Supplemental Statement of David A. Schlissel
January 24, 2008

I would like to start by thanking the Judges for allowing me this opportunity to respond to new Applicant testimony. I would like to make the following points.

1. We have not have an opportunity to review any of Mr. Hewson's workpapers and we only received some of Mr. Sansom's workpapers Monday afternoon when I already was on an airplane for work travel.

2. THE LIEBERMAN-WARNER BILL – Mr. Hewson's analysis is wrong and misleading. Yes, the proposed legislation, as currently written, would allocate some allowances to new plants. However, there would only be fixed pool of allowances for both new and existing plants. Whatever allowances would be allocated to new entrants like Big Stone II would not be available for existing plants.

   This will be a significant loss to the Applicants who already are heavily dependent on coal-fired generation and will likely lead to very significant costs as the Applicants have to buy allowances to cover generation at their existing facilities. Thus, there may be no net gain of allowances allocated to the Applicants – allowances allocated to Big Stone II might otherwise have been available to the Applicants for their existing generation.

   So there is a triple uncertainty – First, will be bill be approved and signed into law as currently written? Second, how many new plants will there be that will be in the new entrant pool with first access to the limited number of emissions allowances that will be available each year? The more new plants in the new entrants pool, the fewer allowances will be available to Big Stone II. Third, how many allowances will each Applicant consequently have to buy to cover their existing generation because new plants like Big Stone II received free allowances?

Finally, none of the other proposed climate change bills in Congress would allow significant numbers of free allowances to new coal-fired power plants coming on line in the future without carbon capture and sequestration technology.

As a result, there is no reason to assume that the Applicants will receive a significant number of free allowances as a result of their participation in the Big Stone II project that they will not otherwise receive for their existing coal-fired power plants.

2. OFFSETS – Mr. Hewson is right that the bills currently in Congress include domestic and international offsets to differing degrees. However, these offsets are limited and are likely to be phased out over time.

Mr. Hewson mentions that according to EPA studies, more than 100 million tons of qualifying carbon dioxide emission offset credits can be created at estimated costs of less than $5/ton CO2e. This sounds like a lot but isn't. These allowances are likely to be consumed in the first few years of a cap-and-trade program when electric and industrial parties are required to reduce their CO_2 emissions by hundreds of millions of tons per year.

Moreover, we considered the potential for offsets when we developed our Synapse CO_2 price forecasts. Without offsets, our CO_2 prices would be higher than they current are.

3. NATURAL GAS PRICES – Mr. Greig has increased the natural gas commodity prices in his new levelized busbar analyses by 17 percent, on average, in every year in the cases where he used the Minnesota Commission's $30/ton CO_2 price. However, there is no evidence to support the conclusion that CO_2 regulation would have this significant of an impact. I used to believe that it might, then I decided to look at the evidence.

Mr. Sansom has discussed three cases from the EIA's January 2008 Analysis of Senate Bill S. 1766, the current Bingaman-Specter Bill. Table 1 and Figure 1 below present the natural gas prices calculated by the EIA for each of these cases.

Figure 1: Natural Gas Prices – S. 1766 Reference, Core and Limited Alternative Cases

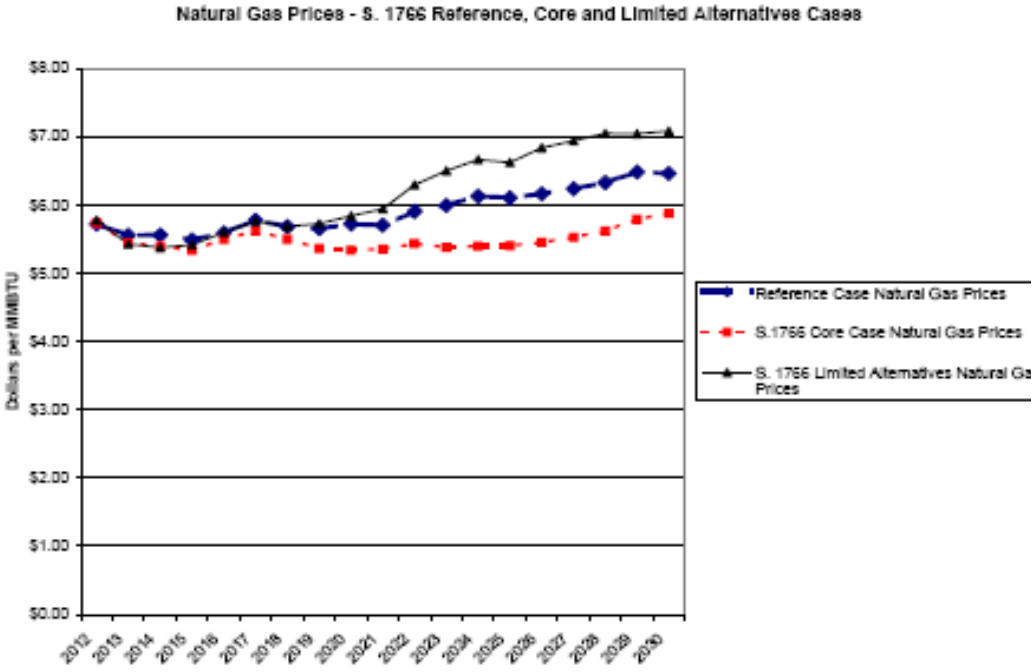

Table 1: Natural Gas Prices – S. 1766 Reference, Core and Limited Alternative Cases

EIA Analysis of S. 1766 Reference, Core and Limited Alternatives Cases

	Reference Case Natural Gas Prices	S.1766 Core Case Natural Gas Prices	Difference Between Core and Reference Case Prices	S. 1766 Limited Alternatives Natural Gas Prices	Difference Between Limited Alternatives and Reference Case Prices
Column 1	Column 2	Column 3	Colmn 4	Column 5	Column 6
2012	5.72	5.74	0.3%	5.78	0.9%
2013	5.56	5.45	-2.0%	5.43	-2.3%
2014	5.56	5.40	-2.9%	5.38	-3.3%
2015	5.49	5.34	-2.7%	5.42	-1.3%
2016	5.59	5.50	-1.7%	5.60	0.1%
2017	5.78	5.62	-2.8%	5.76	-0.3%
2018	5.68	5.50	-3.2%	5.69	0.1%
2019	5.66	5.37	-5.1%	5.73	1.3%
2020	5.72	5.34	-6.7%	5.84	2.1%
2021	5.71	5.36	-6.1%	5.94	4.2%
2022	5.91	5.44	-8.0%	6.30	6.6%
2023	6.00	5.38	-10.3%	6.50	8.4%
2024	6.13	5.40	-11.9%	6.67	8.8%
2025	6.11	5.41	-11.5%	6.63	8.4%
2026	6.17	5.46	-11.5%	6.84	10.9%
2027	6.24	5.53	-11.4%	6.94	11.2%
2028	6.33	5.62	-11.2%	7.05	11.4%
2029	6.49	5.79	-10.7%	7.05	8.6%
2030	6.46	5.88	-9.1%	7.09	9.6%

Thus, natural gas prices are calculated to lower in the Core Case than in the Reference, "business-as-usual" scenario. The Core Case is described as being closest to the provisions in the Bingaman-Specter Bill as it was introduced in the Senate. Even in the Limited Alternatives Case, discussed by Mr. Sansom, natural gas prices are sometimes lower than or relatively the same as the reference case natural gas prices. The natural gas prices in the Limited Alternatives Case never become 17 percent higher in any year, let alone in every year, as Mr. Greig's new analyses with a $30/ton CO_2 price reflect.

Mr. Sansom also discussed certain scenarios in the EIA's Analysis of Senate Bill 280, the current McCain-Lieberman bill. The natural gas prices in each of the cases examined by the EIA are presented in Table 2 below. The two cases that are most restrictive of the non-natural gas alternatives are the three most right-hand cases listed in Table 2. These cases, named "RefNB + No CCS" and "RefNBLNG + No CCS" restrict the availability of nuclear, biomass, coal with carbon capture and sequestration and LNG. These are the cases in which the pressure on natural gas prices should be the highest.

Table 2: Natural Gas Prices – EIA Analysis of S. 280

EIA Analysis of S. 280 Natural Gas Prices

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12	Column 13	Column 14	Column 15	Column 16
	S. 280 Base Case	S.280 Core Policy	S.280 Core Policy % Change from Base Case	Fixed 30% Offsets	Fixed 30% Offsets % Change from Base Case	Unlimited Offsets	Unlimited Offsets % Change from Base Case	No Int'l Offsets	No Int'l Offsets % Change from Base Case	RefNB	RefNB % Change from Base Case	RefNB + No CCS	RefNB + No CCS % Change from Base Case	REFNBLNG+ No CCS	REFNBLNG+ No CCS % Change from Base Case
2012	5.71	5.72	0.2%	5.65	-0.9%	5.69	-0.2%	5.74	0.6%	5.65	-1.0%	5.65	-0.01	5.70	-0.2%
2013	5.56	5.44	-2.2%	5.39	-3.1%	5.46	-1.8%	5.43	-2.4%	5.44	-2.2%	5.45	-0.02	5.42	-2.5%
2014	5.55	5.45	-1.8%	5.39	-2.8%	5.42	-2.2%	5.32	-4.1%	5.60	1.0%	5.43	-0.02	5.77	4.1%
2015	5.50	5.35	-2.8%	5.39	-2.1%	5.43	-1.3%	5.35	-2.7%	5.50	-0.1%	5.74	0.04	5.68	3.2%
2016	5.60	5.44	-2.8%	5.47	-2.2%	5.55	-0.8%	5.37	-4.1%	5.58	-0.3%	5.75	0.03	5.73	2.3%
2017	5.81	5.58	-4.0%	5.64	-2.9%	5.70	-1.9%	5.44	-6.4%	5.76	-1.0%	5.89	0.01	5.89	1.3%
2018	5.72	5.49	-4.0%	5.53	-3.2%	5.61	-1.9%	5.36	-6.3%	5.69	-0.4%	5.88	0.03	5.84	2.2%
2019	5.65	5.47	-3.1%	5.49	-2.8%	5.56	-1.5%	5.31	-6.0%	5.69	0.8%	5.87	0.04	5.83	3.3%
2020	5.71	5.46	-4.3%	5.57	-2.4%	5.62	-1.6%	5.45	-4.6%	5.72	0.2%	5.79	0.01	5.81	1.8%
2021	5.75	5.51	-4.2%	5.68	-1.3%	5.66	-1.6%	5.55	-3.4%	5.74	-0.2%	5.86	0.02	6.02	4.6%
2022	5.90	5.67	-3.9%	5.87	-0.6%	5.75	-2.5%	5.62	-4.8%	5.94	0.7%	6.05	0.03	6.17	4.5%
2023	6.01	5.79	-3.7%	5.96	-0.8%	5.79	-3.6%	5.63	-6.3%	6.12	1.9%	6.29	0.05	6.38	6.1%
2024	6.14	5.83	-5.0%	6.16	0.4%	5.94	-3.2%	5.65	-8.0%	6.24	1.6%	6.51	0.06	6.60	7.5%
2025	6.13	5.93	-3.3%	6.22	1.5%	6.05	-1.2%	5.77	-5.9%	6.08	-0.8%	6.51	0.06	6.65	8.5%
2026	6.14	5.99	-2.4%	6.28	2.3%	6.15	0.1%	5.92	-3.6%	6.33	3.2%	6.67	0.09	6.89	12.3%
2027	6.26	6.03	-3.7%	6.41	2.4%	6.16	-1.5%	6.14	-1.8%	6.48	3.6%	6.84	0.09	7.07	12.9%
2028	6.35	6.00	-5.6%	6.42	1.1%	6.13	-3.5%	6.19	-2.5%	6.51	2.6%	6.98	0.10	7.15	12.6%
2029	6.46	6.00	-7.0%	6.40	-0.9%	6.17	-4.5%	6.02	-6.7%	6.70	3.7%	7.13	0.10	7.29	12.9%
2030	6.44	6.12	-5.0%	6.35	-1.4%	6.19	-3.9%	6.07	-5.7%	6.73	4.6%	7.17	0.11	7.55	17.3%

Thus, even in the most restrictive cases examined by the EIA, natural gas prices only become 10 percent higher in 2026. This analysis also does not support the assumption that natural gas prices will be 17 percent higher, on average, in every year.

Moreover, to be conservative, when we reran some scenarios for CMMPA and MRES with the Strategist model, we did increase natural gas price as a result of our Synapse Mid and High CO_2 price forecasts. However, we didn't not apply a flat percentage increase to natural gas prices in every year. We ramped up the percentage increase in natural gas prices as the CO_2 prices increased.

4. ANSWER TO DR. RAKOW'S REQUEST – Dr. Rakow from the DOC has asked that I comment on whether the coal plant cancellations I discuss in my Supplemental Testimony can be expected to have an impact on the competition for power plant design and construction resources, commodities, equipment and availability of EPC firms. My answer is that there might be some impact but the significant domestic and worldwide competition for these resources, mainly from China and India but also from other countries, will still continue. This demand is not only for power plants – it is also for design and construction of refineries and other facilities.

Mr. Rolfes discussed a recent moderation in power plant commodities prices. The big uncertainty here is whether this moderation is a blip or snapshot as the Judge asked, or is it a longer term trend. There is no way to know at this time and that is a substantial uncertainty concerning the ultimate cost of the Big Stone II Project. Based on the continuing domestic and worldwide demand for the resources need to design and build new power plants, I expect that prices will again increase at very significant rates but we will have to see.

The Applicants expect ratepayers to bear these risks. That is why we have seen Mr. Uggerud decline to agree to a cap on the recovery of Big Stone II capital costs set at their current price estimate.

5. CARBON CAPTURE AND SEQUESTRATION – Mr. Hewson's $5/ton to $10/ton cost for carbon capture and sequestration is far below the credible, independent and objective studies and analyses.

The MIT Future of Coal Study shows a price of about $41/tonne for the cost of CO_2 capture from a supercritical coal plant. This is about $37/ton. Moreover, this cost is only for the cost of capture. Transportation and sequestration are expected to add another $5 to $10/ton to the cost. The MIT Future of Coal study has been marked as Joint Intervenors' Exhibit ___. It is not a draft of the report. It is a widely circulated and cited report.

An October 2007 presentation by Black & Veatch, marked as Joint Intervenors' Exhibit ____, has calculated a cost of $71/tonne for carbon capture and sequestration. (at page 23). This is about $64/ton. Black & Veatch is the Applicants' Engineer for the Big Stone II Project.

A September 2007 letter from the Edison Electric Institute to Congress on CCS Technology has been marked as Joint Intervenors' Exhibit ____. In this letter, EEI reported to Congressman Markey:

> CCS technology will always increase plant construction costs and it has been estimated by the Department of Energy (DOE) and other authorities that CCS will increase the cost of energy from a coal-fired power plant by up to 75 percent or more, depending on the specific circumstances and likely more for smaller facilities or utilities. (page 7)

Mr. Greig has estimated that the levelized cost of power from Big Stone II will be about $78/MWh for an IOU without any carbon costs. Using the EEI's estimate that adding CCS technology will increase the cost of power from a coal plant by 75 percent, the cost of adding CCS would bring the levelized cost of Big Stone II to approximately $138/MWh for OTP and MDU.

It is important to emphasize that the cost estimates in the MIT, NETL, EEI and Black & Veatch studies are not current costs. These are estimates of what carbon capture and sequestration are likely to cost when installed on new coal-fired

power plants. The MIT study, in particular, predicts that it will be even more expensive to retrofit CCS technology onto new pulverized coal plants. If it begins operations in 2013, as currently planned by the Applicants, CCS equipment will have to be retrofitted onto Big Stone II when and if that technology becomes commercially viable.

Mr. Hewson has mentioned the ammonia technologies that some believe will reduce the cost of carbon capture and sequestration. It is important to remember that the $20/ton price cited by Mr. Hewson is just the vendor's unsupported estimate. To my knowledge no one has had access to the underlying data, if any, supporting that estimate. More importantly, the technology has not been tested at anything but very small laboratory scale. Based on past experience with scaling up new technologies, the cost of the ammonia technologies can be expected to increase significantly as it is operated in larger scale tests.

Finally, all of the projected CCS technologies, including the chilled ammonia technology mentioned by Mr. Hewson, are expected to create substantial new on-site parasitic loads to operate the new carbon capture equipment. As a result, the net output of the coal-fired plant will decrease significantly when CCS equipment is installed and operated. Thus, a 500 MW plant may become a net 425-450 MW plant with CCS.