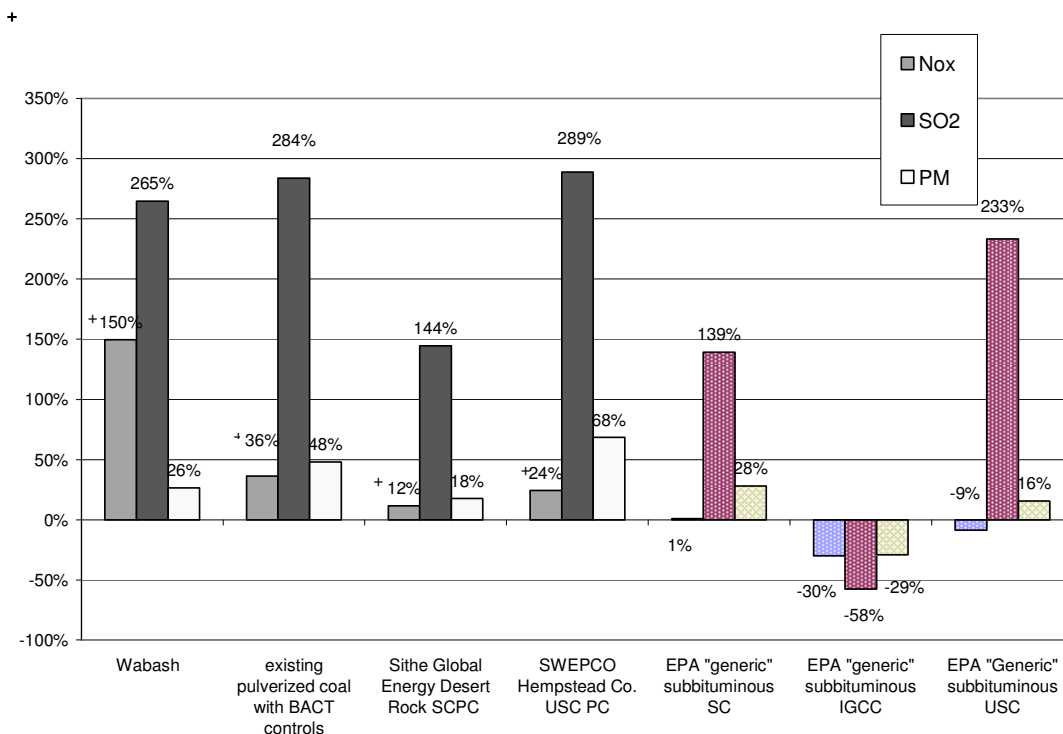


**MINNESOTA POLLUTION CONTROL AGENCY
 RESPONSE TO COMMENTS ON ITS REPORT ENTITLED
 COMPARISON OF NITROGEN OXIDES, SULFUR DIOXIDE, PARTICULATE MATTER,
 MERCURY AND CARBON DIOXIDE EMISSIONS FOR IGCC AND OTHER ELECTRICITY
 GENERATION.**

Comment: US EPA’s published comparisons were made on the basis of pollutant mass emitted per gross megawatt-hour (lb/MWH_{gross}). Ms. Jackson’s comparison between the project and other units are made on the basis of pollutant mass emitted per net megawatt-hour (lb/MWH_{net}).

MPCA response: Mr. Evans is correct that EPA emission factors for generic subbituminous IGCC, supercritical and ultra-supercritical coal fired electric generating units are reported on a gross megawatt generated basis, not net basis as the MPCA intends the comparison to be made. MPCA converted the emission factors for these three types of units to a net generation basis, and they are noted in the revised table “Facility Emission Rates for Comparison”. The EPA emission factor for both gross and net generation for IGCC, supercritical and ultra-supercritical boilers are now shown in the table. Because of the change to the emission rates, Figure 3, the comparison of each facility to Mesaba Energy as a percentage of emissions from Mesaba Energy must be adjusted. Figure 3 is shown below; the corrected emission rates have been re-colored in order to indicate which part of the figure has been changed.

Figure 3. Nitrogen Oxides, Sulfur Dioxide and Particulate Matter emission rates per MWh_{net} as a percentage of Excelsior (Mesaba) Energy I



Comment: The MPCA should use, analyze and compare emissions on a gross generating basis.

Response: Excelsior Energy urges the MPCA to compare emissions between the various types of generating unit on a gross generating basis. The MPCA made its analysis on a net generating basis, which means that the MPCA attributed all emissions from the facility to the power it generates for sale.

The MPCA declines to adjust emission rates from the various facilities to a gross generating basis, as done by Mr. Evans. The MPCA purposely sought to compare the various facilities' on a net generation basis because we are concerned about the pollution related to the amount of power put on the grid.

More efficient units will emit less pollution for the same amount of electricity generated, that is, more efficient units produce more power when using the same amount of fuel. It is in the planning stages, when environmental impacts are being assessed, that the consideration of net power output is critical. Comparing coal-fired electric generating facilities based on their net generation means that one considers the environmental impacts of the electricity being put on the grid for purchase, including what it takes to generate the electricity put on the grid. Indeed, in this proceeding, the facility is being represented as a 606 MW facility (the net generation capacity), not a 740 MW facility (the gross generation capacity). The same is true of the Big Stone Unit 2 proposed by Ottertail Power which is described in the recent EIS as a 600 MW net generation unit¹.

It is likely that the PUC has not seen this type of discussion in the recent past, because until this proposal and Big Stone, additional generation has been natural gas-fired combustion turbines. The gap between gross and net capacity at gas-fired units is minimal, and analyzing the net generating capacity is not meaningful. By contrast, the gap between gross and net generating capacity for Mesaba Energy is 19%.

Therefore, the only adjustments the MPCA is making to its comparison of facility emission rates based on Mr. Evans' remarks is to change the emissions rate for the generic facilities' emission rates as described in the MPCA's response to the first comment. Figure 3 reflects this change.

Comment: The mercury emissions rate for the SWEPCO Hempstead County proposal should be revised to reflect the proposed emissions rate in its permit application.

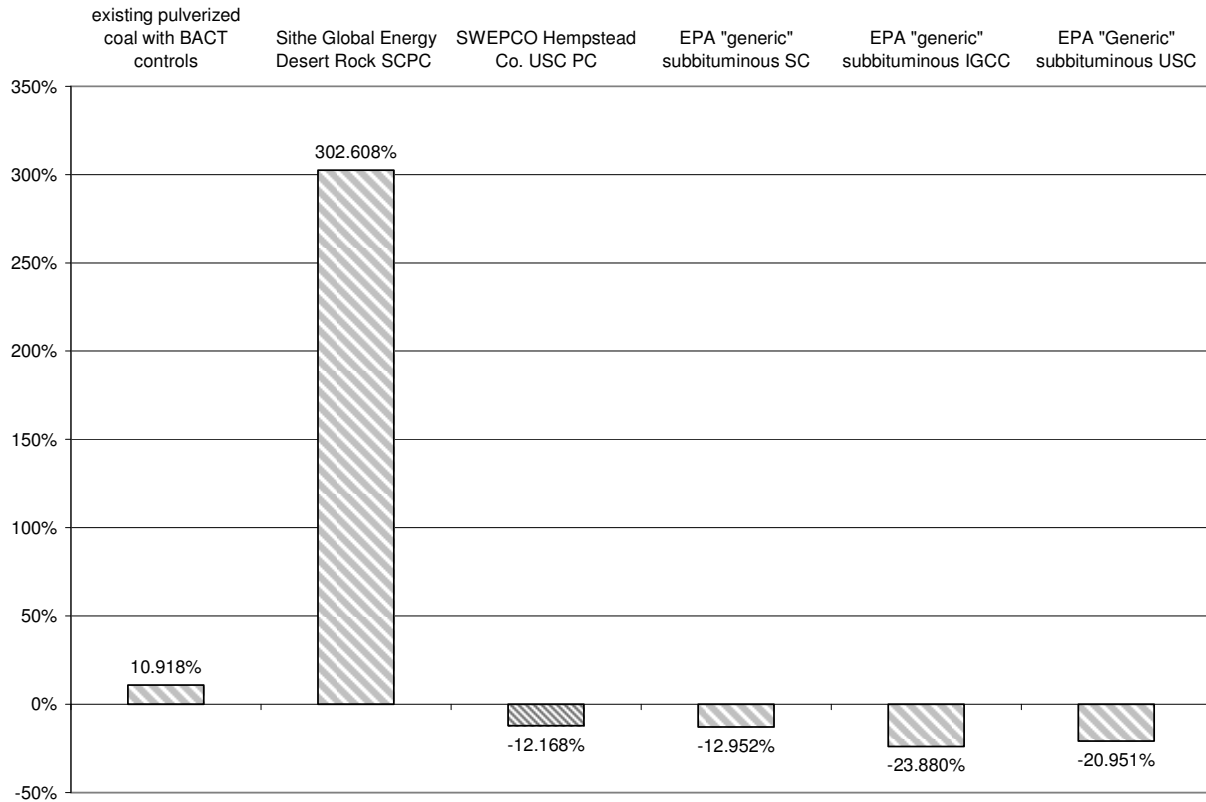
Response: The MPCA declines to change the mercury emissions rate for the SWEPCO facility for mercury, other than to correct it from a gross generation basis to a net generation basis. The SWEPCO Hempstead County permit application provided to the MPCA by the Arkansas Department of Environmental Quality identifies the new source performance standard adopted in June 2006 by EPA as the applicable permit limit for the proposed plant.

The permit limit is not the only regulatory limit that will apply to the SWEPCO facility. By the time the facility begins operation in 2011, the federal Clean Air Mercury Rule (CAMR) will also apply. CAMR is a mercury emissions cap and trade program. Because there is a cap on mercury emissions, there is a fixed number of allowances available for purchase. It is probable that SWEPCO will have to purchase allowances as well as install mercury control equipment in order to account for all of its mercury emissions. Both Desert Rock and Mesaba Energy intend to install mercury controls, but also must purchase allowances for the mercury the facilities will eventually emit.

¹ Minnesota Department of Commerce, Environmental Impact Statement, Route Permit and a Certificate of Need for the Big Stone Transmission Line in Southwestern Minnesota. Docket No. CN-05-619, TR-05-1275 December 1, 2006

The MPCA believes it is highly unlikely that the SWEPCO facility will operate without mercury control of some form, either the control inherent to the proposed SO₂/PM/NO_x control, or the addition of powered activated carbon. As a result, the MPCA used the mercury emissions rate provided by EPA in the “Environmental Footprints and Costs of Coal-Based Gasification Combined-Cycle and Pulverized Coal Technologies” to represent mercury emission rates from a controlled unit. However, because the EPA emission rates are gross generation based, the MPCA adjusted the mercury emissions rate for SWEPCO Hempstead County to net generation base. Revised Figure 4 is provided below.

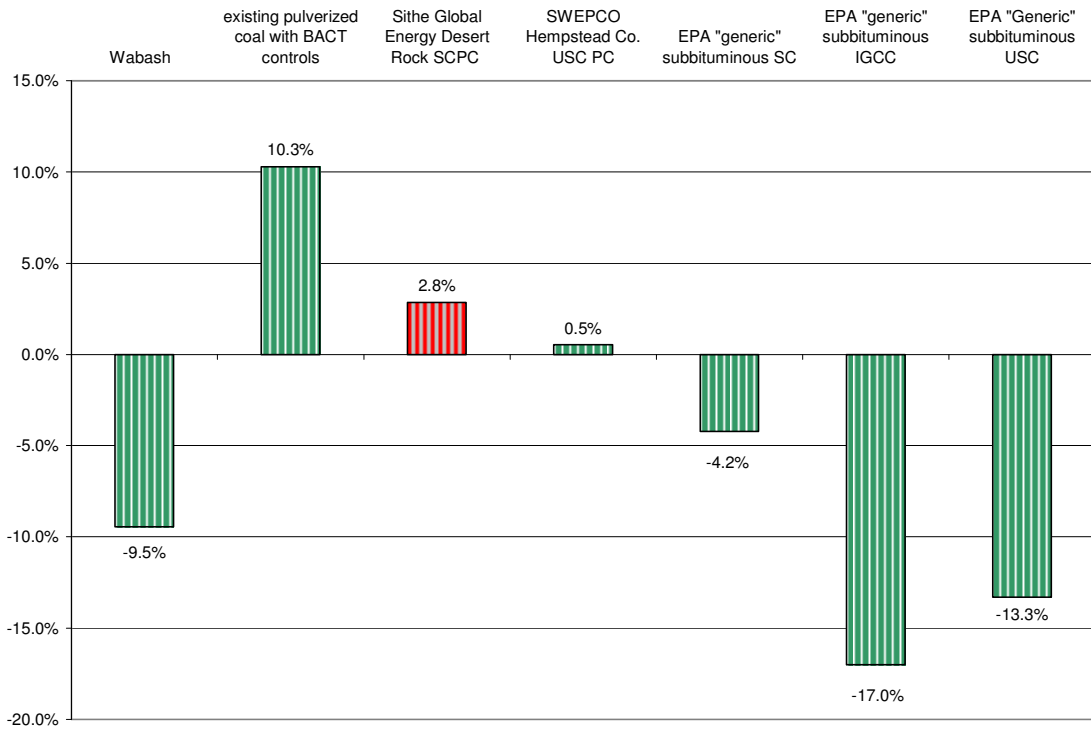
Figure 4. Mercury emissions as a percentage of mercury emissions per MWh from Mesaba Energy I.



Comment: Sithe Global Energy Desert Rock CO₂ emissions look inappropriately low.

Response: The Sithe Global Energy Desert Rock CO₂ emissions were too low. The MPCA changed the CO₂ emissions rate to reflect the use of subbituminous coal in New Mexico. The values in the accompanying table have been adjusted, and Figure 5 is corrected as well. The change in the figure is recolored in order to shown where the change has been made.

Figure 5. Carbon Dioxide Emissions per MWh as a percent of Mesaba Energy I



Facility Characteristics of EPA “Generic” Coal-fired Electric generating Units, Currently Proposed EGUs, and Mesaba Energy I

	Net Thermal Efficiency % HHV	Net Heat Rate Btu/kWH	Gross Power MW	Internal power MW	Heat input mmbtu/hr	fuel required lb/hr	Net Power MW
Mesaba IGCC subbituminous (a)	36.3%	9,397	740	143	5616		598
EPA "generic" subbituminous IGCC (f)	40.0%	8,520	575	75		484,089	500
Wabash (Illinois coal) (actual) (b)	39.7%	8,910					192
EPA "Generic" subbituminous ultra-supercritical (f)	41.9%	8,146	543	43		460,227	500
existing subcritical pulverized coal with BACT controls (c)	32.7%	10,423			3355		350
Sithe Global Energy Desert Rock Supercritical PC (d)	34.3%	9,956	1500		6800	800,000	2 @ 683 net
SWEPCO Hempstead Co. Ultra SuperCritical PC subbituminous(e)	35.9%	9,500			6000 (b)	750,000	600
EPA "generic" subbituminous supercritical (f)	37.9%	9,000	541	41		517,045	500

Facility Emission Rates for Comparison

	NOx			SO2			PM			Hg			CO2			
	lb/MWh	lb/Mwh net	lb/MMBtu	lb/MWh	lb/Mwh net	lb/MMBtu	lb/MWh	lb/Mwh net	lb/MMBtu	lb/MWh	lb/Mwh net	lb/mmBtu	lb/MWh	lb/MWh	lb/mmBtu	lb/mmBtu
Mesaba IGCC subbituminous (a)	0.536		0.057	0.24		0.03	0.085		0.009	4.70E-06		5.00E-07	2005			213.34
EPA "generic" subbituminous IGCC (f)	0.326	0.375	0.044	0.09	0.10	0.01	0.052	0.060	0.007	3.58E-06	4.12E-06	4.20E-07	1818			213.34
Wabash (Illinois coal) (actual) (b)	1.337		0.150	0.89		0.10	0.107		0.012				203.74			203.74
EPA "Generic" subbituminous ultra-supercritical (f)	0.450	0.485	0.060	0.75	0.82	0.10	0.090	0.098	0.012	3.42E-06	3.71E-06	4.20E-07	1738			213.34
existing subcritical pulverized coal with BACT controls (c)	0.730		0.070	0.94		0.09	0.146		0.014	5.21E-06		5.00E-07	2211			212.14
Sithe Global Energy Desert Rock Supercritical PC (d)*	0.597		0.060	0.60		0.06	0.100		0.01	1.89E-05		1.90E-06	1984	2062	199.29	207.1
SWEPCO Hempstead Co. Ultra SuperCritical PC subbituminous (e)	0.665		0.070	0.95		0.10	0.143		0.015	3.80E-06	4.13E-06	4.20E-07	2015			212.14
EPA "generic" subbituminous supercritical (f)	0.500	0.541	0.060	0.54	0.58	0.07	0.100	0.108	0.012	3.78E-06	4.09E-06	4.20E-07	1920			213.34

(a) Mesaba Energy I air emissions permit application, June 2006, p. 48. Excelsior Energy December 2005 Filing, Section IV, p. 51 Also, Robert Evans Rebuttal Testimony, October 10, 2006 p. 18.

(b) Wabash performance from www.clean-energy.us/projects/wabash_indiana.htm accessed on October 10, 2006

(c) Minnesota Power Boswell 3 retrofit, August 2006 permit application

(d) Desert Rock efficiency, heat rate calculated from PSD permit application accessed 10/9/06 at www.epa.gov/region9/air/permit/desertrock/index.html

(e) SWEPCO permit application indicates the boiler to be a supercritical boiler with a heat input rate of 6000 mmbtu/hr; AEP contact indicates the plant is being designed as an ultra supercritical plant, and design heat input rate is 5700 to 5800 mmbtu/hr, net electrical output 600 MW. This difference affects the net heat rate calculation and total boiler efficiency.

(f) EPA generic expected plant performance characteristics EPA-430/R-06-006 July 2006