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**MEETING SUMMARY  
MINNESOTA CLIMATE ACTION PLAN TECHNICAL WORK GROUP**

Energy Supply TWG Meeting #13 Summary  
December 21, 2007, 11:00am-3:00pm  
*Prepared by Linda Lambeck and Bill Dougherty*

The meeting was called to order by Bill Dougherty a few minutes after 8:00 am.

**In attendance were the following TWG Members:**

- Bascom, D. - Global Green Energy, LLC
- Boise, -
- Freese, B. - UCS
- Grant, B. - IWL
- Hamilton, J. Drake - FE
- Jagush, B. – MoraPU
- MacFarlane, C. – OTP (called in)
- McMillan, D. – AlleteMP (Cashin, M. attending)
- Polaksy, S. – UofM
- Robertson, M. - Chamber
- Sparby, D. – Xcel – (Jim Turnure attending)
- Stone, D. – Excelsior Energy
- Sullivan, J.- (called in)
- Turner, J – Xcel

**From MN state staff, the following were in attendance:**

- Thorton, D.-
- Marya White-DOC
- Linda Limback - DOC
- Peter Ciborowski
- Edward Garvey

**From the Public, the following were in attendance:**

- Stacey Fugii - GRE

**From CCS staff, the following were in attendance:**

- Bill Dougherty – Stockholm Environment Institute – US Center

**TWG members not in attendance were:**

- Ambrose, B. - GRE

- Anderson, L. - Wooddale Church
- Goodwald, G. – Gerdau Ameristeel
- Heaney, B. – IBEW
- Jones, B. - EJAM
- Marchessault, J. - Business Card
- Olsen, E. – GRE
- Steger, W. – Ely
- Wachtler, J. – Barr Eng.

The background documents used as the basis for the discussions were posted on the website in advance of the meeting. Unless otherwise noted, this includes the following documents:

- Meeting Notice and Agenda
- Summary of the 12/14/07 meeting
- Powerpoint Presentation for meeting (note: not posted; using presentation from 11/28)
- Analysis spreadsheets for each of the priority options (note: not posted; a new version of these spreadsheets will be distributed to TWG members individually)

Bill Dougherty had the documents available in electronic format on site for those attending on the call to view. Bill Dougherty described the contents of the documents during his presentation so that the data was orally available to conference attendees without access to the documents.

The agenda for the meeting is as follows:

1. Call to order
2. Roll Call of TWG members and public
3. Review and approval of meeting summary for TWG meeting #12 (December 14, 2007) (on web)
4. Old business (review of selected input assumptions)
5. New business (review of standalone mitigation option results)
6. Call to the public
7. Proposed agenda items for next meeting
8. Announcements

Bill Dougherty called the meeting to order and took the roll call (as summarized above). The notes from meeting summary #12 were accepted with no changes. This meeting is a continued discussion of materials that this TWG has been going through for the past few of weeks.

## **REVIEW: COST & PERFORMANCE INPUT ASSUMPTIONS**

### ***Overnight costs***

The current analysis just includes transmission costs for wind while the TWG suggested that transmission upgrades would be needed for any type of electric generation and costs should get be added for all fuel types accordingly. It is, however, a reasonable assumption that capital transmission cost for wind may be a bit higher than for other sources. The TWG decided keep the \$80 transmission cost for wind until revised prices come in from TWG members.

### ***Natural gas price projections***

Current prices are not dependent on regulation; rather they are from the SAIC baseline. These

reference case scenarios will be used in the reference cases. The mitigation case for natural gas projection would be different. After the suggestion to use the same source for both the reference and mitigation case, TWG debated which source was most reliable. For the time being, it was agreed to take the midpoint between the LBL and SAIC lines.

***Effect of backing down existing resources***

Current reference case reflects backing down coal as new the RES comes into effect, however after discussion MN's coal fleet will be unaffected by the RES; natural gas or existing coal imports are more likely affected as renewable incrementally come online.

***Electricity sales***

Given three different trajectories of growth, 1) 12/6 TWG .5% growth rate decision; 2) Updated assumption of a 2.4% ten year historical, then about 0.9% growth rate; 3) Xcel 2007 Resource Plan of 1.2% growth rate. TWG consensus was to use the second line and those taking issue with the decision would email Bill D.

**REVIEW: STANDALONE MITIGATION OPTION RESULTS**

***ES1 (General Performance Standard)***

Performance standard will affect imports. Reference case 1 includes the RES, CIP and all planned additions while Reference case 3 includes the CIP, RES and not the planned coal. The large negative costs are avoided costs from power plant. If replacement power is needed, then this number will go up. With the new growth rate, these numbers will change.

***ES3 (Plant modifications & improvements)***

Biomass represents 8% of the fuel combusted in MN annually at pulverized coal facilities. This is currently modeled, starting in 2013, with a 5-year ramp up period. Since the physical ability to move it thru the plants at 8% becomes a transportation issue, Bill will revisit biomass and fuel supply sources prices and then if MN has to import it, take that into account.

***ES4 (Upgrading the T&D system)***

Several studies have published proposals for reducing losses in electric T&D systems. Current analysis prices 1% efficiency upgrade at \$40,000,000,000, members felt this was too high and were interested in the carbon reduction and cost implications of an upgrade so TWG members will relay thoughts on this to Bill D.

***ES5 (Renewable energy standard)***

Because the RES causes something to leave the system, discussion surrounded the order in which different sources will be backed down from the grid and the associated cost implications. The default is to first displace new coal, and then existing coal and natural gas.

***ES-6 (nuclear power)***

We assume nuclear coming online in 2020 displaces coal, and the costs of carbon saved would be in the \$50 - \$60 range. That figure was contentious within the TWG, as well as the timing. The TWG agreed to put the nuclear plant in after 2025, and since it is more in the \$50/ton cost range, it is unlikely to be the most cost-effective means to reduce carbon emissions.

***ES-8 (Carbon Capture and Storage and/or Reuse Policies)***

An MIT study talks about building Advanced Fossil Fuel technology facilities, and then going back and capturing the carbon when that technology comes on line. The study also cites a large efficiency loss when retrofitting a plant with carbon capture and storage capabilities, so although it was suggested to include in the analysis, the TWG decided to analyze a 500 MW existing coal facilities and a new pulverized coal facility to update coal costs using the MIT study (in comparison with the UCS study).

**SCHEDULE**

- 1) The next TWG meeting is still being decided, though Jan 3 or 4<sup>th</sup> was suggested.
- 2) The next MCCAG meeting is Jan 10 all day and Jan 24 all day

**PUBLIC COMMENTS:**

There were no public comments.

**ANNOUNCEMENTS:**

There were no announcements.