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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	Jack Hébert
Elaine Abraham	David Hite
Steve Colt	Kate Lamal
Jeff Cook	Greg Peters
Brian Davies	Jim Pfeiffer
Steve Denton	Sean Skaling
Karen Ellis	Curt Stoner
Rick Harris	Dan White

Alaska Department of Environmental Conservation (DEC):

Jackie Poston
Sean Lowther
Kolena Momberger

Center for Climate Strategies (CCS):

Brian Rogers, UAF, Co-Facilitator	Brian Gillis, OG TWG
Ken Colburn, Co-Facilitator	Chris James, ESD TWG
Gloria Flora	Dick LaFever, OG, ESD TWG
Katie Pasko	Steve Roe, FAW TWG
Jeff Ang-Olson, TLU TWG	Fran Sussman, OG TWG
Jeremy Fisher, ESD TWG	Nancy Tosta, CC TWG

Alaska Department of Natural Resources (DNR):

Diane Shellenbaum

Others:

Caitlin Higgins for Kate Fey-Phillips	Russ Douglas, OG TWG
Aubrey Bowers for Jamie Spell	David Prouge
John Collagio	

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 CO₂ Fuel Gas at Prudhoe Bay - *Conditionally approved with no objections*

The fuel gas at Prudhoe Bay contains an extremely high level of CO₂ (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 CO₂ 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 CO₂ available is variable between sites. This is a large uncertainty. There is more research necessary to determine the amount of CO₂ 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 CO₂ 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 (MMtCO₂e) 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 (MMtCO₂e) 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 18th 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.