

August 2, 2005

Mr. Michael Koerber
Executive Director
Lake Michigan Air Directors Consortium
2250 East Devon Avenue
Suite 250
Des Plaines, Illinois 60018

Re: Comments on Interim White Paper,
Midwest RPO Candidate Control Measures,
Source Category: Electric Generating Units,
January 19, 2005

Dear Mr. Koerber:

The City of Springfield appreciates the opportunity to provide written comments in connection with work being done by the Lake Michigan Air Directors Consortium (LADCO) under the auspices of the Midwest Regional Planning Organization (RPO). LADCO engaged the services of MACTEC Engineering and Consulting, Inc. (MACTEC) to identify and summarize candidate control measures for regional haze, PM_{2.5} and ozone, and to conduct a technical and economic assessment of available control measures. MACTEC summarized the purpose of this engagement as follows:

“The States of the Midwest Regional Planning Organization (MRPO) are considering adopting additional control measures as part of their planning to achieve regional haze goals and to attain the ozone and PM_{2.5} National Ambient Air Quality Standards (NAAQS). Although currently mandated controls will achieve significant emission reductions over the next 5-10 years, it is likely that additional emission reductions beyond current requirements will be necessary to meet State Implementation Plan (SIP) requirements and to demonstrate attainment.”

MACTEC, Identification and Evaluation of Candidate Control Measures, April 14, 2005, page 1.

MACTEC has prepared a series of white papers for different categories of emission sources. These comments are submitted with regard to the Interim White Paper – Midwest RPO Candidate Control Measures, Source Category: Electric Generating Units,

dated January 14, 2005. This document is posted on LADCO's website www.ladco.org. The Midwest RPO includes the states of Wisconsin, Illinois, Michigan, Indiana and Ohio. The purpose of the Interim White Paper:

“is to provide a forum for public review and comment on the evaluation of candidate control measures that may be considered by the States in the Midwest Regional Planning Organization (MRPO) to develop strategies for ozone, PM_{2.5}, and regional haze State Implementation Plans (SIPs). Additional emission reductions beyond those due to mandatory controls required by the Clean Air Act may be necessary to meet SIP requirements and to demonstrate attainment. This document provides background information on the mandatory control programs and on possible additional control measures.”

Interim White Paper, page 1. LADCO has also conducted Air Quality Workshops in March and June of this year to provide forums and presentations in connection with the Interim White Paper. The United States Environmental Protection Agency (USEPA) issued its Clean Air Interstate Rule (CAIR) in March of 2005. CAIR requires reductions for electric generating units for sulfur dioxide and nitric oxide emissions in all five Midwest RPO states. Based upon the discussions at the LADCO workshops, it is clear that the additional emission reductions beyond mandatory controls referred to above in the Interim White Paper includes such reductions beyond those required by CAIR.

The Interim White Paper

MACTEC unveiled two specific candidate control measures in the Interim White Paper: Measure EGU1 and Measure EGU2. It attributed the genesis of these strategies to the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO). Measure EGU1 is a strategy to reflect application of levels of current emission rates achievable under Best Available Control Technology (BACT) as identified in new source permits on existing and new sources “of the most common levels for existing sources covered under recent USEPA settlement agreements.” This would result in an emission cap based upon “Retrofit BACT Levels”. Measure EGU2 similarly employs a strategy that would result in adopting emissions caps based upon “BACT Levels for New Plants”. EGU1 caps would begin in 2009, while EGU2 CAPS would start in 2013. The emission cap would apply to both SO₂ emissions and nitric oxide emissions. The reductions required by CAIR would begin in 2009 for nitric oxides and 2010 for SO₂ (Phase I) and again in 2015 (Phase II).

TABLE 1 – CONTROL MEASURE SUMMARY FOR EGUs

Control Measure Summary	SO ₂ Emissions (tons/year) in 5-state MRPO Region	
2002 Existing measures (MRPO average SO₂ is 1.16 lbs/mmBtu): NSPS; PSD/NSR; State RACT Rules; Title IV SO ₂ Program	2002 Base:	2,798,884
2009 On-the-Way proposed measures: CAIR (IPM estimates 46% reduction in 2009 emissions from 2002 levels due to early reductions, additional reductions through 2015)	Reduction: 2009 Remaining:	<u>-1,296,587</u> 1,502,297
Candidate measure ID EGU1: Adopt Emission Caps Based on “Retrofit SO₂ BACT Level” of 0.15 lbs/mmBtu <i>Emission Reductions:</i> 66% reduction from 2002 levels in 2009, 84% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$800/ton to \$1,500/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-1,841,645</u> 957,239 <u>-2,347,834</u> 451,050
Candidate measure ID EGU2: Adopt Emission Caps Based on “SO₂ BACT Level for New Plants” of 0.10 lbs/mmBtu <i>Emission Reductions:</i> 77% reduction from 2002 levels in 2009, 89% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$800/ton to \$3,000/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-2,160,725</u> 638,159 <u>-2,498,184</u> 300,700
Control Measure Summary	NO _x Emissions (tons/year) in 5-state MRPO Region	
2002 Existing measures (MRPO average NO_x is 0.43 lbs/mmBtu): NSPS; PSD/NSR; State RACT Rules; Title IV NO _x Requirements	2002 Base:	1,045,736
2009 On-the-Way proposed measures: NO _x SIP Call (21% reduction from 2002 levels); additional reductions from CAIR not anticipated until 2010	Reduction: 2009 Remaining:	<u>-218,338</u> 827,398
Candidate measure ID EGU1: Adopt Emission Caps Based on “Retrofit NO_x BACT Level” of 0.10 lbs/mmBtu <i>Emission Reductions:</i> 62% reduction from 2002 levels in 2009 71% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$700/ton to \$1,600/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-646,886</u> 398,850 <u>-745,036</u> 300,700
Candidate measure ID EGU2: Adopt Emission Caps Based on “NO_x BACT Level for New Plants” of 0.07 lbs/mmBtu <i>Emission Reductions:</i> 69% reduction from 2002 levels in 2009 80% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$700/ton to \$2,100/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-726,656</u> 319,080 <u>-835,246</u> 210,490

Some note should be taken with regard to the emission rates utilized in the candidate control measures to arrive at the caps. For SO₂ emissions the rates are 0.15 lbs/mmBtu for EGU1 and 0.10 lbs/mmBtu for EGU2. With regard to nitric oxide emissions, the rates are 0.1 lbs/mmBtu under EGUI and 0.07 lbs/mmBtu for EGU2. The City will later discuss the stringency and implications of those rates with regard to its electric system.

The City of Springfield

The City of Springfield, Illinois, owns and operates its own electric generation, transmission and distribution system providing retail electric service to the residents and businesses within the City and certain neighboring environs, known as City Water, Light and Power (CWLP). At the end of the City's fiscal year 2005 (February 28), the CWLP had 69,200 retail electric customers. The City also provides wholesale electric service to the Villages of Chatham and Riverton. The City is a transmission owning member of the Midwest Independent System Operator (MISO). Beginning in April 1, 2005, the MISO initiated an energy market tariff in which MISO operates a next day and an hourly wholesale energy market. CWLP also makes additional wholesale sales pursuant to participation in the MISO energy markets. Dispatch of the CWLP generating units is overseen by the MISO. CWLP's generating portfolio consists of the following units:

UNIT	MAXIMUM CAPABILITY NET MW	NOMINAL CAPACITY NET MW	FUEL	INSTALLED
Dallman 3	192	175	Coal	1978
Dallman 2	87	75	Coal	1972
Dallman 1	86	75	Coal	1968
Lakeside 7	38	30	Coal	1965
Lakeside 6	38	30	Coal	1961
Interstate GT*	128	120	Gas/#2 Oil	1997
Factory GT	23	20	#2 Oil	1973
Reynolds GT	18	15	#2 Oil	1970
TOTAL	610	540		

* Assumes wet compression system at Interstate (10 MW increase in summer rating)

The coal units owned by the City and operated by CWLP utilize Illinois coal from the Viper Mine located in Elkhart, Illinois, approximately 25 miles north of the City's generating station on Lake Springfield on the southeast side of the City. The coal supplier provides all of the CWLP's coal requirements pursuant to a contract that runs through 2020. The coal is washed at the mine as required by the contract. The average sulfur content of the delivered coal is 3.3 percent or 5.8 lbs/mmBtu.

The City's Dallman coal-fired units are all equipped with flue gas desulfurization systems (FGDS). Dallman 3 is required to have its FGDS in operation at all times the unit is on line. The Dallman 1 and 2 units were retrofitted with a common FGDS and common stack in 2001 as a compliance strategy for Phase II of the USEPA Acid Rain Program requirements. These units may be operated with or without the FGDS in service, but this typically only occurs if there is an outage at the FGDS. The average SO₂ emission rate for Dallman 3 for the years 2002-2004 based upon continuous emissions monitoring (CEM) data was 0.26 lbs/mmBtu. The average

emissions rate for Dallman 1 and 2 for 2002-2004 was 0.32 lbs/mmBtu. The average uncontrolled emission rate was 6.2 lbs/mmBtu. This represented a removal efficiency of 95.5 percent for Dallman 3 and 94.4 percent for Dallman 1/2. It should also be noted that enhancements were made to the Dallman 3 FGDS for the Acid Rain Program to improve its SO₂ removal efficiency. The installation of the FGDS for Dallman 31/32 was partially financed with \$17 million in grants from the Illinois Department of Commerce and Community Affairs (now Department of Commerce and Economic Opportunity) Office of Coal Development to help secure continued use of Illinois coal at these generating units.

All of the City's Dallman units were retrofitted with selective catalytic reduction systems (SCR's) to reduce and control nitric oxide (NO_x) emissions required by an Illinois NO_x emission standard for ozone season operation (May-September) beginning in 2003 and the federally-issued NO_x SIP Call Rule which went into effect in the 2004 ozone season. The SCR's on the Dallman units became operational in 2003. With the SCR's in service, the average emission rate for NO_x during 2003 and 2004 for Dallman 3 was 0.13 lbs/mmBtu. Dallman 3 has a tangentially fired boiler that has an Acid Rain Program emission limit of 0.45 lbs/mmBtu, and an average actual rate of 0.43 lbs/mmBtu during that period with the SCR's not in service. This represents a removal efficiency during the first two ozone seasons for Dallman 3 of approximately 70.5 percent. The Dallman 1 and 2 units have cyclone fired boilers and a higher uncontrolled NO_x emissions rate of 1.06 lbs/mmBtu. These units are served by a common stack and common CEMs. With the SCR's in service for these units during the 2003 and 2004 ozone seasons, the average NO_x emissions rate was 0.15 lbs/mmBtu. This rate would represent an approximate 86 percent removal efficiency.

The City's Lakeside coal fired units are also cyclone fired and have not been retrofitted with any emissions reduction equipment for either SO₂ or NO_x. The City's recent thinking is that the two old small remaining Lakeside units would be retired by 2010 and replaced with new generating capacity. The City has been working toward such a scenario for several years. In fact, in November of 2004, the City filed an application with the Illinois EPA for a Prevention of Significant Deterioration Construction Permit (PSD Permit) for a new subcritical pulverized coal-fired unit, Dallman 4, at the same generating station where the City's other coal-fired units are located. This unit would also utilize Illinois coal from the Viper Mine. The proposed emission rate limit in the Dallman 4 application for NO_x is 0.1 lbs/mmBtu and for SO₂ is 0.2 lbs/mmBtu. Dallman 4 would be equipped with a wet FGDS for SO₂ control and low NO_x burners and an SCR for NO_x control. It should be noted that with the planned retirement of the Lakeside units anticipated SO₂ and NO_x emissions for Dallman 4 are less than baseline emissions for the Lakeside units to be retired and as a result of the netting analysis conducted for the PSD Permit application a BACT analysis was not required for SO₂ and NO_x.

Impact of CAIR on CWLP

CAIR is a regional emissions reduction program targeting EGU's for cuts of 45 percent in 2010 and 57 percent in 2010 from 2003 SO₂ emissions, and cuts of 53 percent in 2009 and 61 percent in 2005 from 2003 NO_x emissions in states affected by CAIR. Illinois is one of those

states, as are all the Midwest RPO states. The NO_x emissions reductions program under CAIR include an annual program and an ozone season program. CWLP has conducted an analysis of impacts of CAIR on its current and future emissions profiles. This analysis was based upon the assumption that Illinois would adopt the model federal trading rules and model emission allowance allocations contained therein. CWLP also based its analysis on CEMs data for 2002-2004 and approximate extrapolations of projected increased utilization of existing pollution control equipment. The emissions profiles for the future included scenarios both without the retirement of Lakeside and the retirement of Lakeside and the addition of Dallman 4. The first conclusion reached was that continued operation of Lakeside units without controls would require the utilization of a substantial number of banked allowance and eventually the purchase of allowances for both SO₂ and both NO_x programs to balance the projected allocations and emissions. Given the age and size of the Lakeside units, it is not economically feasible to add the control equipment necessary to obtain the required emission reductions from CAIR. Another conclusion ascertained by this analysis is that if CWLP retired Lakeside and added no new generation, and relied on wholesale purchases to cover its electric load, utilization of banked or purchased allowances would still need to be done for Phase II (2015) of the SO₂ CAIR program and Phase II of both NO_x programs. The purchase of allowances might be avoided if CWLP began blending a low sulfur coal with Viper Coal in its Dallman units and continue to operate its FGDS and SCRs while using a blended coal supply. Low sulfur coal also has a somewhat lower nitrogen content. Of course, this would result in a decrease in the utilization of Illinois coal, both from the retirement of Lakeside and the substitution of low sulfur coal for some Illinois coal.

The analysis of a scenario of retiring the Lakeside units and adding Dallman 4 demonstrates that the projected emissions for the City's generating units for SO₂ and NO_x in 2015 (Phase II of CAIR reductions) will exceed allowance allocations projected under the model rule allocation methodology. To comply with CAIR Phase II, CWLP would have to utilize banked allowances, if any remained, purchase allowances, or cut emissions by increasing removal efficiency, if possible, or by blending low sulfur coal with Illinois coal, or a combination of all strategies. This would be required even though all the City's coal-fired units in this scenario would be equipped with FDGS and SCR's. This is based upon the following emissions rates for the Dallman units in 2015.

Unit	SO ₂ (lbs/mmBtu)	NO _x (lbs/mmBtu)
1	0.3045	0.1500
2	0.3045	0.1500
3	0.2660	0.1300
4	0.2000	0.1000

This emission rates are all higher than the proposed emission rates for SO₂ set forth in Measures EGU1 and EGU2. The emission rate for NO_x in EGU1 is lower than the rates for Dallman 1, 2, 3 and the same for Dallman 4. However, the EGU2 NO_x emission rate is lower than all the NO_x rates for the Dallman units. The ability of the City to meet Phase II of CAIR will be a challenge with the City's use of Illinois coal. Under both Measures EGU1 and EGU2 advanced in the Interim White Paper, CWLP will be severely challenged, and this could result in replacing the use of Illinois coal with a lower sulfur coal supply, even though all units would still have a FGDS and an SCR in operation.

Discussion

The initial conclusions that the City has made about CAIR and its ability to have a compliance strategy for Phase II of CAIR will require the city to examine the utilization of alternative coal supplies. Any more restrictive emissions programs such as those embraced by EGU1 and EGU2 will increasingly limit the utilization of Illinois coal in the City's boilers. This conclusion regarding these proposed control strategies is not surprising. The Midwest Ozone Group (MOG) has been active in the efforts of the Midwest RPO. In response to the Interim White Paper, MOG has retained consultants to evaluate the proposals of the Interim White Paper. Some of these consultants have made presentations at air quality workshops sponsored by LADCO in March and June of 2005. James Marchetti made one such presentation on March 9. He pointed out that the emission rates for EGU1 were based upon the most restrictive interpretation of settlement agreements, and the emission rates for EGU2 were based on new units rather than retrofit and the majority of the permits were for plants that would utilize a lower sulfur coal with an FGDS removal rate of 90 percent on that type of coal. He concluded that the emission rates proposed for both NO_x and SO₂ in EGU2 were consistent with the rates for new units that fire exclusively or predominantly Power River Basin (PRB) coal. EGU2 is envisioned as a control strategy in place by 2013 with target rates the City would have to emulate based upon control technologies applied to units combusting PRB coal. * A copy of the report his presentation was based upon is attached as Exhibit 1. The average sulfur content of the City's current coal supply is 5.8 lbs/mmBtu. To achieve the emission rate that the EGU1 cap is predicated on would require the City to operate its existing FGDS at a SO₂ removal efficiency of greater than 97.4 percent. To meet the rate proposed for SO₂ in the EGU2 cap, the City would have to increase the same SO₂ removal efficiency to 98.3 percent. The FGDS at Dallman 3 was placed into operation in 1980 as a retrofit to the generating unit under a consent order. It has already undergone a series of design enhancements to increase its removal efficiency as well as the addition of a dibasic acid system to boost performance. The FGDS for Dallman 1 and 2 was also a retrofit project, placed into service in 2001. It is doubtful whether the removal efficiencies of these units could be enhanced further to continuously achieve the emission rates in proposed Measures EGU1 and EGU2. Fuel switching would undoubtedly be required that would place the utilization over 1.1 million tons of Illinois coal by the City on an annual basis in extreme jeopardy. The ultimate irony would be that the Dallman 1/2 FGDS, partially financed by assistance from Illinois coal, could be used to clean PRB coal at those units.

James Marchetti also commented on the fuel switch phenomena at the June LADCO Air Quality Workshop. Subsequent to the March workshop, he performed additional evaluation and analysis of the measures proposed by the Interim White Paper for MOG. This analysis evaluated the level of capital investment and annual compliance attributed to each scenario, the marginal cost of control for SO₂ and NO_x, the level of potential capacity at-risk in achieving the reduction targets of each scenario and the level of local coal that could be displaced due to compliance.

This analysis was conducted on the coal fired electric generating units in the five states comprising the Midwest RPO. Some of the conclusions were:

- The application of aggressive controls on electric generators burning coal would still not achieve the mission caps of EGU1 and EGU2.
- To meet the caps proposed by EGU1 and EGU2 may result in the retirement of 10.6 GW and 37.9 GW of the region's existing coal-fired capacity.
- Compliance with EGU1 and EGU2 would displace between 42.6 and 47.8 million tons of Indiana, Illinois and Ohio coal with natural gas and PRB coal.

A copy of Mr. Marchetti's report is attached as Exhibit 2.

The City has previously evaluated the use of PRB coal when it decided to install a new FGDS for Dallman 1 and 2. The City does not have the capability of having PRB coal delivered directly to its generating station either by barge or by rail. The PRB coal would have to be unloaded at another site at which unloading and handling facilities would have to be developed. This discussion does not include an examination of the City's cost to make boiler modifications to handle PRB coal, to make enhancements to coal handling facilities to safely operate using PRB coal, or the other infrastructure costs to develop facilities to take deliveries of PRB coal. James Marchetti also concluded that eventual compliance with EGU1 and EGU2 will result in the electric generators in the five state region incurring annualized compliance costs that are ten times greater than compliance costs under CAIR.

Conclusion

In summary, the City of Springfield envisions a generation portfolio in the year 2010 that would include all coal fired units being equipped with SO₂ and NO_x emission control equipment. The Lakeside units will be retired and, one scenario would have these units replaced by a new unit which would be the City's most efficient and least emitting unit. The City would be combusting Illinois coal in these units. CAIR will ultimately require the City to operate its control equipment as effectively as possible. It does not seem that it would be very prudent to adopt policies that would discriminate against the utilization of Illinois coal. To a very great extent nonattainment is a local problem and reductions sought within the nonattainment area should come from all types of sources within the nonattainment area. CAIR will provide a significant reduction in contributions by electric utilities both within and without nonattainment areas. Going beyond CAIR in requiring further utility reductions does not represent good policy. However, if the Midwest RPO and the states continue to pursue a stance that looks beyond CAIR, consideration must be given to those utilities that will already have all coal units equipped with FGDS and SCRs from any requirements beyond CAIR, or from any requirements which would be discriminatory of Illinois coal.

Respectfully submitted,

William A. Murray
Regulatory Affairs Manager
Office of Public Utilities

WAM/ras
Enclosure

Cy: Douglas P. Scott, Director, IEPA
Laurel Kroack, Bureau Chief, Air, IEPA
Bill Hoback, Chief, Office of Coal Development, IDCEO
Philip Gonet, Executive Director, Illinois Coal Association
Bob Gardner, Viper Coal Company
Roger Dennison, Peabody Coal Company
Walt Gregory, Freeman United Coal Company