more timber available per acre over time, which go beyond the quantified range (2025) in the durable wood product market and CO<sub>2</sub> absorption from accelerated growth. This has been displayed but not quantified.

**1b and 1c** – The focus of this element is the reduction of wildfire threat in boreal-adjacent communities. Some very significant benefits include reductions in fire risk which can't be quantified.

**1d** – Reforestration in boreal forest – There is good cost effectiveness based on the economics of the additional sequestered carbon. The value of carbon in the offset program is not included, just the cost of implementation.

The TWG compared identical stands of forest, one managed and the other not, to assess the balance of harvest with maintaining natural carbon sink. In clear-cutting, all carbon above ground is removed and most put into durable wood products. Soil carbon is not affected.

Non-production fossil fuel use values are based on the Used Inventory and Forecast, non-electrical generation coal/heating oil use in residential and commercial use. The TWG has, however, modified the goal.

**FAW-2: Expanded Use of Biomass Feedstocks for Energy Production – *objections to counting biomass in different way than we count fossil fuel***

**2a** - The original goals suggested that over 400 Combined Heat and Power units need to be deployed. The TWG has now refined the goal to just off-setting heating oil use.

**2b** – The quantification combines biomass with coal for power production.

**2c** – Direct biomass feedstocks have been applied to the production of cellulosic ethanol.

Questions were raised about the economic assumptions of total biomass supply versus the actual availability. The overlapping demands for biomass in all the policy options will be resolved in the next (final) phase of quantification.

The sustainability of biomass supplies was not specifically reviewed, but the quantifications are based on the current level of timber production without increase. The assumption is that current harvest levels are sustainable.

Questions were raised about the impact of biomass use on the affordability of the price of firewood over time. The 2008 figures on annual primary mill wastes are most reliable. Transportation costs are based on a forty mile radius in southeast Alaska.

State level analyses are necessarily broad for a state as large as AK. More work is necessary to determine supply and pricing for specific regional and local bases. A focus on the proximity to population centers would be most profitable, as these centers include greater access to biomass including municipal solid waste.

**FAW-3: Advanced Waste Reduction and Recycling – *consensus for approval***

There is a saving realized from waste not being sent to landfills and other disposal mechanisms. The TWG asked for feedback from the MAG regarding the consideration of life-cycle reductions outside of state, which is a majority of the available reductions in this case. The MAG agreed that Alaska should take credit for all reductions taken within the state borders, as other states have done.

**General Discussion:**

There are adjustments to the scale of quantification that will allow the final figures to be more focused on the sub-sets matching feedstocks with near-by end-users.

It was noted that these calculations are a first-order quantification for planning purposes. The numbers can be refined with more time and effort.

More current costs on biomass in Alaska need to be developed.

All calculations need to be based on sustainable feedstock supplies. As noted above, the underlying assumption is that there is no increase to the current carbon cycle, and this is assumed to be sustainable.

Comments on the major impact of location on cost and feasibility should be included, especially for global impacts.

A reduction from bau in the baselines used could be problematic because this would not account for scrubbing data for overlap.

Do not compare waste and biomass equally with coal or oil.

Waste as a source of power was addressed, and is included in the MSW feedstocks in the table at the front of the POD. However, there has been no effort to pair up individual feedstocks with individual technologies.

Extraction and transportation costs have not been included in calculating footprint.

Carbon from trees is treated differently than carbon from fossil fuels as there is a fundamental difference between the active and inactive carbon cycle. Fossil fuels release sequestered carbon, whereas carbon from plants is already released and moving through the active carbon cycle. It will be released whether it is burned or not.

One member doesn't want to encourage actions to harvest live biomass, but is agreeable to using dead residuals.

Concerns were expressed about the uncertainty of the quantifications.

## Energy Supply and Demand

*Reference PowerPoint presentation for more detail*

**ESD-1: Transmission Expansion - *hold on approval until May conference call***

*No further discussion beyond presentation*

**ESD 2-4-6: Energy Efficiency - *hold on approval until May conference call***

These three options all pertain to energy efficiency and were discussed together.

Energy Efficiency is comprised of the costs of implementing the program, the administrative cost, and the infrastructure used to implement the efficiency program.

The average cost of displacement is inflated by about 40% to account for Alaska's special circumstances.

**ESD-3: Renewable Energy Implementation - *hold on approval until May conference call***

*No further discussion beyond presentation*

**ESD-4: Energy Supply and Demand - *hold on approval until May conference call***

A comment was made that fully amortizing the cost the dam should be at 5%, not 40%. The 40% figure includes the interest over time, which is quite high (\$600mm per year).

This is a very simplified quantification for a very complex subject. Numbers should be refined over time since outputs are very new. The Integrated Resource Plan won't be completed until November. The POD should state that the dam output figures are a gross estimation and will need to be reviewed when the IRP is released.

There will likely be a sensitivity analysis of CO<sub>2</sub> emissions in the IRP.

**ESD-7: Implementation of small-scale nuclear power - *Forwarded to Research Needs Group***

**ESD-8: R&D for cold-climate renewable technologies - *Forwarded to Research Needs Group***

**ESD-9: Implementation of advanced supply-side technologies - *Forwarded to Research Needs Group***

*The remainder of the options will be reviewed at the next meeting.*

## **Transportation and Land Use**

**TLU-1: Transit, Ride Sharing and Commuter Choice - *consensus for approval***

This option is supportive of the other options as well as having inherent benefits.

Cost effectiveness is poor; TWG should look for opportunities to improve the cost effectiveness.

**TLU-2: Heavy-Duty Vehicle Idling Regulations and/or Alternatives - *consensus for approval***

Much of the costs of implementation reflect purchasing small auxiliary power units.

The education component is important.

As the stimulus package is released, implementation opportunities for diesel retrofits and other assistance may be created.

**TLU-3: Transportation System Management - *consensus for approval, subject to consideration of MAG comments***

The use of roundabouts, signal timing, etc. are all very specific to location so only the reduction of highway speeds from 65 to 60 mph was quantified. Incomplete compliance was assumed. The TWG has not yet incorporated the costs to administer the program (signs, enforcement, etc.).

Should consider the cost associated with lower speeds (longer travel time for trucks).

There are seasonal variations in speed that might affect the GHG impacts.

**TLU-4: Smart Growth - *consensus for approval***

There is a demand for more pedestrian opportunities and access. Where market demand exists, barriers to smart growth should be addressed, versus a forced compaction of housing where more density is not desired by the market.

**TLU-5: Alternative Fuels- *consensus for approval, subject to consideration of MAG comments***

Three different options were reviewed: compressed natural gas (CNG), plug-in hybrid electric (PHEV) and full-electric vehicle. The quantification does not account for the driving cycle variables: how vehicles are used, the city/highway mix, etc.

The TWG should note the use of national averages versus Alaska-only averages.

**TLU-6: VMT and GHG Reduction Goals in Planning - *consensus for approval***

This option overlaps with TLU-4; both aim to reduce light duty vehicle VMT by 3% compared to BAU forecast.

**TLU-7: On-Road Heavy-Duty Vehicle Efficiency- *consensus for approval, subject to consideration of MAG comments***

The policy option should address the disposition of obsolete vehicles.

**TLU-8: Marine Vessels- *consensus for approval, subject to consideration of MAG comments***

The policy option should address the disposition of obsolete ships.

The option does not account for the variety of season-dependent regulations.

Quantification of GHG benefits needs to be examined. Poor cost effectiveness is not consistent with experience of a large fishing fleet operated by MAG member.

**TLU-9: Aviation - *consensus for approval***

The air sector accounts for approximately 75% of emissions from the transportation sector. There are various proposals to reduce these emissions, but these have not been quantified.

Research indicates that promising low-carbon fuels are on the horizon but are not yet viable. No timeline for wide-spread availability was outlined.

**TLU-10: Alternative Fuels R&D - *consensus for approval***

Policy design and implementation mechanisms not yet developed. TWG is reaching out to Alaska Center for Energy Power at UAF.

## **Oil and Gas Technical Working Group**

*Reference PowerPoint presentation for more detail*

**OG 1 & 2 are focused on conservation efforts.**

**OG – 1: Comprehensive Conservation Practices –**

This option will not be quantified due to the dependence on what is “not being done”. The TWG is suggesting a wide range of options.

**OG- 2: Fugitive Methane –**

It appears that the available figures are higher than the actual amount of fugitive methane, but there are no known reliable sources for such data. The source figures are based on emissions from outdoor operations, largely in the lower 48 states, while those in Alaska are primarily from indoor operations.

The estimates do not include flaring. ICF is working with the TWG to determine appropriate values for Alaska.

**OG 3 through 6 are focused on energy efficiency efforts.**

**OG-3: Electrification of Operations**

Successful implementation of this option would require that the entire transmission system for the North Slope be reconstructed and expanded.

This is a complex issue, as not every system can be switched to electric motors and/or consolidated. This requires careful analysis. It is worth pursuing, however, due to the efficiencies gained and the levels of potential GHG reductions. The next round of quantification will look at scenarios involving the percentage of equipment that could actually be upgraded or replaced.

The implementation rate is estimated at 50%, with a maximum efficiency of 55% as a stand-alone project. The TWG continues to review the combination of this focus with other approaches, as these conversions are more of a hybrid situation, rather than all one way or another.

**OG-4: Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment**

Gains of 15% in thermal efficiency are expected when this option is fully implemented.

Minor infrastructure development and/or changes to the transmission grid are required for this policy option.

Under current CAA rules, some of the turbines have firing temperature limits to control NO<sub>x</sub> levels. Changing these rules to increase firing temperatures might increase NO<sub>x</sub>, but would reduce CO<sub>2</sub>.

**OG-5: Renewable Energy Sources in Oil and Gas Operations**

The use of wind power could be used to augment primary power sources, but not serve as a primary source itself. The capture and use of wind power on the North Slope is unproven at present.

**OG-6: Carbon Capture and Geologic Sequestration with EOR from High CO<sub>2</sub> Fuel Gas at Prudhoe Bay**

The fuel gas at Prudhoe Bay contains an extremely high level of CO<sub>2</sub> (10-12% by volume) to be removed. This issue could be a stand-alone policy option.

The capture costs and EOR are two primary quantification factors. The infrastructure to achieve the goal already partly exists. It makes more economic sense to focus where a field already is in place.

Note that there will be parasitic energy losses: net gains in CO<sub>2</sub> captured, but requiring more fuel to be burned.

**OG 7 & 8 are focused on carbon capture and sequestration (CCS) efforts.**

**OG-7: Carbon Capture and Geologic Sequestration with EOR in and near existing Oil or Gas Fields**

This option refers to the post combustion carbon capture, ie from exhaust or flue gases, and would be very expensive to implement and should only be implemented after all other options are exhausted. It only makes sense with centralized power.

The value of CO<sub>2</sub> may drop due to over-supply on the market. The capture cost of CO<sub>2</sub> is also high.

Post combustion projects currently only exist in large pilot projects and are expensive.

### **OG-8: Carbon Capture and Geologic Sequestration away from Known Geologic Traps**

This option involves the capture of CO<sub>2</sub> from power plants. Disposal means still must be determined. Extensive infrastructure and resources are required, not just funding.

The TWG does not recommend quantification of this option, as the uncertainties are too great. These include pipeline location and long-term economic issues.

#### **General discussion:**

A question was raised about other CO<sub>2</sub> sequestration efforts. Projects putting CO<sub>2</sub> in reservoirs exist in Europe and Africa. Mexico and Kansas are working on partial sequestration with EOR. If Alaska does not work under EOR rules, then sequestration rules will apply. Since these rules have not yet been written, this becomes a long-term option. It would be preferable to let the Feds take the lead on these rules, rather than creating different rules for different jurisdictions/states.

A question was raised about the long term economics about the gas pipeline. The TWG is performing sensitivity testing on gas prices and plans to discuss possible incentives levels. EOR is still the biggest value, but there may not be enough EOR opportunities for all potential CO<sub>2</sub> captured. A price for carbon is required before these would be feasible. Currently, zero is being used as the price for carbon by other TWGs, so for consistency, that value will be used by OG. Other groups have used a value between 10 and 20.

Should ESD address the dropped transmission policy option? No action was taken.

### **Next Meeting and Closing Remarks**

Larry Hartig closed the meeting with thanks to the MAG and TWG members, as well as others who have joined this process and helped to move the project to this near-completion point. All the materials that are and have been developed are very important and will be utilized very soon.

The Climate Change bill is on an aggressive schedule to be through the House by Memorial Day weekend. The Alaska administration is assembling comments on the effects in Alaska.

The next meeting will be held on May 14<sup>th</sup> at a time to be determined. This meeting will take about 3-4 hours, by web conference or teleconference.

TWGs will work to complete their PODs between now and then.

All PODs will be finalized at the June 18<sup>th</sup> meeting.



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## MEETING SUMMARY

### Alaska Climate Change Mitigation Advisory Group

Meeting #6a, May 14, 2009

9:00 AM – 12:00 PM Teleconference

Anchorage, AK

#### **Attendance:**

#### ***Mitigation Advisory Group Members (MAG):***

Larry Hartig, Chair  
Elaine Abraham  
Steve Colt  
Jeff Cook  
Brian Davies  
Steve Denton  
Karen Ellis  
Rick Harris

Jack Hébert  
David Hite  
Kate Lamal  
Greg Peters  
Jim Pfeiffer  
Sean Skaling  
Curt Stoner  
Dan White

#### ***Alaska Department of Environmental Conservation (DEC):***

Jackie Poston  
Sean Lowther  
Kolena Momberger

#### ***Center for Climate Strategies (CCS):***

Brian Rogers, UAF, Co-Facilitator  
Ken Colburn, Co-Facilitator  
Gloria Flora  
Katie Pasko  
Jeff Ang-Olson, TLU TWG  
Jeremy Fisher, ESD TWG

Brian Gillis, OG TWG  
Chris James, ESD TWG  
Dick LaFever, OG, ESD TWG  
Steve Roe, FAW TWG  
Fran Sussman, OG TWG  
Nancy Tosta, CC TWG

#### ***Alaska Department of Natural Resources (DNR):***

Diane Shellenbaum

#### ***Others:***

Caitlin Higgins *for Kate Fey-Phillips*  
Aubrey Bowers *for Jamie Spell*  
John Collagio

Russ Douglas, OG TWG  
David Prouge

## Welcome and Meeting Overview

This meeting was held as a teleconference with several attendees in a conference room in Anchorage.

Larry Hartig welcomed the group and again thanked them for their continuing efforts.

Ken Colburn reviewed the agenda for the meeting. The focus is on the quantification of policy options. All members were strongly urged to submit all comments and suggestions at the meeting or shortly after. Slides 3-5 of the PowerPoint outline the current status of the process.

All documents for the meeting are posted on the [website](#).

The policy option development process is nearing completion. A summary chapter for each TWG will be written as part of the Final Report. Jackie explained that the Sub-Cabinet, once it receives the report, will hold public hearings and solicit opinions from other state agencies.

The OG TWG will address overall concerns in its summary document. The members want to stress that their options are new technology options, not just legislative or regulatory options.

Quantifications for all policy options will be reviewed for overlapping reductions, both with a TWG and between multiple sectors.

The recommendation of the MAG will be forwarded to the Sub-Cabinet for review and possible further research. All PODs will be included in the Final Report, so that the work of the TWGs and the MAG will be available to any parties doing further work in these areas. This is pertinent whether or not these options are approved at the present time, as circumstances can and do change.

## Review and Approve Policy Option Documents

### Energy Supply and Demand

Jeremy Fisher and Chris James presented the quantification data.

*Reference PowerPoint presentation for more detail.*

Note that ESD-2, 4, 6 have been merged as one policy option about energy efficiency for discussion and quantification. They will be presented as one option in the future for a number of reasons.

Each quantified option has several sub-scenarios contributing to the values.

Several options have been moved to the Research Needs Advisory Group:

- **ESD-5 Efficiency Improvements for Utility-Size Generators** – The requirements for of the option require new technology and much more investigation. There is not sufficient solid data for quantification at this time.
- **ESD-7, 8 and 9** were previously moved to the Research Needs Advisory Group.

**Inventory and Forecast** – Assumptions, as shown on slide 12, have been adjusted for the Alaska fuel mix based on data supplied by TWG members.

**ESD-1: Transmission Expansion** – *Conditionally approved with no objections, with fuel cost note included*

The discussion and goals were reviewed and are outlined on slides 14 & 15.

Rural transmission analysis involved assumptions as shown on slide 16 for connecting 172 villages to a central supply grid. Only one line between villages is assumed. Transmission cost assumptions are shown on slide 17. The results are summarized on slides 18 and 19.

There was no credit taken for reduction in fuel costs by utilizing lower cost fuels. Further refined analysis should review specific lower cost fuel availability on a village by village basis.

**The POD should clearly state that fuel costs were not included in the analysis.**

Currently, a distance of 20 miles between villages is assumed. This is likely too low and should also be reviewed on a specific village basis. The line transmission loss was not included in the calculations. The TWG will review this assumption on 5, 15 or 25% levels.

A member cautioned against combining rural transmission efforts with renewable energy projects. The results will be skewed and easily swayed by geography. The overall efforts here make broad assumptions and a detailed analysis needs to be done before implementation.

**ESD 2-4-6: Energy Efficiency** - *Conditionally approved with no objections*

These three options all pertain to energy efficiency and have been combined into one option.

The discussion and goals were reviewed and are outlined on slides 21 & 22. The key assumptions are shown on slide 23 & 24.

Energy Efficiency targets were explained. A 1% goal is defined as achieving annual incremental energy savings equal to 1% of energy sales reduced per year, cumulatively. This will ultimately result in a flat line usage curve for Alaska. The same definition applies to the 2% target. Both of these targets have been adopted by several other states.

The analyses for each fuel type are shown on slides 25-27 with the results shown on slides 28 & 29.

The cost of electricity is not assumed to increase based on carbon capture sequestration efforts.

The TWG is asked to coordinate with the OG TWG on cost numbers.

### **ESD-3: Renewable Energy Implementation - *Conditionally approved with no objections***

The discussion and goals were reviewed and are outlined on slides 31 & 32. Assumptions are summarized on slide 33 and results are on slide 34.

Current levels of renewable energy are 15-18%, with a goal of 50% by 2025. The large hydroelectric plant has a lifetime that extends beyond 2025.

Costs and benefits for some projects are mixed, so the results are net benefits.

## **Oil and Gas Technical Working Group**

*Reference PowerPoint presentation for more detail*

Most of these options are not yet mature enough for immediate implantation, but should be researched further to address the issues raised.

The TWG is recommending further study on options OG-2 through OG-7, dropping OG-8 and implementing OG-1 at this time. *These recommendations are currently supported by the MAG.* OG-8 will be included in the Appendix.

The quantification methodology is summarized on slide 39, with economic notes on slide 41. Note that all the options are new and/or improved technology options. None are currently recommended as they are not yet cost effective (slide 40). Further research is strongly recommended.

The quantification of all OG options is based on a snapshot of current facilities, with no assumptions of expansion or closure in the future.

An amortization date of 2035 was also reviewed, versus 2025, to reflect more accurate assumptions of costs. A discount rate of 5% was used for calculations, which was felt to be appropriate for publicly funded projects. A higher rate of 11%, reflecting private funding, was also tested.

*OG 1 & 2 are focused on conservation efforts.*

### **OG-1: Comprehensive Conservation Practices – *Conditionally approved with no objections***

This option is being not quantified. However, any reductions of emissions due to these early efforts should be credited under any cap-and-trade program or other regulatory efforts. Early efforts should not be discouraged.

### **OG-2: Reductions in Fugitive Methane Emissions – *Conditionally approved with no objections***

The quantification is based on data from the lower 48, which may not be applicable to Alaska's climate conditions.

The focus of the policy is to reduce methane emission leakage primarily from valves and connections. Because these sources did not show great potential for GHG reductions, the TWG also included the methane releases due to wet fields on compressors, assuming the

conversion of all equipment from wet fields to dry fields. It was felt that this is a good surrogate for stray leakage values.

About 75% of the overall emission reduction in this policy option is due to this subsection of the quantification.

**OG 3 though 6 are focused on energy efficiency efforts.**

**OG-3: Electrification of Oil and Gas Operations, with Centralized Power Production and Distribution at a centralized gas facility - *Conditionally approved with no objections***

This policy would require the replacement of the North Slope power generation system with new, high efficiency grid and production facilities. The costs for such retrofits are uncertain, as is the responsible parties. Oil companies do not want to be responsible for electricity generation, but efficiencies of centralizing the efforts can not be overlooked.

There are very issues to resolve, such as production losses, permitting, etc.

The assumptions and uncertainties are outlined on slide 46.

**OG-4: Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment - *Conditionally approved with no objections***

The assumptions and uncertainties are outlined on slide 47.

A 5% contingency was assumed for the costs of changing equipment, permitting, etc. The exact costs are unknown due to differing locations, equipment, etc.

**OG-5: Renewable Energy Sources in Oil and Gas Operations at a Centralized Power Facility - *Conditionally approved with no objections***

The exact size and scope of the electrification project necessary to efficiently utilize renewable energy is unknown.

The current facility is not currently designed to accept outside power sources, and must be retrofitted to enable the introduction of wind sources.

**OG-6: Carbon Capture and Geologic Sequestration with EOR from High CO<sub>2</sub> Fuel Gas at Prudhoe Bay - *Conditionally approved with no objections***

The fuel gas at Prudhoe Bay contains an extremely high level of CO<sub>2</sub> (10-12% by volume) to be removed. The policy focuses on the well-understood EOR technology achieve the desired CCS levels. There is overlap with OG-7 regarding the amount of CO<sub>2</sub> available for each policy option.

Regulations for CCS are currently under development and the final form is unknown. This is a major uncertainty.

The assumptions and uncertainties are outlined on slide 49.

**OG 7 & 8 are focused on carbon capture and sequestration (CCS) efforts.**

**OG-7: Carbon Capture and Geologic Sequestration with EOR in and near existing Oil or Gas Fields - *Conditionally approved with no objections***

The difference between OG-6 and OG-7 is the focus on exhaust gases in OG-7. Work on this issue was done in 2003 and is referenced in the POD. Note that the quantification now is focused on CGF, not the entire North Slope. This is a difference from the last meeting.

The amount of CO<sub>2</sub> available is variable between sites. This is a large uncertainty. There is more research necessary to determine the amount of CO<sub>2</sub> available for capture and the actual amount that will be captured in a cost-effective manner.

Any changes to the life of the field will impact the economics of the option as well.

**OG-8: Carbon Capture and Geologic Sequestration away from Known Geologic Traps – *Not recommended for implementation at this time***

There is a great uncertainty of pipeline length versus exploration. The final form of CCS regulations also significantly impacts the quantification. These include pipeline location and long-term economic issues.

**General discussion:**

A summary of the cost-effectiveness analysis is provided on slide 52.

There are broad over-arching considerations to these proposed policy options. Some of these considerations are summarized on slide 53. These include any possible state and federal GHG regulation program. Any state program should be tied to the federal proposals, to prevent the creation of conflicting policies and regulations. The state should also work with the federal government to ensure the economic vitality of Alaska's economy.

Note that all quantifications were defined in terms of CO<sub>2</sub> equivalents.

OG-4 and OG-5 are non-additive. The TWG feels that all these options will be approached simultaneously and in a hybrid fashion. This is especially pertinent to CCS efforts, with the parasitic nature of the creation of emissions in the effort to capture other emissions.

The OG TWG has recognized that any and all of these options require further research before implementation. Most will over-lap other options in their final form.

While OG-8 is not recommended at this time by the TWG, the information gathered will be included in the final report as source material for any future studies of the issue.

## Forestry, Agriculture and Waste

See slide 56 for the summary table of data.

### **FAW-1: Forest Management Strategies for Carbon Sequestration – *Conditionally approved with no objections***

The benefits of this option focus on biomass production and its potential use for offsetting fossil fuels in other sectors. Most of the quantification efforts are in the supply and demand arenas.

**1a – Pre-Commercial Thinning in Coastal Forest** – The potential costs to remove biomass from coastal forests could be quite high, as well as the potential for damage to the forest by the equipment. The TWG also reviewed the biomass implications of not thinning the trees. *More detail is provided in the POD.*

**1d – Boreal Forest Reforestation** – Estimates are projected out to 2025, and are extremely cost effective. Since forests take time to grow, the GHG reductions increase significantly over time. Initial costs are high to replant trees.

### **FAW-2: Expanded Use of Biomass Feedstocks for Energy Production – *Conditionally approved with no objections***

**2a - Biomass Feedstocks to Offset Heating Oil Use** - The quantification has been revised to include only residential and commercial heating oil use, rather than the heating oil use over all sectors in Alaska. This has reduced the amount of biomass required, as well as the GHG reductions seen.

**2b – Biomass Feedstocks for Electricity Use** - The current assumptions, using biomass to generate electricity rather than fossil fuels, lead to 0.18 (MMtCO<sub>2e</sub>) at a cost of \$59/ton. This does include electricity from FAW-2a.

**2c – Biomass Feedstocks to Offset Fossil Transportation Fuels** - The current assumptions lead to 0.09 (MMtCO<sub>2e</sub>) at a cost of \$41/ton. This is based on using cellulosic ethanol for fuel stocks. These values were not changed from the last meeting.

### **FAW-3: Advanced Waste Reduction and Recycling – *Conditionally approved with no objections***

This option was approved at the last meeting and no changes were made to the quantification since that meeting.

### **NS-6: Develop Capacity in New Forestry and Wood Biomass Opportunities – *Conditionally approved with no objections***

This policy option was added to the FAW POD at the request of the Adaptation Group, due to the overlap of forest impact with FAW-1 and 2. This option will not be quantified.

#### **General Discussion:**

The TWG has emphasized the relationship of the timber harvest availabilities and delivered cost/ton. These values significantly impact the quantification.

The overall average cost of electricity in municipalities was used in prior drafts. This has been changed to more accurately reflect the average cost in villages as well. A concern was raised that the values used are the avoided cost of generation rather than the actual delivered cost charged to the consumer. The text and quantification will be adjusted to address this concern.

## **Cross-Cutting**

Refer to the [Cross-Cutting document](#) on the Alaska Climate Change website for detailed information.

### **CC-1: Establish a Greenhouse Gas Reporting Emissions Reporting Program – *Placed on Hold until federal plans are outlined***

No further discussion at this meeting.

### **CC-2: Establish Goals for State GHG Emission Reductions**

Additional information about the proposed goals for Alaska and work by other states as requested by the MAG has been summarized in the CC briefing document posted on the website. Summary charts and graphs showing potential GHG reductions are included for several time periods. Note that the data is not complete to date, and are subject to change.

Aspirational goals for other states are indicated on Table 3, with legislated goals outlined in Table 4.

For example, Figure 1 shows the estimated reductions from fully implemented FAW and TLU proposed goals. No other sectors have been included at this time. The top line is business-as-usual, with the cumulative reductions from options calculated from the current year. No allowance has yet been made for over-lapping reductions, i.e. “double-counting”, nor is the cost of implementation shown.

The MAG agreed that graphs in this fashion will assist in the framing of the GHG reduction goals. The MAG also asked that costs of implementation be summarized in a similar fashion.

### **CC-3: Identify and Implement State Government Mitigation Actions - *Conditionally approved with no objections***

No further discussion at this meeting.

### **CC-4: Integrate Alaska’s Climate Change Action Plan with the Alaska Energy Plan - *Conditionally approved with no objections***

No further discussion at this meeting.

### **CC-5: Explore Various Market-Based Emissions - *Conditionally approved with no objections***

No further discussion at this meeting.

**CC-6: Coordinate Implementation of Alaska’s Efforts to Address Climate Change –**  
*Consensus Conditionally approved with no objections*

The TWG recommends changing the name of the policy to that shown above.

The MAG asked for further information on this option at the last meeting. The TWG has clarified this option to outline the need for coordination of efforts and activities through a coordinating committee, perhaps with a lead agency, with representation from all involved agencies.

This committee would focus on the implantation of options approved by the Sub-Cabinet.

## **Transportation and Land Use**

**TLU-1: Transit, Ride Sharing and Commuter Choice -** *Conditionally approved with no objections*

An error in transit operating cost estimates was identified by the TWG. This brings the costs down, but this option still has relatively poor cost effectiveness.

**TLU-2: Heavy-Duty Vehicle Idling Regulations and/or Alternatives -** *Conditionally approved with no objections*

No further discussion at this meeting.

**TLU-3: Transportation System Management -** *Conditionally approved with no objections*

A cost for additional staffing resources for enforcement and outreach has been included in the quantification. These values will be refined again for the next meeting, based on data received from DOT.

**TLU-4: Smart Growth -** *Conditionally approved with no objections*

No further discussion at this meeting.

**TLU-5: Alternative Fuels -** *Conditionally approved with no objections*

No further discussion at this meeting.

**TLU-6: VMT and GHG Reduction Goals in Planning -** *Conditionally approved with no objections*

No further discussion at this meeting.

**TLU-7: On-Road Heavy-Duty Vehicle Efficiency-** *Conditionally approved with no objections*

Costs and benefits for each of the three components have been separated and delineated in the summary table.

The SmartWay program is directed at fuel-efficiency programs for heavy-duty trucks. This program shows a cost savings because the fuel savings over the life of the program is greater than the program start-up costs.

Costs for the third component, Public Fleets, were not quantified because the program design is more open-ended. A target is identified, but the specific means of achieving that target were not specified.

**TLU-8: Marine Vessels- consensus for approval, subject to consideration of MAG comments - *Conditionally approved with no objections***

Based on the MAG-recommended review of cost effectiveness, the quantification was revised and has improved.

**TLU-9: Aviation - *Conditionally approved with no objections***

No further discussion at this meeting.

**TLU-10: Alternative Fuels R&D - *Conditionally approved with no objections***

No further discussion at this meeting.

**General Discussion:**

Values for all options have changed slightly to reflect updates in the Inventory & Forecast, as well as impacts from the CAFÉ standards.

There were no comments from MAG members.

**Next Meeting and Closing Remarks**

Larry Hartig closed the meeting with thanks to the MAG and TWG members.

Ken Colburn asked the MAG members to review slides 65-66, the Inventory and Forecast by sector and Potential GHG Reductions, based on the proposed policy options. A member asked that cost effectiveness be plotted against ranges of dollars/ton, such as \$0-\$10, \$10-\$50, etc. Net Savings, less than \$25/ton, \$100/ton, \$250/ton and All Policies have been proposed as ranges.

The next meeting will be held on June 18<sup>th</sup> at a place to be determined in Anchorage. This meeting will take all day, until the resolution of all policy options is completed.

Ken thanked all the members of the MAG and DEC for their work to date.

There were no comments by the public.



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## MEETING SUMMARY

### Alaska Climate Change Mitigation Advisory Group

Meeting #7, June 18, 2009

8:30 AM – 5:00 PM

Room 105, Carr Gottstein Building,  
Alaska Pacific University, Anchorage, AK

*Note: Since Meeting 7 was the last full meeting, the MAG did not meet to approve it later.*

#### **Attendance:**

##### ***Mitigation Advisory Group Members (MAG):***

|                     |                  |
|---------------------|------------------|
| Larry Hartig, Chair | Greg Peters      |
| Steve Colt          | Jim Pfeiffer     |
| Jeff Cook           | Chris Rose       |
| Brian Davies        | Sean Skaling     |
| Steve Denton        | Jamie Spell      |
| Karen Ellis         | Curt Stoner      |
| David Hite          | Kate Troll       |
| Kate Lamal          | Kathie Wasserman |

##### ***Alaska Department of Environmental Conservation (DEC):***

|               |                  |
|---------------|------------------|
| Jackie Poston | Sean Lowther     |
| Alice Edwards | Kolena Momberger |

##### ***Center for Climate Strategies (CCS):***

|                                   |                           |
|-----------------------------------|---------------------------|
| Brian Rogers, UAF, Co-Facilitator | Dick LaFever, OG, ESD TWG |
| Ken Colburn, Co-Facilitator       | Steve Roe, FAW TWG        |
| Gloria Flora, Project Coordinator | Jackson Scheiber, FAW TWG |
| Katie Pasko, Project Support      | Fran Sussman, OG TWG      |
| Jeff Ang-Olson, TLU TWG           | Nancy Tosta, CC TWG       |
| Jeremy Fisher, ESD TWG            |                           |

##### ***Alaska Department of Natural Resources (DNR):***

Diane Shellenbaum

##### ***Others:***

|   |  |
|---|--|
| Janice Adair, <i>Western Climate Initiative</i> | Erik O'Brien, <i>DCRA – Climate Change</i>       |
| Janet Bounds, <i>CVX</i>                        | Doug Vincent-Lang, <i>ADFG</i>                   |
| Steve Toth, <i>Anchorage School District</i>    | Andrea Sanders, <i>AK Conservation Solutions</i> |
| Mark Shasby, <i>USGS</i>                        | Steve Davenport, <i>East Valley Coal Mine</i>    |
| Denny Lassuy, <i>NSSI</i>                       |  |

## Welcome and Meeting Overview

All documents for the meeting are posted on the [website](#).

Brian Rogers opened the meeting with a round of introductions.

Larry Hartig welcomed the group and again thanked them for their continuing efforts. He stated that this has been a very positive and enriching effort, generating conversation and thought. This process has been an important step in the larger Sub-Cabinet efforts.

Ken Colburn reviewed the agenda and goals for the meeting. (Slides 2-4 of ppt) The focus of this meeting is to review the final version of each POD and determine the MAG position of the few outstanding options. The Inventory and Forecast will also be reviewed for final approval.

The major discussion of the meeting should be consideration of a GHG reduction goal. The MAG can recommend a specific target or provide guidance to the Sub-Cabinet.

Colburn reviewed the timeline and status of the planning process for completion of the MAG process. The Final Report will be drafted for review by the MAG at a teleconference to be held in July. A summary chapter for each TWG will be written as part of the Final Report. The Sub-Cabinet, once it receives this report and reports from the other Work Groups, will hold public hearings and solicit opinions from other state agencies.

The recommendation of the MAG will be forwarded to the Sub-Cabinet for review and possible further research. All policies, whether approved or not, will be included in the Final Report, so that the work of the TWGs and the MAG will be available to any parties doing further work in these areas. This is pertinent whether or not these options are approved at the present time, as circumstances can and do change. The work of the MAG and TWGs can provide the basis for necessary further research by many different entities.

## Approval of Meeting Summaries

The MAG approved the summaries for Meeting 6 and Meeting 6a, with one correction. Jim Pfeiffer was present at Meeting 6a.

## Review and Approve Inventory and Forecast

Ken Colburn presented a brief overview of the GHG Inventory and Forecast. Sector analysis is presented in the charts on slides 9-10.

The **Inventory and Forecast was approved**, without objection, with the following notes and revisions:

- Most recent data available was used for this report. Generally, the data is from 2002-04, but some is more recent.
- Ensure that the aviation fuel reference case includes a qualification that a significant amount of the fuel purchased in Alaska is not used in Alaska airspace. The emissions data includes data for some air flights from origination to destination, including those portions of flights not over Alaska air space. Breaking this data out does not follow standard inventory accepted practices, but Alaska also does not control the flight traffic in its airspace.

- Emissions from the Oil and Gas sector are covered in both the Industrial Fuel and Fossil Fuel Industry sections. The definitions of emissions included in these areas needs to be tightened. Clarify where OG industry emissions are illustrated and address the OG industry fossil fuel combustion data in the Industrial section of the report. Members asked that the sections be recharacterized and redefined as described. The numbers in the report are not accurate. These will be addressed before the next meeting by Diane, Gloria, Maureen Mullen and others.
- Note that the Fossil Fuels industry emissions are primarily fugitive emissions. Mitigation efforts in this area are treated very differently than generated emissions. Inventory data should be structured to be useful to these efforts.
- On page 10 of the OG section of the report, Table 6 shows that actual GHG reductions are occurring in the OG industry. There has been a decline in production in Prudhoe Bay, but the same volume of gas is being processed. The values attributed to fossil fuels need to be reviewed to ensure appropriate applicability, and perhaps, separated from other data.

These changes will be available for review at the final MAG meeting in July.

## Review and Approve Policy Option Documents

### Forestry, Agriculture and Waste

*See slide 13 for the summary table of data.*

Jackson Schreiber briefly presented changes to each option. All three were approved at the last meeting.

#### **FAW-1: Forest Management Strategies for Carbon Sequestration – *Unanimous approval***

- a. Coastal Management Pre-commercial Thinning
- b. Boreal Forest Mechanical Fuels Treatment
- c. Community Wildfire Protection Plans
- d. Boreal Forest Reforestation

FAW-1d was quantified, while the other three, FAW-1a, 1b, 1c were left unquantified.

#### **FAW-2: Expanded Use of Biomass Feedstocks for Energy Production – *Unanimous approval***

- a. Biomass Feedstocks to Offset Heating Oil Use
- b. Biomass Feedstocks to Electricity Use
- c. Biomass Feedstocks to Offset Fossil Transportation Fuels

**2a - Biomass Feedstocks to Offset Heating Oil Use** - The quantification has been revised to include newly available and better electricity pricing data. This resulted in slightly higher cost effectiveness values.

**FAW-3: Advanced Waste Reduction and Recycling – *Unanimous approval***

This option was approved at the last meeting and no changes were made to the quantification since that meeting.

**NS-6: Develop Capacity in New Forestry and Wood Biomass Opportunities – *Unanimous approval***

This policy option was added to the FAW POD at the request of the Adaptation Group, due to the overlap of forest impact with FAW-1 and 2. This option will not be quantified.

**General Discussion:**

There was discussion about the use of biomass and the balance of atmospheric carbon. All quantifications are performed using standard definitions and according to international convention, e.g. current carbon in equilibrium in atmosphere. Specific issues in Alaska will be addressed in the Final Report chapters.

Extensive discussion centered about the meaning of the columns on the summary tables. The same format is used for all summary tables to assist in comparison of various proposals and scenarios. Details for each option are in the POD.

The year ranges on columns headers represent annual reductions, not cumulative GHG reductions. The exception is the Total 2010-2025 column, which shows cumulative reductions. In the graphs, the total GHG reduction is shown as the area under the curve.

The summary tables demonstrate the implementation design of the policy option, for example, start with early GHG reductions with the reductions tapering off over time or building a program slowly, usually with infrastructure construction, showing greater GHG reductions in the later dates of the analysis.

**Overlap Discussion:** There is no overlap with TLU biofuel options, as the TLU options focus on research of biofuels, not generation of fuels. The small level of overlap with ESD-3 has been removed from the ESD reduction values, rather than FAW-2. Approximately 17% of FAW-2a and FAW-2b biofuel levels are used in ESD-3. Since FAW-2a has only a small GHG reduction impact to begin with, this is a small impact on the total reductions.

## **Oil and Gas Technical Working Group**

*See slide 16 for the summary table of data. Diane Shellenbaum presented the data and led the discussion using a separate power point.*

**OG 1 & 2 are focused on conservation efforts.**

**OG-1: Comprehensive Conservation Practices – *Unanimous approval***

The focus is to reduce overall liquid fuel consumption. Any other conservation practices should also be pursued.

There were no objections to recommending this unquantified option.

**OG-2: Reductions in Fugitive Methane Emissions – *Unanimous approval***

The focus of the policy is to reduce methane emission leakage primarily from valves and connections. Both wet and dry seals were investigated.

*OG 3 though 6 are focused on energy efficiency efforts.*

**OG-3: Electrification of Oil and Gas Operations, with Centralized Power Production and Distribution at a centralized gas facility - *Unanimous approval***

This policy analyzes the replacement of the North Slope power generation system with new, high efficiency grid and production facilities. The goal is to reduce as many emissions as possible at the start. There are a number of significant issues to resolve, such as production losses, permitting, etc. The costs for such retrofits are uncertain, as are the responsible parties.

Most of the current fuel use is attributed to compressors.

**OG-4: Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment - *Unanimous approval***

All upgrades will be increase efficiency at some level. Doing upgrades piece-by-piece would avoid multi-jurisdictional issues.

**OG-5: Renewable Energy Sources in Oil and Gas Operations at a Centralized Power Facility - *Unanimous approval***

This option focused on a centralized gas facility at Prudhoe Bay.

**OG-6: Carbon Capture and Geologic Sequestration with EOR from High CO<sub>2</sub> Fuel Gas at Prudhoe Bay - *Unanimous approval***

As described in previous meetings, the focus is to remove carbon from fuel gas before use. This is of benefit to the entire supply chain, not just Alaska.

*OG 7 & 8 are focused on carbon capture and sequestration (CCS) efforts.*

**OG-7: Carbon Capture and Geologic Sequestration with EOR in and near existing Oil or Gas Fields - *Unanimous approval***

The difference between OG-6 and OG-7 is the focus on exhaust gases in OG-7.

**OG-8: Carbon Capture and Geologic Sequestration away from Known Geologic Traps – *Not recommended at this time***

There were no objections to dropping this recommendation. While OG-8 is not recommended at this time by the MAG, the information gathered will be included in the final report as source material for any future studies of the issue.

There is a significant overlap between all OG options, which will likely be expensive to implement. Expenses would be shared by industry, government and consumers.

The policy options encompass three main areas: Conservation, Efficiency, and Carbon capture and sequestration. Conservation is the easiest and most effective, as little or no energy is consumed by using less fuel. These areas were outlined at previous meetings and are detailed in the Meeting 6a summary.

The easiest to implement would be centralized electrification of the North Slope to ease conservation efforts. There are significant barriers to implementation.

The OG-7 quantification has been adjusted, due to an error in the emission reductions. Reductions had been calculated without any allowance for capital expenditures. This changed the cost effectiveness values from 157 to 192, but not the conclusions.

The costs demonstrate and support the conclusion that significant GHG reductions can be achieved, with significant costs. This will delay any implementation efforts until cost-effective technology can be developed.

The TWG developed two scenarios for quantification:

**Scenario #1** focused on the most feasible conservation efforts, with centralized electric: OG-1, OG-2, OG-3, OG-5 and OG-7. The maximum reductions with centralized electrification result in a Net Present Value of approximately \$15.3B. Wind energy was added since there would be transmission systems.

The estimated capital required to implement are about the same as the NPV. This scenario is the best case.

These efforts do not save money, but do support societal goals to reduce GHG. There are positive costs to implement these options. However, society has not valued carbon on a dollar basis, nor has the damage to Alaska been likewise valued. Therefore, these significant issues are not included in the quantification.

Note that a positive value for cost-effectiveness is an actual cost, with negative values resulting in net savings. This will be explained in the Final Report.

**Scenario #2** is a similar analysis without centralized electrification: OG-1, OG-2, OG-4, OG-5 and OG-7.

GHG reductions are lower under this scenario, as opportunities to reduce GHGs are more limited, but still provides benefits by improving all equipment. This scenario has a \$7.5B NPV.

Once the options are fully implemented, the projected GHG emissions levels parallel the business-as-usual levels. Once the initial GHG savings are realized, additional savings are not seen in future years.

There is great variability in the quantifications due to which options are implemented and at what level. The TWG focused on places where large GHG reductions could be achieved. Industry – wide solutions tend to be expensive, and therefore less cost-effective, in early years. For example, piece-by-piece equipment upgrades may take place for savings, but was not quantified.

Studies and advocacy on a national level must take place to reduce emissions in the Oil and Gas sector. None of the options are ready to implement immediately, and all recommendations include this caveat.

The impacts of major mitigation projects, i.e. billions of dollars of capital investment, on state revenues and private investment must be investigated. The state revenue stream is structured very differently than other states’.

The TWG strongly emphasizes that redundant regulatory efforts must be avoided.

Implementation of major mitigation projects will require a larger, more trained workforce at the state and industry level. The state has to be able to attract and retain such qualified people.

On a federal level, the allocations and allowances will be critical to Alaska's current and future viability. Alaska is a major part of the nation's energy security and must communicate this fact.

Low carbon fields will require large natural gas expenses, to produce. This gas is the re-injected gas as outlined in the PODs.

**General Discussion:**

Total emissions for the Oil and Gas sector is 12 tons on the North Slope, 15 tons total. The scenarios demonstrate potential savings of greater than 50% of emissions.

The concepts outlined in this POD should be used as a basis for further advocacy at the state and federal levels as well as continued thorough research and discussion. For example, removing carbon from fuel provided to the L48 is a benefit to all of US, not just Alaska. Federal support of the costs would enable Alaska to pursue these goals.

One member stated that value of carbon reduction must be established, such as a coal conversion credit for the carbon saved in converting the plants to natural gas. This would give market value to the natural gas produced in Alaska and elsewhere. Market value makes the construction of a pipeline more economically feasible. Programs such as cap-and-trade will establish the value of carbon.

Alaska needs to ensure that the interests of the state are protected within federal processes, especially because AK is 90% dependent on the oil and gas industry.

The TWG did not assume a value to natural gas, except for a small value in 2020. While the natural gas is not just flared off, there is minimal market value at this time. There is value to the industry, when conservation efforts are employed, but no means of effectively determining the market value of the gas at this time. The TWG did run sensitivity quantifications with a \$2, \$4, and \$6 value assigned to natural gas. These are not included in the report.

Concerns were expressed about the language of over-arching issues included in each OG option. Some MAG members strongly object to the negative tone of this language, but support the ideas as shown in the summary table. For example, US CAP, which includes Shell, Conoco-Phillips and BP as members, have supported the position that there are economic opportunities in climate change initiatives. The cost of inaction is huge, but the comments from the OG TWG are too negative about the obstacles.

All other TWGs handled these types of concerns under Barriers to Feasibility, not a separate section. Their approach was balanced, not just focused on the economic costs. The other TWGs have many of the same economic issues, but did not emphasize them as the OG TWG did. The OG TWG created a separate template, rather than following the model used by the other TWGs.

Other members did not share this view. These barriers exist for many sectors, but were not emphasized so strongly. The state is a large stakeholder in all these issues and must understand the complexities it will face in addressing these issues.

OG TWG members stated that these statements are included in every OG option in case readers of the report are selective and don't read the summaries.

### **Final Report Notations:**

The Final Report should emphasize the total context in the Executive Summary and the Chapter Summary. The authors should focus on the notes under the OG Summary Table. There is a lot of potential for GHG reduction, as well as a lot of barriers to achievement.

The chapter and executive summary should reflect the balance of the ‘over-arching considerations’ with the need for, and opportunities in, climate change initiatives. The context of these chapters is critical, as most legislators will refer to these pages, not the PODs.

Note that these quantifications are for the North Slope only, not industry-wide in Alaska.

The Final Report should also note the ‘zero’ value of the natural gas, and the calculations should be revisited when a market value is established.

Verify that the Barriers to Consensus includes a note that some MAG members disagree with the over-arching consideration language.

Note that Cross Cutting recommendations include market based approaches. Alaska must promote and work on this issue or will otherwise be out-voted in Congress. The Alaskan economy is not as diversified as it likely should be, but should not be penalized for being an energy supplier to the rest of the nation.

The Final Report needs to be balanced and not biased. Societal benefits need to be addressed. Include references to the economic opportunities from acting on climate change and the cost of inaction. The cost of carbon and the cost of damage to climate change must be addressed in the context of the discussion. The costs to the industry also must be addressed.

Approval of the MAG indicates that the Sub-Cabinet should review each option, but not necessarily accept each one without additional work. The MAG recommends that the Sub-Cabinet carefully review each option with their own goal in mind. The MAG is not recommending implementing them at this time.

Note that Alaska faces unique challenges in addressing climate change.

The MAG will review the context in the report at the next meeting.

## **Cross-Cutting**

*See Cross Cutting PowerPoint under Meeting 7 documents on website.*

### **CC-1: Establish a Greenhouse Gas Reporting Emissions Reporting Program – *Unanimous Approval to place on hold pending federal legislation***

The Mitigation Advisory Group (MAG) has agreed that this effort may be needed, but recommends no action until the status of federal legislation is known. No members want to create a parallel program in Alaska. The reasons for keeping these efforts on hold should be clearly outlined in the report.

### **CC-2: Establish Goals for State GHG Emission Reductions – *Majority Approval***

The TWG recommends that the state set aspirational goals for GHG reductions. It recommends a stringent goal of 20% from 1990 levels by 2020, and 80% below 1990 levels by 2050. The

state should establish a GHG emissions baseline and refine it when reporting requirements are established.

The rationale is:

- AK is a premier energy-provider state and the only Arctic state.
- Alaska is experiencing more and is more aware of the effects of climate change than other states.
- Major industry representatives support the creation of a goal.
- National goals will be established, and Alaska needs to address its place in that discussion.

This is an aspirational goal, not a legislatively mandated target. Ten states have legislated goals, and nine have set aspirational goals.

### **Goal-Setting Discussion:**

Focus on factors within Alaska's control.

A motion was made to: "Direct the Sub-Cabinet to set aspirational goals similar to the recommendations and actions of WCI, the CC TWG and other state and regional goals." Take into account those factors beyond Alaska control, such as aviation issues and military bases. Large projects, such as the gas pipeline, should also be considered. There is no desire to force the closure of military bases or to lose freight traffic, such as that of FedEx.

Another suggestion was made that goals should reflect the political reality of Congressional actions. Alaska should be pro-active, rather than reactive, before Congress in demonstrating that Alaska faces different issues than the rest of the states and that these issues are also to the benefit of the rest of the country.

Some members disagree with simply recommending that the Sub-Cabinet set a goal, without the MAG also setting a goal.

Alaska has little control over many GHG sources compared to other states. Alaska should wait and see what Congress does. Other states can make a large impact with vehicular goals, where Alaska burns more diesel and aviation fuel than any other state.

The Governor set a goal of 50% renewable energy, which has encouraged environmental groups to support big hydro-electric projects. Alaska has the highest per capita emissions in the nation.

Note the IPCC information and goals in the text of the report, next to the CC TWG goal to demonstrate their relationship. IPCC recommended < 450 ppm levels of CO<sub>2</sub>. The recommended goal shouldn't be lower than the IPCC goal.

Six members do not support setting any numerical goal. Alaska should follow the federal goals only. This will be listed under Barriers to Consensus.

Eight members are in favor of the option, with some of those members in favor of the MAG creating a numerical goal itself.

The option is Recommended as presented by the CC TWG with a Majority vote.

**CC-3: Identify and Implement State Government Mitigation Actions - *Unanimous approval***

This is the Lead-by-Example option. This is a recommendation to set policies to demonstrate reductions in GHG levels, such as No further discussion at this meeting.

**CC-4: Integrate Alaska's Climate Change Action Plan with the Alaska Energy Plan - *Unanimous approval***

The intent is that will be an integrated plan in the next 5-6 years. It makes more sense to address these concerns together rather than to move forward with both somewhat independently.

**CC-5: Explore Various Market-Based Emissions Reduction Options - *Unanimous approval***

This is a relatively low cost option in study and review of the various programs, such as cap-and-trade, etc. There is no recommendation that Alaska should participate in any specific program.

No further discussion at this meeting.

**CC-6: Coordinate Implementation of Alaska's Efforts to Address Climate Change – *Supermajority approval with two objections***

*Reference slides 8-10 of the CC power point.*

Many actions are proposed under the recommendations for reducing GHG emissions and for responding to the effects of climate change. An approach to coordinating these actions is needed. An Alaska climate change coordinating “program” will help state agencies support ongoing efforts of the Subcabinet.

One purpose of this program would have the agency be proactive with the federal government.

*Two members objected to this policy option.* One stated that the objection is based on the fact this would result in the growth of another state entity, with duplicative efforts to entities and agencies already in place. This is a ‘feel good’ effort that will cost Alaskans significant funds with little benefit. The other proposals will already have high costs. The other agreed with this characterization.

One other member supported this option to provide single-point accountability.

**General Discussion:**

A member asked how aware the Legislature is regarding climate issues. There are varying levels of awareness. The Sub-Cabinet wants to complete its work in time for the next legislative session.

These numbers are similar to major federal legislation. IPCC recommends an 80% reduction over 1990 by 2050 to hold at 450 ppm, which is not a stabilizing value, but trying to avoid major irreversible damage.

One member objects to the inclusion of USCAP in the text of the document as it is an advocacy group. Another member countered with the concept that this group includes strong representation from the oil and gas industry, and would lend context to the discussion.

Referencing IPCC is more compelling as it is a scientific group. *The MAG agreed by consensus to drop reference to USCAP.*

## Energy Supply and Demand

Jeremy Fisher and Chris James presented the quantification data.

*Reference PowerPoint presentation slides 20-22 for more summary table.*

Note that ESD-2, 4, 6 have been merged as one energy efficiency policy option for discussion and quantification.

Each quantified option has several sub-scenarios contributing to the values.

### **ESD-1: Transmission Expansion – *Unanimous approval, with fuel cost note included***

This was quantified in two parts, as transmission systems in rural areas. ESD-1 is the total of separately quantified ESD-1a and 1b, as a weighted average.

**The POD should clearly state that fuel costs were not included in the analysis.**

### **ESD 2-4-6: Energy Efficiency - *Unanimous approval for a 2% efficiency goal.***

Energy Efficiency targets were explained. A 1% goal is defined as achieving annual incremental energy savings equal to 1% of energy sales reduced per year, cumulatively. This will ultimately result in a flat line usage curve for Alaska. The same definition applies to the 2% target. Both of these targets have been adopted by several other states.

The MAG agreed to support a 2% efficiency goal for this option.

### **ESD-3: Renewable Energy Implementation - *Unanimous approval***

A member asked what is taken into account in the renewable energy (RE) quantification. There are three components to the application of the AEA renewable grants. The grants were reviewed and all seed-funded projects move forward at the proposed pace in the grant application. To reach 50% by 2025, the renewable energy state goal, would require looking at a new dam (an example has been evaluated as proxy for cost and returns). Renewable energy based on transmission system accessibility is too difficult to determine.

A member asked what is included in the base curve. Much of the renewable energy infrastructure is nearing 30-35 years old and ready for replacement. BAU should include these replacement costs on the order of \$10-12M, which will also result in greater efficiencies. If using an EIA factor, compare BAU with what's possible under efficiencies.

The uncertainty with regard to large hydro generation must be included in the Key Uncertainties section.

### **ESD-5 - Efficiency Improvements for Generators - *Unanimous approval with no quantification***

Review the quantification assumptions based on EIA data versus Alaska specific data. Quantification estimates can be performed with a better understanding of the baseline data. Recent Actions can indicate the differences on the graphs.

A member recommended moving ESD-5 forward to encourage State incentives for efficiency improvements.

**ESD -6 – Energy Efficiency for Industrial Applications - *Unanimous approval***

**ESD-7 - Implementation of Small Scale Nuclear - *Moved to Research Needs***

**ESD- 8 – Research and Development for Cold-Climate Renewable Technologies - *Moved to Research Needs***

**ESD-9 – Implementation of Advanced Supply-Side Technologies m- *Moved to Research Needs***

**General Discussion:**

The state has been encouraging the use of more energy efficient equipment for the past 20 years. These actions by the legislature should be included in the Recent Actions section.

## **Transportation and Land Use**

*Reference PowerPoint presentation slides 23-24 for the summary table.*

**TLU-1: Transit, Ride Sharing and Commuter Choice - *Unanimous approval***

No further discussion at this meeting.

**TLU-2: Heavy-Duty Vehicle Idling Regulations and/or Alternatives - *Unanimous approval***

No further discussion at this meeting.

**TLU-3: Transportation System Management - *Unanimous approval***

No further discussion at this meeting.

**TLU:-4: Promote Efficient Development Patterns (Smart Growth) - *Unanimous approval***

No further discussion at this meeting.

**TLU-5: Alternative Fuels - *Unanimous approval***

No further discussion at this meeting.

**TLU-6: VMT and GHG Reduction Goals in Planning - *Unanimous approval***

No further discussion at this meeting.

**TLU-7: On-Road Heavy-Duty Vehicle Efficiency- *Unanimous approval***

No further discussion at this meeting.

**TLU-8: Marine Vessels- consensus for approval, subject to consideration of MAG comments - *Unanimous approval***

No further discussion at this meeting.

**TLU-9: Aviation - *Unanimous approval***

No further discussion at this meeting.

**TLU-10: Alternative Fuels R&D - *Unanimous approval***

No further discussion at this meeting.

**General Discussion:**

It is difficult to reduce GHG emission levels in this sector due to linkage of airline emissions levels with the sales of aviation fuel in Alaska.

There have been no substantial changes to the POD. Rounding corrections in the values are the only changes since the last meeting.

The TLU sector has 35% of the GHG emissions in the state. This value includes aviation emissions largely due to freight at Anchorage airport, Emissions are ‘charged’ where the fuel is purchased. There is no regulatory authority to limit this traffic. Not selling fuel is not an option either.

## **Review of GHG Reduction Charts and Graphs**

*Reference PowerPoint presentation slides 25-27.*

Ken Colburn reviewed the various charts prepared to summarize the results of the quantifications of all options. These charts are based on the values prior to this meeting and will be updated for the Final Report.

The MAG agreed that:

- The Bar Chart will be redrawn as a line segment cost-curve.
- The ‘Alligator jaws’ graph will be retitled “Cumulative 2010-2050 Greenhouse Gas Reduction Potential Alaska Policy Options”
- A second graph will be created that does not include aviation fuel. See TLU sector for detail.
- Similar issues exist for ocean shipping and will be treated in a similar fashion.
- Graphs should focus on inventory items that are controllable by Alaska.

## **Other Presentations to MAG**

### **Lunch Speaker**

**Janet Adair**, *Western Climate Initiative Co-Chair and Special Assistant to Department of Ecology*

*See power point presentation under Meeting 7 documents on website.*

Janet Adair presented information about Washington State’s approach to climate change. This approach is very much like that proposed in CC-6.

Waxman/Markey is structured much like WCI.

In Washington State, what get measured, gets managed. The state's plan includes many aspects: Cap and trade, mandatory reporting, complementary policies (regulatory standards, voluntary actions, incentive-based policies, public/private technology initiatives), Active citizen stakeholder participation, 15% RPS (not counting hydro), utilities incentivized for energy efficiency (smart meters, weatherization, conservation), stringent building standards, strict LEED standards for public buildings. Expect that the current portfolio of actions will get the state halfway there.

WCI members and observers include: Manitoba, Quebec, Ontario, Montana, Utah, NM, CA, AZ, WA, OR – Observers – Nova Scotia, all 6 Mexico border states (Baja CA, Chihuahua, Coahuila, Nuevo Leon, Sonora, Tamaulipas), Saskatchewan, AK, CO, ID, KA, NV, WY. Many of these members have also joined *The Climate Registry*.

## **Sustainability in FedEx**

**Karen Ellis**, *Director, Environmental Management, FedEx Express and MAG Member*

Karen Ellis gave a brief presentation about the efforts by FedEx to promote sustainability in every aspect of its business. Shipping, customer packaging and charitable efforts are all structured with this in mind. Safety is another focus of these efforts and is reflected publicly in its charitable efforts.

Work efforts in line with business needs and expertise.

The goals are:

- Aircraft Emission Reductions – 20% by 2020 (3.7% there)
- Vehicles – Improve fuel efficiency 20% by 2020 (already 14% there)
- Utilities Emissions – lease most of facilities (4,000), so have to work with property owners
- Philanthropy as a percentage -
- Renewable Energy –

Five focus areas for sustainability: Emergency Relief, Education, Child Safety, Environmental Sustainability, Orbis (aircraft converted to hospital for mobile eye surgery and medical training), etc.

Efforts to reduce Aviation Fuel consumption, emission, and provide more payload capacity include replacing Boeing 727's with 757's, and retiring 727's in 10 years. The first of four Boeing 777 will be introduced in 2010, 18% improvement in fuel economy with a 20% increase in payload.

Fuel Sense Initiative has resulted in the elimination of 1.5 hours of engine use per flight, saving an average of 1mm gal/month. The on-board auxiliary power unit is being replaced with ground based energy, which also reduces noise by 72%.

Efforts to analyze the packages that are being carried has resulted in many changes in ground travel. The focus is on Reduce, Replace, Revolutionize to optimize ground routes.

Smaller packages are being shipped, mostly electronics. This means that smaller vehicles can be used. Hybrids of same size can save 42% fuel, but using a smaller vehicle can save

80-90%. There is still a cost barrier due to the lack of manufacturers. Electric vehicles are being used overseas and in dense urban areas.

Solar buildings are used where incentives exist, in Germany and California, for example. Installations have included geothermal, lighting, solar, and green building standards which yield reductions of 40% energy and 60% GHG emissions.

Packaging has also been changed. Packaging is provided free to customers, and is now bleach-free, 100% recycled material, recyclable materials. They are printed with non-solvent based ink. The traditional envelope is made with Tyvek and is sent back to DuPont for recycling.

## **Research Needs Work Group Report Review**

**Douglas Vincent-Lang**, *Chair, Research Needs Work Group*

*See Draft Report under Meeting 7 documents on website.*

The RNWG asks that all comments on the Draft Report be submitted by the end of June.

The MAG and facilitators are asked to review the Mitigation section in particular to ensure consistency with the Mitigation report.

The recommendations included in the report encompass many areas discussed by the MAG:

- Improve local climate models
- Improve baseline assessments and mapping improved research infrastructure
- Improved data integration and sharing
- Multiple level decision making tools
- Adapt legal and policy framework
- Improve outreach and education

The RNWG reviewed all the proposed policy options and added their own recommendations in addition to the MAG recommendations where they felt necessary.

MAG members are encouraged to read the draft report.

Larry Hartig stated that the one major purpose of creating this group was to get all the researchers talking about the research needs to accomplish the goals. A round-table group meets regularly to discuss research needs at the state and federal levels.

## **MAG Final Report Schedule**

*Reference PowerPoint presentation slides 30-31.*

Ken Colburn reviewed the content and schedule for completing the Final Report.

The facilitators will write chapter summaries, and the CCS team will complete all remaining documents. The MAG will review all the documents for accuracy and approve it at the final teleconference.

The report is to be delivered to the Sub-Cabinet on or before August 1 (subsequently changed to August 7 because teleconference needed to be scheduled later than anticipated).

The dates presented on slide 31 are suggested only. Firm dates will be determined in the next few weeks.

The purpose of the teleconference is to verify the report for accuracy, not to revisit issues.

The schedule does not allow for more than one review and teleconference, so all members are asked to read the drafts carefully.

The Sub-Cabinet will receive this report from the MAG, as well as the other three research groups, review it and issue its recommendations. This draft will likely be published in November and made available for public comment.

There may be some reiteration and clarification necessary that will require contact with MAG members throughout this process.

Much of the implementation work depends on actions taken by individuals, corporations, etc. not just government.

One member expressed the need for a brief, cogent explanation at the beginning of the report underscoring the dire situation in which Alaska currently finds itself. Several other members agreed.

## **Next Meeting and Closing Remarks**

Larry Hartig closed the meeting with thanks to the MAG and TWG members and the support staff from the state of Alaska, CCS and the University of Alaska. Certificates for all participants and Technical Work Group facilitators signed by Gov. Palin were presented.

This was a very successful process, with good descriptions of current issues and situations and an excellent documentation of potential actions.

Ken thanked all the members of the MAG and DEC for their work on this project.

There were no comments by the public.



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## MEETING SUMMARY

### Alaska Climate Change Mitigation Advisory Group

#### Meeting #8, July 31, 2009

10:00 AM – 1:00 PM

via teleconference

Alaska Department of Environmental Conservation  
Anchorage, AK

*Meeting 8 was a comment and feedback session on the draft final report. The MAG made no substantive decisions on options and did not review and approve this summary afterward.*

#### **Attendance:**

##### ***Mitigation Advisory Group Members (MAG):***

Larry Hartig, Chair (*in Anchorage*)

Steve Denton (*by phone*)

Jack Hébert (*by phone*)

David Hite (*in Anchorage*)

Kate Lamal (*by phone*)

Greg Peters (*by phone*)

Jim Pfeiffer (*in Anchorage*)

Curt Stoner (*by phone*)

Dan White (*in Anchorage*)

##### ***Alaska Department of Environmental Conservation (DEC):***

Jackie Poston

##### ***Center for Climate Strategies (CCS):***

Brian Rogers, UAF, Co-Facilitator

Ken Colburn, Co-Facilitator

Gloria Flora, Project Coordinator

Katie Pasko, Project Support

Chris James, ESD TWG

Steve Roe, FAW TWG

Fran Sussman, OG TWG

Nancy Tosta, CC TWG

##### ***Alaska Department of Natural Resources (DNR):***

Diane Shellenbaum

##### ***Others:***

Janet Bounds, CVX

Steve Toth, Anchorage School District

## Welcome and Meeting Overview

All documents for the meeting are posted on the [website](#).

Brian Rogers opened the meeting with a roll call attendance. The purpose of the call is to ensure that the work of the MAG is accurately reflected in the Final Report.

## Clarification on Recommendations vs. Options Terminology

Larry Hartig opened the discussion regarding the clarification of using the ‘recommendation’ vs. ‘option’ terminology.

Commissioner Hartig stated that the term recommendation has been used for consistency. This term has been used from the inception of the process to refer to the anticipated final work product of the MAG. He explained that it is clearly understood that the recommendations of the MAG are for further review of these specific areas, versus all the other possibilities to inform the further efforts by the Sub-Cabinet and other groups at the state and local level in Alaska.

Concerns were expressed by several members that the use of the term ‘policy recommendation’ would give too much weight to policy options that require additional research and technology development. This is stated in several places in the Executive Summary, but more will be inserted to address these concerns.

Further review will be undertaken by CCS to ensure that the term ‘policy recommendations’ is clarified, ex. Table EX-4.

There was extensive discussion by MAG members to create a defined explanation of the difference between the terms “recommendations” and “options” and intent of the MAG. During its deliberations, the MAG never discussed specifically assigning the status of 'option' or 'recommendation' to each proposed policy option. This discussion was limited to debate about the use of terms as they pertained to Oil and Gas recommendations. Some MAG members stated that, since this generalized discussion was never held, the same term should be used for all proposed policy options.

Larry stated that the recommendations contained in the MAG report are only a part of the creation of new state policy. This work is an important first step, but only a first step. None of the policy option recommendations in the report would be implemented without extensive further discussion and review. Some of the recommendations in the report are more defined already and might be more easily implemented. Others clearly state that further study is necessary.

He suggested that a box with a paragraph at the beginning of the report could effectively communicate the extent and limitations of the work of the MAG and its recommendations. He crafted draft language for this purpose.

Within the document, similar language will be placed at the start of the Oil and Gas and Energy Supply and Demand Chapters and Appendices to highlight those recommendations needing extensive further work, not the entire continuum of options.

The MAG agreed to this approach without objection.

## **Updates from MAG Meeting #7 Recommendations and Reviewers' Comments**

### **Fossil Fuel Industry and Industrial Fuel Use**

Gloria Flora summarized the resolution of the concern regarding data sources and conflicting data found in the fossil fuel industry. *See pg. EX-5 of Executive Summary for the pie charts in question.*

Diane Shellenbaum, Bob Swenson and Maureen Mullen worked to address this issue. Updated data from different sources is available and, therefore, refinements were made to each sector. Further review and discussion showed that the definitions of the refined data were confusing and overlapping, even in the improved data sources regarding venting, fugitive methane, etc. The new, more accurate, data sources required adjusting the total emissions in both sectors as well. Following Bob Swenson's suggestion, the refined fossil fuel use and industrial fuel use data were combined into one sector.

There were no objections to this change.

### **Oil and Gas Summary Table Completion**

Overlaps had not been addressed in the Oil and Gas Summary Table (*pages EX-19 and 20*) at the last meeting. Scenarios 1 and 2, as outlined during Meeting 7, are now displayed in the quantification chart.

Verify that OG-8 is listed as 'Not Recommended' in all summary tables in Final Report. This information will not be deleted from the Final Report.

The MAG agreed to remove Sector Total line from bottom of table.

### **Descriptions of Climate Change Threats**

A wide range of comments were received from MAG members regarding the descriptive language used in the Executive Summary, which was taken from Appendix A – Administrative Order 238. (*page EX-1 and 2*). Some members want more emphasis; others felt it was too strong.

Additions have been suggested because “the current description does not give sufficient context nor does it adequately capture the range and seriousness of impacts, nor the need for mitigation”. At the last MAG meeting, several members asked that it be clearly noted that societal costs and the cost of inaction were not addressed as well as being clear on the seriousness of the impacts. There was no dissent voiced. Therefore, the report now states that “some members believe the costs of societal impacts and cost of inaction will be high” and includes two references in footnotes. One is a global study on the cost of inaction and the other, a UAA study addressing infrastructure costs due to climate impacts. The Immediate Needs Report and Adaptation Advisory Group Report also reference these issues and will be footnoted. (Ensure that these are referenced)

The Final Report does not specifically reference the MAG acceptance or rejection of threats, impacts or opportunities, as the MAG was not asked to take any position regarding the science underlying climate change. The comments taken from the Administrative Order should be footnoted and a summary of the charge included – “the MAG was not asked to review the science”. The MAG was tasked with coming up with options for potential mitigation of GHG emissions in the State of Alaska, not to take any position on the science of Global Warming. The mitigation report should reflect that.

### **Move Overarching Principles from O&G forward to cover all policies/Rewrite O&G Overarching Principles to be less negative**

There were mixed opinions from MAG members at the last meeting. After carefully review of the Overarching Principles from the Oil and Gas section, it was determined that it was not possible to revise simply to a more positive tone. It would be ill-advised to move them forward to cover all recommendations for the following reasons:

The stated objective of the principles is “maximizing implementation efficiency”, not addressing GHG emissions and, by extension, does not include the expressed concerns of some MAG members for balance, such as recognition of societal benefits and the cost of inaction.

The Principles address impacts but do not address opportunities for present and future benefits.

The Principles are specifically focused on oil and gas industry concerns and would have to be significantly generalized or some dropped as non-germane to other sectors.

Gloria Flora recommended that the Overarching Principles be left in place as a lead-in to the Oil and Gas sections, but not move forward to cover other sectors. There were no objections by the MAG.

### **Transient Aircraft**

A second chart was added (*pages EX-10 and 11*) to the Inventory and Forecast sections to present the baseline emission projections excluding transient aircraft per the MAG’s request.

### **Forest Fires**

An explanation was added to the Executive Summary (*page EX-7*) to describe the complex effects of forest fires on GHG emissions and climate change.

### **MAG and TWG review of Inventory and Forecast**

The Executive Summary (*page EX-2*) states the MAG and TWGs reviewed, discussed, evaluated the inventory and forecast. Neither the MAG nor any of the TWGs reviewed the methodologies of forecasting of GHG emissions. Add language to indicate “The MAG and TWGs have reviewed, specific portions of the inventory pertaining to their sectors. No review of methodology or forecasting was performed.”

## Issues for Resolution and/or Clarification

### Goal Setting

At Meeting #7, June 18, comments from MAG members both supported a numerical, aspirational goal and opposed any numerical goal. The actual vote of the MAG included the following:

- A slim majority (8-6) voted in favor of the MAG proposing that the Sub-Cabinet set an aspirational goal, considering the recommendation provided by the CC TWG.
- Some are concerned that this project report will not achieve the aspirational goal so perhaps the goal is too high. However, it is important to remember that an aspirational goal for the state will require more than just the quantified recommendations in this report and actions by state government to be achieved. It is likely to necessitate citizen action, industry efficiency programs and federal assistance as well as other actions.
- The CC TWG also recommended that, in setting an aspirational goal, the Sub-Cabinet consider the relationship to the IPCC goal to stabilize the atmospheric concentrations of CO<sub>2</sub> at 450 ppm.
- It was also recommended by the CC TWG that the goal work of the Western Climate Initiative be reviewed in relationship to future Alaska goals.
- No specific numeric goal was agreed to by the MAG. It was left to the Sub-Cabinet to set the numeric parameters of an aspirational goal.

Ken Colburn suggested that the CC TWG goals and WCI goals be indicated on the GHG reduction projection graphs as dashed lines. It will be clear in the graphs and associated language that the goals are not MAG goals, but that recommended by the CC TWG.

### “Implementation-Ready” Issue

This issue ties closely to the Recommendation vs. Option issue outlined earlier. There are several references though out the Report, that clearly state many of the recommendations are not implementable without further study, analysis and refinement. It is also stated in the first sentence of the Executive Summary that these are recommendations for the Sub-Cabinet’s consideration and further analysis (see page EX-1). Additional language will be added as per Larry Hartig’s “boxed text” recommendation above.

### Clarification of why the per capita emissions are greater in Alaska (all added):

In response to a number of comments, a section (page EX-5) was added to outline why per capita emissions are so much greater in Alaska compared to the national average. The reasons listed are:

- Greater distance to travel and transport, especially by air.
- Long periods of low light and extreme cold.
- Air traffic originating outside of and stopping in Alaska only for refueling.
- Low overall population.

Alaska’s status as a very large energy exporter should also be noted. While the energy is consumed elsewhere, the emissions associated with the industrial activity required to produce the

energy for export are assessed over the low population of Alaska (Figure EX-2). These figures should also be tracked to be used in the federal debate.

Change the characterization leader to “Major factors contributing to this are:” and include Alaska’s energy production as a key reason.

### **ESD 3- Renewables Costs: concern over why costs are so different than remembered.**

A reviewer expressed concern about the difference of the renewable energy costs from that remembered in prior versions.

Jeremy Fisher provided the explanation that ESD-3 is made up of three components, two cost-effective series of small renewables (more than 100 projects total) and one high-cost large hydroelectric project. The combined cost of ESD-3 has fluctuated as these projects were analyzed and the parameters changed by TWG and MAG input. However, the total NPV has never exceeded several dozen dollars per tCO<sub>2</sub>.

In the first presentation of the results, gross costs and benefits were presented where the gross cost was well over a billion dollars. The column of "total costs" at over one thousand million dollars may have been confusing. The NPV was still much smaller, and the cost per ton of CO<sub>2</sub> was in the tens of dollars, not the thousands.

It should be noted that all of the small renewable energy projects are cost effective, with savings exceeding the cost of the project, and therefore result in a negative cost per ton of CO<sub>2</sub>.

### **ESD Grant Costs and NPV**

A reviewer questioned whether full grant costs, from federal, state, and local entities (tax dollars) as well as NGOs are being accounted to Alaskan citizens. Chris James provided the explanation that the full estimated capital cost of each renewable energy project is included in the ESD analysis, amortized over the expected lifespan of the project. Typically, the grant component is a small fraction of the overall costs (capital or otherwise), targeted towards research and development, or permitting and siting. It is assumed that in most energy infrastructure projects, the R&D and permitting is factored into the capital cost. Therefore, since this analysis counts the entire capital cost, it has already taken into account the money pre-spent by the state (grant monies) as part of the net present value.

Record the fact that the costs were amortized over the life of the project, not forced to end in 2025. The benefits were calculated through 2025 as charged. The MAG agreed to this accounting, and stated the record should simply reflect this change as was done in the Oil and Gas report, capturing the amortization date for each option.

### **Other Issues and Questions**

The MAG agreed to combine all Meeting Summaries as one Appendix to the Final Report.

A review will be taken to remove all non-objective adjectives, such as ‘compelling’, from the Executive Summary.

Concerns were raised about the specific language used in summarizing the MAG action on CC-1. The first sentence will be revised to read “The Mitigation Advisory Group (MAG) has agreed that this effort may be needed, but recommends no action until the status of federal legislation is known.”

### **Final Review of Documents**

The Meeting Summary and all documents revised as a result of this meeting will be posted and distributed to the MAG in less than a week.

Any issues decided at this meeting or earlier meetings of the MAG will not be revisited.

There will not be another meeting of the MAG, thus substantive changes or modifications that would require MAG review cannot be integrated into the report. If typos and errors in factual accuracy are found in these revised documents, please forward those corrections to Gloria Flora and Katie Pasko.

### **Approval of Meeting Summaries**

The summary of Meeting 7 is posted on the website. Members were assured that three sets of notes and a review of the meeting recording were used in creating this summary to ensure the accuracy of decisions and direction of the MAG.