MEMORANDUM

To: Minnesota Energy Supply Technical Working Group

From: Bill Dougherty

CC: Ed Garvey, David Thornton, Randy Strait, Tom Peterson

Re: Notes for "Overview of Issues & Assumptions for Developing the Minnesota GHG Forecast"

Date: October 8, 2007

As promised during the Meeting/Teleconference Call #5 of Energy Supply TWG of August 23rd, two files are being provided regarding the key elements and questions regarding the revision of the GHG emissions forecast for the energy supply sector in Minnesota, as follows:

- The file entitled "MN ES GHG Forecast-8 October 2007.pdf" which contains an overview of the key issues & assumptions for developing the Minnesota GHG forecast and which require the TWG's input for finalization.
- This current file entitled "MN ES GHG Forecast Notes-8 October 2007.pdf" which contains a set of notes that accompany the above file.

Slide #	Note
1	None
2	None
3	None
4	A "bottom-up" forecast relies on a detailed characterization of MN electric power sector expansion, as well as the utility systems located outside MN from which power will be imported into MN. A fundamental premise of preparing this type of forecast is that both in-state and out-of-state electric expansion information can be readily obtained.
5	None
6	None
7	None
8	None
9	None
10	The 2005 retail electricity sales is an historical value obtained from the state energy profile for MN (available at http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf),
11	These data are based on a review of Certificate of Need Applications available from the MN Public Utilities Commission (PUC) website (http://www.puc.state.mn.us). Note that 2020 is the last year for which estimates are available.

Slide #	Note
12	None
13	MAPP = Mid-Continent Area Power Pool
14	None
15	None
16	Source: Form EIA-906 (avialable at http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html)
17	None
18	T&D = transmission and distribution
19	Source: AEO2007 outputs (available from http://www.eia.doe.gov/oiaf/aeo/supplement/index.html)
20	None
21	None
22	None
23	None
24	None
25	Source: AEO2007 outputs (available from http://www.eia.doe.gov/oiaf/aeo/supplement/index.html)
26	None
27	The 2005 nameplate capacity is an historical value obtained from the EIA (available at http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html)
28	The 2005 net generation values are historical values obtained from the EIA (available at http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html)
29	None
30	AEO2007 outputs are available from http://www.eia.doe.gov/oiaf/aeo/supplement/index.html
31	Based on the Annual Energy Outlook for 2007. Net capacity additions for natural gas (i.e., 2,438 MW) consist of 25% combined cycle (i.e., 600 MW) and 75% combustion turbine units (i.e., 1,838 MW). Note that AEO2007 outputs do not specify fuel type for combined cycle or combustion turbine units. For the purposes of this estimate, they are considered to be natural gas-fired.
32	based on the Annual Energy Outlook for 2007.
33	Data based on Form EIA-860 (available at http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf).
34	None
35	The results are benchmarked to the control gross generation level in 2025 (i.e., 70,634 GWh) and assume capacity factors of 75% for new coal and natural gas capacity and 29% for other renewable capacity.
36	H2 = hydrogen; LFG = landfill gas; RDF = refuse derived fuel; MSW = municipal solid waste; The results are benchmarked to the control gross generation level in 2025 (i.e., 70,634 GWh) and assume capacity factors for the 2006-2010 period of 75% for new coal and natural gas capacity and 29% for other renewable capacity. For the 2011-2025 period, the results assume that half of the new capacity is intermittent wind with a capacity factor of 29% and the balance biomass-fired with a capacity factor of 75%.
37	None
38	Data based on Form EIA-860 (available at http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf).
39	Data based on Form EIA-906 (available at http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf).
40	None
41	MAPP values based on the Annual Energy Outlook for 2007.

Slide #	Note
42	based on the Annual Energy Outlook for 2007.
43	None
44	None
45	None
46	None
47	The 2005 energy use values are historical values obtained from the EIA (available at http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html)
48	None
49	None
50	The 2005 energy use values are historical values obtained from Form EIA-906/920 monthly time series data
51	None
52	None
53	None
54	None
55	None
56	None
57	None
58	None
59	None
60	None
61	None