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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.

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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 for30% of total emissions in AK, most from North Slope operations. Of 52mmtCO_2e emissions in AK, 15mmt from oil and gas operations and of that 12 mmt are from the North Slope (gas stream is ~ 12% CO_2)

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. Benfits 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_2, 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_2 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_2 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_2 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_2 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 fell 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 Indentify 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.