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**DRAFT MEETING SUMMARY
ES Policy Working Group (PWG)
Call #5, May 4, 2007, Continued on May 9, 2007**

Attending May 4:

PWG Members and Alternates

Joe Broz	Jack Ihle
Vicki Card	Dag Nummedal
Craig Cox	Tom McKinnon
Michael Dowling	Dianna Orf
Chuck Kutscher	Isaac Silverman
Ron Lehr	Jack Ihle
Brian Moeck	
John Nielsen	
Richard Smart	
Chris Williams	
Kate Zimmerman	

Governmental agency liaisons: Lori Bird, Maury Wolfson

Rocky Mountain Climate Organization: Stephen Saunders

Center for Climate Strategies: Ezra Hausman, Alice Napoleon, Ken Colburn

Members of the public: none

Attending May 9:

PWG Members and Alternates

Joe Broz	John Nielsen
Vicki Card	Dag Nummedal
Craig Cox	Dianna Orf
Michael Dowling	Isaac Silverman
Jack Ihle	Richard Smart
Tom McKinnon	
Brian Moeck	

Governmental agency liaisons: Elizabeth Brown, NREL

Rocky Mountain Climate Organization: Tom Easley, Stephen Saunders

Center for Climate Strategies: Ezra Hausman

Members of the public: none

May 4 Summary

Agenda Item #1: Introductions and Roll Call.

Agenda Item #2: Review and approval of draft notes from Policy Work Group (PWG) Meeting #4

The summary of Call #4 was approved by the PWG.

Agenda Item #3: GHG Forecast Issue: Coal to Gas Ratio

At the April 19 PWG meeting, there was some discussion on the coal/gas split assumed in the forecast, 75%/25%. This has not been resolved. (*See below for resolution at May 9 meeting.*) Ezra and John Neilson agreed to look into this matter and provide a recommendation prior to the May 22 CAP meeting.

Agenda Item #4: Review of Issues from Previous Day's CAP Meeting

Ezra Hausman described the changes the Climate Action Panel (CAP) made to the ES policy proposals. They are:

- R&D element was dropped from Option ES-1, because of redundancy with ES-9.
- Option ES-7 was renamed “Carbon Transportation and Storage” infrastructure (instead of “Capture”)
- Option ES-8, Pricing and Rates, is being merged into RCI-7 and removed from the ES list.
- A policy option was added: Efficiency standards for new generation, and for units over 60 years old. John Neilson agreed to take the lead on this option.

Agenda Item #5: Discussion/Development of Policy Option Straw Proposals

Ezra described the goal for the meeting, which is to settle on mitigation option descriptions and text on option design, the first two sections of the mitigation option template.

ES-1 – several participants felt that ES-1 should be complimentary to ES-2. That is, it should promote technologies that are not targeted by, or produced as a result of, a revised RPS pursuant to ES-2. It was noted that the supply vs. demand side measures should be kept distinct, because supply is sold into the market.

- Goals discussed:
 - Maximum technical or economic potential
 - Maximize development of renewable energy sources while preserving reliability. A smart grid may be an important component here.

- Levels that would work towards goal of avoiding dangerous climate change (there was no suggestion of how much ES-1 or ES-2 should contribute towards this goal)
- Implementation: This option should take the form of a tax incentive or rebate payment for technologies that have high capital costs.

ES-2 – should use a portfolio approach to encourage a diverse set of resources, including minimum amounts of Concentrating Solar Power (CSP) with storage, geothermal, biomass, small hydro, and solar.

- Goals: 35% of total energy renewables no more than 85% of this from “big wind” For analysis:
 - __2__ % of 35% solar
 - __5__ % of 35% CSP
 - __2__ % of 35% geothermal
 - __4__ % of 35% small hydro
 - __2__ % of 35% biomass
- Timing: 2020
- Coverage: State wide

ES-3 – it was suggested that this option focus on site-specific renewable resources, including wind and CSP.

- Goals: build & upgrade transmission in support of ES-1 and ES-2; alternately, adopt WGA goals
- Timing: 50% by 2013, 50% by 2020 (upgrades take ~3 years to complete; new transmission facilities/lines take longer)
- Coverage: not established
- Other: It will be important to show that additional transmission cost is small relative to overall customer bill (~10% of total)

ES-4 – Carbon tax:

- Goals: a revenue neutral carbon tax in Colorado – start with \$30/ton CO₂. Alternately, establish the target for CO₂ reductions and work backwards—what level of tax would achieve that target? (reference to \$27/ton-CO₂ from MIT study)
- Timing: not established
- Coverage of parties: a comprehensive approach (covering all sectors) was discussed.

ES-4 – Cap & trade: participants noted the challenges for analyzing the costs of a cap & trade program. Costs for a state or regional program would be higher than for a national system, holding other things equal. The analysis conducted for California is not applicable to Colorado, because these states differ too much in terms of transmission.

- Goals: CO should join the 5-state program. Alternately, CO can advocate for national legislation and/or regulation, although concern was expressed that this option was too passive.
- Timing: the details on the 5-state program have not been worked out.
- Coverage: the details on the 5-state program have not been worked out.

It was emphasized that this is an iterative process. The goals, timing, and coverage of parties that the PWG suggests are not final.

Agenda Item #6: Next Steps for the PWG

Because not all policy options had been discussed, it was agreed to reconvene on Wednesday, May 9, for an all-afternoon in-person meeting to continue this discussion.

Agenda Item #8: Public Input and Announcements.

None.

May 9 Summary

Agenda Item #1: Introductions and Roll Call.

Group participants were emailed files in preparation for the meeting. Ezra Hausman explained that this meeting was scheduled to follow up on Meeting #5 on May 4, 2007, in order to complete work on priority policy option description and design. A PWG member asked what the process would be to formulate the actual policy wording. Ezra and Stephen Saunders confirmed that the analyses for each option will assume that the actions described will be analyzed as if they were mandatory (i.e., we will assume that the goals are met.) Following completion of the analyses, the PWG will be able to consider, in an iterative process that includes interaction with the CAP, whether the goals should be changed and if they should be mandatory or not.

Agenda Item #2: Colorado GHG Forecast Issue: Update on Coal to Gas Ratio

PWG members had agreed to investigate whether the coal/gas split for power production assumed in the forecast, 75%/25%, was appropriate. John Nielsen presented an analysis he had done, and concluded that the 75%/25% split did appear to be appropriate. A question arose as to whether the Comanche 3 power plant was included in the original forecast, since it also appeared in Nielsen's analysis. Ezra agreed to investigate and make a recommendation on what the final assumption should be on the split. (*Conclusion: Comanche 3 is included in the forecast, so we will retain 75/25 gas/oil ratio.*)

Agenda Item #3: Discussion/Development of Policy Option Straw Proposals

The discussion began with policy options that had not been discussed at the May 4 PWG meeting.

- **ES-5 Public Benefit Charge Funds**
The group discussed whether the funds raised should be directed towards efficiency or renewable energy projects, or both, and concluded that since efficiency projects are included in the RCI DSM (RCI-1) policy option, then ES-5 should focus on renewable energy projects that yield the "best bang for the buck." It was suggested that a report at www.CESA.org be consulted for best bang for the buck analyses of investments in renewable sources. The group discussed whether the 4 mill/kWh per capital surcharge on utility bills proposed in the straw proposal is the appropriate amount, and decided to retain it for analysis purposes, and then to revisit the topic after the analysis is completed.
- **ES-6 Incentives for CHP, DG, Smart Grid**
The group decided the goal for ramping up percentage of CHP/DG relative to total fossil fuel generation would be more realistic and achievable at 2% by 2020, rather than the 3% in the straw proposal. The group also determined that the incentive amount should be split 50/50 between CHP and small DG applications.

- **ES-7 Carbon Transport & Storage Infrastructure**
In the goal statement, the group decided to reword it as “. . . analyze options for regional CO₂ transportation and sequestration collaboration (rather than development). It was agreed that it is not practical to analyze the cost or GHG reduction potential for this option. It is, though, important to provide a sense of the potential by providing estimates of the total capacity for sequestration (total and annual) to the extent that these data are available, and to discuss potential environmental issues associated with sequestration. Dag Nummedal agreed to provide a copy of a School of Mines report on capacity and will draft a statement about the environmental issues.

The group also discussed reasonable target timing dates for this option, as well as all of the other ES options. It was determined that in most cases, 2009 is the earliest attainable date for action, unless an option lends itself to more immediate action. For this option, the target date was changed from 2008 to as soon as possible.

- **ES-8 Pricing and Rates**
No longer an ES option, per May 3 CAP decision, since it is included in RCI priority options.
- **ES-9 R&D for DG & Renewables, Advanced Fossil Fuel**
The group discussed if including Advanced Fossil Fuel in this option is redundant with the coverage in ES-10. It was also pointed out that SB 246, just passed by the state legislature, provides funding for renewables and efficiency R&D. The group decided that the goal should be focused on R&D for carbon emissions reduction technology, rather than on any particular category. It was acknowledged that this option will be difficult to analyze for costs and GHG reductions.
- **ES-10 Promote Advanced Fossil Fuel Generation with Carbon Capture, Including IGCC**
Jack Ihle and other PWG members explained that this option is somewhat covered by existing legislation that already directs the PUC to consider approval of an IGCC plant, and to waive some of its rules on seeking least cost production. The group decided to add to the policy description several items:
 - Direct PUC to re-evaluate rules for demonstration projects and technology commercialization.
 - Involve the state’s research universities.
 - Broaden policy to include advanced technologies, not just IGCC.
 The group also acknowledged that this option will be difficult to analyze for costs and GHG reductions.
- **ES-11 Small New Hydro and Efficiency Improvements at Existing Hydro**
The group added several items to this option:
 - Change title to Small New Hydro and Efficiency Improvements at Existing Hydro, Identifying Other Small Renewables, and Removing Barriers Thereto.

- Split goals into 11(a), begin with statewide mapping of unexploited potential for geothermal, hydro, and biomass. This effort should expand the less rigorous mapping that is included in SB 91 passed this last legislative session.
 - Goal 11(b) is hydro-specific. Assuming an average capacity factor of 35%, add 300-500 mW of hydro power by 2020. Timing is to read starting in 2018, to account for the lead time for evaluation, then FERC approval. Consider handing over FERC oversight to the state in order to streamline permitting. Permitting should include environmental certification, based on models DOE already has in place.
- ES-12 Nuclear Energy
The group again discussed the difficulty of estimating the costs for this option. The description of the analysis was changed to strike the straw proposal language of setting a minimum price and maximum benefit for comparison purposes, and substitute instead setting a reasonable price supported by the literature.
 - ES-13 Efficiency Improvements for Existing Generators (Includes Heat Recovery)
Some group members felt that the straw proposal goal of raising the average fuel intensity by 2% per year for 10 years was unrealistically ambitious, but acknowledged there are significant savings that can be accomplished. The group also pointed out that New Source Review (NSR) regulations could raise the cost of meeting this goal. Jack Ihle and Brian Moeck agreed to consult with their resource people about a less ambitious goal, but one that is not low-balled. The goal was changed to read “Decrease the average heat rate by x% per year by 2020 relative to 2006. For the analysis, assume that the costs do not include additional costs associated with NSR regulations, if applicable.
 - ES-14 Oil and Gas Operations
The group discussed several challenges inherent in setting goals for this option. Most of the reduction potential lies in methane reduction from condensate storage tanks at the well site. The most effective methane reduction depends on electric power sources, but in many locations, an electricity source is not practical, forcing the less efficient gas power source. Since past regulation has been VOC-based, it is difficult to calculate the methane emissions and reduction potential. The group decided to use, for analysis purposes, a goal of 35% reduction in GHG emissions relative to unit of production. Ezra may change the 35% goal if the literature analyses are based on another number.
 - ES-15 Efficiency Standards for New Generators
The group decided to change the option title to CO₂ Emissions for Power Plants in order to make it more explicit. The goal was also made more explicit by changing it to: Establish a power plant carbon dioxide emission standard of 1100 pounds per MWh for non-peaking plants (peaking is CF less than 10%). The standard applies to new power sold in the state, or to plants at least 60 years old.

Agenda Item #4: Development of Previously Discussed Policy Option Straw Proposals

The PWG next reviewed and reconsidered the four options that had been discussed at the May 4 meeting.

- **ES-1 Renewable Energy Incentives including Waste to Energy**
It was pointed out that feed-in tariffs might not be the best incentive, and that they are fading away in Europe and other places. The group decided to substitute tax incentives for feed-in tariffs in the goal statement, and to link the statement to meeting the goals in ES-2. The timing was changed to 2009 from 2008.
- **ES-2 Mandated Portfolio Standards**
The group discussed whether 35% of total energy by renewables is realistically attainable by 2020, pointing out that the effect of that standard would mean that the specified 85% share for “big wind” would be the equivalent of current fossil fuel generating capacity in-state. The goal was changed to 30% instead. For the analyses, the mix of contributions from solar, CSP, geothermal, small hydro, and biomass was changed to 3% each, with the assumption that you can trade each attribute in-state.

In addition, an ES-2(a) goal was added, to read Clean Energy Portfolio Standard. The intent is to analyze Xcel’s proposal for a Clean Energy Portfolio Standard, adapting the nationwide analysis methodology to Colorado only.

- **ES-3 Transmission Infrastructure for Renewables**
A PWG member suggested that the goal be made more explicit in requiring collaboration between renewable power developers and utilities in power line location needs. Others suggested that since Xcel has produced resource zone mapping in preparation for a PUC filing later this year, those maps could be used to make assumptions about location, capacity, and length of new power lines. Brian Moeck agreed to provide the Xcel maps. The group decided to defer a decision on whether required collaboration will be included in the policy option. In the analysis, use the identified large wind source areas, estimate the cost of transmission using the RPS standards from ES-2.
- **ES-4 Cost for CO2 Emissions (C&T or tax)**
The group decided it is inappropriate to make assumptions on the advantages of a carbon tax or cap & trade, relative to a \$30 per ton cost. Instead, the analysis should focus on a literature review, looking at the spectrum of conclusions about the relationship between costs and GHG reductions.

Agenda Item #5: Approval of Goals, Timing, and Coverage of Parties for ES-1 through ES-15

The group gave unanimous approval to the revised straw proposals. Ezra will write them up and circulate for review among CAP members prior to submission to the CAP prior to its May 22 meeting.

Agenda Item #6: Next Steps for CAP, PWG

At its next meeting on May 22, the CAP will review the work submitted by the PWGs on proposed priority policy options description and design for further analysis. The CAP may elect to make changes before approving the content of the proposed priority options for further analysis. At its next meeting, the PWG the group will review the CAP's actions and move on to the analysis phase.

Agenda Item #7: Agenda, Time and Date for Next Meeting

To be announced

Agenda Item #7: Public Input and Announcements.

None.