

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

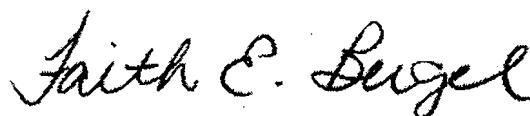
IN THE MATTER OF:)	
)	
PROPOSED NEW CAIR SO2, CAIR NOX)	R06-026
ANNUAL AND CAIR NOX OZONE SEASON)	(Rulemaking – Air)
TRADING PROGRAMS, 35 ILL.ADM.)	
CODE 225, CONTROL OF EMISSIONS FROM)	
LAREGE COMBUSTION SOURCES,)	
SUBPARTS A, C, D and E)	

NOTICE

TO: Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, IL 60601-3218

SEE ATTACHED SERVICE LIST

PLEASE TAKE NOTICE that I have today filed with the Office of the Pollution Control Board the AMENDED TESTIMONY OF CHARLES KUBERT, of the Environmental Law and Policy Center, a copy of which is herewith served upon you.



By:

Faith Bugel
Counsel for the Environmental Law & Policy Center

DATED: November 28, 2006

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AMENDED TESTIMONY OF CHARLES KUBERT

My name is Charles Kubert and I am submitting this testimony on behalf of the Environmental Law and Policy Center where I have worked as a Senior Business Specialist since 2002. My responsibilities at ELPC focus on renewable energy and energy efficiency policy development and analysis. I have an M.B.A. in finance from The University of Chicago Graduate School of Business. Prior to my work in energy policy, I worked for close to twenty years in financial analysis and management consulting for leading corporations. The purpose of my testimony is twofold: first, to explain the important role that renewable energy and energy efficiency can play in reducing emissions from power plants and in increasing Illinois' energy independence, and also to justify why renewable energy and energy efficiency deserve a larger share of the Illinois set-aside allowances under the state's proposed Clean Air Interstate Rule program.

Illinois has four primary sources of renewable power potential: wind, biomass, landfill gas and solar photovoltaics. In addition, Illinois has tremendous remaining energy efficiency potential.

Wind Energy

Currently, Illinois has 107 MW of installed wind capacity with an additional 2,000 MW at varying states of development, including two large projects under construction. The National Renewable Energy Laboratory has estimated that, “the total amount of class 4 and 3+ lands combined is about 1800 square kilometers (1.2% of Illinois' land area), and the wind potential from these areas is about 9000 MW.”¹ As wind turbine technology improves, the economic viability of developing this resource has improved. Already, the levelized cost (capital plus operating) of wind energy is competitive on a per kWh basis with new coal generation and significantly less expensive than new combined cycle natural gas-fired generation. Although Illinois does not have the raw wind resource potential of some of the Great Plains states, its extensive network of transmission lines and large power markets make the development of this resource cost-effective.

Wind energy development has a number of benefits for Illinois. First, wind energy is an emission-free resource—there are no emissions of sulfur oxides (SO_x), nitrogen oxides (NO_x), carbon dioxide (CO₂), mercury or particulate matter (PM) from wind power. This lack of air pollution impact is good for the health of Illinois' citizens and good for reducing Illinois' contribution to global warming pollution. Second, wind energy has no fuel costs. As a result, it is a long-term hedge against rising and volatile coal and natural gas prices. Third, wind energy creates positive economic benefits for the state, particularly rural areas—construction and permanent maintenance jobs, lease income for landowners who have wind turbines placed on their property, local tax revenue and all of the increased economic activity associated with these wind farms. A single 100 MW wind farm will result in 70 construction jobs, ten permanent jobs, \$300,000 in annual lease payments to landowners and as much as \$2 million per year in

¹ National Renewable Energy Laboratory (NREL), “Wind Powering America,” available at www.eere.energy.gov/windandhydro/windpoweringamerica/where_is_wind_illinois.asp

property tax revenue.² The economic benefits of wind generation have been well-documented. These economic benefits can be reaped while maintaining the agricultural nature of wind project sites, as farmers can continue to farm the land around the turbines and land can revert to full agricultural use after turbine decommissioning. Finally, wind energy displaces the drain on Illinois' economy resulting from the purchase of out-of-state fossil fuels.

Biomass Energy

While wind energy is generally the lowest cost source of renewable energy generation in Illinois, there is also potential to use biomass (from corn stover and perennial grasses) in co-firing applications with coal or in small combined heat and power systems. The use of perennial switchgrass in a conventional coal-fired power plant has been successfully tested in Ottumwa, Iowa.³ Biomass can either be directly mixed with coal in these plants or gasified, with the resulting "syngas" being fed into the plant's boilers. Co-firing reduces SO_x and net CO₂ emissions in a conventional power plant by the percentage of capacity which is displaced by biomass. Harvesting of switchgrass and partial harvesting of corn stover also creates additional income streams for farmers. Each megawatt of co-firing would create a demand for energy crops from 1,000 acres or corn stover from 2,000 acres of surrounding farmland.⁴

Landfill Gas

Illinois is among the leading states in electricity generation from methane extracted from landfills. Currently, 23 landfill gas to energy projects have the capacity to

² Goldberg, M. (2004), "Job and Economic Development Impact (JEDI) Model: A User-Friendly Tool to Calculate Economic Impacts from Wind Projects," NREL, available at www.nrel.gov/docs/fy04osti/35953.pdf. Document describes a model for assessing economic impact of wind power development. The model software is available from NREL.

³ Chariton Valley Biomass Project, <http://biomass.ecria.com/>

generate 130 MW of electricity.⁵ There are an additional 20 landfills which according to the U.S. EPA are candidates for electricity generation from methane.⁶ Landfill gas meets the Illinois statutory definition of renewable energy in Illinois. 20 ILCS 687/6-3 (f). While each landfill gas project is relatively small; such projects utilize a resource (methane) which otherwise would be simply flared or released to the atmosphere. Since methane is a far more potent greenhouse gas than CO₂, the capture and use of this for power generation is highly beneficial.

Solar Energy

The global market for solar photovoltaic systems is growing by over 25 percent each year. As the cost of these systems comes down, businesses, individuals and governments recognize the important role that solar energy can play in displacing central station fossil-fueled generation.⁷ While Illinois is not thought of as a “sunny state”, its solar energy potential is significant, particularly during the summer months when electricity demand and generation are at their peaks. In the majority of Illinois, solar photovoltaic output coincides with utility peak loads over 70% of the time.⁸ Solar PV produces no air pollution and no greenhouse gases, apart from their manufacture. Thus, replacing peak load generation from coal with that from solar power will both improve the system’s reliability and significantly offset air pollution.

Energy Efficiency

⁴ Telephone conversation between Charles Kubert and Bill Belden, Biomass Project Manager, Chariton Valley Biomass Project, November 8, 2006.

⁵ U.S. Environmental Protection Agency, Landfill Methane Outreach Program, available at www.epa.gov/lmop/proj/xls/opprjseleclmopdata.xls

⁶ Ibid., available at www.epa.gov/lmop/proj/xls/candflslmopdata.xls

⁷ Solarbuzz, “Marketbuzz™ 2006: Annual Worldwide PV Market Report,” available at www.solarbuzz.com/marketbuzz2006-figures.htm

⁸ See Environmental Law and Policy Center (2001), “Repowering the Midwest,” Figure 5.10b at p. 40, available at www.repoweringthemidwest.org/plan.php.

Energy efficiency, as a strategy for reducing long term energy demand and consequent emissions from power plants, has long been ignored in Illinois. Yet, energy efficiency has been shown to be the lowest-cost and most immediate way to level electricity demand without compromising household comfort or business performance. Energy efficiency measures are long lasting and save energy across all time periods for which the end-use equipment is in operation.⁹ Studies have demonstrated that enough energy efficiency can be “procured” at under 2.5c/kwh (well under the cost of generating and delivering coal-fired electricity) to level electricity demand.¹⁰ Energy efficiency opportunities cut across all sectors of the economy and include lighting, space cooling, refrigeration, motors and other commercial and industrial equipment.

Encouraging energy efficiency and the programs that support it is advantageous to both the environment and the economy. With reduced energy demand, CO₂, NO_x, and SO_x emissions are decreased, and all land and water impacts associated with power generation are also reduced. Lower demand for energy has a positive effect on the energy infrastructure, as reduced electricity loads put fewer stresses on the distribution system and reduce the need for peak load generation. Growing energy efficiency investments create thousands of jobs in manufacturing, trade, and services related to the production, installation and maintenance of energy efficient measures

Increased energy efficiency lowers household utility bills and provides consumers with more disposable income to spend on other goods and services, thereby growing the Illinois economy. Businesses likewise are able to redirect dollars into increased investment, wages, and job growth. Finally, it is important to point out that energy efficiency, just like conventional generation, is measurable both in terms of avoided generation and the associated avoided emissions.

⁹ Illinois Department of Commerce and Economic Opportunity, “Energy Efficiency for Illinois,” PowerPoint presentation, August 10, 2006. at p. 15.

Consistency with the Governor's Plan

Governor Rod Blagojevich has recognized the many benefits of renewable energy and energy efficiency for Illinois. On August 22, 2006, the Governor unveiled a proposed Energy Independence Plan ("Governor's Plan"). The goal of this plan is to drastically reduce the reliance of Illinois on fossil fuels for both power generation and transportation. As a part of this plan, the Governor encourages the adoption of renewable energy and energy efficiency portfolio standards. The plan sets the target for Illinois utilities to meet 10% of Illinois electricity demand with renewable sources by 2015¹¹. The Governor's plan also sets energy efficiency as a goal, stating that "[c]onserving energy by improving the energy efficiency of Illinois' homes, businesses and public buildings is the most cost-effective way to reduce energy use and lower utility bills." The Governor's Energy Efficiency Portfolio Standard would require utilities to "deliver" energy savings equal to 25% of projected annual demand growth by 2015. Meeting these renewable energy and energy efficiency targets and realizing their associated benefits warrant increasing the RE/EE set aside in the Clean Air Set-Aside (CASA) from 12% to 15.4% with a 1% increase on an annual basis to a maximum of 20%.

While IEPA's proposed rule and the provisions for an RE/EE set aside are heading in the right direction, the rule still falls short of the specific goals set forth by the Governor's Plan. According to the IEPA's proposed rule, renewable energy and energy efficiency clean air set asides would be allocated 9,150 allowances, out of a total of 76,230, or 12% of the total number of allowances. Based on my analysis, this figure must be increased to be consistent with the Governor's Plan and to support higher levels of renewable energy and energy efficiency in Illinois. According to IEPA's Hearing Exhibit 5, "IEPA believes that EE/RE projects eligible for CASA allowances should

¹⁰ "Repowering the Midwest," at pp. 20-21.

¹¹ The original RPS submitted in the Governor's Sustainable Energy Plan in February, 2005 called for 8% renewables by 2012. The Governor's Energy Independence Plan announced in August, 2006 called for

reasonably be able to offset between five and eight percent” of future load. However, if utilities are to meet the 10% target, the CASA set aside for renewables alone must be increased to 13.6% (13.0% for wind and 0.6% for biomass/landfill gas). (Ex. 1.)

Wind energy can reasonably be expected to constitute at least 85% of the total renewable energy generation under an RPS.¹² However, under this assumption, wind generation alone would need to be allocated 9,886 allowances or 13.0% of total allowances by 2012. This figure is already in excess of the 9,150 available CASA allowances for all renewables and energy efficiency under the proposed CAIR plan. The remaining renewable energy sources should then be allocated 0.6%, for a total renewable energy set-aside of at least 13.6%.

However, energy efficiency is also mandated by the Governor’s Plan, and so must be included in the CASAs. The goal of the energy efficiency portfolio is for EE projects to account for a growing percentage of projected annual load growth, from 10% in 2006 and rising to 25% in 2015.¹³ For bundled customers of Illinois’ investor-owned utilities, this cumulative savings would equal 1.9 million MWh. These cumulative energy savings represent the equivalent of 1,392 allowances or 1.8% of the total pool of available allowances (see Ex. 2).

Since the 10% renewable energy target does not nearly represent the upper limit of Illinois’ renewable energy potential, I believe this justifies a continued 1% annual ramp-up in renewables’ share of the available allowances beyond the initial allocation. Similarly, as energy efficiency savings continue to accumulate, documented energy efficiency should also be assigned additional allowances.

Conclusion

10% renewable electricity by 2015. The analysis is based on a 10% target for forecast demand from bundled (generation and distribution) customers.

¹² The proposed RPS language requires at least 75% of the renewable energy to come from wind energy; however, because of favorable wind economics, I believe that the wind share will be 85% or more.

Renewable energy and energy efficiency are both important and achievable components of Illinois' electric energy future. The Governor's Energy Independence Plan recognizes this importance in setting explicit targets for both over the next six years. It is important that Illinois' proposed CAIR rule be consistent with and supportive of this policy initiative. As it stands, the proposed rule is not. Raising the allotted CASA allowances for renewable energy and energy efficiency will greatly assist Illinois in achieving compliance with its own clean energy goals.

¹³ *Id.*

ELPC EXHIBIT 1

EXHIBIT 1

Emission Allowances per MW of Renewables		
	<u>Wind</u>	<u>Biomass</u>
Hours/Year	8760	8760
Assumed Capacity Factor	0.3	0.9
MWh/Year per MW of Capacity	2,628	7,884
Allowance Formula	(2lb/MWh)/2000	(.5lb/MWh/2000)
Allowance per MWh	0.001	0.00025

Illinois RPS: 10% by 2015		
	<u>Wind</u>	<u>Biomass</u>
Total RPS MWh Requirement	11,630,000	11,630,000
Assumed Share of RPS Rqmt	85%	15%
MWh Required	9,885,500	1,744,500
MW Required	3,762	221
Total Allowances	9,886	436
Available CAIR Allowances	76,230	76,230
% of Available Allowances	13.0%	0.6%

ELPC EXHIBIT 2

Governor's Energy Efficiency Portfolio:

(All Demand Data expressed in million MWh)	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
Baseline Demand ¹	95.4	97.3	99.3	101.2	103.3	105.3	107.4	109.6
Baseline Change in Demand (2005-12) ²	n/a	1.9	1.9	2.0	2.0	2.1	2.1	2.1
EEPS Targeted Reduction in Demand Growth ³			10%	12%	14%	16%	18%	20%
EEPS Annual Reduction in Demand ⁴			0.2	0.2	0.3	0.3	0.4	0.4
Cumulative Reduction in Demand			0.2	0.4	0.7	1.0	1.4	1.9
Cum. Allowances (1.5lb per MWh)/2000)			146.0	324.6	537.2	785.1	1069.4	1391.8
Share of Total IL Allowances								1.8%

¹ 2005 electric sales statistics for bundled (generation + distribution) customers of Illinois investor-owned utilities.

Source: Illinois Commerce Commission, Comparison of Electric Sales Statistics for 2005 and 2004.

² Baseline Change in Demand assumes 2% annual growth rate

³ The EEPS requires a 10% reduction in demand growth beginning in 2007, rising to a 25% reduction by 2015

⁴ Targeted percentage reduction in demand growth multiplied by baseline growth in demand

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CERTIFICATE OF SERVICE

I, Faith Bugel, hereby certify that on November 28, 2006 I filed the attached AMENDED TESTIMONY OF CHARLES KUBERT. An electronic version was filed with the Illinois Pollution Control Board and copies were served via United States Mail to those individuals included on the attached service list.



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Counsel for the Environmental Law and Policy Center

DATED: November 28, 2006

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