

ILLINOIS POLLUTION CONTROL BOARD

December 21, 2000

IN THE MATTER OF:)
)
NATURAL GAS-FIRED, PEAK-LOAD) R01-10
ELECTRICAL POWER GENERATING)
FACILITIES (PEAKER PLANTS))

INFORMATIONAL ORDER OF THE BOARD (by C.A. Manning, R.C. Flemal, G.T. Girard, E.Z. Kezelis, S.T. Lawton, Jr., M. McFawn, and N.J. Melas):

On July 6, 2000, Governor George H. Ryan asked the Illinois Pollution Control Board to conduct inquiry hearings concerning the potential environmental impact of natural gas-fired, peak-load electrical power generating facilities, known as peaker plants. Governor Ryan requested that the Board, at the conclusion of the inquiry hearings, address in writing whether any further requirements should be imposed on peaker plants to safeguard the environment.

The Board has completed its inquiry hearings and today issues this Informational Order. Based on the record of these proceedings, the Board makes several recommendations to tighten environmental regulations with respect to peaker plants.

This Informational Order has a companion report that the Board will issue in January 2001. It will provide a detailed summary of the information in the record of these proceedings. Both the Informational Order and the companion report will be available on the Board's Web site (www.ipcb.state.il.us) and from the Board's Chicago office (312-814-3620) and Springfield office (217-524-8500).

Below, the Board first provides a summary of its recommendations. Next, the Board sets forth background information on Governor Ryan's request, the Board's completed inquiry hearing process, and the electric power generating facilities discussed in this Informational Order. The Board then answers the five questions posed by the Governor.

SUMMARY OF BOARD RECOMMENDATIONS

Air Emissions

The Board notes that peaker plants burn natural gas, which is a relatively clean fuel environmentally. While peaker plants emit various pollutants into the air, nitrogen oxides (NO_x)¹ are of particular concern because they are ozone precursors. In Illinois,

¹ For ease of reference, a list of abbreviations used in the Informational Order is in Appendix A.

a facility that emits less than 250 tons per year (TPY) is considered a “minor” source under current State and federal environmental regulations. Many of the proposed peaker plants are being permitted to allow for emissions just under this threshold and are intended to emit much less than that. Due to their “peaking” nature, however, the Board finds that these plants are unique. They can emit most, if not all, of their permitted annual amount of emissions during a concentrated period of time. This period is generally the summer months when the ozone risk is greatest.

The Board recommends that the Illinois Environmental Protection Agency (IEPA) and the Board engage in rulemaking pursuant to the Environmental Protection Act (Act), 415 ILCS 5/1 *et seq.* (1998), to consider requiring these plants to use the Best Available Control Technology (BACT) to control their air emissions. BACT is a federally-derived regulatory methodology intended to determine the maximum degree to which air emissions can be reduced in light of energy, environmental, and economic impacts. In Illinois, BACT only applies to “major” sources, which are generally those that emit 250 TPY or more.

In addition, the Board recommends codifying two practices that IEPA Director Tom Skinner, in his administrative discretion, implemented to respond to public concern over the proliferation of peaker plants: dispersion modeling and public hearings for all proposed peaker plant construction permits.

Dispersion modeling is intended to ensure that peaker plant air emissions do not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS). While not required for minor sources, IEPA has recently been requesting this modeling information from peaker plant permit applicants during the permit process. The modeling should use conservative parameters to determine the worst-case impact, including any cumulative impact due to the clustering of peaker plants.

Noise Emissions

The Board first finds that a peaker plant can be a very loud noise source. Without adequate noise controls, peaker plants can greatly exceed the Board’s numeric noise standards. The Board also finds that Illinois’ current noise regulations are adequate to address most concerns. Nonetheless, the Board recognizes that a gap exists in current Illinois noise regulation. While Illinois has strict noise standards, IEPA does not currently have a program in place to ensure at the time of air permitting that facilities will meet the noise standards. The Board recommends remedying that problem.

Siting

As to whether peaker plants should be subject to siting requirements beyond local zoning, the Board stops short of making any specific recommendation on siting.

Instead, the Board provides the Governor with an informed discussion of the concerns raised and potential solutions.

BACKGROUND

Governor Ryan's Request

Citing the recent proliferation of peaker plants in Illinois, Governor Ryan asked that the Board hold inquiry hearings on the following issues:

1. Do peaker plants need to be regulated more strictly than Illinois' current air quality statutes and regulations provide?
2. Do peaker plants pose a unique threat, or a greater threat than other types of State-regulated facilities, with respect to air pollution, noise pollution, or groundwater or surface water pollution?
3. Should new or expanding peaker plants be subject to siting requirements beyond applicable local zoning requirements?
4. If the Board determines that peaker plants should be more strictly regulated or restricted, should additional regulations or restrictions apply to currently permitted facilities or only to new facilities and expansions?
5. How do other states regulate or restrict peaker plants?

The Completed Proceedings on Peaker Plants

The Board opened this docket, R01-10, by order on July 13, 2000. Board Hearing Officer Amy Jackson conducted seven days of public hearings at five different locations throughout the State: August 23 and 24, 2000, in Chicago; September 7, 2000, in Naperville; September 14, 2000, in Joliet; September 21, 2000, in Grayslake; and October 5 and 6, 2000, in Springfield. All seven Board Members were present for each day of hearing. Over 80 persons testified at these public hearings, including individual citizens, representatives of citizen groups, representatives of State and local government, and representatives of industry. A list of all hearing participants is attached as Appendix B. The Board appreciates the thoughtful participation of each of those persons.

Each hearing was transcribed by a court reporter, which resulted in nearly 1,300 pages of transcripts. Hearing Officer Jackson admitted 69 hearing exhibits into the record, a list of which is attached as Appendix C. The Board also received 195 written public comments, a list of which is attached as Appendix D. The Board accepts all of those public comments into the record of these proceedings and thanks each of those commentators for their insightful remarks.

Simple Cycle and Combined Cycle

Peaker plants are facilities that generate electricity during periods of peak electricity demand. The period of peak demand mainly occurs during summer months due to use of electricity for air conditioning. In Illinois, a large number of power plants using natural gas-fired turbines are being proposed to meet peak electricity demand.

A basic gas turbine is a rotary internal combustion engine with three major parts: an air compressor; one or more burners; and a power turbine. The air compressor compresses the incoming air from the atmosphere. A portion of this air is diverted to the burner where fuel is burned raising the temperature of compressed air. This very hot air from the burner is mixed with the rest of the compressed air and passed through the power turbine. The force of the expanding hot compressed air drives the turbine shaft, which is connected to a generator that produces electricity.

A gas turbine that discharges hot exhaust gases directly into the atmosphere is called a simple cycle turbine. A gas turbine with a waste heat boiler that uses the hot exhaust gases to generate steam is called a combined cycle turbine. The steam produced by a combined cycle plant may be used for generating electricity or for other industrial applications.

Gas turbines are ideally suited for generating electricity to meet peak demand for several reasons: they can be brought on-line relatively quickly, particularly simple cycle turbines (five to ten minutes); they are simple to operate; and they emit pollutants into the air at much lower levels than plants using other types of fuel such as coal and oil.

Simple cycle turbines are suitable for producing electricity to meet hourly and seasonal peak demand. Most of the recent air permit applications filed with IEPA have been for natural gas-fired, simple cycle combustion turbines. The generation capacity of simple cycle plants ranges from 25 to 800 megawatts (MW) per plant. Combined cycle turbines are more efficient than simple cycle turbines and are more suited for generating electricity to meet seasonal peak demand or intermediate demand, or for operating year round to supply base-load electricity. The generation capacity of combined cycle plants ranges from 336 MW to 2,500 MW.

A simple cycle turbine may be converted to a combined cycle turbine by retrofitting the simple cycle turbine with a waste heat boiler, steam turbine, and cooling system. It appears that a number of simple cycle plants ultimately may convert to combined cycle plants.

As of November 2, 2000, IEPA had received 67 applications for constructing natural gas-fired power plants, of which 56 are for plants with simple cycle turbines to meet peak demand, eight are for plants with combined cycle turbines to meet base-load demand, two are for plants where the permit applicants had not decided whether to use

simple cycle or combined cycle turbines, and one is for a plant with an aero-derivative combined cycle turbine to meet peak demand. IEPA has limited the time that simple cycle plants can operate as follows: from 2,000 to 4,000 hours (approximately 83 to 166 days) per year per turbine. IEPA has limited the time that a combined cycle plant can operate to 6,000 hours (250 days).

The Board recognizes that most natural gas-fired peaker plants use simple cycle turbines. However, in this Informational Order, the Board will, for a number of reasons, consider plants that use combined cycle turbines as well as those that use simple cycle turbines. Combined cycle plants are used to meet seasonal peak electricity demand. As discussed below, combined cycle plants pose similar environmental concerns with respect to air quality and noise pollution, and combined cycle plants may significantly impact regional water resources. Simple cycle plants may be converted to combined cycle plants. Finally, combined cycle plants, like simple cycle plants, are being located in developed or developing areas of Northeastern Illinois, often near residential areas.

BOARD ANSWERS TO GOVERNOR RYAN'S QUESTIONS

Question 1: Do peaker plants need to be regulated more strictly than Illinois' current air quality statutes and regulations provide?

Current Air Quality Regulation of Peaker Plants

Many sources of air emissions, such as coal-fired plants, emit greater total amounts of pollutants into the air than do peaker plants. Peaker plants burn natural gas, which is relatively clean. Nevertheless, it would be prudent for Illinois to consider regulating peaker plants more strictly in several discrete areas with respect to air quality.

Peaker plants emit various amounts of air pollutants as they burn natural gas to generate electricity. The pollutants are combustion byproducts that include NO_x, carbon monoxide (CO), volatile organic material (VOM), particulate matter (PM), and sulfur dioxide (SO₂). Peaker plants emit NO_x and CO, small amounts of VOM, and negligible amounts of PM and SO₂. NO_x emissions are of particular interest because they are precursors for ozone formation. Air emissions of NO_x from identical gas turbines used in a simple cycle and a combined cycle plant would be similar as long as a duct burner is not used in the heat recovery applications of the combined cycle plant. With a duct burner, the NO_x emissions level for the combined cycle turbine would be higher than that of the simple cycle turbine.

Many peaker plants are designated as "minor" sources of air emissions under current regulations because they are permitted to have "potential air emissions" of less than 250 TPY of NO_x. Because these peaker plants are not considered "major" sources

of air emissions, they avoid the strict requirements for air quality impact modeling and technology-driven pollution controls, such as BACT and the Lowest Achievable Emission Rate (LAER).

A BACT analysis involves determining the maximum degree to which the emissions of a source can be reduced in light of energy, environmental, and economic impacts. LAER requires the source to meet the most stringent emission limit contained in a State Implementation Plan or achieved in practice, without considering energy, environmental, or economic impacts. Neither BACT nor LAER can be less stringent than an applicable New Source Performance Standard (NSPS), which is an emission standard prescribed for criteria pollutants from certain stationary source categories under Section 111 of the federal Clean Air Act.

Generally, peaker plants using simple cycle gas turbines tend to be minor sources, while combined cycle plants tend to be major sources. Because they generate steam to produce electricity, combined cycle plants fall into a special category under Prevention of Significant Deterioration (PSD) regulations, making their threshold for major source status 100 TPY rather than the 250 TPY threshold applicable to simple cycle plants.

Minor source peaker plants may emit their total annual permitted amount of pollution, often just under 250 tons, into the air in a concentrated time period. As noted, that time period tends to be the three or four months of summer because air conditioning use creates a peak demand for electricity. The summer is the worst time of year for ozone formation. Most peaker plants also are locating in the more densely populated Northeastern part of the State, often near residential areas. In addition, peaker plants may be sited in clusters, in part because each plant wants to be close to existing gas and electric transmission lines.

Board Conclusions on Air Quality Regulation of Peaker Plants

To ensure that minor source peaker plant air emissions do not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS), Illinois' existing regulations should be enhanced. Specifically, when those plants apply for air construction permits, they should be subject to air quality impact analyses using dispersion modeling with respect to NAAQS. NAAQS are set at a level that protects public health with an adequate margin of safety and that protects public welfare from known or anticipated adverse effects. Existing regulations require this evaluation only for major sources.

Conservative modeling parameters for plant operation and meteorological conditions should be used to determine the worst-case impact. Modeling should encompass any cumulative impacts due to clustering of peaker plants by accounting for the emissions from other proposed or existing peaker plants in the area. A peaker

plant's impact on air quality should be considered acceptable if the modeling results show that the point of maximum impact at which the NAAQS are met lies at or within the property line of the plant.

The Board recommends that IEPA propose a Board rulemaking to require that new and expanding peaker plants designated as minor sources under the State's PSD regulations conduct air quality impact analyses. This recommendation would primarily affect simple cycle plants because they tend to be minor sources. Combined cycle plants tend to be major sources, and major sources are already subject to air modeling.

Public hearings also should be held before IEPA issues its final determination on the permit application. The Board recommends that IEPA adopt a rule requiring that the air construction permit application process for all combined cycle and simple cycle peaker plants include a public hearing before IEPA makes its final decision.

As noted, IEPA Director Tom Skinner, in his administrative discretion, already has been requiring these facilities to meet the air modeling and public hearing obligations. Citizens applauded these practices and the Board recommends that the practices be codified, as discussed above.

In addition, further consideration should be given to requiring minor source peaker plants to use BACT to reduce their emissions of NO_x into the air. Several other states, including Michigan, Ohio, and Indiana, require BACT for sources that would not trigger BACT under federal PSD rules. New gas turbines with readily available, reliable emission control technology can routinely achieve very low air emission rates.

These emission rates are much lower than the only applicable technology-based emission limitation, the potentially outdated NSPS. NSPS does not reflect BACT or LAER for new turbines. Because they are subject only to NSPS and not the more stringent control requirements, many peaker plants propose NO_x emission limits to IEPA that do not reflect the current emission control technology.

NO_x emissions from peaker plants can be reduced either by combustion modification techniques or add-on control devices. Combustion modification techniques are capable of reducing NO_x emissions to levels ranging from 3 parts per million (ppm) to 25 ppm. Add-on control devices are capable of reducing NO_x emissions from peaker plants to a range of 3 ppm to 4 ppm. Newer gas turbines are being designed to routinely achieve NO_x emission rates in the range of 10 ppm to 25 ppm. The requested NO_x emission rates for simple cycle plants range from 9 ppm to 175 ppm, while the requested NO_x emission rates for combined cycle plants range from 3.5 ppm to 4.5 ppm.

As of August 16, 2000, IEPA had made only three BACT determinations for NO_x emissions from simple cycle peaker plants because most of the plants are

developed as minor sources. In all three instances, IEPA determined that the combustion modification technique known as the “Dry low-NO_x” burner system is BACT, with NO_x limits ranging from 9 ppm to 15 ppm.

The Board recommends that IEPA propose a Board rulemaking to require new, expanding, and existing peaker plants designated as minor sources under the State’s PSD regulations to implement BACT for reducing NO_x emissions. The rulemaking proceeding would provide the opportunity to more fully assess whether BACT should apply in these instances, including whether imposing it would be economically reasonable and technically feasible.

A number of participants, including Mr. Keith Harley of the Chicago Legal Clinic and Mr. Brian Urbaszewski of the American Lung Association, urged the Board to recommend that the United States Environmental Protection Agency (USEPA) rescind the NO_x waiver. The waiver grants relief from New Source Review (NSR) requirements to certain NO_x emission sources in the Chicago nonattainment area (NAA). Those requirements include a major source designation threshold of 25 TPY of NO_x, LAER, and NO_x offsets in the ratio of 1.3 to 1.

The Board notes that repealing the waiver would have ramifications well beyond the scope of these inquiry proceedings. The waiver applies to all types of sources in the Chicago NAA, not just peaker plants. Its repeal therefore would have substantial impacts on industries that are not the subject of this inquiry hearing process. Based on the record of these proceedings, the Board recommends a more tailored approach—namely, considering applying BACT to minor source peaker plants, as described above. The Board agrees with IEPA that any decisions concerning the NO_x waiver should be made by USEPA in the context of its upcoming review of Illinois’ attainment demonstration for the Chicago NAA.

The Board also declines to recommend that all peaker plant air permits automatically contain specific limits on emissions resulting from the start-up and shut-down of the plants. Gas turbines emit greater amounts of pollutants during start-up and shut-down, resulting in a higher emission factor (pounds of pollutant per million British thermal units). However, the lower load during those times compensates for the higher emission factor. IEPA requires construction permits to account for all emissions, including emissions during start-up and shut-down, to demonstrate compliance with annual limits. While permits do not routinely have specific limits on the amount of emissions during start-up and shut-down, IEPA may include those limits if elevated emissions during those periods would threaten air quality.

Question 2: Do peaker plants pose a unique threat, or a greater threat than other types of State-regulated facilities, with respect to air pollution, noise pollution, or groundwater or surface water pollution?

Air Pollution

As noted, many sources emit greater total amounts of pollutants into the air than do peaker plants. Peaker plants, however, pose a unique threat of air pollution when compared to many other State-regulated facilities. Unlike many other sources, simple cycle peaker plants may operate only or primarily during one season, the summer. Those plants therefore may emit most, if not all, of their annual permitted amounts of NO_x, which are ozone precursors, into the air during the ozone season. This may cause a greater impact on air quality than a comparable manufacturing plant permitted for the same amount of emissions that operates over an entire year. Under existing regulations, however, as discussed above, most simple cycle peaker plants avoid the most stringent air quality requirements.

Noise Pollution

Peaker plants pose a greater threat of noise pollution than many other types of State-regulated facilities. The engine used, though not necessarily identical to a jet air craft engine, is a very loud noise source. Without adequate noise controls, peaker plants can greatly exceed the Board's numeric noise standards. Simple cycle and combined cycle plants pose a similar threat of noise pollution because they use the same type of engine.

While IEPA has received no noise complaints about existing peaker plants, a large number of peaker plants plan to begin operating soon, often in close proximity to residential areas. In addition, many of the existing peaker plants appear to be located at or adjacent to electric utilities.

Local governments do not automatically request that peaker plant developers perform noise analyses as part of the local zoning process. Local governments may lack the technical expertise or resources to assess or conduct noise studies. Moreover, when peaker plant developers do provide noise studies to local governments, the methodologies and level of detail in proposing noise control measures, if any, can vary considerably.

Director Skinner stated that one of the critical objectives of IEPA is to ensure that no permit is issued to a peaker plant unless the permit applicant proves that the facility will not violate existing environmental laws or regulations. He emphasized the language of Section 39(a) of the Act:

When the Board has by regulation required a permit for the construction, installation, or operation of any type of facility, equipment, vehicle, vessel, or aircraft, the applicant shall apply to the Agency for such permit and it shall be the duty of the Agency to issue such a permit upon proof by the applicant that the facility, equipment, vehicle, vessel, or

aircraft will not cause a violation of this Act or of regulations hereunder.
The Agency shall adopt such procedures as are necessary to carry out its duties under this Section. 415 ILCS 5/39(a) (1998) (emphasis added).

The Board has adopted a thorough set of noise regulations for Illinois under the Act. See 35 Ill. Adm. Code 900, 901. The problem is that IEPA has no mechanism to ensure that peaker plants (or practically any other noise sources) receiving permits from IEPA will not violate Illinois' existing noise standards. Accordingly, there is a gap in Illinois' current regulatory approach to noise. While Illinois has stringent numeric noise standards and thorough procedures for measuring noise, it has no regulatory scheme for reviewing noise emitters during air permitting to ensure their compliance. IEPA does not currently have the funding or staffing to perform that function for all peaker plants.

The Board recommends that IEPA, in connection with its existing air permitting programs, review demonstrations from combined cycle and simple cycle plants for compliance with the Board's current numeric noise standards. Existing facilities should take sound measurements in accordance with applicable procedures, as part of their permit renewals. Proposed facilities should perform noise modeling as part of their construction permit applications.

IEPA agreed that with additional funding and staff, it could readily review noise information submitted with air permit applications. In fact, for several years, IEPA has been reviewing demonstrations of compliance with numeric noise standards as part of the land permit application process for gas turbines used to generate electricity from landfills. IEPA should seek and be granted adequate funds to provide the important function that the Board recommends.

Some citizens argued that the Board's existing numeric noise standards do not adequately ensure that existing noise levels in quiet residential areas are maintained. The Board's current noise regulations impose statewide numeric limits on the sound levels that can be emitted from one property to another. The regulations take into account different land uses, with residential land having the most protective standards. The regulations require sound measurements to be corrected for background noise, which is generally the noise from sources other than the source at issue. This is done to determine the noise attributable to the noise emitter being studied. Some citizens are concerned that if one or more peaker plants move into a quiet area, they will raise the background noise level in that area, without any one peaker plant violating the numeric noise standards.

It appears that these citizens seek, in essence, to freeze noise levels currently existing in certain neighborhoods. The Board recognizes this concern but believes it could apply to any type of industrial or commercial growth. It does not appear to be unique to peaker plants, the subject of these proceedings. This type of concern about

preserving a lifestyle by preventing the encroachment of industrial or commercial development into quiet residential areas may be better addressed through local zoning and planning.

The Board agrees with IEPA that peaker plant noise emissions do not warrant changing the Board's current numeric noise standards. Of course, residents and local governments can bring nuisance noise enforcement actions before the Board that do not allege a violation of the numeric noise standards.

Water Pollution

The record of these proceedings does not suggest that discharges from peaker plants pose a unique threat, or a greater threat than other State-regulated facilities, regarding water pollution. Nor does the record reveal any gap in existing water pollution regulations with respect to wastewater discharges to surface waters or publicly owned treatment works, or stormwater discharges. The Board therefore makes no recommendation for additional regulations to address potential water pollution from peaker plants. The Board emphasizes, however, that peaker plants do raise concerns about water use, which the Board discusses below.

Question 3: Should new or expanding peaker plants be subject to siting requirements beyond applicable local zoning requirements?

Currently in Illinois, local governments applying local zoning ordinances make decisions on siting simple cycle and combined cycle plants. Environmental permits are addressed separately by IEPA. Three primary concerns with the current siting process were identified during the hearings:

- Energy Planning. Some participants expressed concern that these plants are being sited without the State first determining that there is a need for the electricity that they will generate. They called on the State to develop an energy plan to help guide the siting of electric generating plants.
- Environmental Impacts That May Extend Across Political Boundaries. Some participants asserted that local government cannot effectively address environmental impacts from simple cycle and combined cycle plants that may extend across political boundaries, including cumulative impacts from clusters of plants.
- Public Participation/Cross-Jurisdictional Authority. Some participants pointed out that officials and residents of neighboring communities cannot effectively participate in the siting process of the local host government. For

example, one municipality can approve the siting of a combined cycle or simple cycle plant just within its border, away from its residences but near the residential area of a neighboring municipality. The neighboring municipality has no meaningful voice in the process. Some participants requested that these neighboring communities be able to effectively participate in the siting process and that neighboring officials have a meaningful say in the ultimate siting decision, including, for example, ensuring compliance with county standards.

The Board addresses each of these concerns below.

Energy Planning

Peaker plants are proliferating in Northeastern Illinois because of many factors, including deregulation, rising energy costs, increased demand for power, close proximity to users as well as existing gas and electric transmission lines, low construction costs, the closure of base-load electric plants, and opposition to building new transmission lines. Mr. Patricio Silva, Midwest Activities Coordinator of the Natural Resources Defense Council, described Illinois' current energy market as an "Oklahoma land rush" and called for Illinois to have a "comprehensive energy planning process, encompassing functions once carried out by the Illinois Commerce Commission."

Many persons expressed concern that peaker plants are being sited without the government first determining that they are needed. For example, Mr. Jim LaBelle, Chairman of the Lake County Board, called for the State to take a leadership role in developing an energy plan to help guide the siting of electric generating plants. He asserted that Illinois should have a plan that: identifies the power generation and transmission needed to support continued economic growth in Illinois; assures that power generated in a particular location will provide direct benefits to the surrounding county and region; and considers alternatives such as improved transmission capacity to reduce the need for additional generation in certain areas.

Industry representatives, on the other hand, asserted that the market should determine when additional generating capacity is needed. They warned that imposing stricter siting requirements in Illinois might result in power shortages, higher costs for power, reliability problems, and delays in siting.

The question of whether the State should allow new electric generating plants to be sited only if they are consistent with a statewide energy plan is in many ways a question about whether the proliferation of peaker plants is an unwanted byproduct of restructuring the electric industry.

Before restructuring, electric utilities requested approval from the Illinois Commerce Commission (ICC) to build new generating plants at specific sites. A utility seeking to build a new plant was required to demonstrate need for the new generating capacity. If the utility succeeded, the ICC would grant the authority, including, if required, powers of eminent domain.

A few years ago, Illinois embarked upon deregulation. It chose a market-based approach for restructuring, and the General Assembly passed the Electric Service Customer Choice and Rate Relief Law of 1997 (Illinois Electricity Choice Law) to accomplish it. See 220 ILCS 5/16-101 through 16-130 (1998). Because of the Illinois Electricity Choice Law, the ICC no longer has a formal role in assessing Illinois' electricity needs or mandating additional capacity. Instead, market forces are expected to spur innovation, attract competition, drive the appropriate supply/demand balance, and attract new power suppliers to the State.

In addition to the introduction of market-based restructuring at the State level, the electric utility industry also experienced increasing levels of competition on the federal level. For example, the Federal Energy Regulatory Commission's Order 888 of 1995 required electric utilities to provide open access to their transmission system to any entity interested in moving or "wheeling" electricity from one part of the national grid to another for wholesale purposes. This opened the interstate transmission system to wider access and made interstate electricity sales even more economically attractive.

In light of the evolving nature of deregulation nationwide, a brief review of other states' siting approaches is warranted. (A lengthier discussion of siting options is set forth later in this Informational Order.) As Mr. Charles Fisher, Executive Director of the ICC explained, some states have taken approaches to siting similar to that of Illinois, while others have established state siting committees either as part of or separate from state public utility commissions.

States With Restructuring Laws. Like Illinois, California, New York, and Ohio have enacted electric restructuring laws. Unlike Illinois, these states use state siting committees to determine where peaker plants should be sited. Texas also has enacted an electric restructuring law. It has a system similar to the current system in Illinois: local zoning boards control siting, and the state environmental agency controls permitting.

States Without Restructuring Laws. Wisconsin, which has not enacted an electric restructuring law, requires traditional certificates of convenience and necessity for peaker plants. Kentucky, which also has not enacted an electric restructuring law, does not require any approvals, other than state environmental permitting and local zoning, as long as the peaker plant sells the electricity it generates wholesale on the market.

In Illinois, merchant generators do not have to request the ICC's siting approval or demonstrate to the ICC that they are needed to meet energy demand. Nor is the ICC involved in any formal energy planning for the State. When assessing any impacts of restructuring, the Governor may wish to consider whether the State should have an energy plan that could, among other things, guide the introduction of new generating capacity into Illinois.

Environmental Impacts That May Extend Across Political Boundaries

Environmental impacts from peaker plants, such as from air emissions, noise emissions, and water use, may extend across political boundaries. Multiple peaker plants may be sited close to each other for close proximity to natural gas and electric lines and because certain local jurisdictions may offer less stringent zoning requirements than other jurisdictions. Concentrations of peaker plants may lead to cumulative environmental impacts.

Earlier in this Informational Order, the Board recommended approaches to address these concerns with respect to air and noise. The air modeling recommended will address cross-boundary impacts and air emissions from other sources. The noise compliance demonstration recommended will help to ensure that peaker plant noise emissions meet Illinois noise standards in every jurisdiction. As proposed, potential impacts from air or noise emissions, including emissions from multiple sources, would be assessed by IEPA at the time of air permitting.

The Board also notes that Governor Ryan created the Water Resources Advisory Committee (WRAC) to assess the use of groundwater and surface water. The WRAC's work includes assessing the impacts that users, including peaker plants, have on these supplies of water and recommending action. The WRAC should address the virtual absence of State controls or plans regarding water use. To assist the WRAC in its work, Chairman Manning, who sits on the WRAC on behalf of the Board, forwarded a letter to the WRAC, attaching summaries of information on water use from these inquiry hearing proceedings and on the regulatory frameworks that other Midwestern states have with respect to water use. In her letter, Chairman Manning calls on the WRAC to focus its attention on "the development of a workable regulatory framework for the conservation and fair allocation of water resources in this great State: one that meets the needs of all concerned citizens and entities." Various industry representatives referred to this letter in their public comments to the Board in these proceedings. Chairman Manning's submittal is attached as Appendix E.

Accordingly, concerns over environmental impacts from air emissions, noise emissions, and water use can be addressed through State or regional regulatory mechanisms outside of a siting process. For example, the record shows that the Board's recommendations with respect to air and noise, if implemented, should be protective without any need to have them addressed in a siting process. If such regulatory mechanisms are not implemented, however, these types of concerns could be

addressed in a siting process, as they are in the New York and California processes discussed below.

Water use is a particular concern. As noted, Illinois has no regulatory program to manage and preserve the quantity of its many surface water and groundwater resources. Because of its high water use for cooling purposes, a plant using a combined cycle turbine will have a greater impact on regional water resources than a plant with a simple cycle turbine. Simple cycle plants use about 0.07 to 2 million gallons of water per day, while combined cycle plants use approximately 5 to 20 million gallons of water per day. As mentioned, many simple cycle plants may convert to combined cycle plants.

Dr. Derek Winstanley is the Chief of the Illinois State Water Survey, a division of the Office of Scientific Research and Analysis of the Illinois Department of Natural Resources. He stated that proper use of groundwater resources is not best determined on a “town-by-town” basis because groundwater aquifers cut across political jurisdictions. He advocated regional planning and management of water resources, including groundwater aquifers, river basins, and water sheds.

Dr. Winstanley’s concerns were echoed by numerous local and State government officials and representatives, including State Senator Terry Link, Mr. Daniel J. Kucera, an attorney with Chapman & Cutler appearing on behalf of the Lake County Public Water District, Mr. Mike Shay, Senior Planner with Will County, and Ms. Bonnie Thomson Carter, Lake County Board Member for the Fifth District and Chair of the Public Works and Transportation Committee. Each of them testified that potential environmental impacts from individual or multiple peaker plants cannot be addressed effectively by local government. Many local zoning authorities may lack the financial resources or technical expertise to competently assess these aspects of peaker plant proposals.

The Board agrees that current local zoning processes alone generally do not adequately consider environmental impacts from simple cycle and combined cycle plants that may extend across political boundaries, including any cumulative effects from the clustering of these plants. As noted, however, these concerns can be fully addressed through regulatory mechanisms outside of a siting process.

Public Participation/Cross-Jurisdictional Authority

As noted, currently in Illinois, the siting of peaker plants is addressed only by local government through local zoning or land use ordinances. Generally in Illinois, municipalities control zoning matters within their borders. Accordingly, neither the officials of a neighboring municipality or surrounding county, nor the citizens residing in those jurisdictions, can effectively participate in a given municipality’s zoning approval process to site a peaker plant.

Representatives of DuPage County, Will County, and Lake County explained that their zoning authority is limited in this way. A number of local and State officials, including State Representative Mary Lou Cowlshaw and Ms. Vivian Lund, Mayor of Warrenville, expressed concern that residents and officials in neighboring municipalities and surrounding counties have no meaningful say in a given municipality's zoning approval process for a peaker plant, despite the potential for environmental impacts of peaker plants to cross political boundaries.

Participants requested that neighboring communities be able to effectively participate in a municipality's siting process and that neighboring officials have a say in the ultimate siting decision, including, for example, ensuring compliance with county standards.

Potential Solutions

As noted above, states across the country use different types of processes for approving electric power generating plants. Some states, like Illinois, have a decentralized or segmented process of approving peaker plants. Under that approach, the siting decisions are made by local governments applying their zoning ordinances, while environmental permits are obtained from the different state bureaus. Other states have a centralized or coordinated process. Those states empower one state board or commission to grant or deny all siting proposals. In California and New York, environmental permitting is a component of the power plant siting process and the state environmental regulators participate in that process.

Below, the Board discusses the New York and California processes for siting electric generating plants, as well as Illinois' process under the Act for siting pollution control facilities.

New York and California Siting Processes. The siting processes in New York and California were most frequently referred to in this record. New York's siting process applies to an electric generating facility with a capacity of 80 MW or more. Siting decisions are made by a state board. The application for siting must include: (1) studies of impacts on air, water, visual resources, land use, noise levels, and health, (2) proof that the proposed facility will meet state and federal health, safety, and environmental regulations, and (3) applications for air and water permits.

To facilitate the ability of local government and the public to evaluate the proposed project, New York requires that the applicant provide funds for intervenors to use in the siting process. The applicant must pay a fee of \$1,000 per MW of capacity, not to exceed \$300,000, to be used as an intervenor fund. The funds are awarded to municipal and other local parties to help pay for the expenses of expert witnesses and

consultants. Any municipality or resident within five miles of the proposed facility can become a party to the proceeding.

The state environmental agency reviews the air and water permit applications as part of the siting process and must provide the permits to the siting board before the board decides whether to approve siting. The siting board reviews the siting request based on a number of criteria, including cumulative air quality impacts and public health and safety. Interestingly, one of the criteria requires the siting board, before it can grant siting, to determine either: (1) construction of the facility is reasonably consistent with the state energy plan, or (2) the electricity generated by the facility will be sold in a competitive market. The state siting board may supercede local requirements if it finds them unreasonably restrictive. Please refer to Appendix F for a more detailed description of New York's siting process.

California has given exclusive authority to a state commission to conduct a consolidated approval process for siting all power plants that will have electric generating capacities of 50 MW or larger. The commission's siting responsibilities include statewide planning analysis. The siting process allows the project applicant to submit a single application for all necessary state and local approvals and provides analysis of all aspects of a proposed project, including need, environmental impact, safety, efficiency, and reliability.

While the state commission's authority supercedes the authority of other state and local agencies, the commission solicits their participation in the siting process to ensure compliance with all applicable requirements, including local requirements. Under this approach, the applicant seeks a single regulatory permit from the state commission. The California siting process has public hearings and allows the public to participate. It includes a state-appointed public adviser responsible for ensuring that the public and other interested parties have full opportunities to participate in the siting process. Please refer to Appendix G for a more detailed description of California's siting process.

Pollution Control Facility Siting in Illinois (SB 172). In Illinois, the Act sets forth a process for siting pollution control facilities, including landfills. The process, commonly known as "Senate Bill 172" or "SB 172," was discussed many times in this record as a potential model for siting peaker plants. SB 172 changed the Act in 1981 so that local governments would decide whether to grant siting approval for pollution control facilities. See 415 ILCS 5/39.2 (1998). Previously, the only way local governments could participate in the approval of pollution control facilities within their borders was to provide comments in IEPA's environmental permitting process. Those comments were not binding on IEPA.

With SB 172, the applicable local unit of government to decide siting is the county board if the facility's proposed location is in an unincorporated area, or the

governing body of the municipality if the proposed location is in an incorporated area. See 415 ILCS 5/39(c) (1998). The local government must conduct public hearings to determine whether to grant siting. The process also provides for various public notices. Participation of neighboring officials and residents in the process is allowed. For example, Section 39.2(d) of the Act, after prescribing how to notify these officials, provides:

Members or representatives of the governing authority of a municipality contiguous to the proposed site or contiguous to the municipality in which the proposed site is located and, if the proposed site is located in a municipality, members or representatives of the county board of a county in which the proposed site is to be located may appear at and participate in public hearings held pursuant to this Section.

The local siting authority must determine whether the proposed facility meets each of nine statutory criteria. See 415 ILCS 5/39.2 (1998). Those criteria are set forth in Appendix H. The criteria, which include both land use and environmental considerations, apply to the siting decision in lieu of local zoning or local land use requirements. See 415 ILCS 5/39.2(g) (1998). IEPA is not directly involved in the local government's hearing process. However, IEPA cannot issue a development or construction permit for a pollution control facility unless the permit applicant submits proof that it obtained local siting approval under SB 172. See 415 ILCS 5/39(c) (1998). Local siting decisions are appealable to the Board. See 415 ILCS 5/40.1 (1998).

Many of the SB 172 siting criteria are specific to waste facilities. Criteria, however, could be tailored for siting peaker plants. Because the SB 172 approach requires the statutory criteria to apply instead of local zoning, concern was expressed in the record that local governments would lose some control over peaker plant siting by using the SB 172 approach. Modified SB 172 approaches were suggested. One approach would have State-identified siting criteria serve as minimum criteria that must be met, but which would not operate in lieu of local zoning. Another approach would have State-identified siting criteria serve to inform local governments of siting issues, but be voluntary. Under that approach, local governments would not have to apply the criteria, but could look to the criteria for guidance if they chose to do so. Another approach would involve creating regional siting authorities to make these determinations. Several participants suggested that siting decisions should be appealable to the Board, as they are under SB 172.

Board's Concluding Remarks on Siting. State-run approaches to siting can provide for broader public participation in siting and ensure that a larger perspective is brought to bear on environmental issues and energy planning when selecting sites for power plants. They also offer a more uniform application of siting criteria over a state than a patchwork of individual local zoning decisions. A centralized or coordinated

type of process, however, is not without potential drawbacks. For example, this type of siting process has caused delays in siting electric plants, including delays in California leading to changes in an effort to speed up its process. Also, in most states with these comprehensive siting processes, the state board can overrule local jurisdictional authority. Accordingly, state boards typically can approve siting over the objection of the local host government.

Any number of permutations to existing siting schemes could be fashioned for combined cycle and simple cycle plants. For example, environmental permitting programs might be made a component of the siting process, as in New York and California, or they might remain separate from the siting process, as they are now in Illinois. To enhance public participation and the ability of local governments to assess peaker plant proposals, the State might require peaker plant developers to provide something akin to the “intervenor” funds required in New York. Local siting decisions might be based on State siting criteria and made appealable to a State board, as in SB 172. State siting criteria might operate in lieu of local zoning requirements, or serve as minimum standards to which local authorities may add local requirements. Of course, concerns raised about siting schemes, including delays, power shortages, increased costs, reliability problems, and loss of local control, should be considered.

Determining whether local zoning is adequate or whether additional siting requirements are necessary in Illinois depends on what concerns the siting scheme seeks to address. As discussed, the three primary concerns raised with the current siting process in Illinois were: (1) the lack of a State energy plan, (2) the inability of local government to address environmental impacts that may reach across political boundaries, and (3) the inability of neighboring residents to effectively participate in a local government’s siting process, and the inability of neighboring jurisdictions to ensure that their standards are being met.

If the State decides that it should step into the energy planning void left by the restructuring of the electric industry, then a centralized State siting board might make sense. The State might decide, on the other hand, that the void is a proper result of restructuring and that State regulatory solutions should be implemented to address concerns over air emissions, noise emissions, and water use. In that case, the State might limit any change in the current siting process to require that neighboring communities be allowed to effectively participate in a local government’s zoning decision on a peaker plant.

As for the first concern, this Informational Order provides helpful information to assist the Governor in his consideration of whether the State should renew its role in energy planning after restructuring. The second concern, on potential environmental impacts from air emissions, noise emissions, and water use, can be addressed through State or regional regulation independent of any siting process. As noted, the Board has recommended statewide regulatory solutions to address air and noise. The record

demonstrates that those approaches should be protective. Regarding water use, the Board would expect the WRAC to recommend an effective regulatory framework sorely lacking now on that important issue. If adequate regulatory schemes are not implemented, however, those types of environmental concerns might need to be addressed through a siting process.

Finally, regarding the third concern, legislation might be pursued that would allow the input of neighboring communities in siting decisions. Local government officials and citizens almost uniformly called for State action to address this concern.

Question 4: If the Board determines that peaker plants should be more strictly regulated or restricted, should additional regulations or restrictions apply to currently permitted facilities or only to new facilities and expansions?

The Board's recommended regulation concerning air quality impact analyses and public hearings should be required for new and expanding peaker plants seeking air construction permits. Whether BACT should apply to control emissions from minor source peaker plants should be evaluated in a rulemaking before the Board. At that time, the technical feasibility and economic reasonableness of applying BACT to new, expanding, and existing minor source peaker plants can be examined.

The demonstration of compliance with existing numeric noise standards should be made by existing peaker plants and by new peaker plants and expansions. Existing peaker plants have been subject to the Board's numeric noise standards and therefore should be able to demonstrate that they comply with those standards by taking the appropriate sound measurements. Existing facilities should make those demonstrations upon air permit renewals. The demonstrations of new and expanding facilities could include noise modeling and should be submitted at the time of air construction permit applications.

Finally, while the Board makes no recommendation on siting, any legislative amendment for siting procedures should apply only to new facilities and expansions.

Question 5: How do other states regulate or restrict peaker plants?

Please refer to Appendix I for a comprehensive table on other states' laws and regulations that may affect peaker plants. For example, Michigan requires BACT for all new sources of VOM emissions, which is a more stringent threshold for triggering BACT than the federal standards. Many other states have no noise regulations, or have very minimal noise regulations compared to the noise standards in Illinois. Unlike Illinois, most other Midwestern states have regulatory programs for water withdrawals. As for siting, a number of states have state boards review requests to site electric generating plants, while others, like Illinois, leave siting decisions to local governments applying their zoning ordinances.

CONCLUSION

Peaker plants have proliferated in Illinois in the wake of restructuring the electric power industry. The largest influx of peaker plants is occurring in developed and developing parts of the greater Chicago metropolitan area, often close to residential areas. This has raised public concerns over potential environmental impacts posed by these plants.

In response to those public concerns, Governor Ryan requested the Board to conduct inquiry hearings on peaker plants, which the Board has done. The Governor asked the Board to determine, based on the inquiry hearing process, whether additional safeguards are necessary to address concerns over air pollution, noise pollution, water pollution, and siting with respect to peaker plants.

The Board has carefully reviewed the voluminous record of this inquiry hearing process, which includes the comments of individual citizens and citizen groups, local and State government, and industry. Based on that record, the Board recommends that the State take action to protect the environment by tightening current environmental regulations concerning peaker plants.

Industry representatives asserted that environmental impacts from peaker plants are far less than many other industries and therefore peaker plants should not be subject to any additional requirements unless all such industries would similarly be subject to new requirements. The Board recognizes that other industries may cause greater environmental impacts than peaker plants. This, however, is not a reason to fail to act on the problems presented in this record. Governor Ryan asked the Board to determine whether additional requirements should be imposed on peaker plants, not other industries. Moreover, the “legislature need not choose between legislating against all evils of the same kind or not legislating at all.” Chicago National League Ball Club v. Thompson, 108 Ill. 2d 357, 367, 483 N.E.2d 1245, 1250 (1985).

The Board recommends that IEPA initiate a rulemaking with the Board to require permit applicants to conduct air modeling when IEPA reviews air construction permit applications for peaker plants designated as minor sources under the State’s PSD regulations. The Board also recommends that IEPA adopt a rule to require public hearings on air construction permit applications for all peaker plants.

The Board recommends that IEPA initiate a rulemaking with the Board to require new, expanding, and existing peaker plants designated as minor sources under the State’s PSD regulations to use BACT for reducing NO_x in their air emissions. The rulemaking would provide a forum to more fully address the appropriateness of imposing BACT, including its economic reasonableness and technical feasibility in these instances.

The Board recommends that IEPA require peaker plants to demonstrate that

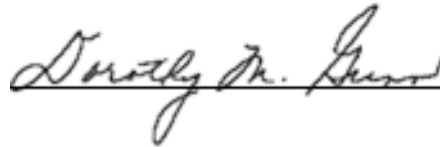
their noise emissions do not exceed the Board's numeric noise standards. This demonstration should be required of existing and proposed plants at the time of air permitting.

Finally, on the question of whether peaker plants should be subject to siting requirements beyond local zoning, the Board does not make any specific recommendation on siting. Instead, the Board provides the Governor with a thorough discussion of the concerns raised and potential solutions.

The Board is honored to have served Governor Ryan and the citizens of Illinois through this inquiry hearing process.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above order was adopted on the 21st day of December 2000 by a vote of 7-0.

A handwritten signature in cursive script, reading "Dorothy M. Gunn", written over a horizontal line.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board