

Illinois Climate Change Advisory Group

Subgroup: Power and Energy

Policy Name: #5 CO2 emission performance standards for electricity generation or an emissions portfolio standard.

Policy Type: Regulatory standard

Estimated 2020 Reductions Compared to BAU: **9.3 MM tons CO2**

Final Draft: 5/18/06

Affected sectors, subsectors or entities

For example:

Sector: Electric Power

Subsector: Electric Generation Units

Entities: Power generation companies, electricity distribution companies

Description

This straw proposal would establish regulatory requirements using a hybrid of two policy approaches. First it contains a CO2 emissions performance standard for new fossil fuel fired power plants in Illinois. This standard is coupled with a mandatory standard on the power purchases of load serving entities (LSEs) in Illinois. A presentation of the advantages and disadvantages associated with both options follows each description along with a summary discussion.

It is important to note that emissions reductions from this straw man proposal would likely overlap with other proposals that address emissions in the electric generation sector.

CO2 emissions performance standards for new electric power plants and electricity contracts.

This option is derived from Section 708 of U.S. 110th Senate bill S. 309, the Global Warming Pollution Reduction Act also known as Sanders-Boxer. This straw proposal would apply to all new electric generation units built in Illinois that begin operation no less than 2 years after approval of the standard, which have a nameplate capacity of 25MW or greater and are intended to generate electricity at a unit capacity factor of at least 60%. Beginning on December 31, 2015, these plants and all subsequently built plants must meet a CO2 emissions rate standard equal to that of a typical new natural gas combined cycle power plant. Or roughly 1,100 lbs. CO2/MWH (499 kg/MWH).

In this straw proposal, IEPA would be permitted to increase the stringency of the standard over time. Standards could be met through any combination of low-carbon fuels (such as natural gas or sustainably sourced biomass), increased efficiency, carbon capture and storage or other technology.

In addition, beginning January 1, 2009, LSEs in Illinois that enter into power purchase contracts with newly operational power plants regardless of where the plants are located may only do so if the plants meet the same 1,100 lbs CO₂/MWH. The standard would not apply to day ahead and spot market power purchases.

Advantages and disadvantages

Advantages

- This proposal directly regulates GHG emissions from new power plants in Illinois. This insures that emissions reductions are achieved in state in order to meet the Governor's target.
- The standard is performance based rather than a technology or fuel based mandate which allows flexibility for plants to use the least cost option available for compliance.
- The standard will help to achieve state-wide compliance with future state and/or federal cap and trade systems. Requiring lower GHG emissions from future power plants will reduce overall allowances prices in a state GHG market.
- The LSE standard will minimize any competitive advantage that may otherwise arise for out of state, unregulated power generation that sells power into Illinois as well as minimize emissions leakage.

Disadvantages

- Though this option does send a signal to the market that low emissions power has value (through the LSE standard) this proposal does leave high emitting, existing sources in Illinois entirely unregulated if they sell all of their power out of state. Complimentary policies that apply to direct emissions from these existing sources, such as a cap and trade system would be needed to address this issue.
- This option does nothing to address emissions from existing power plants and may provide a perverse incentive to extend the life of existing plants rather than retiring them and replacing them with new units.
- May increase the cost of electricity from new regulated power plants depending on which fuel and technology options are used to meet the standard.
- Adjustments to the current auction system would be necessary so that power purchasers know in advance the emissions rate associated with power contracts.

Rough estimate of reductions from BAU in 2020

Under WRI's business as usual projections it is assumed that four, new 1,000 MW conventional pulverized coal plants are built in Illinois between 2012 and 2020 and that each plant emits 5.6 million metric tons of CO₂ annually for a total of 22.4 MM tons CO₂ in 2020.

In order to meet the CO₂ emissions performance standard, it is assumed that natural gas plants, IGCC plants with carbon capture and storage, or ultra-supercritical pulverized

plants coal plants co-fired with 50 percent biomass are built instead of the four conventional coal plants. For the purpose of estimating emissions benefits, we assume eight 500 MW natural gas combined cycle plants are built in their place. The choice of natural gas for this example is appropriate as the US Energy Information Administrations projects that the levelized total cost of electricity in 2015 for natural gas is slightly lower than that of conventional coal (see table 1).

These natural gas plants are assumed to emit 1.64 MM tons CO2 each annually for a total of 13 MM tons CO2 in 2020. Therefore an estimate of the potential GHG reduction from this straw man proposal is 22.4MM tons CO2 minus 13.12 MM tons CO2 or 9.28 MM tons CO2.

	Capital	O&M	Fuel	Transmission	Total
Coal	30.34	4.73	14.58	3.47	53.12
Gas Combined Cycle	11.33	1.4	36.97	2.88	52.58
Wind	40.67	8.31	0	6.77	55.75
Nuclear	42.6	7.84	6.63	2.18	59.25

Source: US Energy Information Administration, Annual Energy Outlook 2006 with Projections to 2030, 2005. Figure 58.

It is assumed here that the LSE portion of this proposal would not significantly affect emissions in Illinois above and beyond the emissions standard for new plants. However, this component of the proposal will aid in preventing leakage of emissions to other states and therefore will maintain the environmental integrity of the entire package.

Timetables, duration and stringency

January 1, 2009. All LSEs in Illinois may only enter into power contracts from generators that meet or exceed the emission standard.

January 1 2010 (estimate). All new plants that begin operation on or after this will be subject to the emissions standard

January 1, 2016. Standards take effect.
Standards may become more stringent over time; there is no sunset provision in this straw proposal.

Barriers to implementation

IEPA will require additional resources to manage and enforce new performance standards

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Legislation would be required to implement this proposal.

Other regulatory measures may be needed to facilitate the availability of carbon capture and storage. This technology may be required for coal to be considered as a fuel source for new plants that are compliant with these proposed standard.

Adjustments to the current auction system would be necessary so that power purchasers know in advance the emissions rate associated with power contracts. This could be done by integrating the auction with a robust generation attribute tracking system (GATS) that track all generators from which Illinois LSE's purchase power would need to be implemented in order to assess the emissions rate associated with any one power purchase and overall LSE portfolio averages. A brief discussion of what a GATS is and how easily it could be applied in Illinois is presented below.

Generation Attribute Tracking Systems and their use in an emissions performance standard for electricity procurement.

Generation Attribute Tracking Systems (GATS) are standardized registry and accounting systems that tracks and records emission performance data from participating generators. Generation attributes are “unbundled” from actual electricity and tracked as unique certificates. This concept is identical to that of Renewable Energy Certificates (RECS) only attributes such as pollutant emission rates for all generation can be tracked and accounted for. Generation attribute certificates can be bought and sold separate from the actual electricity from which they were generated.

GATS are currently in operation for specific types of generation (e.g. renewables) in Wisconsin and Texas as well as full for generation tracking in the New England Power Pool and in the PJM Interconnection which covers Northern Illinois. Systems are under construction in the Western states (WREGIS) as well as the Upper Midwest (MRETS). In the PJM GATS (See attached fact sheet) generator participation is voluntary; however, states can require LSE's to hold GATS certificates to verify emissions disclosure data and for the compliance of policies such a an emissions portfolio standard as presented above. Therefore, LSE's have an incentive to require GATS certificates as part of power purchase transactions.

PJM GATS is designed to accommodate expansion and can accommodate the participation of generators that are located outside of the PJM Interconnection. For example, some generators located in the MISO power pool have registered with PJM GASTS in order to participate in Pennsylvania's Alternative Portfolio Standard market. If Illinois were to implement an emissions portfolio standard, MISO generators could participate in PJM GATS. This would reduce the need for MISO to develop its own GATS though if it were to do so it would not be difficult to interconnect the two systems.

In short, the infrastructure to support Option 2 in this straw proposal is either readily available or could be available in a short enough timeframe to support the development and implementation of this policy.

Written Comments - Submitted by United Mine Workers based on the straw proposal of "Options 1 & 2" discussed on the Electric Power conference call of April 22nd.

The UMWA supports many of the in-state energy conservation and efficiency options under consideration by the Advisory Group. The UMWA also supports national climate legislation consistent with the principles outlined by the AFL-CIO Energy Task Force (February 2007):

"A growing body of scientific evidence has confirmed the environmental challenges posed by global warming. Human use of fossil fuels is undisputedly contributing to global warming, causing rising sea levels, changes in climate patterns and threats to coastal areas.

Because of these dangers, the AFL-CIO supports balanced measures to combat global warming. However, the federation opposes extreme measures that would undermine economic growth, harm particular sectors, or placing ourselves at a disadvantage to other nations. We believe any approach for addressing greenhouse gas emissions must be done upstream on an economy-wide level, with contributions from each sector in proportion to the greenhouse gas emissions of that sector. Any mandatory tradable-permits program should initially seek to gradually slow the growth in greenhouse gas emissions, and should also contain a "safety valve" cost cap to protect the economy. In addition, U.S. efforts to address climate change should be conditioned on similar actions by U.S. trading partners and developing countries.

Any auction of carbon permits should be reasonable in scope and must assure that no sector is disproportionately burdened. The revenues generated should be primarily targeted to finance improvements in technology that will allow clean energy to be produced at prices close to what consumers pay for energy from conventional sources, and to encourage deployment of this technology in manner that promotes domestic production and jobs for American workers. This includes incentives for conversion to clean coal technology, carbon capture and sequestration, domestic production of advanced technology vehicles and their components, energy efficiency and renewable energy resources. We also recognize that hydro and nuclear energy are non-carbon emitting types of generation that also help maintain energy diversity in the electric utility industry."

UMW Comments on Option 1. CO2 emissions performance standards for new electric power plants

"All new electric generating facilities larger than 25MW which begin operation after 2011 must meet a CO2 standard equivalent to a gas combined cycle plant (1100 lbs CO2/MWH) by 12/31/2015 (adapted from S. 309, the Sanders-Boxer bill.)"

This standard, if implemented in Illinois apart from national legislation, likely would preclude the construction of new coal-based electric generating facilities in Illinois. The

additional costs associated with carbon capture & storage or other mitigation means would make new electric generation in Illinois uncompetitive with plants built in nearby coal states such as Kentucky and Indiana. Just as southern Illinois now stands to benefit from a resurgence of coal-based energy development, a stand-alone state policy mandating gas-based performance standards would drive new construction, mining and operating jobs to other eastern states.

For example, American Electric Power estimates the following costs for alternative coal and natural gas generation technologies, with and without carbon capture (and excluding carbon sequestration):

	PC	IGCC	NGCC	
Cost w/o CO2 capture (\$/MWH)		\$58	\$63	\$90
Cost with CO2 capture (\$/MWH)		\$94	\$87	\$137

Source: AEP Presentation to UBS, February 2006.

UMWA anticipates that economic analyses of the proposed application of gas-based performance standards on a stand-alone basis in Illinois will validate these concerns. Also, it is unlikely, as assumed by WRI, that eight 500 MW gas combined cycle units would be constructed in lieu of the four 1,000 MW coal plants assumed in the BAU base case. Natural gas is not an economic choice for new generation relative to increased imports from other states. For this reason, the CO2 reduction impacts of Option 1 should be calculated based on increased emissions from alternative generation supplies in adjacent states.

UMW Comments on Option 2. CO2 emission performance standards for electric procurement.

“Derived from CA AB 1368, prohibiting load serving entities in Illinois beginning in 2009 from entering into contracts (other than short-term day-ahead or spot) that in aggregate result in an emissions rate exceeding that of a new gas combined cycle plant (1100 lbs CO2/MWH).”

The UMWA believes that this option is unconstitutional under the dormant aspects of the Commerce Clause. It plainly discriminates against the purchase of power from predominately coal-based electric utilities in adjacent states. As discussed below, even if judged under the balancing tests of *Pike v. Bruce Church*, it is unlikely that Illinois could demonstrate any climate-related environmental benefit from the 15 million ton CO2 reduction estimated for this option.

In addition, we believe that this option, and similar proposals to regulate the emissions content of imported power, conflict with the exclusive jurisdiction that Congress conferred over wholesale power transactions to the Federal Energy Regulatory Commission. The Federal Power Act effectively preempts state interference with interstate wholesale power transactions.

By reserving to Congress the power to regulate interstate commerce, the Commerce

Clause of the U.S. Constitution implicitly limits state power to discriminate against interstate commerce. *Gibbons v. Ogden*, 22 U.S. (9 Wheat) 1 (1824). The "dormant" or negative aspects of the Commerce Clause do not preclude state actions affecting commerce: "(t)he States retain authority under their general police powers to regulate matters 'of legitimate local concern,' even though interstate commerce may be affected." *Lewis v. BV Inv. Managers*, 447 U.S. 27, 36 (1980).

The U.S. Supreme Court has adopted a two-tiered approach to dormant commerce clause analysis. The first approach involves statutes that have neither a discriminatory purpose nor a discriminatory effect:

"Where a state statute regulates evenhandedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits." *Pike v. Bruce Church*, 397 U.S. 137, 142 (1970).

The second approach governs statutes that discriminate against interstate commerce in purpose or effect. The Court has applied a "virtually *per se* rule of invalidity" if a statute effects simple economic protectionism and the state can present no valid purpose for the statute. *Wyoming v. Oklahoma*, 502 U.S. 437 (1992). Because Option 2 plainly discriminates against certain forms of interstate commerce, it likely would be judged under the strict scrutiny standard of the *per se* line of cases. The *per se* approach is applied when a regulation "directly regulates or discriminates against interstate commerce." *Brown-Forman Distillers v. New York State*, 476 U.S. 573, 578 (1986).

A CO₂ importation standard is extraterritorial in nature, requiring out-of-state utilities to reduce the CO₂ content of their emissions in order to compete in Illinois. The State would confront a substantial burden to demonstrate that Option 2 "advances a legitimate local purpose that cannot adequately be served by reasonable nondiscriminatory alternatives." *Oregon Waste Systems v. Dept. of Environmental Quality*, 511 U.S. 93. Numerous nondiscriminatory alternatives are available, such as the various in-state energy conservation and efficiency measures under consideration by the Climate Change Advisory Group.

An exception to the *per se* approach has been carved out where a state can show that its statute serves a legitimate local purpose and that no available nondiscriminatory means could serve this purpose as well. *Maine v. Taylor*, 477 U.S. 131, 138 (1986). The Court has given effect to state interests in protecting environment, wildlife and natural resources, *id.*, and to the protection of public health and safety. *Huron Portland Cement Co. v. Detroit*, 362 U.S. 440, 442 (1960).

The Court has recognized that there is no bright line standard to distinguish between statutes falling within the "balancing" of *Bruce Church* or the strict scrutiny of *Maine*. See, *Brown-Forman*, 476 U.S. 573, 579 (1986).

The issue posed here is whether Option 2 is "basically a protectionist measure, or whether it can be fairly viewed as a law directed to legitimate local concerns, with effects on

interstate commerce that are only incidental." *Philadelphia v. New Jersey*, 430 U.S. 617, 624 (1978). While Illinois properly is concerned about the potential effects of global climate change on its natural resources, the implementation of Option 2 may have no demonstrable effect on future climate change affecting Illinois, but a definite discriminatory effect on sales of electric power from adjacent states. Moreover, other non-discriminatory options under consideration by the Advisory Group are available to achieve Option 2's estimated 15 million ton CO2 reduction. For these reasons, we regard Option 2 as likely to fail a judicial challenge under the Commerce Clause.

We appreciate the opportunity to comment on these options. The UMWA expects that the policy recommendations of the Advisory Group ultimately will be submitted to the General Assembly for its consideration and implementation through appropriate legislation.