IN THE MATTER OF: NATURAL GAS-FIRED, PEAK-LOAD ELECTRICAL POWER GENERATING FACILITIES (PEAKER PLANTS)
Docket No. R01-10

COMPANION REPORT TO THE ILLINOIS POLLUTION CONTROL BOARD'S INFORMATIONAL ORDER OF DECEMBER 21, 2000

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I. INTRODUCTION

On July 6, 2000, Governor George H. Ryan requested that the Illinois Pollution Control Board (Board) conduct inquiry hearings on the potential environmental impact of natural gas-fired, peak-load electrical power generating facilities, known as peaker plants. The Board opened this docket, R01-10, on July 13, 2000, and has completed its inquiry hearings.

This Report is a companion to the Informational Order that the Board issued on December 21, 2000. The Report summarizes the record on which the Board based its Informational Order. The record includes the testimony, hearing exhibits, and public comments that the Board received during the inquiry hearing proceedings.

The Board's findings and recommendations are not set forth in this Report, but rather in the Informational Order. In the Informational Order, the Board made several recommendations to tighten environmental regulations with respect to peaker plants. A summary of the Informational Order is attached to this Report as Appendix A. The Informational Order and the Report are available on the Board's Web site (www.ipcb.state.il.us) and from the Board's offices in Chicago (312-814-3620) and Springfield (217-524-8500).

This Report organizes the record information into ten broad subject matters: (1) background on peaker plants; (2) air emissions; (3) noise emissions; (4) water quality; (5) solid waste; (6) water quantity; (7) electric industry restructuring and its impacts; (8) siting; (9) moratorium; and (10) health and safety. The Report also includes a number of appendices, as described in the preceding table of contents.

Board Hearing Officer Amy Jackson conducted seven days of public hearings at five locations: 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 attended each day of hearing. Over 80 persons testified, including individual citizens, representatives of citizen groups, representatives of State and local government, and representatives of industry. Please refer to Appendix B for a list of all hearing participants. The Board appreciates their assistance in developing this record.

A court reporter transcribed each hearing, resulting in nearly 1,300 pages of transcripts. The hearing transcripts have been available on the Board's Web site.[1] Hearing Officer Jackson admitted 69 hearing exhibits into the record, a list of which is attached as Appendix C.[2] In

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[1] The transcript pages for the first four hearing locations are numbered consecutively, *i.e.*, Chicago (pp. 1-364), Naperville (pp. 365-574), Joliet (pp. 575-735), and Grayslake (pp. 736-1,036). These pages are cited as "Tr.1 at [page number]." The transcript for the fifth and final hearing, in Springfield (pp. 1-263), is cited as "Tr.2 at [page number]."

[2] Hearing Officer Jackson identified hearing exhibits by the name of the participant submitting the exhibit, and by the number of exhibits submitted by the participant. Hearing exhibits are cited as "[participant] Exh. [number] at [page number]." Hearing exhibits submitted as a group of exhibits are cited as "[participant] Grp. Exh. [number] at [page number]."

addition, the Board received 195 written public comments, which also have been available on the Board's Web site. Please refer to Appendix D for a list of all public comments.[3] The Board thanks the commentors for their insights.

II. BACKGROUND ON PEAKER PLANTS

In this part of the Report, the Board summarizes information from the record on (1) defining "peaker plant," (2) simple cycle and combined cycle turbines, (3) the types of fuels used in turbines, and (4) the number and location of existing and proposed peaker plants.

A. Defining "Peaker Plant"

1. Information from State Government

Mr. Thomas Skinner, Director of the Illinois Environmental Protection Agency (IEPA),[4] explained when peaker plants operate:

> Peakers operate only during peak demand situations such as on hot summer days when residential and commercial usage of electricity creates more demands than the baseload plants that exist in Illinois make available. Tr.1 at 52.

In its "Peaker Power Plant Fact Sheet," IEPA further explained that peak demand in Illinois typically "occurs during the summer months when air conditioning load is high, and the nuclear and coal burning power plants cannot meet the demand for power." IEPA Grp. Exh. 2, No. 20.

2. Information from Industry

Mr. Gerald M. Erjavec, Manager of Business Development for Indeck Energy Services, Inc. (Indeck), described peaker plants:

> "Peaking" plants are so named because their practical use is limited to operating during periods of the highest or "peak" need for electricity. As can well be imagined, the use of electricity varies over the day. From periods of low use over night to the time of high use during the day, generating units are turned on, or dispatched, to meet the needs of the system . . . . During the highest demand period of the day, particularly in hot weather when there is more need for electricity to power air conditioners, the peaking units are dispatched on. Indeck Exh. 1 at 1.

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[3] Each public comment is assigned a number, beginning with the number one and continuing through 195. Public comments are cited as "PC [number] at [page number]."

[4] A list of abbreviations used in the Report is set forth in Appendix E.

According to Mr. Richard A. Bulley, Executive Director of Mid-America Interconnected Network, Inc. (MAIN), air conditioning can account for up to 40% of the load on hot summer days in Illinois. Tr.1 at 321.

Reliant Energy Power Generation, Inc. (Reliant), graphed the typical daily load curve to describe how electricity demand fluctuates. PC 1, Att. 1. The graph is set forth as Figure 1 in Appendix F of this Report. Reliant noted that there are three main categories of electricity demand: base, intermediate, and peak. Base-load demand is the constant demand for electricity that exists day and night, season to season. Reliant stated that base-load units "with low operating costs, such as nuclear and coal-fired plants, are ideally suited to run at full capacity at all times." PC 1 at 2. Intermediate demand rises and falls as the day goes on, and intermediate or load-following plants:

> [A]re ramped up and down to follow the daily load curve of electricity demand. * * * Together, [base-load and intermediate-load plants] cover most of the daily and seasonal fluctuations in demand. This, however, leaves a few hours in the year when unusually high demand peaks are encountered. * * * Peaking units—or peakers—are used to meet these spike demands for power. PC 1 at 2.

Mr. Richard Ryan of Standard Power and Light narrowed the definition of peak demand to a predictable calendar basis:

> Peak really means 5 by 16. It's five days a week, 16 hours a day. * * * You have on-peak and off-peak. On-peak months would be May through September, December, January and February. Off-peak would be all the out months. So you have on-peak and off-peak months and then you have on-peak and off-peak hours. Tr.1 at 427.

Commonwealth Edison Company (ComEd) noted that "electric power is not readily stored." ComEd Exh. 1 at 3. To respond efficiently and economically to peak needs for power, a "peak load plant, or peaker, can be started relatively quickly" to meet the demand not readily supplied by base or intermediate-load plants. ComEd Exh. 1 at 4. ComEd explained that peaker plants "have high hourly operating costs, but low capital costs compared to base load plants. Because of this cost structure, it is economical to supply peak load, in the relatively few hours required, using this type of plant." ComEd Exh. 1 at 4.

Besides meeting peak demand, peaker plants can address temporary shortages in power supply. Mr. Christopher Romaine, Manager of the Utility Unit in IEPA's Division of Air Pollution Control, explained:

> [I]f there is an unexpected outage of a power plant during the winter period of time, there is an event to be able to turn on the peaker plant. So that would be a

> time where we might call upon a peaker plant some other period of the year than summer. * * * [P]eaker plants can also be used to meet an emergency demand for power, when . . . there is a breakdown of a substation or power lines (assuming power can still be carried to the area where it is needed). Tr.1 at 179; IEPA Grp. Exh. 1, Romaine at 3.

Comparing summer and winter peak loads, ComEd noted that the all-time summer peak load was 21,243 megawatts (MW) on July 30, 1999, between 2:00 p.m. and 3:00 p.m. central time. ComEd's all-time peak load during a winter month was 14,484 MW on December 20, 1999, between 5:00 p.m. and 6:00 p.m. ComEd Exh. 1 at 3.

The Illinois Environmental Regulatory Group (IERG), an affiliate of the Illinois State Chamber of Commerce, stated:

> [T]he industrial community is adjusting to [electric industry] deregulation . . . by exploring the increased use of on-site co-generation facilities. These facilities are intended to provide both electricity and steam to the host facility. IERG Exh. 1 at 3.

Mr. Alan Jirik, Director of Environmental Affairs for Corn Products International, Inc. (CPI) testified that these co-generation units often use gas-fired turbines. Tr.1 at 631. He explained that the industrial community seeks not only to use co-generation units to produce steam for its operations, but also to sell any excess electricity on the grid. Tr.1 at 632.

However, IERG stressed that "a 'peaker plant' is very different from on-site units at an industrial facility, in terms of physical and operational characteristics, as well as financial investment and return." IERG Exh. 1 at 4. IERG encouraged the Board to restrict its findings to " 'peaker plants' and not to other types of electric generating facilities, be they on-site emergency generators, co-generation units or base-load power plants." IERG Exh. 1 at 4.

Similarly, Mr. Jirik of CPI emphasized that these industrial co-generation units should be distinguished from peaker plants:

> Industrial cogeneration units are typically base loaded as industrial processes demand a relatively constant supply of steam and electricity. This constant demand essentially precludes peak-only operation. Tr.1 at 631. * * * These units will provide steam and electricity to the manufacturing operation, and by virtue of their capacity, also provide electricity to the grid. We expect to maximize our sales to the grid during times of peak pricing, which usually occurs during periods of peak demand. However, these industrial cogen units differ from the peakers that are the subject of [these] hearing[s]. Tr.1 at 632.

3. Concerns of Citizens

Referring to the federal definition of a peaking unit,[5] Ms. Susan Zingle, Executive Director of the Lake County Conservation Alliance (LCCA), testified that "peaker plants are expected to operate about 10 percent of the time, approximately 876 hours." Tr.2 at 169. She noted that Director Skinner of IEPA, in a May 16, 2000 letter to the United States Environmental Protection Agency (USEPA) about regulating peaker plants, said that peaker plants "were expected to run about 20 days a year [or] . . . 300 hours." Tr.2 at 169. She contrasted this with "plants [in Illinois] claiming to be peakers [and] being permitted for 2,300, 3,300, 4,000 hours, not 300 to 900 [hours]." Tr.2 at 170. Ms. Zingle concluded:

> [T]otal demand on the ComEd system has been as high as about 21,000 [MW], so peaking power within MAIN should be about 2,000 [MW], not the 22,000 [MW] we have being permitted now. In the applications, most of these plants have some indication that they plan to operate year-round. I don't believe these are peakers. These are intermediate load plants. Tr.2 at 170.

After observing the Chicago hearings in August, Ms. Dianne Turnball, a consultant to several citizen groups, noted at the Naperville hearing that "[w]e keep talking about peaker plants and we seem to eliminate the combined cycle plants." Tr.1 at 434. She argued that the Board should address combined cycle plants. She also suggested that any rule changes should apply to independent power producers (IPPs), except those that operate base-load plants. Tr.1 at 435.

B. Simple Cycle and Combined Cycle Turbines

1. Information from State Government

Recently, most power plant air permit applications filed with IEPA have been for natural gas-fired, simple cycle combustion turbines ranging in capacity from 25 to 187 MW per turbine. PC 168, Att. 2. However, not all natural gas-fired peaker plants are simple cycle. PC 9 at 31. IEPA noted:

> All power plants are used to meet peak electricity demands. During periods of peak electricity demand, base-load power plants and the cyclic [intermediate or load-following] power plants are in service, which would also include combined cycle plants. PC 9 at 31.

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[5] "Peaking Unit means: (1) A unit that has: (i) An average capacity factor of no more than 10.0 percent during the previous three calendar years and (ii) A capacity factor of no more than 20.0 percent in each of those calendar years . . . ." 40 C.F.R. § 72.2.

Mr. Romaine of IEPA described a gas turbine and explained how it works. A "gas turbine is a rotary internal combustion engine with three major parts . . . an air compressor, burner(s) or combustion chamber, and a power turbine." Tr.1 at 75. The air compressor compresses incoming air, diverting a portion to the burners where the fuel is burned. "This very hot gas is mixed with the rest of the compressed air and passes through the power turbine." Tr.1 at 75. The hot compressed gas expands to push the blades of the power turbine. "The power turbine turns the generator and makes electricity." Tr.1 at 76.

Mr. Romaine also discussed the differences between simple cycle and combined cycle gas turbines. With simple cycle turbines, the "waste heat from the exhaust from the gas turbine is directly discharged to the atmosphere with the exhaust gases." Tr.1 at 76. With combined cycle turbines:

> [T]he hot exhaust gases discharged from the turbine . . . are ducted through a waste heat boiler and used to generate steam. This steam is then used to drive a steam turbine generator, as in more traditional steam power plants. * * * The recovery of heat energy in the exhaust of a gas turbine in this combined cycle fashion can increase the energy efficiency of a combined cycle plant by about 50 percent as compared to a simple cycle turbine . . . ." Tr.1 at 77-78.

The generation capacity of simple cycle plants ranges from 25 to 800 MW per plant. The generation capacity of combined cycle plants ranges from 336 MW to 2,500 MW. PC 168, Att. 1.

2. Information from Industry

Mr. Erjavec of Indeck presented a diagram of simple cycle and combined cycle natural gas-fired plants. This diagram is set forth as Figure 2 in Appendix F of this Report.

3. Information from Citizens

Natural Resources Defense Council (NRDC) stated that "[c]ombustion turbines, particularly combined cycle applications are capable of obtaining 55-60% efficiencies . . . . Single cycle natural gas-fired combustion turbines are considerably less efficient, operating between 28-35% with combustion controls limiting [nitrogen oxides] NO_x emissions to 15-25 ppm [parts per million]." PC 109 at 5.

C. Fuels Used

1. Information from State Government

"Gas turbines . . . rely on the availability of a supply of clean fuel such as natural gas, kerosene, or light oil. Note that gas turbines are called 'gas' turbines because the working

fluid is a hot gas, not because they burn natural gas." IEPA Grp. Exh. 1, Romaine at 5. Mr. Romaine of IEPA noted that all air permit applications filed with IEPA have "proposed the use of natural gas as their primary fuel, but some applications have also included provisions to have fuel oil as a backup fuel." Tr.1 at 178. He confirmed that some plants originally intended for natural gas may ultimately use a different fuel should the market allow: "the plants that are going in with fuel oil capacity are really looking at being able to supply the winter peaking market." Tr.1 at 178.

Other fuels typically used for peak applications in Illinois include diesel, ethane, jet fuel, fuel oil, #2 oil, and distillate oil. IEPA Grp. Exh. 2, Att. 8, 9. According to Mr. Romaine, the fuel type dictates the character of the air emissions. As for plants using oil, Mr. Romaine noted that "emissions would certainly be higher." Tr.1 at 179. "Certainly it is more difficult to control [nitrogen oxides] NO_x as compared to oil than it is burning natural gas. Oil has more ash than natural gas. Oil has some fats [that create] sulfur dioxide [SO_2]." Tr.1 at 180.

2. Information from Industry

Mr. Erjavek of Indeck noted that light oil or diesel can be used to fuel gas turbines, but that this practice is not as common in the United States as in other countries. Tr.1 at 225.

3. Concerns of Citizens

Ms. Carol Dorge, an attorney and Director of LCCA, expressed concerns about air pollution from diesel fuel: "We also note that some of these facilities are being permitted to use diesel fuel. They say they are using diesel for back up, but back up is not defined in their applications or their draft permits." Tr.1 at 450.

D. Number and Location of Existing and Proposed Peaker Plants

1. Information from State Government

Director Skinner of IEPA noted the increasing number of peaker plant air permit applications that IEPA has received over the past year and a half: "We seem to get more every day." Tr.1 at 51. As Director Skinner explained, the total number of peaker plants depends on whether you are counting "facilities" or "units." A facility may have multiple units or turbines. As of the August 24, 2000 Chicago hearing, IEPA had received permit applications for 46 facilities. Tr.1 at 48.

Mr. Romaine stated:

> These plants are being proposed throughout the state, not only in rural areas where new power plants were historically sited, but also in developed and

> developing areas in the greater Chicago metropolitan area. In the Chicago area, some plants are being sited for existing industrial locations, but many have selected sites that are not in industrial areas and might be best characterized as open, often close to residential areas. * * * Like the existing peaker plants, some [peaker plants being proposed by historic utilities] are occuring at or adjacent to existing coal-fired power plants. IEPA Grp. Exh. 1, Romaine at 3-4.

As of November 6, 2000, IEPA listed 67 air permits for existing and proposed power plants using simple or combined cycle turbines. PC 168, Att. 2. A table and corresponding map based on information from IEPA are set forth as Table 1 and Figure 3, respectively, in Appendix F of this Report. Of the 67 air permits, 36 are for locations in ozone attainment areas while 31 are in nonattainment areas (NAAs); 9 are for existing facilities while 58 are for proposed facilties; 8 are for base load, 56 for peak load, and 3 for either base or peak load. If all of the proposed facilities are built, total electrical capacity contributed by existing and proposed gas-fired simple cycle and combined cycle plants will be 27,329 MW. IEPA Grp. Exh. 2, No. 7; PC 168, Att. 2.

Mr. Charles Fisher, Executive Director of the Illinois Commerce Commission (ICC), provided a USEPA document entitled National Combusion Turbine Projects, which lists combustion turbine facilities across the United States that have draft permits or recently-issued final permits. PC 8. A map based on this information is set forth as Figure 4 in Appendix F of this Report.

2. Concerns of Citizens

As described throughout this Report, individual citizens and citizen groups consistently expressed concerns over the growing number of proposed peaker plants, the proposed locations of the plants (including clustering), and the resulting impacts to the environment.[6]

III. AIR EMISSIONS

In this portion of the Report, the Board summarizes record information on (1) the general concerns of citizens about air pollution, (2) the type and amount of air emissions from peaker plants, (3) air pollution control regulations, (4) air emissions control technology, (5) air quality modeling, (6) air quality impacts, and (7) other specific concerns of citizens about air pollution.

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[6] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

A. Concerns of Citizens—Generally

Potential air pollution from peaker plants was a major concern of individual citizens and citizen groups testifying before the Board. In general, they were concerned about (1) the impact on local air quality, *i.e.*, in the vicinity of peaker plants, (2) the impact on regional air quality, including attaining the National Ambient Air Quality Standards (NAAQS), (3) the adequacy of existing regulations and permit requirements to address the unique aspects of peaker plant air emissions, and (4) the adequacy of emission control technology that peaker plants use.

Citizens argued that peaker plants need to be regulated more strictly than current air quality regulations provide. Tr.1 at 458, 919, 994-995; Tr.2 at 113 and 186. They asserted that peaker plants pose a unique threat with respect to air pollution when compared to other types of State-regulated facilities. Tr.1 461, 994-995 and Tr.2 at 188. Further, they argued that if the Board determines that peaker plants should be more strictly regulated or restricted, the new regulations or restrictions should apply both to existing and new facilities. Tr.2 at 189-190.

Specific concerns that individual citizens and citizen groups raised about particular air emission subjects are summarized below when the record information on the particular subject is summarized.

B. Type and Amount of Air Emissions

1. Information from Citizens

Many individual citizens and citizen groups expressed concern about the large amounts of pollutants that peaker plants may emit during the summer months. Tr.1 at 646, 788, 923, 980. Ms. Carol Stark, Director of Citizens Against Ruining the Environment (CARE), stated that emissions of nitrogen oxides (NO_x) and volatile organic material (VOM) on hot summer days contribute significantly to the formation of ground level ozone. Tr.1 at 646. She asserted that it is not acceptable to have peaker plants in the NAA, which contains "some of the major polluters in the State." Tr.1 at 646.

Ms. Lucy Debarbaro of Citizens Against Power Plants in Residential Areas (CAPPRA) expressed concern about the emission of greenhouse gases. She stated that carbon dioxide (CO_2) emissions from power plants significantly impact global climate change. Tr.1 at 497. Ms. Debarbaro maintained that if CO_2 emissions continue to increase, the greenhouse effect may cause an irreversible large-scale impact on the environment. Tr.1 at 497.

2. Characteristics of Air Emissions

a. Information from Government. Mr. Romaine of IEPA testified about the characteristics of air emissions from peaker plants. He has extensive experience in air pollution control, including permitting peaker plants. IEPA Grp. Exh. 1, Romaine at 1-2. The characteristics of peaker plant air emissions were also addressed by Versar, Inc. (Versar), an environmental consultant. Versar was retained by the DuPage County Department of Development and Environmental Concerns to review environmental issues related to peaker plants. DuPage County Board Exh. 1 at 1.

Mr. Romaine stated that peaker plants emit air pollutants because they burn large amounts of fossil fuel to generate electricity. He stated that these pollutants are combustion byproducts and include NO_x, carbon monoxide (CO), VOM, particulate matter (PM), and sulfur dioxide (SO_2). Tr.1 at 83-84; IEPA Grp. Exh. 1, Romaine at 10-11; see also DuPage County Board Exh. 1 at 14. Mr. Romaine stated that NO_x emissions are of particular interest in part because gas turbines emit more NO_x than the other pollutants. IEPA Grp. Exh. 1, Romaine at 10. Versar stated that "NO_x and CO are the pollutants emitted in the greatest amount from a gas-fired turbine . . . ." However, CO generally causes less concern than NO_x "because NO_x plays a role in ozone formation." DuPage County Board Exh. 1 at 14.

Mr. Romaine relied on a USEPA publication entitled Alternative Control Techniques Document—NO_x Emissions from Stationary Gas Turbines to address NO_x emissions from peaker plants. IEPA Grp. Exh. 2, No. 2. Gas turbines form NO_x in three ways. The primary way involves forming "thermal NO_x." Thermal NO_x is formed in the gas turbine combustor from a series of chemical reactions. Nitrogen and oxygen in the combustion air dissociate and subsequently react to form the different NO_x. The second way involves forming "prompt NO_x." Prompt NO_x is formed from early reactions of nitrogen in combustion air and hydrocarbon radicals in fuel. The third way involves forming "fuel NO_x." Fuel NO_x is formed from reactions between the fuel bound nitrogen compounds and oxygen. Because natural gas has a negligible amount of fuel-bound nitrogen, "[e]ssentially all NO_x formed from natural gas combustion is thermal NO_x." IEPA Grp. Exh. 2, No. 2 at 3.1-3.

The reaction between nitrogen and oxygen leads to the formation of seven known oxides of nitrogen. However, only nitric oxide (NO) and nitrogen dioxide (NO_2) are formed in sufficient quantities to be significant in air pollution. IEPA Grp. Exh. 2, No. 4 at 4-1. The formation rate of thermal NO_x increases exponentially with increase in temperature. In addition, NO_x formation in gas turbines is influenced by the combustor design, fuel type, ambient conditions, operating cycles, and power output level. IEPA Grp. Exh. 1, Romaine at 10; IEPA Grp. Exh. 2, No. 4 at 4-6.

The combustor design is considered the most important factor affecting NO_x formation because flame temperature, fuel/air mixing, and residence time are controlled by the turbine design. The type of fuel used to fire the turbine affects NO_x emission levels. NO_x emissions are higher for fuels that burn at high flame temperatures. Ambient conditions, such as humidity, temperature, and pressure, also affect NO_x formation. Regarding operating cycles

(simple/combined), NO_x emissions from identical turbines used in a simple cycle and a combined cycle plant would have similar NO_x emission levels, as long as a duct burner is not used in the heat recovery applications of the combined cycle plant. A duct burner is a supplemental burner used in combined cycle plants to increase the temperature of exhaust heat from the gas turbine and thereby produce the desired quantity of steam. With a duct burner, the NO_x emissions level for the combined cycle plant would be higher than that for the simple cycle plant. IEPA Grp. Exh. 2, No. 4 at 4-12.

Regarding other air pollutants, Mr. Romaine stated that CO is formed from incomplete combustion when there is insufficient residence time at high temperatures or incomplete mixing. IEPA Grp. Exh. 1, Romaine at 10. He also noted that gas turbines emit small amounts of VOM. VOM also results from incomplete combustion. Mr. Romaine stated that forming both CO and VOM depends on the loading of the gas turbine. A gas turbine operating under full load will emit lower levels of CO and VOM because full load results in higher fuel efficiency. Higher fuel efficiency in turn reduces the formation of CO and VOM. However, higher fuel efficiency is more conducive to NO_x formation. Thus, Mr. Romaine asserted that when combustion modification is considered for reducing NO_x emissions, compensatory steps must be taken to maintain or even improve combustion efficiency. IEPA Grp. Exh. 1, Romaine at 11.

Mr. Romaine stated that PM results mainly from the noncombustible trace constituents present in the fuel. He noted that natural gas-fired turbines emit negligible amounts of PM. Mr. Romaine stated that even turbines burning distillate oil emit very low amounts of PM due to the low ash content of the fuel oil. IEPA Grp. Exh. 1, Romaine at 11. Versar stated that natural gas is inherently clean burning fuel, and gas-fired turbines generally achieve a level of combustion efficiency so as to be considered small sources of VOM and PM. DuPage County Board Exh. 1 at 14. Mr. Romaine stated that peaker plants emit very low levels of SO_2. SO_2 results from burning sulfur compounds present in the fuel. He noted that SO_2 emissions are not a concern with natural gas-fired turbines. However, SO_2 is emitted at higher levels by oil-fired turbines because of the higher sulfur content of oil. IEPA Grp. Exh. 1, Romaine at 11.

b. Information from Industry. Maintaining that air emissions from peaker plants will be very low, Mr. Erjavec of Indeck compared a proposed peaker plant's air emissions with the emissions of a number of different types of sources and the NAAQS. Tr.1 at 246-247; Indeck Exh. 2, Average Permitted CO Emissions. He noted that the peaker plant's emissions would be in the mid-range when compared to other sources, such as steelworks, refineries, foundries, coal-fired power plants, and airports. Tr.1 at 248. The comparison also illustrated that the peaker plant's emission levels would be significantly lower than the applicable NAAQS. Indeck Exh. 2, Air Quality Impacts. According to Indeck, the emissions are low because: peaker plants use clean burning natural gas; are equipped with low NO_x burners; and are designed to operate only during peak-load demand. Indeck Exh. 2, Representative Impact Documentation.

3. Quantity of Air Emissions

a. Information from Government. Information on rates and amounts of pollutants that peaker plants emit into the air focused mainly on NO_x because peaker plants emit large quantities of NO_x and NO_x is an ozone precursor. Tr.1 at 85; IEPA Grp. Exh. 2, No. 4 at 4-6. The amount of NO_x emitted from a particular gas turbine model depends on design factors, fuel type, operating mode, and ambient conditions. IEPA Grp. Exh. 2, No. 4 at 4-6. Mr. Romaine testified that "the preferred source of information [on] the expected emissions of a particular model of turbine is the manufacturer of the turbine." Tr.1 at 85.

Mr. Romaine stated that turbine manufacturers provide data sheets that include maximum expected emissions under different operating, load, and ambient conditions. IEPA Grp. Exh. 1, Romaine at 11. Manufacturers provide the amount of uncontrolled air emissions from peaker plants in parts per million by volume (ppmv), which is converted to pounds per hour based on turbine power output, heat rate, and fuel properties. IEPA Grp. Exh. 2, No. 4 at A-1. Versar stated that by knowing the number of hours per year the plant operates, the amount of air emissions for a particular pollutant may be calculated on a tons per year (TPY) basis. DuPage County Board Exh. 1 at 14-15.

USEPA has published the uncontrolled NO_x emission factors based on manufacturers' data for a number of gas turbine models. IEPA Grp. Exh. 2, No. 4 at 2-2. These emission factors range from 0.397 to 1.72 lbs NO_x/mmBtu (million British thermal unit) (99 to 430 ppmv) for natural gas and from 0.551 to 2.50 lbs NO_x/mmBtu (150 to 680 ppmv)for distillate oil fuels. Mr. Romaine stated that actual emission rates may be determined by measuring the amount of pollutants in the turbine exhaust as it passes through the stack. Tr.1 at 85.

b. Information from Industry. Mr. Erjavec of Indeck presented air permitting information on total emissions for a proposed 300-MW peaker plant in Libertyville. The plant's two turbines, when operated according to permit limits over a period of 2,000 hours, would emit 173 tons of NO_x, 105.4 tons of CO, 20 tons of PM, and 1 ton of SO_2. Indeck Exh.1, Att.

4. Start-Up, Shut-Down, and Low Load Emissions

a. Information from Citizens. Citizens were concerned about peaker plants emitting greater amounts of pollutants when starting up, shutting down, and operating at low load. Tr.1 at 789, 995, 998, 1,024; Tr.2 at 139, 148. Dr. William McCarthy, a resident of Libertyville, stated that emissions during peaker plant start-up and shut-down would account for a large part of the total emissions from peaker plants. Tr.1 at 995. He said that peaker plants produce up to 200 parts per million (ppm) of NO_x during start-up (when plants operate at less than 50% load capacity), compared to NO_x emissions of 10 to 30 ppm during full-load operation. Tr.1 at 999-1,000. Ms. Dorge of LCCA also noted that peaker plant emissions are

much higher during start-up, particularly emissions of CO and VOM. Tr.1 at 451; Tr.2 at 149.

Dr. McCarthy stated that Illinois regulations do not specifically address emissions during start-up and shut-down of peaker plants. Tr.1 at 998. He noted that because peaker plants do not have any restrictions on how many times they can start up or shut down, a plant may turn on and off many times on a given day based on market conditions, producing large quantities of emissions. Tr.1 at 1,000-1,001.

Dr. McCarthy submitted a California Air Resources Board publication entitled Guidance for Power Plant Siting and Best Available Control Technology, which recommends that start-up and shut-down emissions be regulated by a separate set of limits to optimize emission control. Tr.1 at 999; McCarthy Exh. 2 at 36-37. The guidance document is intended to assist the various air districts within that state in making permitting decisions. McCarthy Exh. 2 at 3. The guidance document notes that natural gas-fired power plants operate with varying loads and have numerous start-ups and shut-downs, which can contribute substantially to total annual emissions. It recommends that enforceable permit emission limits be set for turbine emissions at all potential loads. The guidance document also states that permit conditions must address limits on the number of daily and annual start-ups and shut-downs, as well as monitoring the duration and quantity of start-up and shut-down emissions. McCarthy Exh. 2 at 60.

Ms. Dorge of LCCA urged that the Board adopt regulations requiring turbine manufacturers to provide information on start-up and shut-down emissions, alleging that the manufacturers are reluctant or unwilling to provide the information. Tr.1 at 452, 455.

b. Information from Government. IEPA stated that gas turbines emit greater amounts of pollutants during start-up and shut-down, including NO_x, CO, and VOM. This occurs because combustion efficiency will be at its lowest when fuel is first ignited and emission control techniques are not effective until flows and temperature in the turbine exhaust reach certain minimum levels. PC 9 at 13. IEPA acknowledged that emissions during start-up and shut-down are higher when expressed as an emission factor (pounds of pollutant per mmBtu heat input). However, IEPA noted that actual emissions may not be higher when expressed in pounds per hour because the lower heat input during start-up and shut-down compensates for the higher emission factor. PC 9 at 14.

IEPA relied on actual air quality monitoring information from the Elwood Energy facility to illustrate that NO_x emissions during an hour with start-up are similar or slightly higher than those during an hour of normal operation. PC 168 at 9. IEPA stated:

> The CEMS [continuous emissions monitoring system] data shows that the peaking turbines presently at Elwood Energy normally operate at about 0.05 to 0.055 lb NO_x/mmBtu. (The permit limit is 0.061 lb/mmBtu, based on an

> exhaust concentration of 15 ppm NO_x.) During startup, NO_x emissions are in the range of 0.1 to 0.115 lb/mmBtu. Of course, the average firing rate during a startup is about half of the turbines' capacity. This indicates that startup of these peaking turbines does not significantly change the hourly NO_x emissions of these turbines. PC 168 at 10.

IEPA cautioned that a different conclusion would be reached with new turbines being added to the Elwood Energy facility—because the new units are required to comply with a lower emission rate during normal operation. IEPA noted that if the start-up emission rate remained the same as with the existing turbines, the emissions during an hour with start-up could be about 25% higher than those during a normal hour of operation. PC 168 at 10.

IEPA asserted that higher levels of emissions accompanying start-up and shut-down occur over a relatively short period (15 to 30 minutes) and do not appear to pose an extraordinary concern for air quality. IEPA stated that start-up and shut-down emissions are another example of how emissions from particular units can vary, which must be addressed during permitting. PC 9 at 14. IEPA noted that it requires peaker plant permit applicants to account for all emissions (including emissions during start-up and shut- down) when demonstrating compliance with annual emission limits. PC 9 at 15. IEPA acknowledged that construction permits generally do not have specific emission limits for start-up and shut-down. However, IEPA contended that specific limits are necessary only when elevated emissions during those periods would threaten air quality. IEPA also noted that permit provisions require that peaker plants implement measures to minimize emissions associated with start-up and shut-down. PC 9 at 15.

IEPA explained that separate short-term permit limits are set if needed to protect ambient air quality during low-load operation. PC 9 at 16. IEPA relies on the results of air quality modeling to determine whether any particular turbine operation, such as low-load operation, would threaten air quality. PC 9 at 28.

C. Air Pollution Control Regulations

1. Information from Citizens

Citizens expressed concern about the adequacy of existing air pollution control regulations to address peaker plant emissions. They believe that peaker plants need to be regulated more strictly than other sources of air pollution. Tr.1 at 450, 514, 782. They addressed a number of specific issues concerning air pollution control regulations, including regulating peaker plants as major sources, the New Source Performance Standard (NSPS) for NO_x, the NO_x waiver, start-up and shut-down emissions, and permitting. This information is summarized below.

a. Regulating Peaker Plants as Major Sources of Air Pollution. Individual citizens and citizen groups argued that peaker plants, which are generally being permitted as minor sources of air pollution, should be regulated as major sources of air pollution. Tr.1 at 453, 466, 514, 787. Ms. Zingle of LCCA testified that peaker plants restrict their hours of operation or fuel consumption to limit NO_x emissions below 250 TPY, thereby avoiding major source status. Tr.1 at 514. As minor sources, she contended, peaker plants escape all but minimal air regulations. Ms. Zingle maintained that limiting emissions to stay below the 250 TPY threshold in no way limits the operating capacity of peaker plants because their emissions come in just three summer months. Tr.1 at 512-516.

Ms. Dorge of LCCA also maintained that peaker plants should be regulated as major sources of air pollution because they operate as major sources during the ozone season. Tr.1 at 453. Ms. Sandy Cole, the Lake County Board Commissioner for the 11th District, similarly stated that peaker plants must be evaluated on the basis of daily emission rate. Tr.1 at 787; Lake County Exh. 2 at 1. She asserted that because peaker plants operate only during times of need, their annual emissions generally fall within the minor source category, making it easy for companies to obtain permits. Tr.1 at 788.

b. NSPS for NO_x. A number of citizens noted that the existing NSPS for NO_x has become obsolete. Tr.1 at 454, 1,006. Dr. McCarthy stated that the existing NO_x NSPS of 75 ppm, which was adopted 13 years ago, has become outdated. Tr.1 at 1,006. Ms. Dorge stated that peaker plants equipped with dry-low NO_x combustion routinely achieve 9 ppm under normal operations. Tr.1 at 454.

c. NO_x Waiver. A number of citizens and citizen groups expressed concern regarding the NO_x waiver that USEPA granted to the State of Illinois for the Lake Michigan NAA. Tr.1 at 683; Tr.2 at 106, 116. Mr. Keith Harley of the Chicago Legal Clinic testified on behalf of ten environmental and citizen groups concerning the NO_x waiver. He stated that generally a new source of NO_x in a NAA for ozone, such as the Chicago metropolitan area, would be regarded as a major source if the source had the potential to emit 25 TPY of NO_x. Tr.1 at 683-684. Mr. Harley noted that under the federal Clean Air Act's (CAA) New Source Review (NSR) regulations, this major source would be subject to the most stringent pollution control measure called the Lowest Achievable Emission rate (LAER) and would be required to acquire NO_x offsets in the ratio of 1.3 to 1. Tr.1 at 684.

However, Mr. Harley noted that in mid-1990s the State of Illinois obtained a NO_x waiver from USEPA that relieved the sources in the Chicago NAA from NSR requirements, including the major source designation threshold of 25 TPY of NO_x. Tr.1 at 684. He stated that the NO_x waiver was granted on the basis of preliminary information suggesting that reducing NO_x emissions in the NAA would not reduce ozone levels in the NAA. Tr.1 at 685. Mr. Harley asserted that because of the NO_x waiver a peaker plant is not considered a major

source unless it emits 250 tons of NO_x per year. He noted that it is not a coincidence that all peaker plants are being permitted below the 250 TPY threshold. Tr.1 at 685-686.

Mr. Harley stated that since the granting of the NO_x waiver, the basis for the waiver has been discredited by the USEPA-appointed Ozone Transport Assessment Group (OTAG). Tr.1 at 686. He noted that the OTAG's comprehensive study demonstrated that NO_x reductions locally and regionally reduce ozone levels in the NAA. Mr. Harley stated that USEPA responded to the OTAG findings by imposing statewide NO_x reductions in a number of states, including Illinois, *i.e.*, the NO_x State Implementation Plan (SIP) call. However, no action has been taken to reconsider the Illinois NO_x waiver. Tr.1 at 686.

Mr. Harley asserted that the NO_x waiver provides a loophole for peaker plants to be built in the Chicago NAA. He maintained that Illinois could voluntarily request USEPA to rescind the NO_x waiver. Tr.1 at 687. Mr. Harley noted that he has filed a petition with USEPA requesting the federal agency to rescind the NO_x waiver for the Chicago NAA. Tr.1 at 688. Mr. Harley's position on the NO_x waiver was echoed by Mr. Brian Urbaszewski, the Director of Environmental Health Programs for the American Lung Association of Metropolitan Chicago (ALAMC) and a board member of the Illinois Environmental Council (IEC). Tr.2 at 107. Mr. Urbaszewski testified that Governor Ryan should request USEPA to repeal the NO_x waiver. Tr.2 at 116.

NRDC recommended that USEPA "withdraw the section 182(f) NO_x waiver granted to the Chicago . . . ozone [NAA], which exempts proposed new single cycle combustion turbines from obtaining emission offsets or utilizing best available control technology [BACT]." PC 109 at 6.

d. Regulating Start-Up and Shut-Down Emissions. A number of citizens expressed concern regarding the higher emission levels during start-up and shut-down of peaker plants. Dr. McCarthy stated that Illinois does not regulate start-up and shut-downs of peaker plants. Tr.1 at 998. He noted that peaker plants do not have any restrictions on how many times they can start and shut down. Accordingly, on any given day, based on market conditions, a plant may turn on and turn off many times, producing large quantities of emissions. Tr.1 at 1,000-1,001. Ms. Dorge asserted that some of the peaker plants that IEPA permitted as minor sources (NO_x emissions less than 250 TPY) would be major sources if start-up emissions were included in the overall annual emissions. Tr.2 at 149.

e. Permitting Issues. Ms. Dorge testified that regulations should better define the permit application requirements. Tr.1 at 458. She stated that every peaker plant permit application should include information on duration and expected frequency of start-up and shut-down emissions, good operating practices, operating factors affecting emission rates, standard procedures for calculating emission rates during all operational modes, monitoring procedures, operator information, operator training, and contractual warranties. Tr.1 at 455-457.

Further, Ms. Dorge stated that it is important to know what constitutes a complete permit application. Using a permit application that Carlton, Inc. filed as an example, Ms. Dorge identified what she considers to be a number of inconsistencies and deficiencies in the information that the applicant provided. Tr.2 at 144-147.

Ms. Turnball expressed concern regarding public access to permit information. Tr.1 at 441. She suggested that the permit applicant should be required to provide public notice concerning the proposed plant to all property owners within 500 feet of the proposed facility. Ms. Turnball also stated that all information that an applicant provides in an air permit application should be verified by actual operating data. Tr.1 at 438. Dr. McCarthy noted that there is no need to have any operating data to obtain a construction permit in Illinois. Tr.1 at 1,007. In addition, Ms. Turnball urged the Board to make permanent the requirement for a public hearing on construction permits for peaker plants that is currently being imposed at the discretion of IEPA Director Skinner. Tr.1 at 513.

f. NO_x SIP Call. Ms. Dorge stated that the 40 or so proposed peaker plants would account for approximately 10,000 tons of NO_x per year compared to roughly 30,000 tons allocated to Illinois under the proposed NO_x trading program. Tr.1 at 450. She noted that this comparison clearly shows that peaker plant contribution to the ozone problem will be significant. Tr.1 at 450. Ms. Zingle also expressed concern regarding the implications of siting a large number of peaker plants on existing NO_x emitters in the context of the NO_x SIP call. Tr.1 at 660.

Mr. Larry Eaton is an attorney formerly with the Illinois Attorney General's office in environmental enforcement. Mr. Eaton testified on behalf of three organizations associated with the conservation community known as Prairie Crossing: Prairie Crossing Homeowners Association; Liberty Prairie Conservancy, a foundation dedicated to preserving Prairie Crossing and other communities; and Prairie Holdings Corporation, the developer of Prairie Crossing. Tr.1 at 864, 905; Eaton Exh. 1 at 1. Mr. Eaton stated that the NO_x SIP call requires Illinois to quickly and radically reduce NO_x emissions. Tr.1 at 882. He asserted that the SIP call demonstrates the need for better planning and regulations for power plant industry. Tr.1 at 883.

Mr. Patricio Silva, Midwest Activities Coordinator of NRDC, stated that, while the NO_x SIP call is a tool to achieve the one-hour ozone standard, it will have a technology forcing

edge. Tr.2 at 90. However, Mr. Silva asserted that the NO_x waiver will negate the use of innovative technology. He argued that the allocation methodology under the proposed SIP call regulations favor the existing sources at the expense of future sources with cutting-edge technology. Tr.2 at 91.

Mr. Urbaszewski of ALAMC and IEC echoed Mr. Silva's concern regarding the allocation methodology under the proposed NO_x SIP call rules. Tr.2 at 111. Further, he asserted that the NO_x allocation methodology does not support energy efficiency and renewable energy projects. Tr.2 at 112. Mr. Urbaszewski did not agree that the NO_x SIP call would address all the concerns related to NO_x emissions from peaker plants. Mr. Urbaszewski stated that the new units may have to import allocations from other states in the trading region because a very small portion of the NO_x budget is set aside for these new sources under the proposed allocation methodology. Tr.2 at 122. He argued that the amount of allowances imported would go down if peaker plants are required to emit NO_x at low levels. Tr.2 at 122.

2. Information from Government

Mr. Romaine of IEPA testified about the air pollution control regulations governing the peaker plants. Tr.1 89-93; IEPA Grp. Exh. 1, Romaine, Att. 1. He explained the applicability of the federal regulations:

> If emissions from a proposed new source of air pollution or from a modification to an existing source are considered major, the source must undergo federal . . . NSR . . . analysis as part of the construction permitting process. Different NSR rules govern areas that attain the . . . NAAQS . . . for pollutants and in areas that do not attain the NAAQS. These national standards are established by [USEPA] under Section 109 of the [CAA] (42 U.S.C. Section 7401-7661q (CAA) and are set at a level that protects the public health with an adequate margin of safety and protects public welfare from known or anticipated adverse effects. Peaker plants emit the following pollutants for which [USEPA] has established national standards: . . . NO_2 . . . , . . . PM . . . SO_2 . . . CO . . . . In addition, . . . VOM . . . and sometimes . . . NO_x . . . emissions, both of which are emitted by peaker plants are subject to regulation as precursors to ozone. Attainment NSR is addressed under the Prevention of Significant Deterioration (PSD) program found at 40 C.F.R. Section 52.21. IEPA Grp. Exh. 1, Romaine, Att. 1 at 1.

Further, Mr. Romaine explained that if "an area does not attain the NAAQS, it is considered a [NAA] and proposed new or modified major sources are subject to nonattainment NSR . . . . Illinois' [nonattainment] NSR requirements are found at 35 Ill. Adm. Code 203." IEPA Grp. Exh. 1, Romaine, Att. 1 at 2.

a. Prevention of Significant Deterioration (PSD) of Air Quality. Versar, environmental consultant for the DuPage County Department of Development and Environmental Concerns, also discussed the air pollution control regulations. DuPage County Board Exh. 1 at 27. Versar stated that the PSD program is designed "to ensure that the current NAAQS levels are not degraded such that exceedences of the standard would occur." DuPage County Board Exh. 1 at 28. Mr. Romaine stated that IEPA implements the federal PSD regulations under a delegation agreement with USEPA. IEPA Grp. Exh. 1, Romaine at 13. Mr. Romaine explained the applicability of PSD to peaker plants:

> Under PSD, a new source or a modification to an existing minor source is considered major if potential emissions of a pollutant are 250 [TPY] or more unless the source is one of the listed categories at 40 CFR Section 52.21(b)(1)(i)(a). If a source is one of the listed categories, it is considered major if its potential emissions of a pollutant are 100 [TPY] or more. *Id*. This list includes fossil fuel steam electric plants of more than 250 [mmBtu] per hour of heat input. Peaker plants that use simple cycle gas-fired turbines are not covered by this category or any other listed categories, as the turbines used in peaker plants do not generate steam. Therefore, the PSD threshold for simple cycle peaker plants is 250 [TPY]. If the gas-fired turbine produces electricity by steam through a waste recovery system, often referred to as combined cycle turbines, the plant would be reviewed under the 100 [TPY] or more threshold. Once a proposed source qualifies as major for one pollutant, other pollutants only need be emitted in a significant amount, as defined at 40 CFR Section 52.21(b)(23) to be subject to PSD. IEPA Grp. Exh. 1, Romaine, Att. 1 at 1-2.

Mr. Romaine stated that PSD can have an effect on peaker plants because a plant that qualifies as major for a pollutant is subject to additional requirements for that pollutant. He noted that a major plant must be operated to comply with control requirements that represent BACT for the pollutant, as determined and approved on a case-by-case basis during issuance of the construction permit for the project. IEPA Grp. Exh. 1, Romaine at 13. In addition, Mr. Romaine explained that a permit applicant for a major source or modification "must perform modeling to determine the air quality impact of its proposed project, using dispersion modeling for pollutants other than ozone." IEPA Grp. Exh. 1, Romaine, Att. 1 at 2. He added:

> To address the air quality impacts from individual sources of ozone precursors, [USEPA] has developed screening tables based on generic airshed ozone modeling. Dispersion modeling is not relied upon under PSD to address the air quality impact from ozone precursor emissions because ambient ozone is formed by atmospheric reactions of precursor compounds and the impact of a single source cannot typically be measured through modeling. IEPA Grp. Exh. 1, Romaine, Att. 1 at 2.

Mr. Romaine discussed the applicability of PSD to peaker plants to address public concern over why all peaker plants are not considered major sources. He stated that the need for a PSD permit is triggered for a new peaker plant if the permitted emissions of a pollutant (NO_x, SO_2, CO, PM, or VOM) that the applicant requests equal or exceed the major source threshold for PSD. IEPA Grp. Exh. 1, Romaine at 14. Mr. Romaine noted that the major source threshold for PSD is set at annual emissions of 100 tons or more for 28 listed categories, and 250 tons for all other categories of sources. IEPA Grp. Exh. 1, Romaine at 15. Further, regarding the issue of why the PSD program is not applied on the basis of seasonal emissions, *i.e.*, summer months, Mr. Romaine maintained that the applicability provisions of the PSD rules do not provide a basis to trigger applicability of PSD on any emission totals other than annual emissions. He noted that Section 169 of the federal CAA clearly provides that for purposes of PSD, major sources are to be defined in terms of their annual emissions. Mr. Romaine stated that peaker plants are not the only plants that are seasonal in nature. He noted that some boilers at heating plants operate primarily in winter. IEPA Grp. Exh. 1, Romaine at 15-16.

Mr. Romaine also addressed the issue of why IEPA was considering PSD for NO_x in the Chicago NAA. He stated that if NO_x was considered an ozone precursor in the NAA, a proposed peaker plant would have to comply with the Major Stationary Sources Construction and Modification (MSSCAM) regulations. The applicability threshold for MSSCAM is annual emissions of 25 tons of an ozone precursor. IEPA Grp. Exh. 1, Romaine at 16. However, Mr. Romaine stated:

> [USEPA] has granted the states bordering Lake Michigan a NO_x waiver under Section 182(f) of the [CAA]. This waiver is based on scientific analyses that found that controlling NO_x emissions only in the [NAA] would actually increase ozone levels in the area. Instead, for NO_x reductions to improve ozone air quality, they must be provided on a statewide basis and preferably on a multi-state regional basis. IEPA Grp. Exh. 1, Romaine at 16.

Mr. Romaine stated that because of the public concerns regarding the applicability of PSD to peaker plants, IEPA formally sought guidance from USEPA on implementing PSD. He noted that USEPA confirmed that IEPA is properly implementing the applicability provisions of the PSD rules for these plants. IEPA Grp. Exh. 1, Romaine at 17.

b. Nonattainment NSR. Mr Romaine stated that in an area that is designated as nonattainment for a pollutant, PSD does not apply to a proposed project for emissions of the nonattainment pollutant or, in the case of ozone nonattainment, the ozone precursors. He stated that a separate state permit program called MSSCAM or nonattainment NSR (35 Ill. Adm. Code 203) addresses emissions of nonattainment pollutants from a proposed source in the area. IEPA Grp. Exh. 1, Romaine at 14. A proposed project that qualifies as major under the applicability thresholds of MSSCAM must control emissions of the nonattainment pollutant to the LAER, rather than BACT. The project must also provide "offsets" for its emissions.

Mr. Romaine explained that "[o]ffsets are emission reductions that have not been relied upon to demonstrate attainment [and] that have or will occur from existing sources already in the [NAA]." IEPA Grp. Exh. 1, Romaine at 14, n. 4.

Mr. Romaine explained that in the Chicago area, which is designated as severe nonattainment for ozone, a source may be considered major if it has potential to emit 25 tons or more of VOM per year. IEPA Grp. Exh. 2, Romaine, Att. 1 at 2. He noted that NO_x emissions are sometimes regulated as an ozone precursor. However, in the Chicago NAA, NO_x is reviewed under PSD because USEPA has granted a NO_x waiver. (Issues concerning the NO_x waiver are discussed further below.) In the Metro-East/St.Louis area, which is designated as moderate NAA for ozone, Mr. Romaine noted that a source is considered as major if it has potential to emit 100 tons of VOM or NO_x. IEPA Grp. Exh. 2, Romaine, Att. 1 at 2. Further, Mr. Romaine noted that like the PSD program, the applicability of nonattainment NSR is determined on the basis of potential annual emissions, even if a relevant air pollution problem is seasonal in nature, such as ozone pollution that only occurs during summer months. IEPA Grp. Exh. 2, Romaine, Att. 1 at 4.

c. NO_x Waiver. Ms. Kathleen Bassi, Assistant for Program and Policy Coordination for IEPA's Bureau of Air, responded to citizen concerns regarding the NO_x waiver that USEPA granted for the Chicago NAA. In responding to the citizens' position that the waiver should be revoked, Ms. Bassi stated that the removal of the NO_x waiver would have ramifications well beyond the scope of the inquiry proceedings. Tr.2 at 204-205. She noted that NO_x waiver affects all NO_x source in the Chicago NAA and not just peaker plants. In light of this, Ms. Bassi asserted that any decisions on the NO_x waiver should be made by USEPA in the context of its review of the attainment demonstration for the Chicago NAA. Tr.2 at 206. She noted that USEPA would be performing its review of the State's attainment demonstration in the very near future. Tr.2 at 207. Ms. Bassi also clarified that the NO_x waiver does not limit the scope of control measures or reductions that may be required of power plants.

d. NSPS. Mr. Romaine stated that USEPA promulgated NSPS for emissions from new turbines under Section 111 of the CAA, found at 40 C.F.R. 60, Subpart GG. IEPA Grp. Exh. 2, Romaine, Att. 1 at 5. He noted that IEPA implements the federal NSPS in Illinois pursuant a delegation agreement with USEPA. Mr. Romaine explained the applicability of NSPS to gas turbines:

> These standards apply to stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour that commence construction, modification, or reconstruction after October 3, 1977. The limit for NO_x emissions from large turbines, such as those used in peaking power plants, is approximately 75 [ppm]. The exact limit varies by model of turbine because the limit is adjusted for the efficiency of the turbine. Additionally, such turbines may not use any gas that contains [SO_2] in excess of 0.015 percent by volume at

> 15 percent oxygen on a dry basis and sulfur in excess of 0.8 percent by weight. IEPA Grp. Exh. 2, Romaine, Att. 1 at 5.

Versar noted that NSPS also contain monitoring, testing, reporting, and record keeping requirements that the operator of a peaker plant must follow to prove the standards are being attained and the equipment is properly maintained. DuPage County. Bd. Exh. 1 at 28.

Mr. Romaine agreed with the citizens that the NSPS no longer reflects the Best Available Control Technology (BACT) for new equipment. IEPA Grp. Exh. 2, Romaine, Att. 1 at 5. He noted that new natural gas-fired turbines are routinely designed to achieve 25 ppm of NO_x and low sulfur oil that meets the sulfur content limitations is readily available.

e. Hazardous Air Pollutants. Mr. Romaine stated that if a new or reconstructed peaker plant is considered major for emissions of hazardous air pollutants (HAPs), it must undergo review under Section 112(g) of the CAA, which is implemented in Illinois under Section 39.5(19)(e) of the Environmental Protection Act (Act) (415 ILCS 5/39.5(19)(e) (1998)). He noted that a source is considered major for HAPs if it emits 10 TPY or more of any individual HAP or 25 TPY or more of all HAPs aggregated. IEPA Grp. Exh. 1, Romaine, Att. 1 at 5.

Mr. Romaine explained that a new major source of HAP emissions must achieve the maximum degree of reduction that is deemed achievable for new sources in a category or subcategory and may not be less stringent than the emission control achieved in practice by the best controlled similar source, often referred to as the Maximum Achievable Control Technology (MACT). IEPA Grp. Exh. 1, Romaine, Att. 1 at 5. He stated that MACT is implemented on a case-by-case basis during construction permitting until a National Emission Standard for Hazardous Air Pollutant (NESHAP) is promulgated for the relevant source category. Mr. Romaine noted that USEPA intends to develop a NESHAP to address HAPs that stationary combustion turbines emit. IEPA Grp. Exh. 1, Romaine, Att. 1 at 7. He said that USEPA expects to propose this NESHAP, which is likely to address peaker plants, before the end of the year and finalize a standard in 2002. 65 Fed. Reg. 21,363 (April 21, 2000).

Mr. Romaine stated that peaker plants generally are not known to emit more than *de minimis* levels of HAPs. He did note that natural gas-fired combustion units emit formaldehyde, which is listed under Section 112(b)(l) of the CAA. However, emission levels from peaker plants in Illinois have not been great enough to trigger new source analysis under Section 112(g) of the CAA. IEPA Grp. Exh. 1, Romaine, Att. 1 at 5.

f. Title IV Acid Rain Requirements. Mr. Romaine stated that new peaker plants are considered affected sources for acid rain deposition under 42 U.S.C. § 7642(e). He noted that existing units that were operational before the 1990 amendments to the CAA may be entitled to an allocation of SO_2 allowances. However, new sources are required to obtain allowances after January 1, 2000. IEPA Grp. Exh. 1, Romaine, Att. 1 at 5. Some existing peaker plants in Illinois are not considered affected sources for acid rain deposition because they do not serve

generators with a nameplate capacity of more than 25 MW (42 U.S.C. § 7641(8)) and are, therefore, not subject to requirements under Title IV. IEPA Grp. Exh. 1, Romaine, Att. 1 at 6. Mr. Romaine noted that peaker plants must also obtain an acid rain permit from IEPA before starting to operate. These permits are issued in Illinois under the authority of the Clean Air Act Permit Program (CAAPP) at 415 ILCS 5/39.5(17). IEPA Grp. Exh. 1, Romaine, Att. 1 at 6.

g. Operating Permit Requirements. Mr. Romaine stated that because peaker plants are affected sources for acid rain deposition under Title IV of the CAA, they are required to obtain a CAAPP operating permit pursuant to Section 39.5 of the Act. He explained that a peaker plant operator must obtain an acid rain permit before operating. However, the operator must apply for the very detailed CAAPP operating permit one year after starting to operate the facility. IEPA Grp. Exh. 1, Romaine, Att. 1 at 6.

h. State Requirements. In addition to the federal regulations described above, Mr. Romaine stated that peaker plants may be subject to certain State regulations.

i. *PM.* Mr. Romaine stated that the Board's generic regulations that prohibit emissions of visible PM emissions into the atmosphere apply to peaker plants. However, he noted that natural gas-fired peaker plants do not generally emit significant amounts of PM emissions if proper combustion occurs. IEPA Grp. Exh. 1, Romaine, Att. 1 at 6.

ii. *Emissions Reduction Market System (ERMS).* Mr. Romaine stated that if a peaker plant located in the Chicago ozone NAA emits at least 10 tons of VOM during the ozone season (May through September), the plant would be subject to the Emissions Reduction Market System (ERMS) requirements under 35 Ill. Adm. Code 205. He explained the applicability of the ERMS program:

> If the source was operating prior to May 1, 1999, it will be allotted trading units by [IEPA] based on past emissions, with certain adjustments, and will be required to hold sufficient trading units to account for its seasonal emissions each year. If the source was not operating prior to May 1, 1999, it will not be issued trading units by [IEPA] in most instances but will be required to obtain trading units sufficient to account for its seasonal emissions each year. If a new source was issued a construction permit prior to January 1, 1998, it will be allotted trading units by [IEPA] based on its first three years of operation. IEPA Grp. Exh. 1, Romaine, Att. 1 at 6.

Regarding VOM emissions from peaker plants, Versar stated that natural gas is inherently clean burning fuel, and gas-fired turbines generally achieve a level of combustion efficiency to be considered small sources of VOM. DuPage County Board Exh. 1 at 14.

iii. *NO_x Trading Program (NO_x SIP Call) for Electrical Generating Units (EGUs).* In July of this year, IEPA proposed a rule to the Board to reduce statewide emissions of NO_x from electrical generating units (EGUs). As Director Skinner described, "[t]his proposal was in response to [USEPA's] call for [SIPs] requiring significant reductions in emissions or the so called NO_x SIP call, an area in which Illinois, as a state, has been the leader nationwide among the states and has put in a significant amount of work over the course of the past five to 10 years." Tr.1 at 60.

Mr. Romaine discussed the NO_x trading regulations that the Board adopted for first notice at 35 Ill. Adm. Code 217, Subpart W. He stated that the proposed Subpart W is intended to reduce NO_x emissions in Illinois during the ozone season (May - September) from EGUs by determining source allocations and providing for participation in the national NO_x trading program. IEPA Grp. Exh. 1, Romaine, Att. 1 at 7.

Proposed Subpart W applies to fossil fuel- fired stationary boilers, combustion turbines (such as peaker plants) or combined cycle systems that serve generators with a nameplate capacity greater than 25 MW that have at any time produced electricity for sale. Mr. Romaine stated that the new sources that commenced commercial operation on or after January 1, 1995, may receive allowances based on an emission rate and heat input. Initially, these sources may acquire allowances from a new source set aside but eventually will receive allowances from the main trading budget based on when the source commenced commercial operation. Under the proposed rule, NO_x emission reductions will occur beginning in May 2003.[7] IEPA Grp. Exh. 1, Romaine, Att. 1 at 7.

[7] The Board adopted the NO_x trading program rules on December 21, 2000. See Proposed New 35 Ill. Adm. Code 217, Subpart W, The NO_x Trading Program for Electrical Generating Units, and Amendments to 35 Ill. Adm. Code 211 and 217 (December 21, 2000), R01-9. The Board notes that the final rules require sources to begin complying with the trading program in May 2004, instead of May 2003.

3. Information from Industry

Industry representatives testified that Illinois' current air quality statutes and regulations, and additional federal regulations are adequate for regulating peaker plants. Mr. Erjavec of Indeck argued that peaker plants are highly regulated under the Act. Indeck Exh. 1. He asserted that any additional regulations would be unjustified and counterproductive. Ms. Arlene Juracek of ComEd stated that peaker plants are subject to State and federal environmental regulations. Tr.1 at 291-292. She maintained that there is no need for new or stringent regulations. Ms. Juracek argued that additional regulations may have a negative effect on the State's generating capacity. Tr.1 at 293.

Ms. Deirdre Hirner, Executive Director of IERG, testified that the current State and federal air quality standards are adequate for regulating peaker plants. Tr.1 at 310-311. She noted that peaker plants, like any other facility, must comply with regulations, such as NSPS and PSD, if they trigger the applicable regulatory thresholds. Tr.1 at 311. She asserted that even if these plants do not trigger PSD, restrictions like operating limits, monitoring and testing would be placed in the permits to assure that the facility does not exceed the protective upper limit on emissions. Tr.1 at 312. In addition, Ms. Hirner asserted that, because all peaker plants would be subject to the proposed NO_x trading program, fears that additional peaker plants will increase the total tonnage of NO_x in the overall region are unfounded. Tr.1 at 313.

Ms. Freddi Greenberg, Executive Director and General Counsel, Midwest Independent Power Suppliers (MWIPS), also argued that the current regulations are adequate for regulating peaker plants. Tr.1 at 327. She maintained that a strict set of regulations applies to peaker plants, and that these plants do not pose a threat to air quality, human health or the environment. Tr.1 at 327. Mr. Mike Kearney, Manager of Economic Development, Ameren Corporation (Ameren), stated that the current regulations governing the peaker plants are appropriate and provide each stakeholder to an opportunity to become involved in the process. Tr.1 at 341. He maintained that additionally regulating peaker plants is not warranted or needed at present. Mr. John Smith, a representative of the Illinois Section of the American Water Works Association (ISAWWA), also stated that peaker plants should not be singled out and regulated more strictly with regard to air quality. Tr.2 at 24. A similar position was taken by Mr. Brent Gregory, a representative of the Illinois Chapter of the National Association of Water Companies. Tr.2 at 30.

With respect to the NO_x SIP call, Indeck suggested that "natural gas-fired peaking plants should be encouraged rather than discouraged" to help achieve reductions that the NO_x SIP call requires. Indeck noted that gas-fired turbines "are among the lowest emitters of NO_x per kilowatt-hour [kWh] produced, when compared to other means of electrical production." PC 173 at 2.

D. Air Emissions Control Technology

1. Information from Citizens

Ms. Stark of CARE testified that peaker plants were being permitted with inadequate emission control technology. She stated that a peaker plant that Rolls Royce Power Ventures proposed in Lockport was permitted at 55 ppm for NO_x, which will make it the "dirtiest" peaker plant in the State. Tr.1 at 648. Ms. Dorge stated that residents of Illinois and Wisconsin are entitled to air that is as clean as can be achieved with modern technology. Tr.1 at 454. She asserted that peaker plants "should install LAER and every effort should be taken to prevent backsliding particularly in the case of NO_x and VOM emissions." Tr.1 at 454.

Ms. Turnball stated that peaker plants emitting more than 25 TPY should be required to meet BACT. Tr.1 at 926. She noted that Indiana requires BACT for any emitter over 25 TPY. Tr.1 at 925. Further, Ms. Turnball maintained that the treatment goal in the NAA areas should be LAER. Tr.1 at 926. Ms. Cindy Skrukrud, a resident of Olin, Mills, McHenry County, also recommended that peaker plants be required to meet BACT. Tr.1 at 1,024.

Ms. Terry Jacobs, a resident of Libertyville, noted that technology to substantially lower emissions to as low as 4.5 ppm is readily available. Tr.1 at 982. She stated that peaker plants must be required to meet lowest achievable emissions. Tr.1 at 983. Dr. McCarthy submitted information on a specific NO_x control technology called XONON™. McCarthy Exh. 3. He asserted that the XONON™ technology is capable of reducing NO_x emissions to 2.5 ppm. Tr.1 at 1,004. Dr. McCarthy stated that the XONON™ technology is being used by General Electric on 250-MW turbines in Southern California. Tr.1 at 1,005. He urged the Illinois officials to review the XONON™ technology to determine whether it can be used in the State.

Mr. Robert Brooks of Waukegan presented information on power generation technology capable of producing very low NO_x and CO_2 emissions. According to the April 15, 2000 issue of Ward's Engine and Vehicle Technology Update, solid oxide fuel cell turbine engine EGUs—fueled by natural gas and built by Siemens Westinghouse—have 60 to 70% efficiency, produce less than 1 ppm NO_x, require no water, and can be modified so that its CO_2 output is captured for injection into the ground. "The later CO_2-capturing version is planned for demonstration with Shell Oil Co. and is expected to be the first hydrocarbon-fueled generator that can be classified as emitting no CO_2." In the October 1, 2000 issue, the periodical notes that a 220-kilowatt (kW) unit was installed at a California electric utility plant earlier this year and is performing well. A 1,000 kW unit is planned for an EPA facility demonstration in Maryland in 2002. PC 13 at 2.

NRDC stated that combined cycle turbines are capable of obtaining 55-60% efficiencies. Simple cycle natural gas-fired combustion turbines "are considerably less efficient, operating between 28-35% with combustion controls limiting NO_x emissions to 15-25

ppm." PC 109 at 5.

2. Information from State Government

The criteria pollutants from gas turbines targeted for emissions control are NO_x, CO, and VOM. Mr. Romaine of IEPA explained that turbine emissions "can be reduced by combustion modifications and by add-on control devices." Tr.1 at 93. Combustion modifications are the preferred control method for NO_x and CO pollutants from gas turbines. Types of combustion modifications include water injection, air to fuel mix adjustment, and catalytic combustion. Tr.1 at 93-94.

- Injecting water into the burner slows down the combustion process and reduces the formation of NO_x by as much as 60% or more. Tr.1 at 94. NO_x emissions levels for water injection systems range from 42 ppmv for natural gas-fired turbines to 45-75 ppmv for most oil-fired turbines. IEPA Grp. Exh. 2, No. 4 at 5-11, 5-15. However, water injection is not feasible for turbines already achieving emission rates less than 25 ppm through advanced burner design. IEPA Grp. Exh. 1, Romaine at 22. Besides reducing NO_x formation, water injection also increases CO and VOM emissions and decreases fuel efficiency. IEPA Grp. Exh. 1, Romaine at 18.

- Adjusting the air to fuel mix in a "dry low NO_x burner" minimizes "hot spots" in the combustion flame where NO_x is formed and can achieve a reduction in NO_x of 90% or more for natural gas fuel. Tr.1 at 94. For oil, dry low NO_x burners are not as effective. IEPA Grp. Exh. 1, Romaine at 19. For frame turbines, dry low NO_x burners can yield emissions of 9-12 ppm. Aero-derivative turbines will yield about 25 ppm. PC 9 at 22.

- A third type of combustion modification is catalytic combustion known as XONON™ that Mr. Romaine described as a "promising technology for improving burner performance." However, its application is currently limited to turbines much smaller than those proposed for Illinois, around 1.5 MW in size. IEPA Grp. Exh. 1, Romaine at 19.

Mr. Romaine further explained: "add-on control devices are not commonly used for NO_x emissions from simple cycle gas turbines." Tr.1 at 94-95. Although not commonly used, a catalyst material can reduce NO_x to nitrogen and water using ammonia in a chemical reaction known as selective catalytic reduction (SCR). Tr.1 at 95. In a similar process, selective noncatalytic reduction also uses ammonia, but requires higher operating temperatures and no catalyst. IEPA Grp. Exh. 2, No. 4 at 5-87. Using ammonia in these add-on controls presents its own environmental concern because unreacted ammonia may be released into the atmosphere, contributing to acidification of surface waters and soil. Mr. Romaine noted that

none of Illinois' new peaker plants are using or proposing to use SCR. IEPA Grp. Exh. 1, Romaine at 20.

Besides NO_x, add-on control devices are also available for CO and VOM emissions. Because CO and VOM are products of incomplete combustion, add-on control devices use an oxidation catalyst to drive the combustion reaction to completion in the exhaust ductwork without the need for supplemental heat. Tr.1 at 96. These systems generally achieve a 90% reduction, but reduction varies depending on the model of gas turbine. Mr. Romaine noted, "The new peaking plants in Illinois, which rely on good combustion practices to minimize emissions, are not routinely using oxidation catalyst systems." IEPA Grp. Exh. 1, Romaine at 21. A newer add-on control device is the proprietary catalytic technology SCONOX™ for control of NO_x, CO and VOM. However, because SCONOX™ is only effective at temperatures below 700° F, it is not suited for simple cycle gas turbines, which are not equipped with a heat recovery steam generator. IEPA Grp. Exh. 1, Romaine at 21-22.

3. Information from Industry

> Indeck commented on the control technologies that citizens suggested at the hearings:
>
> [T]hese technologies have not been proven on a commercial-sized scale sufficiently that most developers will risk committing to a permit that relies on such unproven technology for compliance. PC 173 at 2.

As to the feasibility of utilizing add-on controls, Indeck noted that although aero-derivative turbines may be more conducive to add-on controls than frame turbines, they generally consume more water, produce more CO, operate less efficiently at high temperatures, and incur additional capital and maintenance costs. PC 173 at 2.

Mr. Ryan of Standard Power and Light provided his company's IEPA air permit application for a peaking facility in West Chicago that would use add-on controls to achieve a NO_x emission rate of 3.5 ppm. Challenging his competitors to reduce their emissions to below 5 ppm NO_x and appealing to the legislature to impose stricter emission standards, Mr. Ryan stated that the new Standard Power and Light peaker plant would be "the lowest emissions source of any peaking power plant in the entire country." Tr.1 at 427-429. Mr. Ryan pointed to available air emissions controls like SCR, SCONOX™, and XONON™. He conceded that the investment may be expensive, but emphasized that, "[r]egardless of what technology is used, something has to be used." Tr.1 at 428. "It's the right thing to do." Tr.1 at 429.

E. Air Quality Modeling

1. Information from Citizens

Individual citizens and citizen groups complained that the air quality modeling that IEPA requires is not accurate and reliable. Tr.1 at 439, 649, 660, 782. Ms. Turnball stated that the air quality modeling should be done using parameters that reflect the actual conditions of humidity, wind pattern, and temperature. Tr.1 at 439-440. She noted that the modeling must show the point of maximum impact for each regulated pollutant. Tr.1 at 440. A number of citizens stated that modeling should be done to evaluate the cumulative effects of all proposed and existing peaker plants and other industrial sources. Tr.1 at 460, 660 and 782. In addition, Ms. Turnball urged the Board to make permanent the air quality modeling requirement that is currently being imposed on peaker plants at the discretion of IEPA Director Skinner. Tr.1 at 513.

2. Information from State Government

a. Function of Air Quality Modeling. As elucidated by Mr. Robert Kaleel, Manager of IEPA's Air Quality Monitoring Unit, "[a]ir quality is predicted through modeling or measured through monitoring. . ." Tr.1 at 109. Models "are applied in an engineering or analytical way to identify the causes of existing problems and in a planning or predictive way to project and avoid future problems." IEPA Grp. Exh. 1, Kaleel at 2. "Modeling provides a quantitative link between sources of air pollutants and ambient air quality. Such a link is necessary when regulatory decisions must be made within the framework of the . . . NAAQS . . . and . . . PSD . . . increments." IEPA Grp. Exh. 1, Kaleel at 3.

To assess potential impacts on air quality, IEPA has been requiring air quality modeling for all peaker plants since at least January 2000. Generally, existing law only requires air quality modeling when a source triggers PSD requirements. Tr.1 at 107. However, as Director Skinner pointed out, IEPA made an administrative change to require modeling for all peaker air permit applications to provide a comprehensive analysis of the potential environmental effects. Tr.1 at 59.

Air quality modeling is a set of mathematical equations relating the release of air pollutants to corresponding concentrations of pollutants in the ambient atmosphere. Modeling is used to identify and evaluate the level of controls required to solve industrial and urban air pollution problems. IEPA Grp. Exh. 1, Kaleel at 2. According to Mr. Kaleel, "[t]here are a number of different types of air quality models that [IEPA] uses for a range of different applications." Tr.1 at 109. The models range in degree of sophistication. The most frequently used simulation model for evaluating the "dispersion of atmospheric contaminants" is the Industrial Source Complex model that USEPA developed. IEPA Grp. Exh. 1, Kaleel at 4. That model:

> [I]s an appropriate model to evaluate local, or neighborhood scale, effects where chemical reactions in the atmosphere are relatively unimportant in determining peak impacts. The [Industrial Source Complex] model was used for air quality impact analyses for those "criteria" pollutants (*i.e.*, pollutants for which

> [USEPA] has established an NAAQS), such as [PM] 10 microns in aerodynamic diameter (PM 10), . . . SO_2 . . . CO . . . NO_2 . . ., where peak impacts from the natural gas-fired peaking plants are expected to be local in scale. IEPA Grp. Exh. 1, Kaleel at 4-5.

The dispersion models are not appropriate for ozone. As Mr. Kaleel explained, "[i]n fact, the ozone modeling techniques that are required are very complex . . . as a result of a complex series of chemical reactions in the atmosphere." Tr.1 at 117. These models are not required of individual applicants. Modeling for ozone uses urban airshed models to address the urban- and regional-scale problem of ozone formation and transport. The ozone modeling that IEPA uses is a photochemical grid model, called the Urban Airshed Model—Version V (UAM-V). IEPA Grp. Exh. 1, Kaleel at 10.

b. Parameters Used in Modeling. IEPA used both dispersion modeling and photochemical modeling to ascertain the potential air quality impacts of the proposed peaker and combined cycle plants.

Dispersion modeling parameters were based on source characteristics (stack location, height, diameter, flow rate, emission rate, exit velocity), wake effects, aerodynamic downwash, and five years of meteorological data. IEPA explained that, "[a]s a result, modeling determines worst-case pollutant concentrations that may result from a proposed plant. * * * However, actual monitoring data . . . are not used to specifically verify the results of dispersion modeling." PC 9 at 26-27.

The parameters used in the photochemical modeling were derived from historic high ozone episodes that occurred in the Lake Michigan region during 1991 and 1995. The parameters used in the ozone air quality modeling were based on meteorological, emissions, and source characteristic data. Meteorological data derived from those high ozone episodes included: wind direction and speed, temperature, pressure, humidity, and turbulence. Data for cloud and precipitation fields were drawn from National Weather Service observations. Data for chemical reactions between pollutants and meteorological conditions was calculated from a numeric algorithm. Emissions data was based on an emissions inventory that includes hourly emissions for volatile organic compounds (VOCs), NO_x, and CO. Sources included in the inventory were: man-made, naturally-occurring (plants and soil), motor vehicles (on-road and off-road), industrial or point (smoke stacks), and area sources (fuel combustion, solvents, *etc*.). As IEPA explained, to determine the worst-case pollutant concentrations that might result from a proposed plant, modeling also included emissions from all new simple cycle and combined cycle plants with active permits or applications. PC 9 at 23-26.

In general, IEPA's photochemical modeling of the peaker plants was based on the future year, attainment modeling of the Lake Michigan Air Directors Consortium. This modeling takes into account growth in each source category as well as air pollution control measures. The control measures include the NO_x SIP call, Enhanced Vehicle Inspection and

Maintenance, Phase II-reformulated gasoline, Tier 2 automotive standards, low sulfur gasoline, heavy-duty vehicle standards, and other measures required by the CAA. IEPA Grp. Exh. 1, Kaleel at 5-6.

c. Results of Air Quality Modeling. In its review of dispersion modeling studies submitted for proposed peaker plants, IEPA found that emissions from these natural gas-fired units are typically small. Of the criteria pollutants that these units are expected to emit, IEPA observed quantities ranging from 40-60 TPY for NO_2, 60-700 TPY for CO, 10-360 TPY for PM 10, 5-250 TPY for SO_2, and 2-130 TPY for VOCs. "From the studies reviewed to date, none of the modeled impacts from these projects have been determined to exceed either the NAAQS or PSD increments for any of the relevant air contaminants." IEPA Grp. Exh. 1, Kaleel at 5-6.

In evaluating the effect of peaker plants on ozone air quality, IEPA relied on results of the photochemical UAM-V model for the attainment year 2007. IEPA Grp. Exh. 1, Kaleel at 10. Results of modeling based on expected reductions from the NO_x SIP call suggest "that the impact of peaker emissions on overall daily maximum ozone levels is small." IEPA Grp. Exh. 1, Kaleel at 12-13. With all peaker plants operating simultaneously on a high ozone day, modeling results suggest that ozone concentrations would increase 1 to 4 parts per billion (ppb). An increase of 1 ppb can be expected in the highest ozone area, which typically occurs over Lake Michigan. Higher impacts are predicted in areas where modeled concentrations are less than the NAAQS. The modeling indicated no change in the Metro-East/St. Louis area. Mr. Kaleel concluded, "[t]he model's response to projected emission increases is small relative to the improvements in ozone air quality achieved to date and to improvements expected in coming years from control programs yet to be implemented." IEPA Grp. Exh. 1, Kaleel at 13-14.

3. Information from Industry

Reliant provided a synopsis of the air quality modeling it performed for its Aurora peaker project in DuPage County. Dispersion modeling included emissions from both its proposed peaker plant plus all other industrial facilities in that area. Reliant concluded that maximum NO_x emissions from the plant would be fifty times less than the NAAQS and found in a small area radiating a few hundred feet to the north of the Reliant property. Reliant concluded that residential neighborhoods one-half mile or more beyond the affected area would register no measurable impact of NO_x emissions on air quality. PC 1 at 3-4.

Indeck also provided information on its air dispersion modeling for NO_x, SO_2, CO, and PM 10 for its proposed Libertyville plant. To predict the worst case effect, modeling was conducted using the five-year worst hourly meteorological conditions and maximum operating rates of 8,760 hours per year rather than the restricted hours in the air construction permit. Indeck suggested that the modeled impacts of the specific pollutants were not significant impacts, either in terms of ambient air standards or in terms of health effects. "In fact, the

predicted ambient air quality impacts from this facility are less than the predicted impacts from a boiler at a typical school and about the same as the impact from one gas heated home." Indeck Exh. 2, Representative Impact Documentation.

F. Air Quality Impacts

1. Information from Citizens

A number of citizens stated that cumulative or combined effect of all existing and proposed peaker plants should be considered in the permitting process. Tr.1 at 460, 980, 1,024. Ms. Terry Jacobs, a resident of Libertyville, noted that the current ability to cluster peaker plants, if permitted by local zoning, does not take into account the cumulative impact. Tr.1 at 980. She stated that the cumulative emissions from peaker plants must be evaluated on a regional level. Tr.1 at 980-981. Dr. McCarthy noted that at present there is no law or regulation for siting multiple peaker plants within close proximity. Tr.1 at 1,010. Ms. Dorge also stated that a number of peaker plants are being sited within close proximity of one another.

CARE's Ms. Stark, stated that peaker plants are being proposed within very close proximity to residences and elementary schools. Tr.1 at 647. She asserted that children's health is not being taken into consideration, especially children with asthma and other respiratory conditions. Tr.1 at 647.

NRDC stated that "[n]atural gas-fired combustion turbines represent the best available large-scale fossil fuel generation in terms of minimal adverse air quality impacts." However, "the aggregate impact of the proposed combustion turbine projects in Illinois would amount to several hundred tons, likely to be emitted during the worst ozone episodes." PC 109 at 5-6.

According to NRDC:

> In isolation single cycle natural-gas fired combustion turbines do not pose a greater threat to public health and the environment than other types of state-regulated facilities, particularly coal-fired steam turbine generating units. However, the aggregate impact of siting several single cycle natural gas-fired combustion turbines should be thoroughly evaluated since these units can emit quantities of NO_x . . . CO . . . PM 10 . . . VOCs . . . SO_2 . . . and sulfuric acid mist . . . in quantities sufficient to trigger permit review thresholds under the [CAA]. * * * [Peaker plants can] also emit toxic air pollutants, including formaldehyde, acetaldehyde, benzene, lead, mercury and beryllium in quantities sufficient to trigger permit review thresholds under the [CAA]. Toxic air pollutants emissions increase significantly at single cycle combustion turbines equipped to burn distillate fuel oils as an alternative fuel source. PC 109 at 6.

2. Information from State Government

a. Impact on Illinois' Ability to Attain the NAAQS. Mr. Kaleel desribed the trends in ozone readings: "Back in the '87 to '89 time frame, the highest design values [for ozone] in

the region were occurring just at the Illinois, Wisconsin border." That reading was 190 ppm of ozone. In Michigan City, the highest reading was 180 ppm. In downtown Chicago, the highest reading was 70 ppm. Tr.1 at 119. In the last three-year period, Northern Illinois has not experienced any violations of the ozone design values. Tr.1 at 120.

Mr. Kaleel recognized "we had a pretty serious problem 10 years ago, and, of course, the IEPA proposed many things, and the Board has acted on many things to reduce precursor emissions over the last 10 years and, through the limitation of those programs and programs required by [USEPA], made tremendous strides." Tr.1 at 120. According to Mr. Kaleel, although "there have been major improvements on ozone[,] [w]e still have a little ways to go. We're still not showing attainment." Tr.1 at 120.

Regarding the impact peaker plants will have on Illinois' ability to attain the NAAQS for ozone, Mr. Kaleel remarked: "So does this result of a peaker complicate our efforts to showing attainment? It clearly complicates our efforts. It would be easier to demonstrate attainment without having synergies." Tr.1 at 129. IEPA is currently preparing its ozone attainment demonstration due in December of this year. Mr. Kaleel believed that Illinois would be able to show attainment with "improvements that are seen from all of the programs that have been implemented to date [because they] far exceed the negative consequences of peaker emissions." Tr.1 at 130. With the modeling to date showing that peaker plants have a noticeable but small effect on ozone concentrations, IEPA expects to be able to demonstrate attainment of the one-hour ozone standard based on the requirements of the NO_x SIP call. PC 9 at 29.

b. Localized Impacts. To ensure that localized impacts are considered, IEPA has required all applicants for peaker plants to perform air quality modeling at the locations where the highest impacts are expected, even as close as the source's fence line. According to IEPA, "[t]he modeling has consistently demonstrated that the air quality impacts of the peaker are small, if not insignificant, and will not cause or contribute to violations of the NAAQS." PC 9 at 6.

3. Information from Industry

Mr. Richard Trzupek is the Air Quality Manger with Huff & Huff, Inc. (Huff & Huff), an environmental consulting firm that assists electric facilities with air permitting. Mr. Trzupek said that "[w]hile coal technology has made massive strides toward becoming a cleaner fuel, it cannot be as clean as natural gas." Huff & Huff Exh. 1 at 13. Comparing emissions from current utility sources to potential emissions if 10,000 MW of coal generating capacity in MAIN were replaced by natural gas, Mr. Trzupek estimated a 27% reduction in NO_x, 29% in SO_2, and 25% in PM. Mr. Trzupek suggested there would be "a significant environmental benefit to the region by substituting natural gas for coal." Huff & Huff Exh. 1 at 7. Mr. Trzupek cautioned that further restrictions on constructing natural gas-fired generation "will have the unintended consequence of making it more difficult for the state to

meet both energy demand and air quality goals." Huff & Huff Exh. 1 at 13.

G. Other Specific Concerns of Citizens

1. Regulating Multiple Peaker Plants with a Single Owner or Operator

Mr. Eaton, attorney for Liberty Prairie Conservancy, Prairie Holdings Corporation, and Prairie Crossing Homeowners Association, stated that some companies were avoiding major source review for individual plants by building multiple plants, each having contaminant levels just under the major source threshold. Tr.1 at 871. He noted that efforts made by a company or business entity having common ownership to obtain permits to construct and operate multiple plants in a vast NO_x airshed constitutes an effort to dilute emissions. Tr.1 at 873. Mr. Eaton asserted that "total emissions from all such plants need to be reviewed as one, not individually, to avoid a circumvention precluded by that regulation." Tr.1 at 873.

2. Environmental Impact Statement (EIS)

Ms. Verana Owen, Co-Chairperson of Zion Against Peaker Plants, stated that the impact of a peaker plant on the environment must be evaluated by conducting an environmental impact statement (EIS). Tr.1 at 943. She noted that an EIS, at a minimum, should address issues concerning hydrology and water quality, water use, water runoff, air quality, loss of habitat, loss of agricultural land, land use, socioeconomic impact, impact on local services including traffic, noise, and public health and safety. Ms. Owen stated that Indiana, Ohio, and Wisconsin require EISs for peaker plants. Tr.1 at 943.[8]

IV. NOISE EMISSIONS

In this part of the Report, the Board summarizes information from the record on (1) citizen concerns about noise emitted from peaker plants, (2) peaker plant noise emissions, (3) methods to control noise, and (4) noise pollution regulation.

A. Concerns of Citizens

Many citizens raised concerns about the potential for peaker plants to cause noise pollution. Individual citizens and citizen groups raised the specific concerns described below.

1. Noise Emissions and Proximity to Residences

- Gas-fired turbines generate significant sound power and can negatively impact nearby

[8] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

property. Sargis Exh. 1 at 7-8.

- Mr. Eaton, on behalf of Prairie Crossing Homeowners Association, Liberty Prairie Conservancy, and Prairie Holdings Corporation, participated in the public hearings held before the Village of Libertyville Plan Commission regarding a 300-MW peaker plant proposed by Indeck. Those proceedings involved more than 20 hearing sessions over 10 months. Mr. Eaton also represented a citizen group in Bartlett with respect to a proposed peaker plant. Tr.1 at 864, 905; Eaton Exh. 1 at 1. Mr. Eaton asserted that, for residents in close proximity to proposed peaker plants, "noise may well be the single most serious and acute environmental problem posed by these plants." Eaton Exh. 1 at 12.

- Mr. Eaton stated that a "number of the approximately 50 pending peaker plant applications for installations are proposed for locations quite close to residences" and many of the residential areas at issue were found to be "extremely quiet." Eaton Exh. 1 at 12, 14.

2. Permitting and Pre-Construction Review

- Illinois has no permit program or pre-construction review for noise emissions. Eaton Exh. 1 at 12; Sargis Exh. 1 at 7-8.

- Mr. Mark Sargis, an attorney with the law firm of Mauck, Bellande & Cheely, has practiced environmental, land use, and zoning law during the past 15 years. He is representing a group of citizens concerned generally about the effects of peaker plants and specifically about a peaker plant proposed in DuPage County near property that the citizens own. Sargis Exh. 1 at 1. Mr. Sargis stated:

> Generally, it is reasonable to expect that, under current regulations, noise emissions from peaker plants would operate closer to or past the point of non-compliance than would air emissions. The fact that there is a comprehensive air permit program, but no required review of noise impacts, indicates an inconsistency in regulation between these two media. Sargis Exh. 1 at 9.

- If noise control is not addressed when designing a peaker plant, adding controls after construction may be ineffective, difficult or impossible, or much more expensive. Sargis Exh. 1 at 7-9.

3. State Noise Standards and Enforcement

- Mr. Eaton asserted that, "even if we had the most rigorous enforcement of current

standards," the State's noise standards are "inadequate":

> [T]he noise regulations are written for 9 octave bands. However, we believe it is fairly well accepted that the nighttime[9] noise regulation limits for emissions from industrial sources to residential receptors can be referred in the shorthand as approximately 51[dB(A), *i.e.*, A-weighted decibels[10]]. That may be fine in a place where these plants perhaps ought to be located, such as existing industrial locations, brownfield areas, or areas where there is already a substantial amount of noise and/or virtually no residences in the vicinity . . . . However, . . . many of these plants have been proposed to be built in or near residential areas. Many of those areas we have found to be extremely quiet. For example, in both Libertyville and Bartlett, background noises, particularly at nighttime and particularly on weekends (when these plants may well operate), are extremely low, running sometimes below 30 [dB, *i.e.*, decibels], and many times in the low 30s in [dB(A)]. Noise doubles approximately every 6 [dB] that the level of sound is increased. Accordingly, to go from 33 [dB] to 39 [dB] would double the noise; to go from 39 [dB] to 45 [dB] would double the noise again; and to go from 45 [dB] to 51 [dB] would double the noise again. Thus, at 51 [dB], noise is eight times as loud as it is at 33 [dB], . . . a fairly common level of noise to be found in or near many of our residential neighborhoods. Eaton Exh. 1 at 13-14.

- Mr. Sargis stated:

> [B]ecause of how the noise regulations in Illinois work, allowing one peaker plant in an area can make it easier for a second, nearby facility to meet applicable noise standards, due to increased ambient noise levels caused by the first facility. This problem is especially apparent because of the areas identified as "preferred" from the standpoint of energy

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[9] Nighttime hours are from 10 pm to 7 am, local time. Daytime hours are from 7 am to 10 pm, local time. See 35 Ill. Adm. Code 900.101.

[10] "A-weighting measurements attempt to compensate for the fact that generally a sound with a given decibel level at a higher frequency seems louder to the human ear than a sound with the same decibel level at a lower frequency. * * * For a given sound measurement, decibels are either subtracted or added at various frequencies using a scale, then the weighted values for each frequency 'are combined to give a single A weighted decibel level for the sound.'" Charter Hall Homeowner's Association v. Overland Transportation System, Inc. (October 1, 1998), PCB 98-81, slip op. at 22 (quoting Noise Pollution Control Regulations (July 31, 1973), R72-2, slip op. at 11).

supply lines. Sargis Exh. 1 at 9.

- There is little, if any, State enforcement of Illinois' noise standards. Eaton Exh. 1 at 12; Sargis Exh. 1 at 9.

- Mr. Eaton asserted:

> [A]t present, there is inadequate IEPA noise enforcement. Illinois' noise regulations are virtually unenforced by IEPA, contrary to the purposes of the Act. Greg Zak, IEPA's noise director, is a one-man noise section and is the only person reviewing this area . . . . [T]here is virtually no ability to enforce these regulation[s], an inability which is due to insufficient staffing and budget restrictions which preclude properly dealing with this critical area. Eaton Exh. 1 at 12.

4. Local Noise Standards and Enforcement

- Local noise regulations are often out-dated or inconsistent with the State standards. Sargis Exh. 1 at 9.

- Local enforcement mechanisms are unlikely to be effective. Sargis Exh. 1 at 9.

B. Peaker Plant Noise Emissions

1. Information from State Government

Mr. Greg Zak is the Noise Advisor for IEPA. He has 28 years of experience measuring noise, controlling noise, and assessing the effects of noise on people. His experience includes industrial, commercial, residential, urban, rural, and construction noise. Tr.1 at 130-131; IEPA Grp. Exh. 1, Zak at 1. Mr. Zak stated:

> Peaker plants pose a greater threat than other types of State regulated facilities with respect to noise pollution because the gas turbine engine used in peakers is one of the most powerful (loudest) noise sources in the U.S. IEPA Grp. Exh. 1, Zak at 3.

He also testified that the noise emissions that must be contained and neutralized in the peaker plant are "tremendous" and that the potential for releasing "great amounts of sound power poses a greater threat than most other types of State regulated facilities." Tr.1 at 132.

Mr. Zak, referring to the Board's noise regulations, stated that noise emissions from peaker plants may be characterized as "nuisance noise (35 Ill. Adm. Code 900.102),

broadband noise (35 Ill. Adm. Code 901.102(b)), and tonal noise (35 Ill. Adm. Code 901.106)." IEPA Grp. Exh. 1, Zak at 3. He stated that "very low frequency (rumble) noise" is associated with large gas turbines. IEPA Grp. Exh. 1, Zak at 4. He added that uncontrolled peaker plant noise emissions may significantly depress neighboring property values. Tr.1 at 136.

Mr. Zak stated that IEPA has received no noise complaints regarding existing peaker plants. However, "with the new influx of permit applications and peakers coming on-line, we're keeping an eye on that to see if we do have a . . . problem." Tr.1 at 170; IEPA Grp. Exh. 1, Zak at 6. He stated that peaker plant noise emissions can greatly exceed the limits that the Board requires in 35 Ill. Adm. Code 900.102, 901.102(b), and 901.106. IEPA Grp. Exh. 1, Zak at 3. These exceedences can occur if the noise emissions are not controlled in the peaker plant housing, or the land buffer or setback needed is not considered when choosing a site. IEPA Grp. Exh. 1, Zak at 3.

2. Information from Local Government

The DuPage County Department of Development and Environmnetal Concerns retained Versar, an environmental consultant, to review environmental issues related to peaker plants. DuPage County Board Exh. 1 at 1. Versar stated that peaker plant noise may be a concern. It explained that combustion turbines are "very similar to the technology of jet air craft engines, and some, but not all, of the combustion turbines used in peaker plants are derived from aircraft designs." DuPage County Board Exh. 1 at 16. Versar cautioned, however, that there are limits to comparing peaker turbines and jet aircraft engines:

> This can lead to inappropriate comparisons between peaker plants and aircraft noise, which are generally not true. A jet aircraft engine provides power by exhausting a high-velocity gas stream for propulsion, and capturing only enough energy from the exhaust to compress inlet air. A ground-based turbine, such as a peaker plant, extracts much more energy from the exhaust to perform the mechanical work of generating electricity. A peaker plant will also have much larger inlet and outlet structures, that will reduce noise both indirectly and by design. DuPage County Board Exh. 1 at 16.

Nevertheless, Versar noted that the "residual noise from the turbine train may be significant to surrounding residential, commercial and industrial neighbors, and a peaker plant may have other components that can generate noise." DuPage County Board Exh. 1 at 16. Versar identified the following potential noise sources at peaker plants:

- Air inlet structures;

- Combustion turbine casings;

- Air exhaust from stacks;
- Fans from exhaust vents;
- Auxiliary compressors, pumps, and other equipment;
- Transformers; and
- Cooling towers. DuPage County Board Exh. 1 at 17.

Versar noted that impulsive sounds, which are "generally associated with activities that are intermittent, usually with a duration of one second or less, such as drop forging or blasting, . . . would not generally be anticipated to be located at a peaker plant . . . ." DuPage County Board Exh. 1 at 35.

Versar provided information on six proposed peaker plants, five in Illinois and one in Maryland:

Developer	Location	Size (MW)	Noise Analysis Results
Indeck	Libertyville	300	• From modeling, facility will produce 47-51 dB(A) at nearby residences (1,200 feet), 41-45 dB(A) at 2,400 feet • Existing noise is higher with 43-61 dB(A) in residential and 57-69 dB(A) in commercial areas
Reliant	Aurora	950	• From modeling, facility will produce 55-57 dB(A) at nearest residential receptors, 60 dB(A) at nearest commercial receptors • Plant is expected to operate only during the day
Constellation	West Chicago	300	• From modeling, facility will not meet Board noise standards without noise suppression

			• Applicant committed to install noise suppression to meet the standards • No quantitative data
Reliant	Cecil County, Maryland	1,125	• From modeling, facility will produce 58-64 dB(A) • Existing daytime noise measured at 38-59 dB(A) • Plant is expected to operate only during the day
Dynergy	East Dundee	398	• No pre-approval analysis identified • Most recent Village resolution (for expansion to 398 MW) required the developer to fund noise measurements to verify that the constructed project complies with Illinois and Village noise requirements
Reliant	Shelby County	328	• Applicant stated that plant would meet 70 dB (represented as the "county standard," but not further explained) at the property boundary • Applicant stated that the plant would meet 61 dB(A) (represented as the "state standard") at the property boundary and emit 55-56 dB(A) at the nearest residence

DuPage County Board Exh. 1 at 17-18.

3. Information from Industry

Indeck's Mr. Erjavec asserted that the lack of any noise complaints to IEPA about any of the approximately 100 peaker plants in Illinois supports the proposition that peaker plants do not pose a unique threat, or a greater threat than other types of State-regulated facilities, with respect to noise pollution. Tr.1 at 241; Indeck Exh. 1, 2. He added that when the McHenry County Board toured a peaker plant operated by the local utility in Springfield, one of the county board members standing 1,500 feet from the peaker plant said: "We didn't hear anything. The corn was louder than the plant." Tr.1 at 24; Indeck Exh. 2, PowerPoint. Mr. Erjavec offered further anecdotal evidence that residents near peaker plants find the plants to be quiet. Tr.1 at 241-242; Indeck Exh. 2, PowerPoint.

An independent environmental assessment report on Indeck's proposed 300-MW facility in Libertyville concluded that the proposed facility, with careful design, should be able to meet the Board's nighttime numeric standards. Indeck Exh. 2, ERM report at 36, 38. Indeck's consultant, Acentech, Inc. (Acentech), identified the major noise sources at the proposed facility:

- Combustion turbine/generators (noise radiated from the air inlet, exhaust, and casing);
- Transformers;
- Cooler fans;
- Equipment (*e.g.*, combustion turbine compartment) and building ventilation systems—in-line or rooftop exhaust fans and fresh air inlet openings; and
- Miscellaneous equipment (*e.g.*, motors, pumps, air compressors, and fuel gas flow valves, regulators, and heaters). Indeck Exh. 2, Representative Impact Documentation, App. 2.0 at 7-8.

4. Information from Citizens

Midwest Environmental Assistance Center (MEAC), a consultant, performed noise analyses for several groups (including a homeowners association) concerned about Indeck's proposed peaker plant in Libertyville. MEAC conducted noise monitoring at several locations in Libertyville and Grayslake to determine area background noise levels:

> The results of that monitoring . . . show background nighttime sound levels in Prairie Crossing as low as 35 dB(A) on weekdays and as low as 33 dB(A) on weekends, and daytime background levels on weekends also ranging as low as 35 dB(A), levels typical of quiet suburban environments with little industrial activity.

> Octave band background sound level measurements for residential areas near the proposed Indeck plant site show background noise levels in the lowest regulated frequencies (31.5-125 [Hertz]) as low as 35-40 dB during both daytime and nighttime hours. These levels are more than 30 [dB] below [State] nighttime noise regulation limits of 69 dB, 67 dB and 62 dB for these frequency bands. A 30 dB increase would increase by over 30 times the low frequency background sound found in this area. Readings in other octave bands, although less pronounced are nevertheless also very significant. PC 6, MEAC report at 1.

Based on its monitoring data and its review of Acentech's noise studies on the proposed peaker plant, MEAC concluded:

> [I]t is anticipated that noise from the proposed Indeck plant would totally replace the existing background sound climate in areas including portions of Prairie Crossing, Bull Creek and Harris Road residential areas, during weekend daytime and nighttime hours, and would be the major contributor to the noise climate during weekday nighttime hours.
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> The existing, characteristic quiet suburban residential nighttime and weekend daytime background sound conditions will be replaced by the steady noise source propagations of the proposed 300 MW turbine generator peaker plant.
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> If the noise levels predicted were only 5 to 10 dB over the existing background sound level at Prairie Crossing, Bull Creek or the nearest Libertyville resident, then some moderate noise abatement procedures might possibly create a reasonable new noise condition. But when the existing background sound levels are to be violated by 15, 20 or 25 to 30 dB at various octave band frequencies, even the casual observer is bound to conclude that this type of large industrial facility belongs in [an] . . . industrial area . . . . PC 6, MEAC report at 1, 10, 12.

C. Noise Control Methods

1. Information from State Government

Mr. Zak of IEPA testified that primarily four strategies are used to control noise emissions from peaker plants: air intake silencers; turbine enclosures; air exhaust silencers; and setbacks. First, properly designed and installed combustion air intake silencers reduce intake noise by approximately 99.999 to 99.99999% in the average peaker plant. Second, a

hardened acoustic enclosure completely containing the gas turbine similarly controls noise radiated from the turbine's outer shell. Third, properly designed and installed combustion gas exhaust silencers reduce exhaust noise by approximately 99.9999 to 99.999999%. Tr.1 at 132-134; IEPA Grp. Exh. 1, Zak at 3-4.

The fourth noise control strategy is a setback or land buffer. Mr. Zak explained that the size of the setback should correspond to the distance needed to ensure that noise emitted from the peaker plant will have dissipated so as to meet State standards at the peaker plant's property line. He added, therefore, that the setback distance needed would depend upon the level of noise control included in the peaker plant's initial design. Mr. Zak explained that the peaker plant should control the setback land to eliminate the concern of residential development moving in next to the peaker plant. Tr.1 at 133-134; IEPA Grp. Exh. 1, Zak at 4.

Mr. Zak also testified about a new noise control technology called "active noise cancellation." Tr.1 at 133. This technology has the potential to abate "much of the very low frequency, rumble type sound associated with large gas turbines . . . ." However, the technology is "unproven . . . when used in low cost applications." Tr.1 at 133. He added that active noise cancellation could be considered "when the more traditional silencer technology is not able to satisfactorily address the rumble problem." Tr.1 at 133-134.

2. Information from Local Government

In its report prepared for the DuPage County Department of Development and Environmnetal Concerns, Versar indicated that peaker plant noise usually can and must be accounted for in designing the project. Means of noise control include buffer zones, inlet and outlet silencers, noise-reducing housings for the turbines and other mechanical equipment, low-speed fans, structural barriers, and prohibiting nighttime operation. DuPage County Board Exh. 1 at 16-17.

The Lake County Board's legislative program for the 2000 session of the Illinois General Assembly provides that the county board would seek to directly sponsor legislation that would have the State establish a siting process, similar to the current landfill siting process, that would review noise emissions from peaker plants among other factors. Lake County Exh. 5 at 8.

3. Information from Industry

Mr. Erjavec of Indeck stated that because peaker plants may be called upon to operate at any time and because sound attenuation cannot be increased at night, peaker plants are designed to meet the Board's nighttime numeric noise standards at all times. Tr.1 at 240-241. He added that peaker plants are meeting Illinois noise standards through buffer zones or designed noise silencing measures. Tr.1 at 242; Indeck Exh. 1, 2. Noise silencing measures

include mufflers and enclosures of turbine areas. The enclosures are made of acoustical material. Tr.1 at 266.

Mr. Erjavec testified that if a peaker plant has a large buffer zone, the plant "may not need to put quite as much acoustical treatment onto [the] facility." Tr.1 at 268. Likewise, engineered noise controls may eliminate the need for a large buffer zone. Tr.1 at 268. Mr. Greg Wassilkowsky, another Manager of Business Development for Indeck, testified that the University of Illinois has gas turbines located across the street from a hospital. Tr.1 at 268-269.

Indeck budgeted approximately six to eight million dollars for acoustical treatment on its proposed 300-MW peaker plant in Libertyville. Tr.1 at 269; Indeck Exh. 2, ERM report at 38. Indeck's consultant, Acentech, identified the major noise sources at the proposed facility and the corresponding noise control measures proposed:

Noise Source	Noise Control Measure
Combustion turbine/generators (noise radiated from the air inlet, exhaust, and casing)	• Air inlet noise—parallel-baffle muffler in the inlet ductwork to each unit; acoustically-lined inlet duct or lined inlet plenum • Turbine exhaust noise—contain in the ductwork by thermal/acoustical lagging or enclosures; reduce as it travels through the exhaust flow path by a muffler typically located in the ductwork between the turbine and the stack or within the stack • Casing-radiated noise and noise from ancillary equipment—enclose in acoustical structure
Transformers	• High-efficiency transformers designed to have lower internal magnetic flux densities and lower magnetostrictive forces • Acoustical barrier walls or partial or full enclosures around transformers
Cooler fans	• Specify reduced-speed, low-noise fans • Locate units to take advantage of shielding that other structures provide

	• Barrier walls near the units
Equipment (*e.g.*, combustion turbine compartment) and building ventilation systems—in-line or rooftop exhaust fans and fresh air inlet openings	• Lower-speed, reduced-noise fans • Mufflers or acoustical lining in the air paths • Locate units to take advantage of shielding that other structures provide • Barrier walls near the unit

Miscellaneous equipment (*e.g.*, motors, pumps, air compressors, and fuel gas flow valves, regulators, and heaters)	• Specify noise limits • Install inside facility buildings or in smaller, acoustically-designed enclosures or lagging

Indeck Exh. 2, Representative Impact Documentation, App. 2.0 at 7-8.

Independent consultants for Libertyville stated that Indeck proposed a "serious design effort to mitigate potential noise impact" and that a typical noise control budget for that type of facility is two million dollars. Indeck Exh. 2, ERM report at 38. The independent consultants concluded that public concerns over Indeck's proposed noise control measures were not warranted:

> While it is true that low frequency noise is more difficult to mitigate than high-frequency noise, that doesn't mean that it can't be controlled at all. For example, a reasonably substantial building envelope can contain much of the equipment noise inside the building, and barriers can provide a noise reduction of at least five [dB] at any frequency, provided they block the line of site between the noise source and receiver. In addition, silencers such as [Indeck's] planned 80-ft long exhaust silencer can provide substantial noise reductions, even at low frequencies. Indeck Exh. 2, ERM report at 38.

D. Noise Pollution Regulation

1. Pre-Construction Permitting or Review

a. Information from State Government. Mr. Zak of IEPA stated that to avoid problems with peaker plant noise, "compliance reviews (on paper) are essential to insure future compliance" with the Board's noise regulations. IEPA Grp. Exh. 1, Zak at 5. He stated that turbine manufacturers could provide a substantial amount of noise information. IEPA Grp. Exh. 1, Zak at 6. He added that "before full operation is started, the peaker should show that

it can be operated at or below the nighttime noise limits (35 Ill. Adm. Code 901.102(b))." IEPA Grp. Exh. 1, Zak at 5. Mr. Zak stated that "if a peaker plant could not show compliance through a demonstration, the problems could be resolved at the beginning." IEPA Grp. Exh. 1, Zak at 5. He also testified that "the design and noise compliance review of that design are the most important project events." Tr.1 at 135. Illinois regulations do not require noise permits or any pre-construction design review for compliance with the numeric noise standards. Tr.2 at 239; IEPA Grp. Exh. 1, Zak at 5-6; IEPA Grp. Exh. 2, Att. 20.

Mr. Zak testified that "[d]esigning and adding on noise compliance after the plant is built may be next to impossible." Tr.1 at 135. He explained that "[u]pgrading costs would be extremely high, if not prohibitive, for added noise control." IEPA Grp. Exh. 1, Zak at 6. He noted that incorporating noise control measures during the design stage of a peaker plant is much less expensive than adding those measures after the plant is operational. Tr.1 at 137. Because "[s]ilencing equipment comprises the bulk of the peaker plant and is carefully tuned to match the turbine," in some instances "it may be less expensive to install a whole new unit than try to upgrade the old one." IEPA Grp. Exh. 1, Zak at 6.

IEPA stated that for several years it has had an "internal mechanism for insuring a demonstration of compliance with numeric noise standards" as part of the land permit application process for gas turbines used to generate electricity from landfills. PC 9 at 34. IEPA also stated that its air construction permit application does not require noise pollution information. IEPA added:

> Assuming adequate funding and personnel (neither of which exist today), if information addressing noise pollution were submitted with air construction permit applications, [IEPA] could coordinate the permit review process by routing the noise portion of the air permit application to the appropriate personnel. PC 9 at 34.

b. Information from Local Government. Developers of peaker plants often have noise modeling performed before construction to assess potential peaker plant noise against applicable noise standards. The noise analyses can involve a complex evaluation of current and proposed noise sources, noise control measures, and neighboring land uses. DuPage County Board Exh. 1 at 17-18. Versar, the consultant for DuPage County, cautioned however that existing noise regulations "limit actual noise impacts from facilities once they are constructed . . . ." "Before-the-fact analyses" might be requested as part of the zoning application process, but they are not "automatically required." DuPage County Board Exh. 1 at 44.

Five of the six peaker projects that Versar reviewed for the DuPage County Department of Development and Environmental Concerns, including four projects in Illinois and one in Maryland, provided "pre-approval noise analysis . . . with supporting material for either the state air permit or a specific local approval." DuPage County Board Exh. 1 at 44. However,

Versar noted that the methodologies and level of detail in proposing noise control measures varied considerably among the studies. DuPage County Board Exh. 1 at 44.

Versar stated that DuPage County may wish to consider:

> [R]equiring applicants to conduct noise analyses and/or fund analyses to be conducted by the County, either as part of its Conditional Use approval process for electric power generating stations or on an ad hoc basis with individual applicants, assuming that sufficient authority exists in current ordinances. DuPage County Board Exh. 1 at 45.

Mr. Paul Hoss, Zoning Manager with the DuPage County Department of Development and Environmental Concerns, stated that DuPage County is considering amending its zoning ordinance and standards because of concerns over peaker plants and similar industries. Specifically, DuPage County is considering requiring these petitioners seeking conditional or special use approval to "submit a noise-modeling study, which indicates that the facility will be in compliance with DuPage County noise requirements" and to use "noise controls sufficient to meet county noise requirements." DuPage County Board Exh. 3 at 4. Mr. Hoss elaborated:

> Requiring the petitioner to submit noise modeling before and as part of the special use process and before any permits are issued. This is a similar type process I understand that the developer of peaker plants has to go through for air emissions, submitting . . . air modeling so that the IEPA can review what the impacts—potential impacts could be. We're proposing to do a similar type modeling with respect to noise to ensure or to, at least, glean some information as to whether or not these facilities will comply at least in the model with county noise ordinances.
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> [E]ssentially what we would be looking for is to have them show that the peaker plant operating at full capacity would meet the county noise standards for nighttime and daytime at the property line and we would want to make sure that their model shows that, in fact, it would meet that requirement. Tr.1 at 400-401, 406.

Mr. Hoss explained that DuPage County would need to retain a professional consultant to review noise studies because the county staff lacks the expertise to assess them. Tr.1 at 413-414.

Versar also expressed concern over how facilities modeled to show compliance with daytime but not nighttime standards would be restricted to daytime operations:

> [T]he noise analysis for Reliant facilities in Aurora, IL and Cecil County, MD indicate noise levels in compliance with daytime limits, but not with applicable nighttime standards. This is apparently considered not to be a problem because the plants will operate during daytime peaks. However, it is not clear how the plants may be restricted from nighttime operations that would apparently exceed allowable levels.
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> Each analysis [for the five projects] indicated that the respective project would comply with state and local noise limits during daytime. Results for only one project indicated compliance with nighttime levels based on reported analysis, and that was for residences at a considerable distance, not at property boundaries. Project sponsors may be focusing on daytime operations as the most likely scenario, but it was not apparent that nighttime operations would be precluded. DuPage County Board Exh. 1 at 17, 44.

c. Information from Industry. Mr. Erjavec of Indeck testified that peaker plant designs account for Illinois noise regulations because the plants must comply with the regulations even though noise compliance is not part of the permitting process. Tr.1 at 283.

When Indeck proposed a 300-MW peaker plant in Libertyville, Indeck guaranteed that it would "limit noise from [its] facility to levels that are 2 [dB] below the applicable Illinois nighttime regulation [at each octave band for sound emitted from Class C to Class A land] at the nearest residence, located 1,200 feet northwest of the proposed site." Indeck Exh. 2, ERM report at 35, 57, Representative Impact Documentation. Indeck's consultant, Acentech, predicted the noise levels from the proposed plant based measurements of existing ambient noise and on "vendor and Acentech octave-band data for the major plant noise sources, and on estimates of sound attenuation (loss) with distance that considered geometrical spreading of sound [based on the standard sound propagation model for hemispherical spreading from a point source] as well as some atmospheric absorption of sound [at higher frequencies (1,000 hertz and above)]." Indeck Exh. 2, ERM report at 36-37, 56, Representative Impact Documentation. For the Libertyville proceeding, Acentech provided noise impact predictions, but not evidence of actual measured results from a similar facility. Indeck Exh. 2, ERM report at 57.

MEAC, a consultant for several groups, including a homeowners association, raised concerns about Acentech's predictions. Indeck Exh. 2, ERM report at 35-36. Independent consultants for Libertyville concluded the following about the predictions of Indeck's consultant:

> While it is true that noise levels can increase under downwind or temperature inversion conditions, this increase is largely due to the reduction or elimination

> of sound attenuation due to ground absorption, foliage or shielding by barriers. Because [Indeck's consultant's] estimates do not include any of these effects, we believe that their predictions fairly represent "worst case" sound propagation conditions. Beyond that, however, there appears to be little margin of safety in [Indeck's consultant's] estimates to achieve the noise limits guaranteed by Indeck. Thus, while we believe that Indeck can meet [its] noise guarantee, we also believe that this will not be easy and will require careful design. Indeck Exh. 2, ERM report at 36.

The independent consultants recommended that a Libertyville permit require Indeck to pay for an acoustical engineer to conduct "a noise compliance test on behalf of [Libertyville] to ensure that all noise limits are met prior to allowing the facility to initially go 'online' (revenue operation)." Indeck Exh. 2, ERM report at 39. The consultants also recommended that Libertyville require that similar compliance tests be performed annually "after the start of operation to ensure that the repeated start-up and shut-down of the peaking plant has not affected the performance of the acoustical treatments." Indeck Exh. 2, ERM report at 39.

d. Information from Citizens. Mr. Mark Sargis, an attorney representing a group of DuPage County citizens concerned about the effects of peaker plants, emphasized the importance of considering noise concerns during design and not relying solely on enforcement:

> [T]he reality is that noise control is best addressed in the design phase of a facility, because it is difficult if not impossible to retrofit such equipment after construction to correct noise violations. In addition, it is important to accurately and correctly measure ambient noise before a facility goes on-line. Furthermore, public policy is better served by encouraging appropriate design before construction, rather than rely on enforcement mechanisms for violation that are, at best, uncertain and, at worst, ineffective.
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> At a minimum, the Board and [IEPA] should consider policy and/or regulations that would require an applicant for certain types of large facilities, including peaker plants, to submit detailed information about ambient noise and projected noise emissions as part of the review of a construction or development permit. In this way, concerns about noise impact on nearby property can be more effectively addressed in the design phase of a facility, rather than leading to noise complaints after construction, at which time additional controls may be difficult, ineffective, or much more expensive.
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> Although [reviewing noise impacts during design] may require some minimal

> additional [IEPA] personnel, the incremental cost seems a small price to pay to address what is becoming a significant issue, particularly for peaker plants. Sargis Exh. 1 at 7-9.

Mr. Sargis also provided his views on the legal authority for requiring noise analyses as part of the permitting process:

> On occasion, [IEPA] has reviewed projected noise emissions for individual projects on a case-by-case basis in the context of other permit programs in the Bureaus of Land and Air. Despite this practice, it is my understanding that the Air Bureau, for example, will no longer consider noise emissions in the context of air permit applications. I agree that examination of noise issues should not be conducted on an *ad hoc* basis. However, there is clear authority for Illinois to consider noise emissions in any permit proceeding, and it makes sense to do so for facilities such as peaker plants that have potentially significant noise impacts.
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> Section 39 of the . . . Act states that "it is the duty of [IEPA] to issue . . . a permit upon proof by the applicant that the facility, equipment, [etc.] will not cause a violation of [the] Act or of regulations hereunder." 415 ILCS 5/39. Under that authority, [IEPA] should not issue a permit, even an air permit, if there is a question of whether that facility would violate applicable standards for other media, including noise.[11] In other words, [IEPA] need not necessarily establish a separate permit program for noise emissions to be able to fulfill its statutory duty under the act. The State *could*, however, implement a permit program for certain categories of facilities with reasonable application fees that would help fund the program. Sargis Exh. 1 at 8.

Mr. Eaton, an attorney representing several groups (including a homeowners association) concerned with peaker plants, stated that the failure to assess noise emissions as part of IEPA's permitting process is a "problem that needs to be rectified, either by including noise as a part of [the existing] permitting process, or requiring a separate noise permit for new installations." Eaton Exh. 1 at 12.

2. Illinois' Current Noise Regulations

a. Information from State Government. IEPA stated that it is unaware of any concerns with peaker plant noise emissions that warrant changing the Board's current numeric noise standards. IEPA accordingly found no merit in changing the requirements so that the more

[11] Citing to Section 39(a) of the Act, Director Skinner stated that one of the important objectives of IEPA is to ensure that "[n]o permit shall be issued for the construction of a peaker plant unless the permit applicant proves that the facility will not violate existing environmental laws and regulations." IEPA Grp. Exh. 1, Skinner at 2-3.

stringent nighttime numeric standards apply all weekend, for example. IEPA emphasized that local units of government can impose more stringent noise requirements as appropriate for the respective communities. PC 9 at 33-34. IEPA also noted that the Board's numeric standards already account for background noise, *i.e.*, ambient noise. PC 9 at 33 (citing 35 Ill. Adm. Code 900.103(b), which requires that measurements and measurement procedures "correct or provide for the correction of such emissions for the presence of ambient noise . . . .").

Mr. Zak did state that the Board's numeric noise standards do not address low frequency noise or vibrations (infrasonic sound) that could be associated with peaker plants. He explained that the lowest frequency in the Board's numeric noise standards is 31.5 hertz; "infrasonics typically occur below 20 hertz." Tr.1 at 199. IEPA stated, however, that the "issue of low frequency noise, specifically infrasonics, (*i.e.*, vibrations) does not lend itself to a numerical standard at this time." PC 9 at 33.

Mr. Zak suggested that if a peaker plant emitted this low frequency sound, and it became a problem for residents, the residents could bring an enforcement action before the Board alleging nuisance noise. Nuisance noise allegations could be corroborated with measurements. Mr. Zak concluded that, for enforcement and health purposes, Illinois' current noise regulations are adequate to address any noise problems that peaker plants may create because those regulations include not only numeric standards, but also the nuisance noise prohibition. Tr.1 at 198-200; Tr.2 at 238-239; PC 9 at 33 (citing the nuisance noise prohibition at 35 Ill. Adm. Code 900.102).

b. Information from Local Government. Versar, the consultant for DuPage County, concluded that the State's numeric noise standards are "quite stringent" and "appear to be an ample basis for ensuring acceptable environmental impacts from peaker plants." DuPage County Board Exh. 1 at 45. Versar also referred to peaker plant applicant Reliant's assessment of the stringency of Illinois' standards: "allowable impacts to residential land would be on the order of a residential air conditioner at a distance of 15 feet." DuPage County Board Exh. 1 at 44.

c. Information from Citizens. Mr. Eaton asserted that the State's noise standards "need to be revisited, and new emission levels consistent with background noise levels in quiet residential neighborhoods need to be taken into account." Eaton Exh. 1 at 14. Mr. Eaton acknowledged that it may be "impracticable for these [peaker] plants to meet noise levels in the low 30s." He asserted, however, that if that is the case, the plants "simply should not be built in locations where they will be disturbing people." Eaton Exh. 1 at 14. He concluded:

> These and other new facilities need either to be required to comply with far more stringent noise requirements than the present regulations require, or to find a location where they can comply with those regulations, where background noise levels are not so extremely low as is the case with a number of these proposed sites. Eaton Exh. 1 at 14.

3. Enforcement of Illinois Noise Regulations

a. Information from State Government. Presently, the State does not enforce Illinois noise regulations. Instead, IEPA provides technical assistance to persons who wish to bring enforcement actions. Individual citizens as well as local authorities may bring actions before the Board to enforce Illinois' noise regulations. Tr.2 at 238-239; IEPA Grp. Exh. 2, Att. 20.

b. Information from Local Government. Mr. Hoss of the DuPage County Department of Development and Environmental Concerns testified about how DuPage County would address a facility causing a noise problem:

> What we currently do, for instance, if a peaker plant were operating and there were a noise problem, we would hire . . . a noise expert to determine if they were in violation. If they were, we would actually file a complaint with the . . . Board on that violation and prosecute it in that manner. Tr.1 at 407.

Versar, DuPage County's consultant, cautioned however that "[w]ith the exception of East Dundee, where applicant funding for post-construction noise monitoring was required, it is not now clear what resources would be available to analyze or enforce compliance." DuPage County Board Exh. 1 at 45.

c. Information from Citizens. Mr. Eaton described the lack of any State enforcement of its own noise standards as an "intolerable state of affairs . . . due to a lack of manpower." Eaton Exh. 1 at 13. He urged that, "[a]t a minimum, having the IEPA check sources for noise, and having IEPA regulate noise emissions by enforcing their standards through a permit process that has some teeth in it, would be a major step forward." Eaton Exh. 1 at 13.

4. Noise Regulation in Other Jurisdictions

a. Information from State Government. Mr. Zak's review for noise regulations in other states revealed that 43 states lack noise regulation, six states have very little noise regulation, and Illinois is "more active than the others in regulating noise." Tr.1 at 135; IEPA Grp. Exh. 1, Zak at 5; IEPA Grp. Exh. 2, No. 19. Mr. Zak stated that "[p]eaker noise is not regulated by the other [USEPA] Region 5 states [*i.e.*, Indiana, Michigan, Minnesota, Ohio, Wisconsin], California, Texas, or New York." IEPA Grp. Exh. 1, Zak at 5. Mr. Zak cautioned, however, that local governments in these states may regulate noise by ordinance. Tr.1 at 135. He added that "peaker noise is not regulated on the federal level." Tr.1 at 136.

Mr. Zak testified that local governments might be reluctant to adopt stringent noise standards for peaker plants:

> I think the reluctance on some of the local government, though, is the cost of the personnel and the instrumentation in order to enforce that type of noise regulation . . . . [T]he instrumentation is expensive and typically the salaries are also expensive for the folks that can take those kind of measurements and enforce those kinds of regulations. Tr.1 at171.

b. Information from Local Government. The Versar report, prepared for the DuPage County Department of Development and Environmental Concerns, compared the noise standards of DuPage County with those of the State:

> [T]he allowable daytime and nighttime sound impacts on residential property compare completely. For business property, the County allowable sound levels make no distinction between the land designations for the source of the sound and are only equivalent to the impact levels on Class C Land. Thus, the business and residential property allowable sound levels are less stringent than the State's. The impulsive limits set by the State are slightly more stringent than the County limits, which also make no distinction between the land designation for origination of the sound. DuPage County Board Exh. 1 at 35.

Because of concerns over peaker plants and similar industries, DuPage County is considering replacing its noise standards for all property uses with the State standards. Tr.1 at 398, 407; DuPage County Board Exh. 3 at 3.

DuPage County is also considering requiring that the facility's "operational area" be "at least 1,000 feet from all parcel boundary lines that adjoin any zoning district." DuPage County Board Exh. 3 at 4. DuPage County would define "operational area" as "all facilities used to generate the services (i.e.: towers, cooling equipment, exhaust or venting equipment and structures housing such equipment)" and exclude items, such as wires and pipes, used to transport the power off-site. DuPage County Board Exh. 3 at 4; Tr.1 at 401. In addition, Versar noted that the DuPage County ordinance lacks any provision "to oversee enforcement of the noise limits, except based on noise complaints." DuPage County Board Exh. 1 at 35.

The Versar report refers to Maryland residential noise standards of 65 dB(A) for daytime and 55 dB(A) for nighttime. The same report refers to the Village of East Dundee passing a resolution requiring a peaker plant developer to fund post-construction noise measurements to verify that the plant complies with Illinois and village noise requirements. The Versar report also identifies a noise standard of "70 dB (not further defined)" for Shelby County. DuPage County Board Exh. 1 at 18.

c. Information from Industry. A group of independent consultants prepared a report for Libertyville, assessing the anticipated environmental impact from Indeck's proposed 300-MW peaker plant. The report described several local noise ordinances. Libertyville's zoning code has a noise performance standard that "prohibits a facility from producing noise that is

detectable at any location beyond the facility's lot." Indeck Exh. 2, ERM report at 35. Libertyville's consultants concluded that Libertyville's noise standard "is not realistic, since audibility is rarely, if ever, used as a criterion for noise acceptability." Indeck Exh. 2, ERM report at 36. The Illinois communities of Gurnee, Island Lakes, and Lincolnshire have noise ordinances with octave-band limits that are as much as 10 [dB] more stringent than the corresponding State noise standards. Indeck Exh. 2, ERM report at 35.

d. Information from Citizens. Mr. Eaton, an attorney representing several groups, including a homeowners association, recommended that local governments be formally apprised, through State guidelines, that local governments have the "right and ability to impose more stringent noise requirements than does the State." Eaton Exh. 1 at 17; Tr.1 at 900. He described how local regulations might be structured:

> [S]uch noise regulations may well be appropriately tied to a plant's proximity to residential areas. It might thus be possible, and we believe this should be encouraged, for an IPP to construct a plant more cheaply, with less expensive noise attenuation, if it is located further away from residential locations, and is located, we would suggest, in a more appropriate location such as a brownfield and/or an existing industrial site where the noise levels are already high and the potential impact on residences is low. Eaton Exh. 1 at 17.[12]

V. WATER QUALITY

In this portion of the Report, the Board summarizes information from the record on (1) wastewater, (2) wastewater regulation, (3) stormwater runoff, and (4) wetlands.

A. Wastewater

Mr. Steve Nightingale of IEPA's Bureau of Water and others discussed wastewater generated from peaker plants, which varies depending on the type of peaker plant. Waste streams identified in permit applications submitted to IEPA include one or more of the following: evaporative cooling water blowdown; cooling tower blowdown; blowdown from a water treatment system; reverse osmosis waste discharge; demineralization blowdown; filter backwash; chiller system water; various drains; and a small amount of sanitary waste. Pollutants expected to be in the wastewater (excluding sanitary wastewater) depend on the type of wastewater generated. They include: total suspended solids; total residual chlorine; pH; temperature; total dissolved solids; calcium; magnesium; iron; manganese; sulfate; chloride; oil and grease; water conditioning chemicals for biofouling and corrosion control; and

[12] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

radioactive isotopes (in some areas). Mr. Nightingale did not address isotopes because isotopes are under the jurisdiction of the Illinois Department of Nuclear Safety. Tr.1 at 141-142; IEPA Exh. 1, Nightingale 6-8; DuPage County Board Exh. 1 at 19; Indeck Exh. 1, Att. 1 at 7.

DuPage County claimed that peaker plant blowdown is fairly innocuous. It has enriched minerals from the supply water and residuals of water treatment chemicals. The treatment chemicals "could include cooling tower biocides . . . or chlorine." The chlorine could affect a receiving water if it is not discharged to a publicly owned treatment works (POTW). DuPage County Board Exh. 1 at 19-20.

Mr. Erjavec of Indeck stated that wastewater from peaker plants is minimal. Incoming water may have to be softened before it goes into the evaporative coolers, and the softening equipment may have to be backwashed occasionally. The backwash is sent to local treatment plants. Both Mr. Erjavec and DuPage County agreed that most of the water sent to the evaporative coolers evaporates, so the wastewater stream coming out is much less than the incoming water stream. Indeck's proposed plant for Libertyville generates about 10,000 gallons of wastewater per day. Tr.1 at 239, 280-281; Indeck Exh. 1, Att. 2 at 33; DuPage County Board Exh. 1 at 9.

Mr. Nightingale of IEPA said that although peaker plants may generate a wastewater that contains a thermal component, the quantity would be small compared to other types of power plants. Tr.1 at 142; IEPA Exh. 1, Nightingale at 7-8. Mr. Erjavec of Indeck stated that thermal discharges from simple cycle peaker plants are practically nonexistent and that there are no thermal discharges from the peaker plants that Indeck is proposing. Tr.1 at 281-283.

Mr. Erjavec said that there may be thermal discharges from an open cycle plant. Open cycle plants do not send wastewater to a sewer. These plants use surface water and then send it back out again. He was not sure if IEPA still permits open cycle plants. Tr.1 at 281-282. Mr. Erjavec stated that there are thermal discharges from combined cycle plants. Heat is generated from cooling the steam that runs through turbines of a co-generation facility. This heat results in a thermal discharge. Tr.1 at 282-283.

IEPA expects that all sanitary wastewater will be discharged to a sanitary sewer. Tr.1 at 142; IEPA Exh. 1, Nightingale at 8. Indeck estimated that sanitary waste flow from its Libertyville peaker plant would have been about 300 gallons per day. Indeck Exh. 1, Att. 1 at 6-7, Att. 2 at 33.

The Village of Libertyville's consultants reported that Libertyville could have handled the wastewater discharges from the proposed Indeck facility and that the discharge would not have a significant impact on Libertyville's wastewater tratment plant. Indeck Exh. 1, Att. 2 at 34. A subsurafce septic system for a peaker plant is an unlikely treatment option due to the

large amount of wastewater generated. DuPage County Board Exh. 1 at 46.

B. Wastewater Regulation

IEPA Director Skinner said that some peaker plants require a permit from IEPA's Bureau of Water. Tr.1 at 54; IEPA Exh. 1, Skinner at 3. Mr. Nightingale of IEPA's Bureau of Water pointed out that not all peaker plants produce wastewater. He testified primarily about wastewater discharge permitting for simple cycle peaker plants. Tr.1 at 138-139; IEPA Exh. 1, Nightingale at 2. Mr. Nightingale said that wastewater from simple cycle peaker plants is either subject to the federal National Pollutant Discharge Elimination System (NPDES) permit program or the State construction and operating permit program, depending on how wastewater is disposed. IEPA administers both programs. Wastewater routed to surface waters would be addressed by IEPA's NPDES permitting program. Tr.1 at 139; IEPA Exh. 1, Nightingale at 2; DuPage County Board Exh. 1 at 46.

Mr. Nightingale said simple cycle peaker plants that dispose of their wastewater to surface waters will be required to obtain an NPDES permit in accordance with 40 C.F.R. 122 and 35 Ill. Adm. Code 309. Permit limitations that apply to peaker plant discharges are the water quality limitations from 35 Ill. Adm. Code 302, the effluent limitations found in 35 Ill. Adm. Code 304, or other technology-based limitations based on "Best Professional Judgment" at 40 C.F.R. § 125.3. Because there is no steam generated at a simple cycle peaker plant, surface discharges are not subject to any federal industrial categorical effluent guideline discharge limitation. Thus, limits are established on a permit-by-permit basis. In addition, any pollution control equipment installed for reducing pollutants in the wastewater below NPDES permit limitations will be subject to a construction authorization in accordance with 35 Ill. Adm. Code 309.154. Tr.1 at 139-140; IEPA Exh. 1, Nightingale at 2-3, 5.

Mr. Nightingale testified that peaker plants discharging to a POTW will be required to obtain a State construction or operating permit in accordance with 35 Ill. Adm. Code 309. Permit limits are established by the local POTW pursuant to 35 Ill. Adm. Code 307 and federal general pretreatment regulations at 40 C.F.R. 403. Tr.1 at 140-141; IEPA Exh. 1, Nightingale at 3, 6.

Mr. Nightingale reported that engineers in IEPA's Bureau of Water review permit applications based on the federal and State regulations described above. The engineers also establish numeric limitations, mixing zones, and zones of initial dilution. The engineers perform a nondegradation evaluation in accordance with the draft nondegradation policy.[13] Engineers will also verify that the discharge location is not to a stream that has been identified as an impaired water for certain pollutants of concern in accordance with Section 303(d) of the

[13] The Board is currently reviewing IEPA's new antidegredation proposal, which could replace the nondegredation proposal. See Revisions to Antidegredation Rules: 35 Ill. Adm. Code 302.105, 303.205, 303.206 and 106.990-106.995, R01-13.

Clean Water Act. Once engineers have set technology limitations, they will include in the draft permit the more stringent of the water quality or technology-based effluent limitations. The draft permit also includes appropriate monitoring and verification requirements. Tr.1 at 140; IEPA Exh. 1, Nightingale at 4.

Mr. Nightingale said that IEPA then provides notice of the draft permit to the public, the Army Corps of Engineers, the United States Fish & Wildlife Service, the Illinois Department of Natural Resources (DNR), municipalities, and IEPA field offices. There is an opportunity to comment and request a public hearing to address concerns about the draft permit. If no hearing is requested, IEPA reviews all comments, makes appropriate changes, and issues a permit. IEPA schedules a hearing if a request is made and there is significant public interest. Before taking final action on the permit, IEPA staff evaluates comments made at hearing and received during the comment period. Tr.1 at 140-141; IEPA Exh. 1, Nightingale at 4-5.

Director Skinner said that IEPA has recently instituted a policy of holding hearings for every peaker plant construction permit. Tr.1 at 58-59. He also said that IEPA is now conducting annual inspections at peaker plants (instead of the old practice of inspecting every three years). IEPA maintains its policy of conducting inspections at any regulated facility (including peaker plants) if it receives complaints. Tr.1 at 57, 174.

As of July 20, 2000, IEPA's Bureau of Water had received eight permit applications from peaker plants. One application each had come from Ford, Perry, Madison, Shelby, DuPage, and Vermilion counties. Two applications had come from Will County. Two of the eight plants were discharging to surface waters and six were discharging to POTWs. As of July 20, 2000, IEPA had granted five of the permits for the peaker plants discharging to POTWs. Wastewater flows in the applications ranged from 25,000 to 361,000 gallons per day. IEPA Exh. 2, Att. 18.

Mr. Nightingale said, for regulatory purposes, some combined cycle plants could also be considered peaker plants. In addition to the regulations outlined in his testimony, combined cycle plants are also subject to the federal effluent guideline discharge standards in 40 C.F.R. 423. IEPA Exh. 1, Nightingale at 3.

Mr. Nightingale said that IEPA's Bureau of Water does not anticipate any adverse environmental impact on the waters of the State from peaker plant discharges, provided those plants receive appropriate permits and follow the limitations set in the permits. IEPA Exh. 1, Nightingale at 8.

DuPage County has incorporated the Board's regulations by reference. DuPage County Board Exh. 1 at 36. All industrial facilities in DuPage County must submit a Spill Prevention and Slug Control Plan to address accidental discharges to POTWs. DuPage County also regulates connections to public sewers. DuPage County Board Exh. 1 at 36-37.

C. Stormwater Runoff

DuPage County stated that stormwater effects from a peaker plant will be similar to those of any other industrial or commercial facility. Lubricating oil, transformer insulating oil, or other maintenance chemicals could contaminate surface runoff if not managed well. One advantage that peaker plants have over other industrial or commercial facilities is that the quantity of stormwater may be smaller. There are no large buildings, and the only other impervious surfaces are pads for some of the equipment. The quality of stormwater from a peaker plant built on a brownfield would depend on pre-existing conditions. DuPage County Board Exh. 1 at 21.

Mr. Erjavec of Indeck stated that "[s]tormwater is captured on site [and] . . . sent to storm sewers after the retention just as you would do with any other development." Tr.1 at 239. Mr. Nightingale of IEPA testified that, pursuant to 40 C.F.R. 122, permits for stormwater discharges during construction activities would be required if more than five acres are disturbed. IEPA Exh. 1, Nightingale at 3. DuPage County regulates stormwater runoff through its County Code. All developments must have a Stormwater Management Permit. DuPage County Board Exh. 1 at 37.

D. Wetlands

DuPage County stated that the United States Army Corps of Engineers has resources and experience to address concerns related to peaker plants sited on or near wetlands. DuPage County Board Exh. 1 at 42. DuPage County's Stormwater Ordinance provides for wetland delineation, mitigation, and possible participation in a wetlands banking program. DuPage County maintains that its ordinance is sufficient. DuPage County Board Exh. 1 at 42.[14]

VI. SOLID WASTE

In this part of the Report, the Board provides a summary of record information on solid waste that peaker plants generate and how the waste is regulated. Mr. Todd Marvel of IEPA's Bureau of Land commented:

> Peaker plants may generate various types of waste that must be managed in accordance with waste disposal regulations found in Subtitle G of Title 35 of the Illinois Administrative Code. By comparison, peaker plants are no different than any other generator of the following types of waste in terms of how the waste is regulated. Any municipal waste generated at the facility, such as general office waste, must be sent to a facility permitted to treat, store or dispose of municipal waste. Any special waste generated at the facility must be managed properly in accordance with the regulations applicable to the specific type of special waste generated. * * * All special waste is subject to the requirements for making a hazardous waste determination under 35 Ill. Adm. Code Section 722.111. Tr.1 at 147-148; IEPA Exh. 1, Marvel at 1.

Mr. Marvel said that special waste is regulated in certain ways depending on whether it is hazardous or non-hazardous special waste. Requirements for generators of hazardous special waste become increasingly stringent as the amount of waste generated per month increases. Mr. Marvel estimated that most peaker plants will generate 100 kilograms of waste or less per month and will be classified as conditionally-exempt small-quantity generators (CESQGs). Tr.1 at 149; IEPA Exh. 1, Marvel at 2.

Mr. Marvel testified that CESQGs are primarily regulated pursuant to 35 Ill. Adm. Code 721.105(g). CESQGs must complete a proper hazardous waste determination for each special waste generated at the facility. Hazardous waste generated must be accumulated in tanks or containers. Finally, these wastes must be sent to a permitted hazardous waste treatment, storage, or disposal facility. Tr.1 at 149; IEPA Exh. 1, Marvel at 2. If a peaker

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[14] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

plant meets these requirements, IEPA Bureau of Land would not require the plant to secure a permit. Tr.1 at 150.

Mr. Marvel mentioned that peaker plants may be located on brownfields. IEPA can provide information on reported releases at brownfields in addition to information on documented cleanup activities. Tr.1 at 150; IEPA Exh. 1, Marvel at 2-3.[15]

VII. WATER QUANTITY

In this portion of the Report, the Board summarizes record information on the potential impact that simple cycle and combined cycle plants may have on the quantitiy of the State's waters. The Board first summarizes information on this subject from State government, then information from local government, and then information from industry. Lastly, the Board provides a summary of concerns raised by State legislators and citizens regarding water quantity.

A. Information from State Government

1. IEPA

Mr. Romaine of IEPA explained how peaker plants use water. As air used in the turbine becomes denser, more air can be pushed through the turbine, which allows more fuel to be burned. As a result, power output will be higher. Air becomes denser as it gets colder, but peaker plants are generally needed most on hot days. Thus, simple cycle turbines used in peaking plants usually have devices to cool the air going into the turbine. IEPA Exh. 1, Romaine at 8.

There are several different types of air cooling systems. In the simplest system, water is injected directly into the incoming air. The air becomes colder by evaporative cooling. This system requires clean demineralized water to prevent excess build up of scale or erosion of the blades in the air compressor. In more advanced systems, water may also be injected into the air compressor. The inlet air may also be cooled indirectly by using cooling coils. In this case, water may still be used in an open cooling tower where evaporation of water dissipates the heat generated by a refrigeration unit. A dry cooling system may also be used. IEPA Exh. 1, Romaine at 9.

Another approach to boost power output is to inject clean water or steam into the burners or to inject steam after the burners. These techniques increase the gas flow through

[15] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

the power turbine and thus increase its power output. IEPA Exh. 1, Romaine at 9.

Mr. Richard P. Cobb is Manager of the Groundwater Section of IEPA's Bureau of Water. Mr. Cobb described the Illinois Water Use Act of 1983 (Water Use Act) (415 ILCS 45/1 (1998)), which abolished the rule on absolute ownership of groundwater. The Water Use Act, to resolve groundwater conflicts and mitigate potential shortages, established a "reasonable use" rule. However, Mr. Cobb said that most Illinois court decisions have interpreted "reasonable use" for groundwater as being any use except for malicious or wasteful purposes. IEPA Exh. 1, Cobb at 2-3.

Mr. Cobb reported that Governor Ryan, by Executive Order, established the Water Resources Advisory Committee (WRAC). The WRAC will focus on water resources and water use, including the effects of peaker plants. The WRAC will also examine economic and social issues related to other power facilities and water use. The WRAC is to present recommendations to Governor Ryan.[16] IEPA Exh. 1, Cobb at 3.

2. DNR

Dr. Brian Anderson is the Director of the Office of Scientific Research and Analysis (OSRA) within DNR. He testified that there is little State regulation of water withdrawals from surface waters and groundwater. However, withdrawals from Lake Michigan are regulated. Dr. Anderson asked Dr. Derek Winstanley, Chief of the Illinois State Water Survey (ISWS), a division of the OSRA of DNR, to summarize some of the water quantity issues relating to peaker power plants. Tr.1 at 151-152; DNR Exh. 1 at 2.

Dr. Winstanley stressed that peaker plant water use and the impacts on groundwater resources should be examined in the context of overall demand for water, including demand from domestic use, municipal use, agricultural use, and other industrial uses. Tr.1 at 153.

The water demands from peaker power plants vary widely, depending upon how the plants are designed and used and how many days they operate. Dr. Winstanley studied simple cycle plants producing from under 100 MW to about 1,000 MW and operating from 20 to 90 days per year. They use approximately 0.07 to 2 million gallons of water per day. Annually, the range would be about 1.4 to 180 million gallons of water per year. Tr.1 at 153-154; DNR Exh. 2 at 2.

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[16] 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 on October 25, 2000, 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. Chairman Manning's submittal is attached as Appendix G.

Dr. Winstanley also examined combined cycle plants, which range from 500 to several thousand MW of electricity and are intended to operate almost continuously. These plants consume about 5 to 20 million gallons of water per day. Annually, this would equal approximately 1.5 to 6 billion gallons of water per year. Thus, simple cycle plants consume a fraction of 1% to about 3% of the water that typical base-load combined cycle plants use. Tr.1 at 154-155.

For comparison purposes, Dr. Winstanley examined municipal water use in Champaign-Urbana, which has a population of about 120,000. Champaign-Urbana currently consumes about 20 million gallons of groundwater per day, which translates into an annual use of about 7.3 billion gallons per year. In comparison, a simple cycle plant would use the same amount of water as 25 to 3,000 people. Tr.1 at 155.

Dr. Winstanley then discussed sustainable yield (also called potential yield) for groundwater. Basically, sustainable yield is the amount of groundwater that can be maintained over the long term so that it can be used both by the current population and by future generations. Determining sustainable yields is a complex exercise involving variables, such as rainfall, recharge rates, and geology. Currently, there is not an accurate estimate of sustainable yield for most Illinois aquifers. Better scientific data and modeling capabilities are needed for more accurate estimates, but these studies are costly. Tr.1 at 155-156.

Dr. Winstanley thinks that there should be studies on public values regarding water use, coupled with studies on the amount of water used. Tr.1 at 156. Water quality is also an important parameter. Natural variations of chemicals and minerals in the groundwater throughout Illinois can effect the operation of and discharge from peaker plants. Tr.1 at 156-157.

Dr. Winstanley stressed that aquifers must be paramount in an analysis of groundwater. Groundwater typically is found in discrete aquifers, and aquifers usually transcend political jurisdictions. Individual communities cannot solve groundwater problems in the long term. Illinois would benefit by establishing "comprehensive regional water resource planning and management" that would entail planning based on aquifer boundaries. Winstanley also stressed that surface and groundwater use (*i.e.*, aquifers, river basins, and water sheds) must be considered together. Tr.1 at 157-158.

Dr. Winstanley pointed out that the current law of "reasonable use" does not impose quantitative restrictions on water use. DNR Exh. 2 at 4. Although new laws and regulations may be necessary, Dr. Winstanley maintained that the State should encourage local communities to solve their own water resource problems. Tr.1 at 159. Dr. Winstanley cited an "excellent model" of water resource planning in Central Illinois. The Mahomet Aquifer extends from the Illinois River across to Indiana and lies underneath 15 counties. Recently, the local communities in those 15 counties formed the Mahomet Aquifer Consortium. The Consortium is planning for future use of water resources by better characterizing and managing

the aquifer. Tr.1 at 159.

Dr. Winstanley expressed concern about other aquifer systems that transcend political boundaries. Limiting groundwater withdrawals in one community will not solve groundwater supply problems if other communities do not limit withdrawals. Water supplies in the Cambrian-Ordovician aquifer underneath Northeastern Illinois may be strained if too many simple cycle and combined cycle facilities use the aquifer. DNR Exh. 2 at 3.

Dr. Winstanley also reported that allocating water from Lake Michigan is constrained by Supreme Court decree and international agreement. The State has the power to limit diversions of water from large rivers to maintain minimum base flows. However, the State does not have this power over moderate-sized streams, and large diversions could adversely affect aquatic habitat, wastewater assimilation, and recreation. DNR Exh. 2 at 3-4.

B. Information from Local Government

1. Will County

Mr. Michael Shay, Senior Planner for Will County, is responsible for long-range planning. He testified that one of Will County's biggest concerns with respect to peaker plants is its aquifer reserve water of about 66 million gallons per day. This reserve is Will County's water supply. Mr. Shay said that there is also some concern about the quantity of river water. His research indicates that combined cycle plants use five to 12 million gallons a day per facility and that simple cycle plants use roughly a million gallons a day per facility. Mr. Shay is very concerned that simple cycle plants in Will County will be converted to combined cycle facilities in the future. It would only take a few combined cycle facilities to use up the entire reserve water capacity for Will County. Tr.1 at 707, 709-710.

Mr. Shay added that Will County is the fastest growing county in Illinois. He predicted that problems may arise as simple cycle plants and combined cycle plants compete with a growing population for reserve water capacity. Tr.1 at 710-711. Mr. Shay is also concerned about the manner in which a combined cycle facility collects its water. The facility would drop a well into an aquifer and pull it up at a rate that creates a drawdown. The level of the aquifer would drop in the shape of a reverse cone with a radius of six miles, a 300-foot drawdown at the point of the well, and a 35 to 50-foot drawdown at the six-mile radius. If this drawdown were to occur across the county, thousands of residential, industrial, and group wells might fail. Tr.1 at 711.

Chairman Manning and Board Member Kezelis asked Mr. Shay where he obtained the figures regarding drawdown and the amount of water used by simple cycle plants and combined cycle plants. Mr. Shay replied that the information on aquifers and reserve capacity came from the ISWS, including the ISWS Web site. Mr. Shay said that the numbers on the water demand at simple cycle and combined cycle plants came "from the industry itself." For

example, Will County officials talked to engineers who have built a simple cycle unit in Elwood and are planning two additional simple cycle units there. The engineers said that if the three simple cycle units all became combined cycle units, water use at Elwood would total 16 million gallons of water per day. Tr.1 at 719-721, 729-730.

Board Member McFawn asked Mr. Shay if Will County is only concerned about the drawdown from simple cycle and combined cycle plants, as opposed to drawdown from other industries. Mr. Shay replied that simple cycle and combined cycle plants are the only concern now. It is the only industry Will County knows of that draws such a large amount of water in a short period of time. To illustrate his point, Mr. Shay said that three combined cycle facilities, each with water needs of 16 million gallons of water per day, could use up all of the water in the Fox River if their intakes were located in St. Charles. Tr.1 at 719.

Board Member Kezelis asked Mr. Shay how Will County is currently addressing the potential water problem. Mr. Shay replied that Will County has passed an initial set of regulations to govern water use. Will County is in the process of researching a second set of regulations. Mr. Shay speculated that the second set would "prohibit the use of aquifer water for electric generation." Tr.1 at 713. Board Member Girard asked Mr. Shay if the probable prohibition on using aquifer water would also apply to facilities inside a municipality in Will County. Mr. Shay replied that the prohibition would not affect municipalities. Tr.1 at 721-722.

Board Member Flemal asked Mr. Shay how government should regulate water use. Mr. Shay said that he would favor statewide or national regulation of drawing water from wells. He said that aquifers do not fit jurisdictional boundaries and local authorities are "played against each other by the private industry." Tr.1 at 724.

2. Lake County Board

Ms. Bonnie Thomson Carter is the Lake County Board Commissioner for the 5th District and Chair of the Public Works and Transportation Committee. Tr. 1 at 778; Lake County Exh. 3 at 1. Ms. Carter received a call in 1998 from two of her constituents. They were concerned about a base-load power plant to be located near their homes in the Village of Island Lake. Ms. Carter learned about the potential adverse effects of the base-load plant, and the biggest environmental concern was the projected water use. The plant would have used four to eight million gallons of water per day, which, according to the ISWS, is greater than the demand for the entire village. Tr. 1 at 792-793.

Although the Island Lake base-load plant proposal was withdrawn, Ms. Carter remained concerned about water use in simple cycle plants. Even though water use is not as great with simple cycle plants, they can easily be converted to combined cycle plants. Tr. 1 at 794, 798-799.

In February 1999, Ms. Carter and her constituents met with two State legislators, IEPA Director Skinner, and other officials from IEPA and DNR. Ms. Carter learned that no State agency had authority to limit groundwater withdrawals. Ms. Carter said that the Water Use Act and the Water Authorities Act do not give counties the authority to regulate groundwater withdrawal. She also said that IEPA officials were "frustrated" that they could not consider the regional impact of peaker plants in reviewing construction applications. Ms. Carter was "surprised and shocked" that each bureau at IEPA did its own review of peaker plant applications without consulting each other. She was pleased that IEPA's review process for peaker plants was subsequently lengthened from 90 days to 180 days. Tr. 1 at 794-795, 800.

Ms. Carter asked the Board to consider the cross-jurisdictional water use problems that multiple peaker plants could cause if sited in close proximity to each other. "The water consumed in one village not only limits the supply of its immediate neighbors, but impacts the supply of further villages, commercial wells and deep community wells which draw from the same aquifer." If the Island Lake proposal had been approved, the taxpayers of the Village of Wauconda would have incurred expenses of $1 million to reset the pumping well head in two municipal wells. These taxpayers had no voice during the application review. Tr. 1 at 796-797.

Collecting and studying groundwater data is an expensive process. It would cost several million dollars to determine a sustainable level of water use in Lake County. Local communities cannot reasonably shoulder the burden of paying for collection and analysis of groundwater data. However, communities need this data to make informed water use decisions. Tr. 1 at 797.

In August of 1999, Dr. Winstanley of DNR reported that Lake County will maximize its water use around 2030. Water demand is up, but water supplies are limited. Northern Illinois has already reached the maximum sustainable level of water use in deep bedrock, and water from Lake Michigan is already fully allocated. Tr. at 797-798.

Research indicates that excess withdrawal of groundwater can decrease water availability for streambeds, wetlands, and lakes. The quality of the existing water may be threatened, which may harm animal and plant life. Tr. at 798.

Ms. Carter wants to share her expertise with all relevant State agencies to make proper decisions about the power industry. She said that construction applications should indicate whether proposed power plants are simple or combined cycle. In addition, simple cycle plant applicants should indicate if they intend to convert a simple cycle plant to a combined cycle plant. A regional group with regulatory authority should review applications. Ms. Carter said that the Lake County Board has recommended legislation that regulates aquifer drawdowns. She wants the Sate to determine the meaning of "reasonable use." As a member of the WRAC, Ms. Carter said that the WRAC was scheduled to address these issues and make recommendations to Governor Ryan in December 2000. Tr. 1 at 799, 800-801.

Ms. Carter stated that the Board does not have the authority to regulate groundwater withdrawal. However, she asked that the Board institute a moratorium on all pending and new applications for peaker and base-load plants until government agencies have addressed the negative consequences of peaker plants. Tr. 1 at 800.

Ms. Carter realizes that, besides power plants, residential, commercial, and other industrial development will burden water sources. She also realizes that electricity may be in short supply. However, she is not convinced that locating peaker plants in Lake County will alleviate a possible power shortage there. Tr. 1 at 799.

3. Lake County Public Water District

Mr. Daniel J. Kucera, an attorney with Chapman & Cutler, testified on behalf of the Lake County Public Water District. The District has a peak demand of six million gallons of water per day, and an average demand of between three and four million gallons of water per day. Tr.1 at 761, 776.

Mr. Kucera said that combined cycle plants, which use steam to generate a portion of electrical output, can be expected to use more water than small simple cycle plants, which use water only for cooling. Tr.1 at 761-762. He was concerned that generally there is no permitting process or regulatory oversight of water use by peaker plants. IEPA acknowledged that it currently has no responsibility over peaker plant water use. Tr.1 at 763.

Mr. Kucera said that a public water supply would need permission from DNR to supply a new peaker plant with Lake Michigan water. Diverting and allocating water from Lake Michigan is limited by statute. See 615 ILCS 50/1 *et seq*. Tr.1 at 763-764. Mr. Kucera claimed that Lake Michigan water is perceived to be superior to groundwater and that there is a great demand for domestic use of Lake Michigan water. Accordingly, he thinks that the use of Lake Michigan water in peaker plants should be limited or prohibited. Tr.1 at 763-765.

Mr. Kucera testified about the problems with water from sources other than Lake Michigan. Water from aquifers in Northern Illinois often has high levels of iron, manganese, and other constituents that raise aesthetic issues and that can require costly treatment facilities. Water from deep wells often contains radium or alpha particles. In parts of Northern Illinois, water levels are lower in aquifers, and some deep wells have been mined into salt water. Tr.1 at 763, 765.

Mr. Kucera pointed out that groundwater is a limited resource in certain portions of the state, especially in parts of Central Illinois. He stated that aquifers in Northern Illinois have also been diminished. Tr.1 at 765-766.

Mr. Kucera testified that the Water Use Act provides that the rule of "reasonable use"

applies to groundwater withdrawals, but it does not provide for permitting or regulation of reasonable use. Section 5 provides that the owner of a proposed well expected to withdraw over 100,000 gallons of water per day must notify the local soil and water conservation district. The district must notify other units of local government whose water systems may be impacted. The district must also review the impact and make findings. However, the Water Use Act provides no enforcement mechanism, and it does not apply to areas of Illinois near Lake Michigan. Tr.1 at 763-764.

Mr. Kucera wants regulatory oversight of water use at peaker plants because they use upwards of several million gallons of water per day. The potential effects of the drawdown upon aquifers and groundwater should be evaluated as part of the permitting and regulatory process. Tr.1 at 765. Mr. Kucera also wants peaker plant withdrawals from surface water to be evaluated. He claimed that the withdrawals could reduce the resource value of the water body for domestic water supply, aquatic life, or recreation. Tr.1 at 766.

Mr. Kucera shared his concerns about decommissioning peaker plants, specifically with respect to accountability. He asked who would be responsible for resulting excess capacity in the local public water supply, for capping a peaker plant's wells, and for leakage from a plant that contaminates a local utility's or residential well's source of water. Mr. Kucera thinks that there should be a decommissioning procedure to protect water sources and the public. At the very least, there should be a state-administered trust account, funded by peaker plants, to provide remediation and restoration funds if owners abandon plants without protecting water resources. Another possibility is to require owners of peaker plants to post a surety bond or letter of credit. Tr.1 at 767-768.

Mr. Kucera expressed concern about siting clusters of plants. Currently, siting of electric generating plants is a local issue. If some recent proposals are approved, multiple peaker plants could be sited in close proximity to each other. Mr. Kucera is concerned about the impact of multiple drawdowns on an aquifer at one location. Tr.1 at 768-769.

Mr. Kucera is also concerned about the lack of regulation for cross-connections. As an example, he described a peaker plant that is partially served by a public water supply and partially served by the plant's own wells. The public water supply may provide water for domestic use and fire protection. The peaker plant uses its own wells for process water. However, the public water supply might also provide backup if the wells are out of service. A local government may not have the staff or the skills to monitor for cross-connections at peaker plants. Mr. Kucera asked who would regulate cross-connections and protect the public water supply. Tr.1 at 770-771.

Mr. Kucera is aware that the WRAC may consider water issues related to peaker plants, but he does not know if the WRAC is soliciting public comments. Therefore, Mr. Kucera asked that the Board include water use issues when reporting to Governor Ryan on peaker plants. Tr.1 at 771.

In conclusion, Mr. Kucera suggested that Illinois adopt a regulatory oversight requirement (including permitting) for process water used by all electric generating facilities. Tr.1 at 771.

C. Information from Industry

1. ComEd

Ms. Arlene A. Juracek and Mr. Steven T. Naumann of ComEd asserted that during the planning and development of any peaker plant, they carefully assess the possibility of water contamination and the affect on water supply. They noted that the WRAC will examine peaker plants' impact on water resources and water use. ComEd Exh. 1 at 13-14.

2. MWIPS

Ms. Greenberg of MWIPS asserted that the simple cycle technology currently used for peaker plants typically places a small demand on water resources. As a basis of comparison, she noted that one peaker plant in Kane County used no more than 2.5 million gallons of water per year. In contrast, an average golf course in the Great Lakes region uses almost 31 million gallons of water per year. She recommended that the Board consider the WRAC report on water supply. MWIPS Exh. 1 at 7.

3. Indeck

Mr. Erjavec of Indeck testified that water consumption depends on humidity and temperature. Little water will be used on high humidity days. Maximum consumption occurs on hot and dry days. He noted that a typical 300-MW plant uses a maximum of 80 gallons of water per minute, and an average of about 40 gallons per minute. Eighty gallons per minute is equal to 11 homes watering their lawns at the same time. Tr.1 at 222, 226, 238-239.

4. CPI

Mr. Jirik of CPI testified that his company's plant currently takes its non-contact cooling water from the Sanitary and Ship Canal for use in its corn wet milling operation. The cooling water is then returned to the Canal. CPI plans to use its existing cooling water flow to supply cooling water to its new co-generation operation. After servicing the co-generation operation, CPI will return the water to the Canal as is does now. The co-generation operation will not increase CPI's current water withdrawal and will not result in any new discharges. Tr.1 at 630, 634.

D. Concerns of State Legislators and Citizens

1. State Legislators

State Senator Terry Link testified that regulators must address peaker plants on a regional basis because peaker-related issues, such as air quality, water supply, natural gas supply, noise, and taxes are cross-jurisdictional. Tr.1 at 751-753. State Representative Susan Garrett testified that she is concerned about water supplies from aquifers. Tr.1 at 754-755. Ms. Sally Ball testified on behalf of State Representative Lauren Beth Gash. Ms. Ball said that Representative Gash's constituents are understandably worried about the impact of peaker plants on air quality and water supplies. Tr.1 at 757.

2. Citizens

NRDC commented that "many of these proposed single cycle combustion turbine projects maybe converted in the future to combined cycle . . . . A single cycle generating unit may not tax available water resources for example, but its conversion to combined-cycle operation could create significant allocation quandaries for the host community." PC 109 at 6. NRDC stated that "[s]ingle cycle combustion turbines are not particularly water intensive, consuming less than 100,000 gallons per day," but "[w]hen firing distillate fuel oil, water consumption rises to up to 1,000,000 gallons per day when steam injection is employed to reduce NO_x emissions. In comparison a 1,000 MW combined cycle natural gas-fired combustion turbine relying upon wet cooling consumes approximately 7,000,000 gallons per day." PC 109 at 7.

Ms. Zingle of LCCA testified that some peaker plants use vast amounts of water. She stated that water supply is not a local issue. She further alleged that the proposed peaker plant for Zion is going to use as much as the entire city of Zion uses. Tr.1 at 507, 516. Ms. Cathy Johnson, Vice Chair of the Rural and City Preservation Association, testified that the proposed standards in McHenry County barely consider water. She argued that it is ridiculous that a new peaker plant only has to report how the water it uses affects the area within one-quarter mile of the plant. Tr.1 at 545, 552.

Ms. Connie Schmidt, a representative of River Prairie Group of the Illinois Sierra Club, testified that, despite living in the incorporated town of Warrenville in DuPage County, she and her neighbors have wells and septic tanks on their properties. Groundwater use and disposal of the groundwater after it has been used are realistic concerns in her area. Tr.1 at 463, 467. Mr. Mark Goff, also a resident of Warrenville testified that he lives 2,000 feet from a proposed peaker plant site. He is also concerned about the effect on his well water. Tr.1 at 468-469.

Ms. Stark of CARE testified that the aquifers located beneath the closed Texaco Refinery in Lockport are joined together. The aquifers are the primary source of municipal water in Lockport and she is concerned that a local peaker plant could use thousands of gallons

of water per day.[17] Tr.1 at 644-646, 654.

VIII. RESTRUCTURING AND ITS IMPACTS

In this part of the Report, the Board summarizes the information from the record on the electric industry restructuring and its impacts. Specifically, the Board summarizes (1) introductory information on the resructuring or deregulation of the electric industry, (2) information on the history of deregulation, (3) information on the environmental effects of deregulation, (4) information on the impacts of deregulation on local zoning, (5) information on current and future retail and wholesale energy markets, (6) information on the supply and demand for electric power, (7) information on the need for peaker plants in Illinois, (8) information on importing and exporting power generated by peaker plants, (9) information on Illinois' lack of a statewide energy plan, and (10) information on how peaker plants affect electric transmission and distribution systems.

A. Introduction

Providing electricity to retail customers can be broken down into the generation, transmission, and distribution of power. The electricity that a power plant generates is typically transmitted over a national power grid at high voltages from generating plants to substations and distributed at lower voltages to homes and businesses. Tr.1 at 17. Historically, regulated and vertically integrated monopolies provided all three services as a single bundled product to customers. State commissions approved siting of generators based on the need for power and rates for utilities according to their cost of providing the service. ComEd Exh. 1 at 5.

Federal and State laws have largely restructured the electric industry over the last ten years. As Mr. Christopher Zibart of ComEd noted, the federal Energy Policy Act of 1992 and the Federal Energy Regulatory Commission (FERC) directed utilities to "transmit power for others pursuant to a tariff, on an open access, non-discriminatory basis, assuring that new generating sources will be able to sell and move their power." PC 164 at 5. Executive Director Fisher of the ICC stated that "excess power generated by a company in one area [of the electric grid] may . . . be sold and delivered over transmission lines to a company in another area for [resale] to customers in that utility's service territory." Tr.1 at 17.

Introducing the "wholesale wheeling" of electricity spurred states to further restructure the electric industry. Several states, including Illinois, are beginning to move away from monopoly-based market structures, towards much more competitive market structures. Tr.1 at

[17] For summaries of aditional public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

16. In 1997, the Illinois General Assembly passed a law to freeze 1996 electric rates until 2004 and to progressively deregulate the electric industry. See 220 ILCS 5/8-503. Under the new structure, a "customer's generation, transmission, and distribution may be supplied by different companies." ComEd Exh. 1 at 5. In the next few years, Illinois residents will be able to choose between different retail suppliers of electricity. "Generation, in particular, is becoming a competitive industry, and market forces [of] supply and demand will set energy rates." ComEd Exh. 1 at 5. According to ComEd, "a free market for electric generation will lead ample capacity at reasonable prices." PC 164 at 1.

A number of factors are attracting new generators to provide power during peak demand hours. Those factors include deregulation, rising energy costs, increased demand for power, the relatively low cost of constructing modern gas-fired turbines per kW of generating capacity, the speed of construction and operation, the closure of base-load electric plants, and the adversity to building new transmission lines. These new peaker plants use combustion turbines that the ICC states cost less to run, are easier and faster to build and operate, and can use natural gas, which until lately, has been a less expensive source of fuel. Tr.1 at 25-27; ICC Exh. 1 at 3-5.

With the shift from regulation to a market-driven field, the only remaining controls are environmental protection and local zoning procedures. Reliant stated that Illinois must balance the benefits of meeting the State's demand for electricity with "continued progress in cleaning up the air, protecting its water supply, avoiding noise pollution and protecting property values in communities where these plants are located." PC 1 at 5. ComEd stated that changing the regulatory system will impact the market for power generators, and could adversely affect the retail price of electricity. ComEd Exh. 1 at 5. IERG stated that "each obstacle or cost added to constructing peakers will, at best, be reflected in the cost of electricity and, at worst, will deter any decision to construct [generating plants]." Tr.1 at 309-310. "The decision could leave Illinois without necessary electric capacity." Tr.1 at 309-310.

Illinois deregulation has shifted the burden of siting generators from the ICC to local zoning boards. Tr.1 at 246; PC 107 at 6. State and federal changes attract construction of non-utility generators to satisfy the peak demand for electrical power. ICC Exh. 1 at 5. While the ICC had and continues to have siting authority for utility generators, the new IPPs do not fall under the certificate program. The shift in the trend towards building peaker plants has largely left municipal zoning boards to decide whether to place plants in their area. ComEd Exh. 1 at 8; PC 107 at 6; Tr.1 at 868. Several groups testified that the municipal boards do not have the ordinances, experience, or resources to properly address the concerns surrounding peaker plants. Tr.1 at 386, 389-390, 436-437, 460, 511, 868, 916-917 and 1,021-1,022. Citizens testified that both municipalities and residents must expend a large amount of money in either reviewing or opposing the new plants, and may face legal fees if the IPP decides to sue the municipality for voting not to site the plant. Tr.1 at 521-522, 550, 972.

The electric industry largely believes that Illinois must construct peaker plants to match

the growing rate of demand. The companies claim the shrinking reserve margins for electric power and the 1998 wholesale market price spikes show the need for increased supply of electricity. Tr.1 at 324. According to ComEd, Ameren, and MWIPS, placing peaker plants within a utility's control area increases the system's reliability. Tr.1 at 324, 340. Mr. Earl Struck, President of the Association of Illinois Electric Cooperatives (AIEC), stated that "[s]ufficient generation capacity is absolutely essential to fulfilling the responsibility of providing adequate, reliable energy at an affordable price." PC 111 at 3.

Many citizens question whether the explosive number of requests to build peaker plants is excessive compared to the growth of peak-demand for electricity. Tr.1 at 390, 494-495, 502-503, 510, 542, 557-559, 701. They are concerned that companies will build plants that will export power to other states at the detriment of the health and environment of local communities. Tr.1 at 390, 502-503, 542 and 559. Citizens also expressed concern that the proliferation of the peaker plants cuts against programs that use alternative fuel resources. Tr.1 at 496 and 649. They feel that we can use several viable forms of alternative fuel resources to help meet the growth in peak demand for electricity. Tr.1 at 496, 649.

The reduced ICC regulation of the industry also leads to a lack of statewide oversight of the supply and demand of electric power. Because the ICC no longer can require utilities to provide reports on the generation, import and export of power, it cannot continue to play a formal role in maintaining an energy portfolio for the State. Moreover, ComEd claimed that MAIN, which provides regional oversight of electric power generation and transmission, is being phased out on the federal level in favor of new transmission organizations. Tr.1 at 38-39. Illinois currently has not designated a government body to formally track statewide supply and demand of electric power. Tr.1 at 779-780; Tr.2 at 61.

Many citizens expressed concern that peaker plants sited in Illinois would export power to other states. Tr.1 at 390, 502-503, 542, 780, 1,024. Power companies and other experts disagreed about whether exporting power was feasible or profitable and whether the transmission and distribution systems in Illinois can handle the proposed growth in generating capacity. Groups testified that parts of the transmission grid are outdated and hinder exporting power to other states, such as Wisconsin. Tr.1 at 598, 706-707; Tr.2 at 50; Lake County Exh. 4 at 7-8. Local residents may resist updating the system because of their concerns about potential health effects from the lines. Tr.1 at 975.

B. History of Deregulation

For most of the 20th century, natural monopolies held the United States electric industry. As Executive Director Fisher of the ICC explained:

> Government agencies designated stockholder-owned companies to provide electric service to the public within specific service territories.

* * *

> Each and every day, excess power generated by a company in one area may, in fact, be sold and delivered over transmission lines to a company in another area for resell to customers in that utility's service territory.
>
> For the most of the last century, these transactions were primarily made by regulated entities in the interst of security and reliability of the grid. Tr.1 at 17-18.

State and federal governments jointly regulated the electric industry. FERC regulates the wholesale and interstate transmission of power. Tr.1 at 18. States appointed public utility commissions, such as the ICC, to regulate power distribution from electric utilities to the end-user customer. Tr.1 at 18.

Under the old Illinois regulatory system, the ICC controlled siting and certifying new generating facilities, and set rates for utilities based upon their costs of serving customers in their area. ComEd Exh. 1 at 8; Tr.1 at 867-868. IEPA decided "whether to issue the necessary permits covering issues such as air pollution." ComEd Exh. 1 at 8; see also Tr.1 at 867. According to Mr. Eaton, counsel for several organizations, including a homeowners association, deregulation in Illinois "has left [IEPA's] responsibilities in this area largely unchanged, but has removed the ICC from the equation, for all intents and purposes." Tr.1 at 867-868.

1. Federal Rate Cases

Executive Director Fisher explained how the federal rate cases developed and how they impacted the deregulation of the electric industry. He stated that the federal government historically granted monopoly service territory to electric utilities as long as they served all retail customers without discrimination or delay at a price set by the regulatory commission. FERC set prices during periodic cases, now known as rate cases. Tr.1 at 18. Statutes required rates to be just and reasonable for both utilities and customers. According to Executive Director Fisher, the "basic theory was to allow the utility to recover its reasonable expenses as well as to provide a fair return on the investment." Tr.1 at 19.

As Executive Director Fisher explained, "[f]or the first two-thirds of the 20th century, rate cases generally resulted in a gradual lowering of prices as utilities enjoyed the efficiencies of technological improvements and economies of scale." Tr.1 at 20. Each utility built generating plants, expecting growth in demand for power that it was obligated to provide. Some utilities imported excess power from other utilities rather than build generating plants when it was more economical. Tr.1 at 20.

The cost of electric power significantly increased for most customers in the 1970s and 1980s. Electric prices rose for consumers because of unexpectedly higher costs of building and operating nuclear plants. Other utilities faced increased costs from general price inflation and compliance with air pollution standards. Tr.1 at 21. The increase in prices led to a state and federal movement towards deregulation in the 1990s.

Federal policy significantly changed with the introduction of "wholesale wheeling." Executive Director Fisher commented that the Energy Policy Act of 1992 authorized FERC to "require public utilities owning transmission lines to make those lines available to wholesale market participants who wished to move electricity from one part of the grid to another." Tr.1 at 21-22.

In 1995, FERC responded to the Energy Policy Act by issuing Order No. 888, which required electric utilities to give generators access to the transmission grid on a non-discriminatory basis. ComEd Exh. 1 at 5, citing Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities and Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, Order No. 888 (Order No. 888), FERC statutes and regulations, preambles for regulations, January 1991 - June 1996, 31,036 (1996); see also Tr.at 22. Utilities had to provide transmission authority to out-of-state generators, and according to the ICC, have done so at a fair price. Tr.1 at 22. For example, an Illinois utility must now allow an Ohio generator to carry power over its transmission lines. ICC Exh. 1 at 3; Tr.1 at 22.

In 1992, "most transactions between utilities were 'cost based' and the highest price paid for energy and capacity was that authorized by FERC as 'not to exceed' the FERC authorized rates." Lake County Exh. 4 at 9. Utilities that greatly needed power would pay a maximum emergency tariff of generally $100/MW hour (MWh), or 10% plus out of pocket costs. Lake County Exh. 4 at 9. Utilities entered into contracts "knowing that their maximum exposure or risk of having [to] fulfill their sale commitment was measurable, calculated, and deemed to be acceptable because the maximum exposure was no more than the Emergency power rate." Lake County Exh. 4 at 9-10.

Between 1992 and 1999, the number of power marketers increased from a few to over 300. Lake County Exh. 4 at 10. Marketers bought electricity by price rather than costs, and purchased power as a commodity. Lake County Exh. 4 at 10. "The biggest problem with market rates was the regulators and retail customers were not prepared for the change." Lake County Exh. 4 at 10.

Executive Director Fisher testified that wholesale wheeling encourages long haul transmission of electric power more than in the past. Tr.1 at 44. However, utilities can place FERC-approved tariffs on access to their transmission lines. When a company wants to transport power over transmission lines that another utility owns, the company must pay the filed tariff to the utility to use the lines. The company must pay the rates of each utility for the

lines used to transmit its electricity to its destination. The rates compile or "pancake." Tr.1 at 43. Executive Director Fisher noted that, although FERC granted wholesale access to utility transmission lines, wheeling tariffs cause longer transmission hauls to be more costly. Tr.1 at 27.

Executive Director Fisher stated that FERC Order No. 888 "opened the interstate system to wider access and made non-utility generation economically attractive over short distance[s]." Tr.1 at 28. For example, ComEd has "pursued a policy of nondiscriminatory cooperation with [IPPs] wishing to locate in Northern Illinois and interconnect with ComEd's system." ComEd Exh. 1 at 6.

FERC based the electric utility model on its previous success with the natural gas industry. Tr.1 at 30. FERC regulates the national transfer of gas through interstate pipelines. The commission deregulated the natural gas industry in the 1980s. Tr.1 at 30. According to the ICC, prices have dropped and the natural gas market is very competitive. Illinois customers buy 40 to 50% of their natural gas from non-utility providers. Tr.1 at 31.

2. States Start to Deregulate Electric Utilities

In the late 1980s and early 1990s, companies that needed to compete internationally, in part by cutting energy costs, lobbied their state capitols for the right to buy power on the wholesale market. Some states, beginning with California and Pennsylvania, have responded by moving to deregulate the electric industry. Tr.1 at 22-23.

The Wall Street Journal wrote that, in the summer of 2000, "several of the 24 states that began opening their electricity markets to competition in 1996 [were] struck by extreme price volatility and, in some cases, power shortages." PC 11 at 2. The Wall Street Journal reported on August 14, 2000 that the problems were caused by a combination of factors, including "higher-than-expected demand, fewer new generating plants than necessary to keep up with it and an interstate transmission network that wasn't built for the deregulated world." PC 11 at 2. The article stated that "[n]owhere has the situation been more critical than in the San Diego region, the first area of the country where retail electricity prices have been dictated solely by market forces." PC 11 at 2.

a. California Deregulation. Several factors played into why many consumers' bills doubled in San Diego. Generally, extreme heat and stunted growth in supply caused rates to rise for California customers over the summer of 1999. Tr.1 at 294; Tr.2 at 38-39. A number of utilities claim that California stunted its electric supply when it deregulated electric utilities, but chose to maintain "tight regulatory control over . . . wholesale prices and approval for new generation." Tr.1 at 293-294; Tr.1 at 834. The Illinois Energy Association (IEA) stated that it is "undoubtedly true that the lack of adequate power supply is at the heart of the problem in that state." Tr.2 at 40. "Several state policies discouraged new construction at a time when demand continued to surge." Tr.2 at 40. IEA testified that "[b]etween 1996 and 1999,

California added only 2 percent to its generating capacity." Tr.2 at 40. According to Ameren, "California attempted to control natural market forces, which resulted in an imbalance between electric supply and demand." PC 107 at 13. Reliant agreed, stating that "the state's environmental and regulatory mandates have hampered the siting and approval of new plants in recent years." PC 1 at 4.

NRDC testified that "the conventional wisdom is that electricity consumption in California is surging out of control; 'the Internet' and a booming economy often are frequently invoked as explanations." PC 109 at 4; Tr.2 at 39. According to Reliant, the previous reserve margin of 35% from the early 1990s disappeared while the California economy soared and summer temperatures were unseasonably high. PC 1 at 4. As a result, the existing generators, which are relatively old, run harder and under more stressful conditions, decreasing reliability and increasing chances of outages. PC 1 at 4.

The increase in 1999 customer rates occurred when costs of wholesale power were directly passed onto retail customers. Tr.1 at 35. This was due in part to existing generators that quickly paid off their mandatory stranding costs. Mr. Greg Elam, CEO of the energy management consulting firm of American Energy Solutions, Inc. (American Energy), explained that stranded costs are "basically a subsidy given to compete in a transition into a competitive market." Tr.1 at 815. Ms. Arlene Juracek of ComEd testified that, when California power companies "exhausted their stranded cost recovery, their customers were essentially put on the spot market for electricity." Tr.1 at 304. According to ComEd, "no one buys all of their supply on the spot market." Tr.1 at 304. For example, San Diego Gas and Electric paid off its stranded costs early, and was able to pass along market costs to residents in its service area. Tr.1 at 304. Companies that paid off their stranded costs also had less incentive to sell power at low rates to California residents rather than export the power at a higher rate to customers in another state. Tr.1 at 838.

IEA testified that when California could not meet the peak demand for electricity, it had to import power from other states. California was importing a lot of power and has not "added any power to speak of since then." Tr.2 at 56. When it faced power shortages, California "couldn't get out-of-state power suppliers to sell power into California at the artificially low prices that the government was setting." Tr.2 at 56.

NRDC contested the premise that inadequate supply remains at the heart of the problem in California. "In fact, the California system peak from 1990-1999 grew less than 2% per year (to about 50,000 MW, with 41,000 MW representing total demand on the three large investor-owned systems)." PC 109 at 4. NRDC also stated that the "[t]otal statewide consumption of electricity increased less than 1% per year from 1990-1998 (less than one third the rate of the 1980s)." PC 109 at 4. Recent data shows that hotter weather greatly affected a significant short-term increase in consumption for the first six months of 2000. PC 109 at 4.

NRDC largely attributed higher prices in California over this past summer to weather

and higher wholesale electricity prices:

> Electricity use spiked in June 2000, up almost 13% compared to much cooler June of a year earlier. This clearly contributed to sharply higher wholesale electricity prices for June 2000, which averaged about twelve cents per [kWh] (a sixfold increase over the June 1999 figure). It didn't help, obviously, that natural gas prices also were soaring above five dollars per [mmBtu] (if sustained, this would drive the fuel costs alone for older gas-fired power plants past five cents per kWh produced). The first three weeks of July saw more moderate weather in California, and both electricity and peak consumption were down compared to the same period a year earlier; average wholesale electricity prices dropped about 40%. However, at more than seven cents per kWh, these prices were still very high by recent historical standards, and more unpleasant suprises are entirely possible in the months ahead. PC 109 at 4.

NRDC also specifically pointed to the significant curtailment of hydroelectric power throughout the Pacific Northwest. Tr.2 at 64. "Essentially, rainfall across the Sierra Nevadas, the Cascade, was much lower and was actually near historic low, so much of that generation capacity was reduced, and in many cases there were no constraints in the system that prevented exports into California." Tr.2 at 65.

NRDC stated:

> The short term reliability crisis in California should be quickly and cost-effectively resolved by additional investment and deployment of energy efficiency and renewable energy on sufficiently large scale, alongside entry into service of single and combined cycle natural gas-fired combustion turbines already in the siting and construction process (more than 3500 MW already having completed the siting process).
>
> The deployment of energy efficiency and renewable energy investments has already made significant contributions to California's economy and electricity grid. California's efficiency programs and standards have reduced peak electricity demand by 10,000 MW and total annual consumption has been reduced by approximately 15%. Since 1990, energy efficiency investments have reduced statewide electric bills by more than $2.8 billion. As a result, 'California continues to lead the nation in maximizing the amount of Gross State Product produced per unit of energy' . . . . California still has numerous untapped and inexpensive opportunities to get more work out of less electricity.
>
> Renewable energy is also a critical part of California's energy portfolio, with about one-ninth of the state's supply now generated from wind, solar, geothermal or biomass resources. Thanks to a 1998 auction for new renewable

> capacity, more than 500 MW of urgently needed supply are now being added to the California system, with almost 100 MW already installed, more than 400 MW expected by the end of 2001, and at least 900 additional MW available for near-term purchase. The new capacity has gratifyingly short lead-times, with the 50 winning bidders all scheduled to be operating by summer of 2002. PC 109 at 4-5.

NRDC testified that the California market is still in transition. Tr.2 at 66. Some market mechanisms will not completely convert for several years, resulting in price spikes and dislocations in the market-based system. Tr.2 at 66. However, NRDC does not believe that the system is fundamentally wrong. Tr.2 at 66. It predicts the system will improve, and is an example of what may or may not be the most useful tools in deregulation. Tr.2 at 66-67.

b. Deregulation in New England. According to Mr. Silva of NRDC, the energy "Oklahoma land rush" phenomenon being seen now in Illinois "has also already played itself out in New England, where energy markets were deregulated earlier than Illinois." PC 109 at 3. NRDC gave a detailed account of what happened when New England underwent deregulation:

> By early 1999 some 63 electric generating projects were proposed in New England, totaling 31,000 MW of generating capacity, of which between 7,000 and 8,000 MW are expected to actually be built . . . . By way of comparison, the current annual peak demand in New England is approximately 22,544 MW with the New England Independent System Operator . . . calculating that an additional 4,000 MW of generating capacity is all that is required to meet short term expected increases in electrical demand.
>
> The 31,000 MW of generating capacity originally proposed in New England was winnowed down to approximately 9,437 MW by power plant siting authorities and environmental regulatory agencies in Massachusetts, Maine, New Hampshire, Connecticut, and Rhode Island. Most relevant is that of the 36 combustion turbines being permitted at 19 electric generating facilities across New England, all are combined cycle natural gas-fired combustion turbines . . . . These combustion turbines are expected to operate as intermediate load following or base load units, rather than peaking units.
>
> In the neighboring state of New York, 20 new electric generating facilities are undergoing siting review representing a total of 15,064 MW of generating capacity[.] [A]vailable information indicates they will be equipped with combined cycle combustion turbines. PC 109 at 3-4.

NRDC believes that "[p]art of the reason [that New England chose combined cycle plants] was the attraction for mainly the host communities . . . in having units that had a clear

value, and in terms of benefits to the community and the state, there was a definite need and recognition of the need for additional capacity." Tr.2 at 58-59. The combined cycle plants also met stringent air and water requirements. Tr.2 at 58.

3. Illinois Takes Steps Toward Deregulation

Illinois approached deregulation differently than California. Tr.1 at 35. As Mr. Udo A. Heinze, on behalf of Ameren, stated: "Illinois has chosen a market-based approach to achieve the appropriate supply/demand balance." PC 107 at 13. However, according to Mr. Elam of American Energy, both Illinois and California are deregulated at a level of two out of ten, because both currently lack competition. Tr.1 at 836-837.

The Illinois General Assembly passed the Electric Service Customer Choice and Rate Relief Law of 1997 (Illinois Electricity Choice Law) to meet this end. ComEd Exh. 1 at 7; see 220 ILCS 5/16-101 through 16-130 (1998). Executive Director Fisher of the ICC stated that the law partially was "intended to spur innovation and drive down prices through competition among Illinois' traditional utilities and to attract new competitive power suppliers to the state." Tr.1 at 23; see also 385-86. According to MWIPS, increased competition in the wholesale market will reduce the probability of price spikes in the Midwest market. Tr.1 at 326-327. IEA commented that Illinois, which is the only state in our area undertaking deregulation, is "leading the way in creating a competitive electricity market that will result in more affordable electricity prices for our citizens." PC 167 at 5.

ComEd stated that by "May 2002, all customers can select their own vendor of electric power." ComEd Exh. 1 at 7. As of October 1, 1999, approximately 52% of ComEd's non-residential customers had the opportunity to choose their own electric provider. Tr.1 at 299. "Forty percent of the eligible [kWh] are already operating under non-traditional supply." Tr.1 at 299. However, electric utilities must still provide power to customers in their service territories, even if they select a different vendor. The ICC continues to regulate the utility's rates and delivery services. ComEd Exh. 1 at 7.

Under the Illinois Electricity Choice Law, the ICC no longer can order utilities to build new electric plants. ComEd Exh. 1 at 7. Instead, the construction of new generators is now market driven, relying on the increased demand for power to spur new growth and decreased demand to stop unnecessary construction. ComEd Exh. 1 at 7-8. Private investors, rather than utilities and customers, bear the financial risk of building new plants. ComEd Exh. 1 at 8; Tr.1 at 326. Further, the ICC no longer examines the need for new projects. ComEd Exh. 1 at 8. Executive Director Fisher testified on the ICC's former statutory role in determining the State's energy needs:

> The [ICC] prior to the '97 restructuring law had a formal responsibility to have filed by each individual utility what was called a least cost of planning, and basically it was a 20-year forecast of power demand.

> The '97 law took away that requirement from – from the utilities and, therefore, there is not a formal role for the [ICC] at this point in terms of the overall – looking at the overall generation. Tr.1 at 32.

As Executive Director Fisher explained, the Illinois Electricity Choice Law also froze electric base rates for customers at 1996 prices until 2004. The rate freeze allows for a smoother transition for deregulating Illinois electric utilities. Since 1996, national and Midwest wholesale electric prices have risen and are anticipated to continue climbing if the supply for power does not match national demand figures. Tr.1 at 28-29.

The ICC suspects that between the years of 2004 and 2005, Illinois utilities will request rate adjustments to reflect the change in the price of wholesale power. Executive Director Fisher said that the electric rates, primarily for the delivery of power, are "simply a function of supply and demand." Tr.1 at 34. The ICC stated that, with the current rise in wholesale prices, if Illinois utilities today could request increased rates, they would have strong arguments to raise the prices of retail power in Illinois. Tr.1 at 29, 34. ComEd noted that the rate release would differ from what happened in California because utilities would have to petition the ICC to abandon customers and place them on the spot market. Tr.1 at 305.

C. Environmental Effects of Deregulation

Ms. Stark, Director of CARE, as well as other citizens, voiced concerns that "virtually no rules or regulations exist because these [peaker] plants are so new." Tr.1 at 647. However, private companies and public utilities are still subject to environmental standards and local zoning ordinances. ComEd Exh. 1 at 8. Facilities must obtain air emissions permits and possibly water discharge permits from IEPA to construct and operate peaker plants. Tr.1 at 53. IEPA permits can restrict a facility's hours of operation. Tr.1 at 312; PC 9 at 6. IEPA can also impose monitoring and testing provisions in the permits to ensure that peaker plants do not exceed emission limits. Tr.1 at 312. If an applicant cannot prove compliance or will not remedy the problem, IEPA denies the permit. Tr.1 at 53.

Indeck testified that it analyzed some other Illinois industrial facilities under standard industrial classification (SIC) codes, which IEPA uses in part to set emission standards. Tr.1 at 247. The company compared NO_x emissions to steelworks, refineries, industrial machinery manufacturers, brick and tile manufacturers, and other operations in Illinois, and testified that peaker plant emissions are in the middle of approximately 200 other sources. Tr.1 at 248-249. Because peaker plants fell in the middle of the spectrum, Indeck stated the electric plants should not be more heavily regulated than other forms of industry. Tr.1 at 252. "[A]ny change in regulatory philosophy should apply to all industry, not just to peaker plants." Tr.1 at 254.

D. Impact of Deregulation on Local Zoning

Deregulation shifted the statewide burden of siting largely onto local municipalities. Before 1997, the ICC controlled siting of new generators, requiring all utilities to receive a certificate of public convenience and necessity. Tr.1 at 436. "Utilities seeking a certificate of public convenience and necessity for a new plant were required to demonstrate an economic need for additional generating capacity." ICC Exh. 1 at 5. The ICC granted certificates when a "new plant was necessary to provide adequate, efficient, and reliable service at the least cost." ComEd Exh. 1 at 8. According to Ms. Turnball, a citizens group consultant, the ICC directed utilities to provide an environmental impact assessment and held public hearings to determine if there were better ways to produce power. Tr.1 at 436.

The ICC certified nine investor-owned companies as electric utilities, including ComEd, Ameren, Illinois Power Company, and Certified Central Illinois Light Company. Tr.1 at 19-20; ICC Exh. 1 at 2. ComEd stated that "[l]ocal input was limited because a state Certificate of Public Convenience and Necessity generally preempts local ordinances such as zoning . . . . [R]egional public utility power plants and transmission lines are considered matters of statewide, not local interest." ComEd Exh. 1 at 8.

When Illinois restructured the electric industry in 1997, the ICC could no longer order companies to construct new plants to meet the State's demand for electric power. ICC Exh. 1 at 5. However, Executive Diector Fisher of the ICC stated that "the provisions of Illinois law addressing siting of electric generating facilities have not changed." ICC Exh. 1 at 5. Non-utility generators have and continue to be exempt from the ICC siting process. The major shift was in the trend towards building non-utility plants to meet peak demand for power. In response to deregulation, numerous IPPs applied to construct non-utility generating plants in Illinois. Because State and federal changes made non-utility generation economically attractive, especially over short distances, a higher number of non-utilities have begun to propose new generation facilities in Illinois. ICC Exh. 1 at 5.

Because the market now favors building non-utility plants, the burden of locating the generators falls on local counties and municipalities. The municipalities mainly rely on zoning and other land use regulations to site new plants. ComEd Exh. 1 at 8; PC 107 at 6; Tr.1 at 868. According to Indeck, siting, certain wastewater approval, water supply approval, and ultimately a building permit are now solely addressed at the local level. Tr.1 at 246.

Many citizen groups and government officials challenged whether local zoning could provide sufficient balance in evaluating whether to site peaker plants. NRDC commented that "residents of many potential host communities are convinced from their experiences that existing local zoning requirements are not adequate to address all the public interest concerns associated with [peaker plants]." PC 109 at 7. NRDC expressed concern that Illinois will develop into a:

> Balkanized area where some communities are more willing or tolerant to accept these projects, others will fight them at any cost regardless of the actual value or how meritorious future projects may be, and we're talking both about natural gas combustion turbine units and renewable projects. Tr.2 at 63.

LCCA also commented that "[l]ocal zoning does not adequately address siting considerations." Tr.1 at 460. State Representative Mary Lou Cowlishaw stated that "[a]s government seeks to restore a free marketplace, some anticipated problems are almost unavoidable. Peaker power plants and the siting of them are just such a problem." Tr.1 at 386.

Citizens expressed concern that "[p]eakers were not anticipated by the existing zoning courts." Tr.1 at 940. "Local governments have not had adequate time to respond to the zoning implications or peaker plant constructions." Tr.1 at 389. Mayor Vivian Lund of Warrenville testified that "[t]ime should be afforded local governments to revise their local zoning ordinances to assure fair and adequate review of these facilities which, because of their multiple impacts upon local and regional . . . should be considered special uses." Tr.1 at 389-390. Mr. Sargis, an attorney with experience in land use and zoning law, commented that local ordinances, sometimes like environmental regulations, often lag behind development trends. Tr.1 at 1,021. Municipalities continually add categories to reflect the new developments. Tr.1 at 1,021. Mr. Sargis stated:

> [I]n many cases, a local zoning ordinance today might allow public utility as a permitted use in many districts. And a peaker plant in the absence of an updated code provision could be interpreted to be a "public utility" under the local definition. In that instance, a peaker plant could ostensibly pass local zoning approval without meeting any of the procedural safety guards such [as] public notice and public hearings that otherwise would apply for special or conditional uses. It wouldn't matter if there was a guidance that was available if the local code essentially allowed that use as a permitted use. Tr.1 at 1,021-1,022.

Ms. Turnball also stated that "siting is impacting most municipalities who have zoning ordinances that wouldn't have included a category for that particular business because even though there might be a statement in the zoning ordinance that says public utility station, they aren't a public utility." Tr.1 at 436-437. She maintained that the ordinances are not geared towards siting peaker plants. Tr.1 at 436-437.

Mr. Eaton testified that "different zoning agencies have varying degrees of expertise and ability to step into the fray and handle these inquiries." Tr.1 at 868. Mr. Sargis stated that "many communities, both government and the public, are ill-equipped to evaluate the potential impact of facilities that are not yet familiar in Illinois." Tr.1 at 1,021. Ms. Zingle, who is a member of the Lake County Board of Appeals, strongly agreed that zoning is a local issue, but "adamantly disagreed with Director Skinner's optimism . . . about the ability of

local villages to cope with the host of issues surrounding [peaker] plants." Tr.1 at 511. She stated that, "[w]ith the best of intentions, [local governments] don't have a clue what questions to ask and they don't know how to judge the answers they get of the questions they do ask." Tr.1 at 511.

Mr. Ersel C. Schuster, Supervisor of Seneca Township and member of the McHenry County Board, felt that "[l]ocal officials are the 'front line;' those expected to address concerns over the operation of such facilities." PC 186 at 1. He commented that, "as is often the case, we neither have the authority, technical expertise, nor the financial ability to ensure that the operator is in compliance with the regulations." PC 186 at 1.

Ms. Chris Geiselhart, Chairperson of Concerned Citizens of Lake County (CCLC), complimented the Village of Libertyville for creating a system to hear testimony. There, she noted, "people have spent hundreds of hours and thousands of dollars educating themselves and the plan commission . . . through public testimony and hiring expert witnesses to testify in opposition, finally, to Indeck experts." Tr.1 at 916. She asked "how can many communities of more limited wealth and means expect to raise the kind of public outcry and money for expert witnesses that Libertyville did? How many zoning boards have the expertise needed to make the best decision for their communities?" Tr.1 at 916-917. Ms. Johnson, a resident of Marengo and Vice Chair of the Rural and City Preservation Association, testified about the siting of the PP & L Global plant:

> Those hearings and meetings keep coming week after week after week. We just keep going to hearings. The county can't afford experts to help them. Our group can't afford experts to push them and urge them to make some zoning ordinance and strong standards which would protect us. Our lives have been totally disrupted, and meanwhile, we realize the County Board is being lobbied by people in the county who would prefer to have a peaker plant put out in the country, meaning South Marengo. Tr.1 at 551.

Several citizens testified about the cost of challenging the siting of peaker plants. Ms. Zingle of LCCA pointed out that their fight was only with what they considered to be badly sited plants. Tr.1 at 521. Ms. Zingle voiced frustration about money spent by both citizens and municipalities to challenge peaker plants:

> Opponents for the plant in Woodstock raised over $100,000 in their fight. Libertyville opponents reportedly spent over $500,000 for those 20 public hearings with the consultants and the attorneys. Individuals in Aurora have discussed with me possibly taking out second mortgages on their home to pay for the lawsuit. Bartlett, which will come later, has two attorneys and a range of consultants. Zion opponents just hired a municipal attorney in addition to the attorney and the environmental consultant we already have on board . . . . The villages that spend money get the results. Villages like Lockport who simply try

to rely on the system do not. It creates a terrible disadvantage for the affluent cities and for the less aggressive. Tr.1 at 520-521.

Citizens asserted that problems with siting are exacerbated by the fact that IPPs are suing municipalities for choosing not to site a generator. After McHenry conducted several months of hearings and voted against siting an Indeck peak generating facility in its area, Indeck filed a lawsuit challenging McHenry's decision. Tr.1 at 550 (Johnson), 972 (Wilson).

NRDC commented on the "growing sense of unease in Illinois that current state and municipal review of new or expanding electric generating facilities is too limited and inadequate." PC 109 at 7. NRDC stated that the sentiment "may be in part attributable to the lack of coordination between municipalities and Illinois regulatory agencies involved in permitting new electric generating facilities, particularly [IEPA] charged with evaluating the air and water quality impacts of these facilities." PC 109 at 7.

Executive Director Fisher of the ICC explained that some states have taken approaches to siting similar to that of Illinois. Others have established state siting committees either as part of or separate from state public utility commissions. PC 8 at 2-3. 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. PC 8 at 2-3.

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. PC 8 at 2-3.

E. Current and Future Retail and Wholesale Energy Markets

Mr. Elam of American Energy provided a broad overview of the role of peaker plants in the energy market. Lake County Exh. 4. Electric power is currently sold in both the wholesale and retail markets. Different rules govern each market. The "wholesale market acts much like a free market, while the retail market is still very regulated." Lake County Exh. 4 at 3. Mr. Elam asserted that, in the future, both the wholesale and retail markets will converge into a single energy market. Tr.1 at 804.

1. Retail Market for Electric Power

Mr. Elam stated that the deregulation of the Illinois electric industry is actually closer to re-regulation of the market. Lake County Exh. 4 at 3. "[I]nvestor owned utilities have

been given a subsidy called stranded cost to help them transition into a competitive market." Lake County Exh. 4 at 3. Stranded costs are also called the competitive transition charge. Lake County Exh. 4 at 3.

When the retail market is completely deregulated, customers will either remain "firm customers" or will opt to contract for varying degrees of interruptible loads. Lake County Exh. 4 at 3-4. Firm customers "continue to demand firm reliable service, and they will pay for it." Lake County Exh. 4 at 3. Other companies will be "willing to modify their operations to gain a break in price." Lake County Exh. 4 at 3-4. Mr. Elam stated that the "combination of these firm and interruptible loads all will become a part of a suppliers portfolio thus another means for reserve margins to be enhanced." Lake County Exh. 4 at 4.

2. Wholesale Market for Electric Power

Mr. Elam asserted that the wholesale market for electric power is very effective. Tr.1 at 837. "Wholesale market prices are driven by supply and demand, which is influenced by weather, fuel prices, and future expectations." Lake County Exh. 4 at 4. Wholesale electric power is traded like a commodity. Independent brokers conduct transactions between utilities and marketers on a brokers market. Independent brokers trade 50-MW blocks of power, which are delivered or priced into a hub, such as the CINergy transmission system. Someone can buy and sell the same power several times in the same day. Supply and demand dictate how prices move. For example, a peaker plant in Chicago will either sell its energy to the CINergy market or into the Chicago market, depending on which offers the highest price. Lake County Exh. 4 at 4.

According to Mr. Elam, "[m]arketers sell various products into the market." Lake County Exh. 4 at 5. "The standard product is a sale of 50 [MW] for each hour for one 16 hour day, during the on-peak hours of 0700 - 2300 hours. The price reflects the anticipated average price per [MW] hour over the 16-hour period." Lake County Exh. 4 at 5.

Mr. Elam explained that marketers create a spread or profit from either selling short or long on transactions and filling their trade. Lake County Exh. 4 at 5. "Buying and selling blocks of power is often known as swaps." Lake County Exh. 4 at 5. Marketers sell short by selling power, and filling their position by buying the same contract back at a lesser price. In contrast, they buy long if they wait to sell a contract for power or generation that they have or own. Marketers buy long when they expect prices to rise and buy short when they anticipate prices will drop to cover their position. Lake County Exh. 4 at 5.

Mr. Elam stated that marketers can also buy options, which give purchasers the right, without the obligation, to "call on power at a specific . . . price, terms and conditions." Lake County Exh. 4 at 5. The buyer of an option gives a premium to the seller of the option. Lake County Exh. 4 at 5. This is analogous to paying premiums to a homeowner's insurance company to cover potential damages from a fire. Lake County Exh. 4 at 5-6.

Mr. Elam noted that having an option can be better than selling long on energy. Lake County Exh. 4 at 6. Companies that own energy contracts and sell long must either sell their position before the trade period closes or settle out with liquidated damages. Companies owning an option on power "will only call on that power if the market price is high enough to generate a profit." Lake County Exh. 4 at 6. "Owning a peaker plant is very much like owning an option, the owner does not have to run it." Lake County Exh. 4 at 6. The owner can sell a "call option" and use its generators to "back the option sale." Lake County Exh. 4 at 6.

Mr. Elam briefly summarized the price structure for peaker plants:

> The peaking facility has basically two cost components, a fixed and variable price. The fixed price that an owner of a peaking facility has to pay is made up mostly of the debt service that is used to pay for the project cost of the facility. The variable portions of the price of power are based on the variable cost of fuel and some operations and maintenance costs. The fuel portion is based on the heating value or efficiency of the gas turbine. Depending on the heating value and the delivered price of fuel, the variable cost of energy may range from $35-60/[MWh]. It should be noted that in addition to buying options on energy (calls or puts), marketers and utilities use the natural gas futures market to hedge their price risk. Lake County Exh. 4 at 6.

Mr. Elam stated that because the same energy contracts are sold many times, selling rights to a peaker plant does not even imply where its power will be sold. Lake County Exh. 4 at 6-7. Power from peaker plants can be exported "several states away" because the plants are used when market prices are highest. Lake County Exh. 4 at 7. Transmission tariffs are "extremely small when compared to the price paid for power during peak periods." Lake County Exh. 4 at 7. For example, a peaker plant in Lake County selling power at $1,000 per MWh can move power to CINergy for a maximum cost of $6 to $12 per MWh. Lake County Exh. 4 at 7.

Mr. Elam explained that "[m]oving power over several transmission systems is not a problem <u>if the transmission system is reliable</u>." Lake County Exh. 4 at 7. Price is generally not the problem during peak hours. Lake County Exh. 4 at 7. "Likewise, high fuel prices do not hinder the sale in volatile markets." Lake County Exh. 4 at 7. Owners of generation have no means to guarantee that their power will benefit local communities. Lake County Exh. 4 at 8. Mr. Elam asserted that, "[i]n reality, the generation being built will be used to provide a hedge for the marketer or utility selling into a hub or specific market such as Wisconsin." Lake County Exh. 4 at 8.

3. <u>Price Spikes</u>

According to Mr. Elam, to understand why the 1998 price spikes occurred in the electric power market, "it is helpful to have a historic perspective as well as a futuristic viewpoint." Lake County Exh. 4 at 9. As stated above, the electric power market changed dramatically between 1992 and 1999. The "change created the foundation for the electric industry to move towards competition and accept market rates." Lake County Exh. 4 at 10. Mr. Elam explained that marketers purchased electric power as a "firm" product, which "means that any components necessary to generate and deliver the commodity to the delivery point is included in the price." Lake County Exh. 4 at 10. "The fillcost of energy is priced in a total dollar per [MWh] fee, with the capacity component embedded into the unit price." Lake County Exh. 4 at 10.

Mr. Elam stated that, by 1998, the electric market split into the segments of (1) trading and (2) "trading to fill." Trading is where marketers and utilities broker power as a commodity. Lake County Exh. 4 at 10. "The trades are made in standard 50 MW blocks under standard terms and conditions." Lake County Exh. 4 at 10. Trading generally uses a hub like CINergy as a pricing point. Lake County Exh. 4 at 10. It does not matter to marketers where the power is generated as long as they generate a profit from the delivery price to the hub. Lake County Exh. 4 at 10. Mr. Elam explained that "[t]rading to fill means that the marketer or utility is buying or selling for a specific need." Lake County Exh. 4 at 10. Utilities only purchase the MW needed to meet requirements for specific hours. Lake County Exh. 4 at 10-11.

Mr. Elam stated that the 1998 price spike occurred when a marketer, Federal Energy, sold electric power it did not have and could not pay for on the market. The marketer "shorted the market" by selling 750 to 1,000 MW "to various parties and did not have the physical power or own contracts to cover its position." Lake County Exh. 4 at 11. Mr. Elam noted that the hollow sale "gave the Midwest market a false sense of security." Lake County Exh. 4 at 11. The market only realized the shortcoming when Federal Energy could not buy back the power at the end of the trading session. Lake County Exh. 4 at 12. The false bid to sell power increased the demand for electricity. Prices soared to over $10,000 per MWh because of the need for the missing supply, according to Mr. Elam. Lake County Exh. 4 at 11.

Mr. Elam explained that immediately after the 1998 Federal Energy shortfall, "monthly prices for the summer soared to more than $200 per [MWh] for the on-peak periods. Since that time prices have dropped dramatically, but not back to the pre June 1998 levels." Lake County Exh. 4 at 11-12.

Mr. Elam stated that the 1998 price spikes "were a function of supply and demand." Lake County Exh. 4 at 12. "FERC's review of the matter concluded that the wholesale market worked to correct itself." Lake County Exh. 4 at 12. According to Mr. Elam, although owners of peaker plants can hedge their portfolio, it does not "assure the local ratepayers or customers that there will be no more price spikes." Lake County Exh. 4 at 12.

F. Supply and Demand for Electric Power

NRDC stated that the deregulation of the electric industry and the considerable increase in demand for power have contributed to the proliferation of peaker plants in Northeastern Illinois. Tr.1 at 385-86. According to NRDC, "the Energy Information Administration now forecasts that by 2020 there will be the need for approximately 300 gigawatts, otherwise known as 300,000 MW, of new capacity across the United States." Tr.2 at 58-59. These figures basically track future growth in the gross national product and are based upon the assumption that the economy will continue to be healthy. Tr.2 at 94. PG&E National Energy Group (PG&E) stated that "[i]t is critical that a balance be struck between the pressing need for new sources of electricity and the desire to maintain and improve environmental quality." PC 170 at 2.

According to ComEd, when evaluating current and future demand for electric power, both the constant need for power and the greatest need for power must be taken into account. ComEd asserted that utilities must be able to generate enough power to meet the greatest demand because electricity cannot be stored and must be generated at the instant it is required. PC 164 at 2; see also PC 1 at 2. The base load of power is the "lowest continuous load over the course of a year," and the peak load is the "highest load observed during a period of time." ComEd Exh. 1 at 3. ComEd stated that peak demand depends highly on weather conditions. Tr.1 at 297. For example, the amount of people that ComEd serves varies considerably when measured daily and annually. ComEd Exh. 1 at 3.

ComEd experiences highest peak-load use in summers because people heavily use air conditioners. According to Ms. Juracek of ComEd, "[a]bout 40% of the peak load is from residential air conditioners." Tr.1 at 297. "ComEd's all-time summer peak load was 21,243 MW on July 30, 1999, between 2:00 and 3:00 p.m." ComEd Exh. 1 at 3. By contrast, ComEd's winter all-time peak load was 14,484 MW in late afternoon on December 20, 1999. ComEd Exh. 1 at 3. Although ComEd may use peaker plants in the spring or fall when it undergoes maintenance on its base-load plants, intermediate capacity is generally enough to cover the need in non-summer months, according to ComEd. Tr.1 at 302.

ComEd also testified that the technical revolution of the 1990s is influencing the demand growth in its area. Tr.1 at 298; see also Tr.1 at 619. Executive Director Fisher of the ICC testified that the "remarkable economic expansion of the past several years, coupled with the proliferation of electronic devices in our homes and offices, has increased the overall demand for electricity." Tr.1 at 23. ComEd stated that additional computers cause further air-conditioning loads and the Internet is affecting loads in hotels. Ms. Juracek of ComEd testified that ComEd is "seeing loading on the order of 150 watts per square foot in a building." Tr.1 at 298. ComEd testified that "this is ten times the type of load . . . seen in the past." Tr.1 at 298. Reliant stated that ComEd faced an annual 3% increase in demand for electricity. PC 1 at 2.

The rise in demand is being felt on a national level. According to Reliant, the United States Department of Energy marked a 17% increase in electricity demand in the past decade. However, the construction of new plants has increased by less than 1%. PC 1 at 2, 12. In a report following price spikes in the summer of 1998, FERC stated that the 1990s demand for electric power in the Midwest grew at a faster rate than that of the nation, and much faster than the rate on the coasts. Tr.1 at 35-36. IEA testified that peak loads grew 4.2% between 1994 and 1999. Tr.2 at 37. According to PG&E, past investments are not keeping pace with regional demand. PC 170 at 2.

According to Executive Director Fisher of the ICC, "[w]hile baseload capacity remains adequate to meet base demand, peaking capacity has not expanded to keep up with increasing peak demand." Tr.1 at 23-24. For example, on July 30, 1999, ComEd set a new peak demand of 21,243 MW. One MW generally serves 500 homes with electric power at times of peak demand. This marked a 10% change in peak demand over one year. Usually, changes in peak demand amount to 1/2 to 1%. Tr.1 at 24, 298. Utilities and IPPs stated that the best way to encourage additional plant development to meet the growing peak demand is through the free market that the Illinois Electricity Choice Law established. PC 170 at 2.

Dr. Thomas Overbye, Associate Professor, Department of Electrical and Computer Engineering, University of Illinois, Champaign-Urbana, stated that the load for ComEd is increasing at the rate of approximately 350 MW per year of demand. Tr.1 at 605. According to Dr. Overbye, this places the load growth for ComEd at 1.5%. This is "how much new generation is needed to meet [its] increase in load." Tr.1 at 605. The Illinois Municipal Electric Agency (IMEA), which is "a not-for-profit unit of municipal government, made up of 39 of the State's 42 municipally-operated electric systems," has seen a 33% increase in peak load over the last decade, from 300 to 400 MW. PC 110 at 1. IMEA stated that, "[a]t this time, IMEA has contracts with 28 of the State's 42 municipal systems to provide all, or most, of [its] wholesale electricity." PC 110 at 1.

The ICC noted that the Midwest experienced very warm summers in 1998 and 1999. Tr.1 at 24. Before 1999, the last peak by ComEd was set in 1995. Tr.1 at 605. The extreme heat caused utilities throughout the region to pay very high prices for wholesale power on peak demand days. Tr.1 at 24. Executive Director Fisher stated that "[t]hose prices attract new peaker plant development." Tr.1 at 24.

According to ComEd, it uses different types of generators to satisfy the base-load and peak-load demand for power. ComEd Exh. 1 at 3-4. Base-load generators, which basically operate year round, usually have relatively high fixed costs and low operating costs. ComEd Exh. 1 at 4; PC 1 at 3. The generators are generally nuclear plants or efficient coal-fired boilers. Tr.1 at 72, 224. Installing a base-load plant that can annually produce 21,243 MW of electricity is costly and inefficient "because that peak amount of demand is only present for one hour of the year." ComEd Exh. 1 at 4.

Mr. Romaine of IEPA explained that cyclic or intermediate power plants "operate on a daily cycle, tracking the daily cycle of power demand as it rises and falls during the day." Tr.1 at 72; PC 1 at 2. According to IEPA, this category includes "some of the older plants and some of the plants specifically designed to interpret the steam and boiler plants." Tr.1 at 72. IEPA stated that, together, base-load and intermediate power plants "cover most of the daily and seasonal fluctuations in demand." PC 1 at 2.

ComEd noted that, in contrast to base-load or cyclic facilities, peaker plants are "designed to produce power only during times of heavy demand, ranging from seasonal to hourly." ComEd Exh. 1 at 4. Peaker plants can quickly start up and shut down to best respond to the heightened demand for power. According to Mr. Romaine, they are "the most expensive to operate because they use high cost natural gas [and] light oil [as fuel]." Tr.1 at 73. However, peaker plants can economically supply peak-load power despite higher hourly operating costs because they have lower capital costs than base-load plants. ComEd Exh. 1 at 4. ComEd uses a combination of both its own and independent generators to meet summer peak-load demands. ComEd Exh. 1 at 4. Ameren stated that it predominately provides electricity to meet base demand and that it is currently in the process of constructing six new peaker plants with a total maximum capacity of 560 MW to supplement its plants in Central and Southern Illinois. Tr.1 at 340, 353.

ComEd testified that it currently owns and operates five nuclear power plants that can produce 9,500 MW of power. ComEd Exh. 1 at 4. The ICC reported that no new coal or nuclear plants are currently under construction in Illinois. Tr.1 at 40. According to the ICC, two ComEd nuclear power plants in Zion and one ComEd nuclear power plant in Dresden are closed. Two other ComEd nuclear power plants in Dreseden are scheduled to go off-line in 2009 and 2011. PC 8 at 1. ComEd and Amergen plan to shut down another nine nuclear power plants by 2027. PC 8 at 1.

The ICC stated that, due to the closure of nuclear power plants, Illinois utilities imported substantial amounts of power in 1999. However, "that is not the case today." Tr.1 at 36. According to Executive Director Fisher, both the Midwest and Illinois have had a lot of excess power in the reserves over the summer of 2000 because of the mild season. Tr.1 at 36-37. It should be noted that, even with the mild summer in 2000 and the general reserves, ComEd testified that it came within 1,000 MW of the all-time peak load of 21,000 MW about one week before the August 24, 2000 hearing. Tr.1 at 299-300.

ComEd and Reliant also noted that they view peaker plants as an insurance policy when something goes wrong with a base-load generator. Tr.1 at 302-03; PC 1 at 10. According to Ms. Juracek of ComEd, if harsh winter conditions prevent the transport or use of coal, peaker plants could quickly satisfy the temporary demand for electric power until the base-load plants can operate again. Tr.1 at 302-03. ComEd views this as a matter of public safety. Tr.1 at 303.

Mr. Eaton, an attorney for the Liberty Prairie Conservancy, Prairie Holdings Corporation, and the Prairie Crossing Homeowners Association, warned:

> It is probable that this rush to build and begin operating new sources is a short window, that the demand will be short lived . . . . [S]ome probable combination of new base-load plants, coupled with such things as microturbines and other sorts of distributed generation, [will] come increasingly into the marketplace in the next very few years, significantly and adversely impacting the demand for peaker plants. Tr.1 at 875.

Mr. Eaton testified that many of the peaker plants under construction could ultimately be abandoned as white elephants, "particularly those which cannot or are not, for whatever reason, expanded into base-load plants." Tr.1 at 875-876.

Dr. Overbye stated that "[w]hen you're planning a power system, you have to plan for the unexpected." Tr.1 at 605. To do that, generators keep a reserve known as the capacity margin. The capacity margin provides generators with insurance in case of a hot summer or other negative weather conditions. According to Dr. Overbye, the capacity margin is "the net capacity resources minus your internal demand divided by your capacity resources." Tr.1 at 605. "Capacity resources" is the amount of generation in a region. Tr.1 at 605. It "can also include imports of power that are guaranteed from other regions." Tr.1 at 605-606. Dr. Overbye explained that the net internal demand is the amount of power people use and the estimated amount that they will use, reduced by the fact that the utility that contracts with a load, at its discretion, can turn off its power. Tr.1 at 606.

Figures for supply and demand in Illinois are currently available through a regional organization called MAIN. MAIN is primarily funded and operated by utilities, managing the flow of power in midwestern states on a daily and long-term basis. It is comprised of 45 members, including utilities, IPPs, and municipal systems. Tr.1 at 321-322. As MAIN explained, it "is one of ten regional reliability councils which comprise the North American Electric Reliability Council . . . ." MAIN Exh. 1 at 1.

According to MAIN, because individual states are a part of an interconnected system, the regional councils jointly "coordinate the planning and operation of the North American bulk electric system (generation and high voltage transmission)." MAIN Exh. 1 at 1. MAIN monitors Illinois, Eastern Wisconsin, Eastern Missouri, Eastern Iowa, part of Minnesota, and the Upper Peninsula of Michigan. MAIN Exh. 1 at 1. MAIN stated that Illinois cannot be evaluated individually because it is "part of an interconnected system of transmission and generation which stretches from the Rocky Mountains to the Atlantic Ocean." Tr.1 at 315-16.

MAIN evaluates resource adequacy for the region and compiles annual forecasts from member utilities. Tr.1 at 603; MAIN Exh. 1 at 1. MAIN stated that it "performs detailed annual studies to determine the amount of reserve required to meet a one-day-in-ten-years loss

of load probability criterion which is a widely used standard in the industry." MAIN Exh. 1 at 1. In a ten-year period, the load on one day will probably exceed the available resources. Tr.1 at 318. The minimum standard reserve requirement with this method is 17 to 20%. MAIN Exh. 1 at 1. MAIN summarizes its members' projected loads and capacity, calculates the reserves, and compares them against the standard. MAIN Exh. 1 at 1.

MAIN projected an 18% reserve margin for the summer of 2000, which fell within the 17 to 20% minimum standard. It projects that reserve margins for the years 2001, 2002, and 2003 will be 13%, 11%, and 10%, respectively, if no new peaker plants are built. These figures are all substantially below the 17% threshold. MAIN Exh. 1 at 1. IEA noted that the figures were based on historically average weather. Tr.2 at 37. It warned that "[e]xtremely hot weather could add an additional 2 to 3 thousand [MW] of demand next summer." Tr.2 at 39.

Reliant stated that, according to MAIN, the region requires an additional 7,900 MW of generation between 1999 and 2007 to meet peak demand. PC 1 at 11. Indeck stated that generators must add between "a thousand to 1,500 [MW] a year for the next five to seven years to maintain an adequate reserve margin." Tr.1 at 272. Dr. Overbye testified that the Wisconsin, Illinois, and Missouri region requires about 1,000 MW a year to meet the new load. Tr.1 at 604.

Reliant stated that the high reserve margin for 2000 was attributed to new peaker plants: "Figures from [MAIN], that include Illinois and nearby states, indicate that the reserve margin was 9.6% in 1998 and 7.6% in 1999." PC 1 at 2. Reliant claimed that the "dramatic drop in the reserve margin has been countered by the addition of new peaker plants operating this summer (such as the Reliant facility in Shelby County)." PC 1 at 2.

NRDC also predicted that the demand for electricity in Illinois will continue to increase. PC 109 at 2. The organization, which relied upon regional data, stated:

> The electric reliability council serving Illinois and portions of Wisconsin, MAIN, reports that projected maximum internal demand for electric generation in 2000 [will be] at 49,615 MW, approximately 3% higher than 199 projected maximum internal demand. The actual peak demand in summer 1999 was 49, 027 MW, approximately 1.8% above projections.
>
> For the summer 2000 peak demand period, MAIN projected available generating capacity at 56,523 MW, including generating capacity available from [IPPs] and limited imports. This figure includes 3,076 MW of new electric generating capacity available for dispatch, representing 11 new generating facilities, upgrades at existing generating facilities, and temporary facilities. PC 109 at 2-3.

Several members of the electric industry claimed that the only way to have sufficient supply and ensure affordable electricity prices in the near future is to build new peaker plants. PC 167 at 6; PC 1 at 2; PC 109 at 2. IEA, a trade organization representing Alliant Energy, Ameren CIPS, Ameren UE, Central Illinois Light Compnay, ComEd and other Illinois power companies, stated:

> If we act to impede the development of this new capacity, we will be placing ourselves and our fellow citizens at the mercy of forces that are beyond our control and influence. In our industry such forces usually mean the weather or equipment difficulties and we have a long history of dealing with such unknowns. However, to voluntarily disrupt our current balance between nature supply and imported power could be a recipe for the type of economic chaos seen in Southern California only a few weeks ago. PC 167 at 6-7.

Reliant stated that "[t]he construction of peaker units will help Illinois avoid supply shortage, unwanted brownouts and unreasonably high costs for consumers that now plague California." PC 1 at 4. Reliant recalled "the summer of 1998 [in Illinois] when temperatures soared and the demand for electricity threatened the state with forced rolling blackouts." PC 1 at 4.

IMEA also warned that Illinois should "do nothing to create power shortages in Illinois through new and restrictive regulation of natural gas-fired, gas turbine peaking plants." PC 110 at 2. PG&E maintained that regulations to determine the need for peaker plants can create a chilling effect and are "antithetical to the competitive principals embraced by the Illinois legislature in 1997." PC 170 at 2; see also PC 110 at 3; Tr.1 at 310. IMEA stated that Illinois needs sufficient power generation to avoid higher costs and possibly severely diminished reliability. PC 110 at 3. "Natural gas-fired peaking plants are a vital component in the State's power portfolio and their construction and operation should not be discouraged by unnecessary and burdensome new regulations." PC 110 at 3; PC 111 at 3.

According to NRDC, "[m]any developers of new electric generating facilities believe there are lucrative short-term profits to be made by siting as many peak-load serving single cycle combustion turbines as they can within the next 18-24 months, anticipating peak demand episodes similar to that experienced by Illinois in 1999." PC 109 at 2. However, NRDC pointed to conclusions of the United States Department of Energy that "those service interruptions were due to failures in the distribution system infrastructure, inadequately maintained by the incumbent electric utility, [ComEd]." PC 109 at 2. NRDC warned that siting more peaker plants within ComEd's service area "will not necessarily avoid a repetition of the 1999 electric service interruptions in metropolitan Chicago." PC 109 at 2. NRDC advised that "improvements and upgrades of the distribution system infrastructure were and remain the principal problem and need." PC 109 at 2. Although NRDC supports siting natural gas-fired combustion turbines, it believes Illinois should also concentrate on developing renewable electric generating facilities and invest in energy efficiency. PC 109 at 1.

G. The Need for Peaker Plants in Illinois

ComEd stated that "it is not clear whether all [of the proposed] additional generating capacity is needed to meet local needs . . . ." Tr.1 at 74. ComEd asserted that the free market is necessary to promote sufficient generation. ComEd contended that "[t]here is no indication that the current regulatory scheme is thrusting too much generation on Illinois." ComEd Exh. 1 at 11. ComEd encourages new IPPs, which are typically gas-fired, peak-load units, to locate in Northern Illinois. ComEd stated that this will diversify and disperse the electric supply of the region, and feels supply and demand will control the number of generation plants built in Illinois. ComEd Exh. 1 at 7-8,10. ComEd warned that "a reduction in new generation could fundamentally alter the wholesale market for electricity," and warned that the "wholesale price of electricity could increase dramatically." ComEd Exh. 1 at 11. It gave an example to illustrate its point:

> In Illinois and elsewhere, there have been wholesale price "spikes" in recent years when electrical energy has cost utilities in excess of $5 per [kWh]. (Last year, ComEd sold electric power to end users for, on average, $0.074 per [kWh].) These skyrocketing prices have occurred when very high demand was coupled with constrained generation and transmission supply. ComEd Exh. 1 at 11.

According to ComEd, California faced electric shortages from unbalanced supply and demand. ComEd stated that California differed from Illinois in that it "retains a pervasive regulatory role in evaluating and approving new generation." ComEd Exh. 1 at 12. ComEd asserted that the lack of growth of new generators in California is from the state's regulation of wholesale power, rather than letting the market drive the price for electricity. ComEd. Exh. 1 at 12. According to MWIPS, California presently has $10 billion of new generation facilities in line for construction. Tr.1 at 333. MWIPS testified that, "[a]ccording to recent statistics presented to the California governor, . . . 672 [MW] of new generation was added to the system [between 1996 and 1999]. Demand during that period jumped more than 5500 [MW]." Tr.1 at 333. ComEd said that "[t]his summer, California customers have experienced high prices and curtailments as demand approached capacity." ComEd Exh. 1 at 12; see also PC 110 at 2. According to ComEd, peaker plants protect Illinois customers by smoothing out price spikes. ComEd Exh. 1 at 12.

ComEd stated that new generation will also "increase the reliability of service overall, especially during times of high demand for electricity, by having more generation available." ComEd Exh. at 9. ComEd has also sold its own fossil-fuel power plants to Midwest Generation EME, LLC (Midwest Generation) and agreed to purchase power from the company to supply to its customers. ComEd Exh. at 9. ComEd added that new generation within its transmission "control area" eliminates potential problems when electricity is carried from a longer distance along the transmission system. ComEd Exh. at 9.

Citizens claimed that the number of proposed peaker plants far exceeds growing demand in Illinois. Citizens and members of local organizations acknowledged the need for peak-demand electric power, but challenged the need for the number of generators proposing to build peaker plants in Illinois. Tr.1 at 390, 494, 502-03, 542, 558, 701. According to IEPA, companies have submitted permit applications to operate peaker plants on 46 sites. Tr.1 at 48. Mayor Lund of Warrenville stated that "[a]lthough there is probably a need to create new supply sources to meet the demand for additional electric power during high usage periods, adequate consideration is not being given to the total amount needed for Illinois users." Tr.1 at 390.

Members of CAPPRA testified that the projected decline in reserve margins by MAIN do not include peaker plants that are accepted and approved for Illinois. Tr.1 at 494. According to CAPPRA, the additional 16,000 MW supplied by the peaker plants will almost double the 32,000 MW plant generation capacity in Illinois. Tr.1 at 495. LCCA testified that the "total power generating capability from [peaker] plants is 22,000 [MW], more than the entire ComEd system." Tr.1 at 510. The number greatly exceeds the demand for peak capacity in the area. Tr.1 at 557. According to one Illinois resident, if ComEd decides to shut down all of its coal-fired plants and solely use nuclear facilities, the proposed peaker plants would still produce excess power. Tr.1 at 558-59. Citizens worry that this surplus will be exported to other states at the expense of the surrounding local residents. Tr.1 at 390, 502-503, 542, 559.

Dr. Overbye testified that MAIN reported the generation of about 14,000 MW from new electric facilities. Tr.1 at 617. Dr. Overbye stated that, to reach the goal of 20% capacity margin, the system would need 6,000 new MW of generation. Tr.1 at 607. Dr. Overbye concluded that "we're getting quite a bit more proposed than is needed to meet the minimum requirements, the 17 to 20 percent capacity margins." Tr.1 at 607. He testified that the reserve margins are adequate and the need for new generation in the MAIN area is relatively modest. Tr.1 at 607-608.

CAPPRA also testified that excess generation also defeats programs that promote conserving energy. Tr.1 at 496. CAPPRA cited to reports by an intergovernmental international organization that stated the power generation industry is responsible for approximately 30% of national CO_2 emissions. A CAPPRA member warned that increased accumulation of CO_2 could create a greenhouse effect with several negative effects on the environment. Tr.1 at 496. According to the speaker, the intergovernmental panel included about 2,000 scientists from various nations. Tr.1 at 496.

Members of CARE also requested that consideration be given to alternative fuel resources. One of its directors testified that "[a]lternatives to natural gas should not only be investigated, but any wind or solar facilities within a 100- to 200-mile radius should be toured by these municipalities . . . ." Tr.1 at 649. IMEA stated that "it would be ideal if even

greener sources of power, such as wind, solar, or hydro, could satisfy the state's growing needs." PC 110 at 2. However, it found that "such sources of power are not available on demand and often, in peak times, are not available at all." PC 110 at 2-3.

NRDC, which promotes renewable energy resources, recommended that Illinois construct peaker plants as well as develop new renewable electric generating technologies. PC 109 at 1. It pointed out that one-ninth of Calfornia's electric supply is generated from wind, solar, geothermal or biomass resources. The new renewable capacity "has gratifyingly short lead-times, with the 50 winning bidders all scheduled to be operating by summer of 2002." PC 109 at 5.

ALAMC and IEC also testified that "[e]nergy efficiency and renewable energy sources could provide a significant portion of electrical demand in Illinois[,]" stating that:

> Encouraging the wise use of electrical power through the use of more efficient lighting, climate control and mechanical systems would negate the need for a portion of new power generation and the associated—and remove the need or remove the presence of associated air pollution, noise and water demands due to fuel combustion at electrical generators. For unavoidable growth in electrical demand, greater use should be made of nonpolluting or less polluting renewable sources of electricity . . . . Tr.2 at 111.

Ms. Skrukrud, a resident of Olin, Mills, McHenry County, likewise stated that "gas-fired plants are much cleaner than coal-fired plants, but we should not forget that there are cleaner forms of energy available such as wind, solar and the cleanest forms of all, improved efficiency in conservation." Tr.1 at 1,025.

H. Importing and Exporting Power Generated by Peaker Plants

Mr. Erjavec of Indeck stated that, "[w]ith the restructuring of the [electric] industry, the door has been opened for other retail suppliers to come into the area." Tr.1 at 274. The move towards deregulation has made it increasingly difficult to measure the amount of power imported and exported in Illinois. According to the ICC, the introduction of power marketers and IPPs entering the wholesale market adds a new layer to calculations. PC 8 at 2. ICC explained why it is difficult to determine a set amount for imports and exports:

> For example, ComEd's total sales in 1999 were about 110 million [MW] hours. ComEd purchased about 11 million, or 10% of that amount, from other utilities and power marketers. About 1 million of that was from Illinois utilities. ComEd sold about 19 [MW] hours, or 17%, to other utilities and power marketers. About 1 million [MW] hours were sold to Illinois utilities. ComEd sold the rest to power marketers or out-of-state utilities. PC 8 at 2.

The ICC stated that, once ComEd sells electricity to power marketers, it is difficult to track whether the electricity remains in Illinois. Marketers may resell power to another Illinois utility or directly to retail customers. PC 8 at 2. Out-of-state utilities may also re-sell power in Illinois or to another state. Executive Director Fisher stated that the ICC cannot track exact numbers for these transactions. Moreover, the power industry itself does not want information on how much it imports or exports to be publicly available because it gives a competitive advantage to others in the field, according to Executive Director Fisher. Tr.1 at 40-41.

Citizens expressed concern that peaker plants will export excess power to other states. Tr.1 at 390, 502-03, 542, 780, 1,024. Mr. Steve Arrigo, a member of CAPPRA, stated that "[t]he power from some of these plants far exceeds any needs in these areas and in order to sell this power, they will sell it far from here." Tr.1 at 502-503. Ms. Cole, a member of the Lake County Board, stated that "there can be no assurances that power produced in one area will be used to supply energy in that area." Tr.1 at 787. Mr. Jim LaBelle, Chairman of the Lake County Board, testified that "none of the builders and operators of power plants have guaranteed that the power produced will be used locally." Tr.1 at 780.

Mr. LaBelle stated that "the county as a whole is risking limited resources and air quality while potentially receiving no benefit." Tr.1 at 780. Ms. Cole warned that "[t]his would mean that those residents immediately impacted by the physical presence of the peaker facility would probably not garner any benefit, but instead bear the [brunt] of the adverse environmental impact." Tr.1 at 787. Similarly, Ms. Carter of the Lake County Board testified that Lake County citizens "are being asked to give up one precious natural resource with no guarantee that the sacrifice will realize a benefit for the county's citizens." Tr.1 at 799-800.

Mayor Lund of Warrenville testified that, "adequate consideration is not being given to the total amount [of power] needed for Illinois users." Tr.1 at 390. As a result, "Illinois residents will bear the negative impacts of these installments whose benefits will be sent outside Illinois borders." Tr.1 at 390.

Mr. James R. Monk, President of IEA, testified that, according to its counterparts in Wisconsin and Indiana, opponents of peaker plants argue about exporting power to other states. Tr.2 at 41. Opponents "say they're building power plants in Wisconsin to ship power to Illinois or they're building them in Indiana to ship power to Illinois." Tr.2 at 41. IEA claimed that "the basic facts of electricity and the physics of electricity are—make that difficult, especially considering the transmission constraints we have in the region." Tr.2 at 41.

Indeck also testified that it was its "expectation that the off take from any plant that [it] propose[s] in Illinois would be sold to someone who is doing retail business in Illinois." Tr.1 at 274. For example, ComEd requires a Rockford plant that Indeck owns to generate power in ComEd's control territory. Tr.1 at 274. Indeck stated that if it wanted to export power, it

would build in another area. Tr.1 at 275. Indeck claimed that long-distance transmission does not make sense because the national transmission grid was not designed for bulk transfers from one site to another. Tr.1 at 275. Reliant also commented that, "[w]hile periods of peak usage typically involve an entire region, the laws of physics dictate that [its plant in Aurora] would serve the needs of the surrounding community first and foremost." PC 1 at 11. Indeck also testified that transmission tariffs discourage exporting electricity. Tr.1 at 275-276.

According to Dr. Overbye, the problem with transporting electric power over transmission lines is that electrons do not know anything about borderlines for utilities. Tr.1 at 613. Electric power takes the path of least resistance. Tr.1 at 613. Dr. Overbye gave an example of the route electric power can take:

> Surprisingly, if Illinois sells power . . . to Tennessee, a good chunk of it [travels to] . . . northern Georgia. Another chunk of it is . . . in the Entergy region. A third of that power actually comes into TVA from the south . . . . Power loops around throughout the entire grid. Tr.1 at 613-614.

Indeck claimed that there is "probably a rare occasion where the economics might make it make sense, but by and large . . . [electric power] would go into this service territory." Tr.1 at 276. Mr. Monk of IEA testified that "geographic and transmission constraints in our region are such that it's very difficult to transmit large amounts of electricity on an export basis." Tr.2 at 41. According to Mr. Trzupek of Huff & Huff, "power export is a very minor source of generation demand." Tr.1 at 357.

Dr. Overbye testified, however, that "it is very common to move power long distances." Tr.1 at 615. For example, "[o]n the West Coast, there's a lot of power from the Pacific Northwest that flows down to southern California." Tr.1 at 615.

Reliant stated that Illinois utilities must depend on imports from other states to meet its peak demand: "given similar economic growth throughout the Midwest, there has been less power available for import—leaving the state with a potential shortfall in generation capacity or supply." PC 1 at 2. Reliant stated that additional peaker plants in Illinois will restore balance between supply and demand. PC 1 at 2.

I. Illinois Lacks a Statewide Energy Plan

Many participants expressed concern that Illinois does not have a statewide energy plan. Mr. LaBelle of the Lake County Board suggested that:

> [T]he State of Illinois needs a plan and comprehensive licensing guidelines to assure that all regions of the state have reliable power. The plan should include identification of the power generation and transmission needed to support continued economic growth in Illinois. It should provide an analysis of the need

> for power in various regions of the state and an identification of the measures needed to assure adequate power is provided . . . . The plan should also include consideration of alternatives, such as improved transmission capacity that could reduce the need for additional generation capacity in certain areas. Tr.1 at 779-780; see also PC 190 at 4.

NRDC proposed a similar solution, calling for "a more comprehensive assessment of the actual need for the units being taken into account." Tr.2 at 62. NRDC suggested that Illinois develop a total energy strategy with stakeholder input to serve as guidance for State agencies to assist local communities in whether projects are a best fit for their areas. Tr.2 at 61.

The ICC presently does not have either a formal forecast of the projected magnitude of the peak demand for electric power, or an aggregate report on the amount of energy imported by and exported from Illinois utilities. Tr.1 at 37-38, 40. Citizens have expressed concern that ICC no longer keeps records as in the past. Tr.1 at 445.

Before the Illinois Electricity Choice Law, utilities had to file a least cost of planning report with the ICC, which gave a 20-year forecast of power demand. Tr.1 at 32. The reports allowed the ICC to generate forecasts of base-load demand, which were generally accurate from the early to mid-1990s. Tr.1 at 42. Executive Director Fisher of the ICC stated that "the last least cost energy plan filed by ComEd with the Commission was in 1996." Tr.1 at 24. The 1997 law eliminated the requirement to report to the ICC. As a result, the ICC currently does not have a formal role in reviewing overall electric generation in Illinois. Tr.1 at 32.

The ICC does receive some information by continuing to work with electric generators. Tr.1 at 37. The ICC held several hearings with utilities monitoring power generation when the summers of 1998 and 1999 placed extraordinary pressures on the system. Tr.1 at 32. The ICC also monitors the development of existing nuclear plants and reviews their existing lifespan. All Illinois nuclear power plants have a licensed life set by the Illinois Nuclear Regulatory Commission (NRC). The ICC is examining whether to lengthen the lives of existing nuclear facilities, because the Illinois plants are operating at an efficient rate. Tr.1 at 33.

Executive Director Fisher explained that organizations like MAIN are currently being phased out on the federal level in favor of new independent transmission organizations. Tr.1 at 38-39. According to Ms. Turnball, a consultant to various citizen groups, even if MAIN were to continue monitoring the region, it does not have access and keep records of forecasting specifically for Illinois. Tr.1 at 445. IPPs want their own access to the transmission network. Tr.1 at 39. Similarly, ComEd suggested that the State privatize the local generation portfolio in Northern Illinois. ComEd Exh. 1 at 9. ComEd believes that a number of different electric suppliers with market incentives to construct new generating capacity should create a portfolio, which "together with resources from other utilities, would meet the area's increasing needs over time." ComEd Exh. 1 at 9.

The ICC gave several reasons as to why companies are eager to site peaker plants: "Their relatively low capital cost permits them to provide high capacity to sell into the market for short periods of time when the market prices reflect peak demand." Tr.1 at 26. The ICC testified that combustion turbines are the least cost alternative for providing power on peak demand. Tr.1 at 24-25. "Modern gas-fired combustion turbines cost about $400 per [kW] of generating capacity whereas new coal-fired plants are estimated to cost about $1,600 per [kW] of generating capacity, and a nuclear generating plant costs between $2,000 and $5,000 per [kW] of generating capacity." Tr.1 at 25.

According to the ICC, a number of factors enhance the cost-effectiveness of modern gas-fired combustion turbines. Federal restrictions on building gas-fired generation have been removed, and gas prices predominately have been lower in the last ten years. Executive Director Fisher stated that, "[a]lthough the cost of natural gas has risen [recently], . . . the push for gas-fired generation does not appear to have dampened." Tr.1 at 25. Peaker plants have ready access to fuel sources in Illinois. Many major natural gas pipelines terminate in or are available to Illinois. Several of the lines go into the Chicago area. Tr.1 at 26. IEA noted that the available natural gas supply is coupled with a viable connection to the high voltage electricity transmission system. PC 167 at 5. According to IEA, the combination "is one reason that so many companies are interested in investing in our state." PC 167 at 5.

Executive Director Fisher noted that gas-fired plants are also more quickly and easily constructed and operated than other generators. Tr.1 at 25. Peaker plants offer flexible operating schedules, and can easily be turned on and off in response to peak demands. Some of the plants can even be operated by remote access. Tr.1 at 26.

According to the ICC, gas-fired generation units are also now more efficient. Executive Director Fisher stated that gas-fired generators further appear to have fewer environmental consequences than coal-fired plants. They also have less of a stigma and cost less than nuclear plants. Tr.1 at 26.

J. Effects of Peaker Plants on Electric Transmission and Distribution Systems

Constructing numerous peaker plants throughout the State raises issues about transmitting power from the new sources across the transmission grid. ComEd described the basic concepts behind transmitting electricity. Because a utility cannot readily store electricity, it must be instantaneously transmitted through a network of wires from generator to end-user. ComEd Exh. 1 at 3; see also PC 110 at 2. "When a customer turns on an electric light or appliance, sufficient power for that device must be generated somewhere on the grid at that moment." ComEd Exh. 1 at 3. The network of wires, or transmission lines, forms a national grid. ICC Exh. 1 at 2.

According to Dr. Overbye, a specialist in power systems, the national grid can be broken down into the transmission system and the distribution system. Tr.1 at 591. The transmission system, comprised of high voltage power lines, is connected in a grid. Tr.1 at 591. Numerous feeds that operate at the minimum of 100,000 volts connect to each point in the system. Tr.1 at 592.

Dr. Overbye explained that the distribution or lower voltage part of the grid is comprised of local or neighborhood wires, which are buried under ground in many places. Tr.1 at 592. "The distribution system is the source of practically all of the outages that we experience." Tr.1 at 592. Local wires are 95% of the problem. Tr.1 at 592. Dr. Overbye stated that, when an outage occurs, the national grid itself is still intact and "[t]here's still plenty of generation." Tr.1 at 593. "[P]eaker plants have no impact on the distribution system reliability." Tr.1 at 595. According to Dr. Overbye, the increase in peaker plants will not change the number of outages in Illinois. Tr.1 at 595.

However, peaker plants do have an impact on transmission system flows, according to Dr. Overbye. Tr.1 at 596. The national grid is designed so that power instantaneously redistributes on the system if a line is lost. Tr.1 at 594. Dr. Overbye stated that this kind of shift can transmit too much power through the line. Tr.1 at 595. For example, Mr. Steve Naumann of ComEd testified that, during the summer of 2000, there were multiple incidents of transmission loading relief on a daily basis, where sales from "one area to another were cut or curtailed because the transmission lines were being overloaded." Tr.1 at 295. This is similar to the circuit breaker shutting down when a homeowner tries to draw too much power. Tr.1 at 295. Dr. Overbye stated that we cannot "directly control the amount of power flowing on a line." Tr.1 at 594. As he explained, there is no valve. "Rather, we can only indirectly control it by changing the output of the generators." Tr.1 at 594-595.

Citizens have asked why generators want to locate peaker plants in more populated areas along the grid. Tr.1 at 759. According to ComEd, new local power plants reduce problems with transmission lines because "[l]ocal generation helps to support voltage on the system, especially near the generator." PC 164 at 3. Reliant commented that "locating plants near the demand 'strengthens the grid'. . . ." PC 1 at 11. Dr. Overbye stated that, "in power

systems, you're always trading off generation location versus transmission." Tr.1 at 595. He explained that "if you put up too much generation too far away from the loads without new . . . transmission, you can overload the grid." Tr.1 at 608. ComEd testified that "[y]ou can either build more transmission [lines] or locate generators at particular locations." Tr.1 at 595. ComEd elaborated:

> [T]he closer a generation source is to the load, the fewer potential problems there are with transmitting the power. If transmission lines become unavailable or overloaded, having local generation could allow nearby customers to remain energized.
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>
> As a matter of physics and prudent operation, only so much power can be transmitted through a given line; at some point, to keep the lines from overloading, a transmission owner must turn down request to transmit more power or curtail other transactions. * * * Because the lines connecting neighboring utilities and neighboring states in the Midwest, like all transmission lines, have finite capacity, there have already been numerous instances on which transmission requests were denied. * * * This is especially true during peak load conditions. It is therefore incorrect that either Illinois can depend heavily on generation in other states, or that Illinois-based generation will be used to supply huge amounts of load in other states. Unless or until massive new transmission line projects redefine the transmission grid, this condtion will remain for the foreseeable future. * * * And, regardless of interstate transmission availability, distant generation cannot support voltage on the local system to the same extent that local generation can. PC 164 at 3-4.

Each utility maintains its portion of the transmission grid. ComEd explained that when a non-utility generator requests access to the transmission lines that ComEd owns, it places the non-utility in a queue "primarily based on the date of the developer's initial interconnection request to ComEd." ComEd Exh. 1 at 6. ComEd maintains the queue because "one project may, if successfully brought on line, affect the plans of future projects." ComEd Exh. 1 at 6.

ComEd stated that it "works with each interested developer to design an efficient and reliable interconnection with ComEd's grid." ComEd Exh. 1 at 6. "Since the effective date of the [Illinois Electricity Choice Law], ComEd has worked with numerous developers to design interconnections with ComEd's grid." ComEd Exh. 1 at 8. "Once the generation plant is interconnected and operational, ComEd's OASIS electronic bulletin board allows market participants to request the delivery components of transmission service on ComEd's network, which, if available, enables the generator's electric power to move onto the regional grid." ComEd Exh. 1 at 6.

Mr. Elam asserted that "ComEd's shareholders, not necessarily consumers, stand to gain interconnection fees and wheeling charges if these peakers are built on the ComEd system." Lake County Exh. 4 at 14. Mr. Elam warned that "ComEd [and other companies] stand to make more money with less risk by selling its existing transmission system benefits to IPPs than constructing new transmission lines." Lake County Exh. 4 at 14. Mr. Elam added that "[g]eneration located at the northern end of the ComEd system benefits ComEd, the IPP, the natural gas company and the power marketer that owns the output of the generation, but does not provide any guarantee of benefit to the local community or state of Illinois." Lake County Exh. 4 at 15.

Dr. Overbye testified that the national electric grid is interconnected and very well designed. Tr.1 at 597. The purpose of the transmission system is to "take power from outlying areas and to bring it into the heavy load areas." Tr.1 at 600. Dr. Overbye stated that "[p]ower generated in Illinois can easily be sold to Wisconsin, Indiana, down to Tennessee, basically anywhere in the eastern part of the country." Tr.1 at 598. He claimed that it is not unusual to export or import power. Tr.1 at 598. "The transmission grid is used to supply power to the system from the generators that may be located quite distant from the load to the load." Tr.1 at 601.

ComEd stated that Illinois cannot rely on out-of-state peaker plants transmitting power because of the slow evolution of the interstate transmission grid. PC 164 at 4; see also PC 1 at 5. According to IMEA, "[t]oday's transmission grid is not the interstate highway to which some have compared it." PC 110 at 2. "Rather, it is a crosshatching of two lane roads with many areas of heavy traffic and troublesome congestion on the busiest days." PC 110 at 2. IEA also testified that "our system is really a Balkanized system that was built for the old electricity style of control area here, control area here, control area here . . . . It wasn't built for all the transfers that are taking place now between utilities in Pennsylvania and utilities in Wyoming." Tr.2 at 52-53. IMEA stated that the resulting transmission bottlenecks "have threatened parts of the State with mandatory curtailments as recently as this summer." PC 110 at 2.

ComEd explained that MAIN currently has regional rules and guidelines that prevent generators from overloading transmission lines. PC 164 at 4. According to ComEd, MAIN has denied numerous transmission requests because lines connecting neighboring states and utilities have reached their capacity. PC 164 at 4.

Dr. Overbye testified about the impact that an overload on a particular line could have on the power markets. Tr.1 at 601. "[P]ower markets are very large." Tr.1 at 602. The Midwest had a price spike in June of 1998. The spike occurred in part because of an overloaded transmission line in Northwest Wisconsin and an overloaded transformer in Southeast Ohio. Tr.1 at 602. When the Northwest Wisconsin line overloaded, several regions could no longer supply electricity to Illinois. Tr.1 at 602. "[O]ne little line wiped out the entire west for a market that we could get energy from. One transformer in Ohio wiped out

the entire east." Tr.1 at 602. "Locating generation in central Illinois . . . would definitely have helped the problems that you saw in northern Illinois or generation in Ohio would have helped as well." Tr.1 at 602.

Dr. Overbye also cautioned that this region's transmission system does have a major bottleneck in Northern Wisconsin, which is called the Eau Claire Arpin line. Tr.1 at 598. This line "limits a lot of the time how much power we, as Wisconsin and Illinois, can import from Minnesota and further north into Manitoba." Tr.1 at 598-99. IEA testified that Wisconsin has very serious transmission constraints caused by geographic barriers and a shortage of transmission capacity. Tr.2 at 50. Dr. Overbye warned that "when the line gets loaded to its maximum ability, we can't bring in any more generation from [the northern region of MAIN]." Tr.1 at 610. "Particularly, when we're having a hot summer down here and they've got cool weather up there, we can bring in a lot of power if we had a new line there or alternatively, we have to generate it more locally." Tr.1 at 599.

Mr. Elam similarly stated that "ComEd has had significant trouble moving power through its system from the south to the north into Wisconsin during peak periods." Lake County Exh. 4 at 8. Transmission of power across ComEd's system has been cut because it lacked the capacity to transport the electric power. Lake County Exh. 4 at 9. Peaker plants "installing generation on the north side of ComEd quickly enhances the lack of adequate transmission capability, but fails to address the issue of inadequate transmission." Lake County Exh. 4 at 8. Mr. Elam questioned why generation was not proposed, instead, in Wisconsin. Lake County Exh. 4 at 8.

ComEd controls a significant portion of the transmission grid in Illinois. "ComEd owns and operates a network of high voltage transmission lines and substations, which transfer power from generating stations or from other networks to local areas of load and to other networks." ComEd Exh. 1 at 4. "ComEd also owns and operates a system of local distribution lines and substations that carry power to ComEd's customers." ComEd Exh. 1 at 4.

ComEd recently became less involved as a generator and is concentrating on transmitting electric power. ComEd Exh. 1 at 9-10. ComEd is taking an active role in optimizing its transmission system. It has been studying its system to "determine the most convenient and, from an electrical standpoint, beneficial locations for new generation." ComEd Exh. at 10. "ComEd analyzed the intricate network of its [lines] . . . in a manner that maximized power delivery from the facility while minimizing modifications that would have to be made to the existing transmission network to accommodate that generation." ComEd Exh. 1 at 10. Mr. Shay, Senior Planner for Will County, stated that new generating facilities are trying to build in Chicago because many of the transmission lines and natural gas lines cross in the area and the plants would be close to a large power market. Tr.1 at 708.

Mr. Elam explained that FERC Order No. 2000 "is focused on making sure that our

nation's infrastructure is adequate and that our existing assets are used efficiently, without undue market influence." Lake County Exh. 4 at 16. The order "creates transmission only entities that will be run by independent operators, independent from market participants so that discriminatory practices are absent when improving and or expanding the grid." Lake County Exh. 4 at 13.

FERC "ordered all public utilities to join Regional Transmission Organizations (RTO) which will operate in essence as one large carrier." Lake County Exh. 4 at 13. The RTOs must facilitate the expansion of the national electric transmission infrastructure. Lake County Exh. 4 at 13. "Energy Secretary Bill Richardson recently commented 'we have the infrastructure of a third world country' when discussing the transmission system reliability." Lake County Exh. 4 at 13. Mr. Elam added that it should be noted that "the grid is looked at as a regional area versus trying to fix a market problem." Tr.1 at 830.

Mr. Elam cautioned that "the efforts of ComEd and other parties that will financially benefit have not been presented in these hearings to coincide with the efforts and planning of the RTO, which is not to have influence by a market participant." Lake County Exh. 4 at 14. Mr. Elam stated that, "[t]o arbitrarily build at the proposed sites without a coordinated effort . . . may be harmful and undermine the efforts of an independent organization such as the RTO, except those expected to profit." Lake County Exh. 4 at 14.

In June 1998, ComEd published a list of 14 preferred sites for new facilities. The list shows where generators can access the transmission network without major new upgrades or expansions to the transmission system. ComEd Exh. 1 at 11; Tr.1 at 296. The list, which does not examine land use issues, environmental impacts, or fuel availability, includes the following locations: (1) Zion; (2) Zion-Libertyville/Zion-Waukegan Right-of-way; (3) Lombard; (4) Silver Lake-Libertyville Right-of-way; (5) Silver Lake; (6) Libertyville; (7) Wayne-Silver Lake Right-of-way; (8) Wayne; (9) Prospect Heights; (10) Itasca; (11) Waukegan; (12) Electric Junction; (13) Lombard-Elmhurst Right-of-way; and (14) Pleasant Valley. ComEd Exh. 1, Att. D. ComEd stated that the last four sites require more significant upgrades, such as installing new transformers. ComEd Exh. 1, Att. D at 1.

Mr. LaBelle of the Lake County Board testified that ComEd should consider "alternatives to peakers, such as additional transmission lines." Tr.1 at 782. However, according to the ICC, building new transmission lines has proven to be difficult in the 1990s. Tr.1 at 26-27. The ICC stated that, "[i]n addition to ready access to fuel sources, electrical generating plants require access to significant transmission capacity to move its product through the market. The closer the combustion turbine peaker is to a natural gas supply and electric transmission lines, the less expensive it is to bring it on-line." Tr.1 at 26-27. However, public resistance to new transmission lines makes it less attractive to construct lines to increase power availability. Tr.1 at 27.

Mr. Dennis Wilson, a resident of the Island Lake area, testified about health problems

allegedly associated with transmission lines. According to Mr. Wilson, an English physicist from Bristol University is studying whether electromagnetic radiation can cause cancer. Mr. Wilson stated:

> [T]hey are coming up with some pretty good proof—is that in areas where you have high pollution, and as high pollution passes through the power lines, the particles become charged, and those particles remain charged for up to five miles away from those lines. That means if you have people living in that area they will be breathing that atmosphere of the charged particles. And what they are stating is that those particles will stick in your lungs at a rate of 100 times greater than it normally would if they were not charged. Tr.1 at 975.

Mr. Wilson testified that the existence of an energy field around lines can be simply shown by walking under a power line with a fluorescent bulb. Tr.1 at 975. He claimed the bulb will light up within 50 feet of the lines. Tr.1 at 975. Mr. Wilson further stated the National Institute of Environmental Health and Sciences conducted research that led it to believe the lines are carcinogenic. Tr.1 at 976.

Mr. Elliot "Bud" Nesvig, a professional elictrical engineer who has been involved with the Evanston energy commission, alleged that the distribution system that ComEd owns is antiquated. Tr.1 at 697-698, 704-705. According to Mr. Nesvig, ComEd stated in a May 2000 meeting in Itasca that the utility "had not maintained the distribution system for 20 years." Tr.1 at 706. Mr. Nesvig claimed that ComEd estimated "it would take more than two years to bring it up-to-date." Tr.1 at 706. He also testified that the continual overloading of distribution lines deteriorates their effectiveness and causes more frequent outages. Tr.1 at 706-707.

Mr. Elam stated that transmission lines "do not emit SO_2, NO_x, or any other hazardous pollutants." Lake County Exh. 4 at 13-14. Mr. Elam added that although they can be unsightly and take up space, the lines can be engineered to be more aesthetic and are needed to enhance the electric power system. Lake County Exh. 4 at 14.[18]

[18] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

IX. SITING

In this portion of the Report, the Board summarizes record information on the siting of peaker plants. Specifically, the Board first summarizes citizen concerns, then suggestions from citizens on siting peaker plants. Next, the Board summarizes, in turn, information on siting from State government, industry, and local government.

A. Concerns of Citizens

1. Clustering/Cumulative Effect

Many citizens expressed concern about clustering of multiple peaker plants in residential areas. Ms. Dorge of LCCA stated that "[w]e can have two across the street—we have two across the street from each other in Zion, the outskirts of Zion with 18 stacks. What is to prevent us from having 10 or more in close proximity. " Tr.1 at 460. Ms. Cathy Capezio, a resident of Aurora elaborated: "There should not be two peaker power plants within a two-mile radius when you have four communities that probably total over 300,000 people in a close proximity of these plants . . . ." Tr.1 at 479; see also CAPPRA Exh.1 at 2.

Ms. Zingle, Executive Director of LCCA, testified about potential air pollution from the clustering of plants:

> They're very much concentrated in the six county area and they centrally ring Lake County, and we're downwind of it, so are we concerned about the overall cumulative effect of these and what are we doing to our situation with NO_x emissions and nonattainment? Tr.1 at 534-535; see also Tr.1 at 912 (Geiselhart).

Mr. Kucera, an attorney with Chapman & Cutler appearing on behalf of the Lake County Public Water District, questioned what the impact would be of multiple draw-downs on an aquifer at a particular location. Tr.1 at 768-769. Mr. Chris Goebel, a member of CAPPRA, stated "we're going to see problems with this, problems that we don't know the true outcome of what's going to happen." Tr.1 at 559.

Ms. Terry Voitik, founder of CAPPRA, asserted that current regulations are inadequate, stating that it is "absurd that the IEPA with the USEPA's endorsement continues to issue permits and give the green light without regard to the cumulative effects of multiple plants in our nonattainment zones." Tr.1 at 485. Ms. Zingle testified that legislation is needed to address the clustering of facilities:

> It is the aggregate effect of millions of cars in the United States that has prompted comprehensive regulations of automobile emissions, not the discharge from a single car. It is totally illogical to disregard the cumulative effects of the peaker plants. Tr.2 at 183; see also Tr.1 at 1,010-1,011 (McCarthy).

NRDC stated that "[n]atural gas-fired combustion turbines represent the best available large-scale fossil fuel generation in terms of minimal adverse air quality impacts . . . ." However, "the aggregate impact of the proposed combustion turbine projects in Illinois would amount to several hundred tons, likely to be emitted during the worst ozone episodes." PC 109 at 5-6.

2. Decrease in Quality of Life

Mr. Maurice Gravenhorst, a member of CAPPRA, testified about his concerns over siting peaker plants near residential areas:

> I am very concerned about the power plant in my community at the corner of Eola and Butterfield Road. It is two miles east of my property. I moved to Aurora because I liked the area and I was real happy with the environment and forest preserves and everything around me was so natural. I lived on a 23 acre wetland that was donated by a developer. Had I known about Reliant and peaker power plants and all these things, this would not have been my choice to move out here because the last clear breath I will take will end in spring of 2001 when the plant at Eola and Butterfield will go into service or so they say, and it really is a tragedy. Tr.1 at 491; see also Tr.1 at 449 (Dorge).

3. Proximity to Residential Areas

According to Ms. Zingle, "the power companies are interested in locating naturally where the power lines and the gas mains intercept. If that happens to be adjacent to a subdivision or in the middle of green fields or in an airport flight path, there doesn't seem to be much concern from the power companies." Tr.1 at 518. Ms. Stark, Director of CARE, stated: "There's residences around there. There's a school within 1,000 feet. I mean, none of that is taken into consideration." Tr.1 at 652-653; see also Tr.1 at 482 (Capezio).

Ms. Carolyn Muse, a resident of Zion, testified: "My husband and I are very concerned [about] the groundwater. Everyone in the area has wells. We have septics. The siting of that plant I don't know how it happened, but it should not be next to residential areas." Tr.1 at 956.

4. Property Values

Ms. Johnson of the Rural and City Preservation Association stated: "We know this will affect property values and future development in the area." Tr.1 at 549; see also CAPPRA Exh.1 at 2; Zingle Exh. 8 at 2.

5. Environmental Justice

NRDC stated that peaker plants:

> [S]hould avoid disproportionately burdening any community, but particularly low income communities and communities of color . . . . [M]any potential host communities are convinced from their experiences that existing local zoning

> requirements are not adequate to address all the public interest concerns . . . . That may be in part attributable to the lack of coordination between municipalities and Illinois regulatory agencies involved in permitting new electric generating facilities, particularly [IEPA] . . . . PC 109 at 7.

Ms. Zingle testified that "[t]he villages that spend the money get the results. Villages like Lockport who simply try to rely on the system do not. It creates a terrible disadvantage for the [less] affluent cities and for the less aggressive." Tr.1 at 518-521; see also Tr.1 at 676 (Zingle); Tr.1 at 916-917 (Geiselhart); Tr.1 at 939 (Owen). Ms. Beverly DeJovine, a member of Bartlett Citizens Advocating Responsible Environments (Bartlett CARE), an environmental group opposed to peaker plants, testified:

> [W]e're very concerned about the siting of this plant and the zoning for this particular plant. We're very concerned that—who is to stop anybody else from—any other power generation company from coming into Bartlett and putting one right next door to this. If we say yes to one, we will not have any legal basis to say no to any others. Tr.1 at 543-544.

5. Home Rule

Ms. Zingle noted:

> We do have a difficulty though and he touched on there, areas that are not home ruled can only regulate those things specifically allowed to by the state. So we were told by the state's attorney that he can't do that particular ordinance, but we did it anyway and we'll see what happens. We were told we can't do noise more stringently than the state even though we'd like to. We can't introduce enforcement things where the state decides. We can't even enforce the noise ordinance. * * * [O]ur hands are tied." Tr.1 at 526.

6. Local Zoning

Ms. Turnball, a consultant to a variety of citizen groups, a private foundation, and businesses opposed to peaker plants, testified:

> [S]iting is now local and siting is impacting most municipalities who have zoning ordinances that wouldn't have included a category for that particular business because even though there might be a statement in the zoning ordinance that says public utility station, they aren't a public utility. So we have local governments which in most cases that I have seen a zoning ordinance where this new business, and I think we need to talk about it as a new business, didn't exist in the zoning ordinances and that is of a concern. Tr.1 at 436-437; see also Tr.1 at 1,121-1,023 (Sargis).

Ms. Owen of Zion Against Peaker Plants stated that "peakers were not anticipated by existing zoning courts. They don't even need a special use permit from the Zion zoning board. An art gallery does, but a peaker plant does not." Tr.1 at 940.

7. Lack of Input from Neighboring Communities

Citizens expressed concern over the lack of input a neighboring community has on the siting of peaker plants. Ms. Zingle offered an example:

> One of the difficulties we had with Zion is that they will not permit the neighbors to speak in public hearings at the village board meetings. They claim this is all being agitated by outsiders, yeah, it's because the outsiders are the ones that live 500 feet from the plant. It's the outsiders what are going to feel the effects. Tr. 1 at 531.

8. Complexity of Issues for Local Boards

Mr. Sargis, an attorney who works with various environmental groups, stated that "many communities, both government and the public, are ill-equipped to evaluate the potential impact of facilities that are not yet familiar in Illinois." Tr.1 at 1,121-1,023; see also Tr.1 at 476 (Goff), 502 (Arrigo), 511, 524 (Zingle), 553 (Johnson), 646 (Stark), 868-869 (Eaton). Ms. Zingle testified that "[i]n Zion, we have a used car salesman, a high school superintendent, a teacher, a retired accountant. How do they know how to judge emissions or ask about point maximum impact. They don't. They're not stupid. They just don't know." Tr.1 at 529.

Mr. Eaton, an attorney for several organizations, including a homeowners association, testified:

> [T]oo often local regulatory agencies believe that the IEPA, in issuing a permit, has exhaustively studied the situation and resolved all the issues. Even worse, they may believe that the IEPA has preempted the field. It should be made clear that local governments are entitled to impose more stringent pollution control measures than does the IEPA, should they choose to do so as far as their siting process. Tr.1 at 892.

Ms. Zingle asserted that the "village board is completely dependent on the representations of the power companies for their information . . . ." Tr.1 at 518; see also Tr.1 at 537-540 (DeJovine), 646 (Stark). Ms. Zingle explained:

> [The power companies] use the reputation of natural gas as a clean fuel and trade on fears of brown-outs to sell their products. They sometimes maybe

> stretch the truth. These are things I've heard at village plan commissions. This one was under oath. Our plant doesn't emit ozone. Technically, it's true. No, their plants don't emit ozone. We have our EPA permit. The IEPA says we're clean. No, the IEPA says you could pollute up to 250 tons a year. The artist's rendering of this plant isn't quite to scale. No, it's not. It [omits] 12, 105 foot tall 20 foot diameter smoke stacks. The nearest resident in the city is over a half mile from the site. That's true, but the nearest residents overall in the unincorporated area is less than 500 feet from the site. Emissions are small compared to other plants. This is my favorite. They'll take the Waukegan plant and the Pleasant Prairie plant and say, see, we don't pollute as much as they do. No, of course you don't. The villages have a responsibility to research and ascertain the claims of the company and each is laboriously going through the same learning curve without guidance or help. Most of the villages are unaware of the need for an air construction permit and that data on emissions or stack height or operating hours or fuel types is available and documented. Even those that find the existence of the permit, really aren't really good at running around and showing it. We need help interpreting its contents. The village's reactions to the new plants vary from the sublime to the ridiculous. From Libertyville who went through 20 highly structured plant commission hearings addressing air, need, noise, water, zoning, property values and so forth, to Zion who has two plants coming in across the street from each other who has had no public hearings in over nine months of controversy. Tr.1 at 518.

B. Suggestions of Citizens

NRDC advised that "[w]hen applications are pending for multiple facilities, siting boards should select those that best meet these criteria rather than approve applications on a first-come, first-served basis." PC 109 at 7. NRDC believes that the Board should integrate:

> [T]he currently disjointed local zoning review process with consideration of draft state administered air and water permits. * * * NRDC supports siting laws that encourage new power plants to: (1) use renewable fuels; (2) implement state-of-the-art air and water pollution systems; (3) locate on or near existing power plant sites that do not require new fuel supply or transmission infrastructure; and (4) avoid disproportionately burdening low-income communities and communities of color . . . . [S]iting laws should ensure that cumulative environmental and public health impacts decline over time as capacity increases. PC 109 at 9-10.

NRDC also stated that some entity should take over the ICC's old role and develop "a comprehensive energy strategy for Illinois": "The issues associated with permitting and siting a large influx of single cycle natural gas-fired generating capacity do not necessarily

require . . . comprehensive power plant siting regulations or legislation, but rather a comprehensive energy planning process, ecompassing functions once carried out by the [ICC]." PC 109 at 10. Other suggestions are described below.

1. Siting Template

Given the concern with the ability of local boards to site peaker plants, some citizens suggested the need for a siting template. Tr.1 at 529, 544 (Zingle), 868-899 (Eaton). Mr. Eaton testified:

> We wish to be clear that we are not recommending a reinstitution of a statewide regulation. However, what we are suggesting is that there ought to be an effort made on a statewide comprehensive basis to assist local governmental agencies to fill this gap. What we believe is sorely needed is a sound set of principals, guidelines and criteria to assist local governmental agencies to properly evaluate power plant siting requests and to evaluate whether a proposed site is a good site. Tr.1 at 890; see also Tr.1 at 900 (Eaton).

2. Preferred Locations

Mr. Eaton and other citizens suggested that peaker plants should be sited at existing industrial locations or brownfield areas. Eaton Exh. 1 at 17; see also PC 14 at 2. Mr. Dennis Wilson is from the Island Lake area. He stated:

> Now, in talking about these plants, what we are really talking about here is siting issues. When they can take and bring in a $250 million operation on top of residences 1,200 feet away, there is something wrong with the regulation. * * * I have heard in testimony earlier this evening that maybe brown areas were better for this. Industrial property might be better than this. But having researched this for quite a period of time now, it has been two years, I have a completely different opinion. I think that these plants should be located—because they [can] wheel the power great distances as we have heard—way out in the country away from everybody. Tr.1 at 974.

3. Multi-Jurisdictional Oversight

Ms. Schmidt, a member of the River Prairie Group of the Illinois Sierra Club, testified: "We are advocating for regional use of land and that regional planning be done in this process. If regional use is considered, then one municipality cannot be allow a proposed plant to be built on its perimeter thus protecting its own residents, but without regard to the neighboring communities." Tr.1 465-466; see also Tr.1 at 980-981 (Jacobs), 449 (Dorge), 858-859 (LaBelle).

4. Bonding

Mr. Eaton emphasized the importance of bonding:

One guideline or recommendation that we feel is vital in power plant sitings is for communities to require reliable, suitable and adequate bonding to cover disassembly, site remediation, and any other possible consequences of a decision of an [IPP] to discontinue use of a power plant after it has been built. Tr.1 at 876.

5. Notice

Ms. Turnball advocated that IEPA provide certain notices:

I would like to suggest that [IEPA] require the applicant to provide a list of the adjacent property owners within 500 feet of their proposed facility and a list of all the municipalities within a mile and a half unless they're in a municipality and that the IEPA would then send public notices to that list so that the people who are going to be affected by it would have a knowledge of this. If they're having to do any kind of zoning—local zoning, that's a list that they could have developed for that anyway and then the public can, at least, have some knowledge and attend the meetings in case they don't happen to hear about a public notice. Tr.1 at 442.

6. Siting Approaches in Other States

Mr. Silva of NRDC testified at length about siting approaches in other states:

Essentially, we would suggest that Illinois consider a process whereby a more comprehensive total energy strategy is developed with stakeholder input that would essentially serve as a blueprint to help guide decisions of various state agencies, whereby the communities right now, many municipalities in the state have complained, rightfully so, that they feel somewhat bereft of state assistance in assessing whether or not some of these projects are a best fit for their particular communities. * * * [S]ome of these kind of centralized processes that are available in states such as California and New York[19] allow for participation of the public and fund that participation as part of the permit applications for the plants. They essentially provide for intervenor funds based on a prorated share of the proposed generation capacity of the unit which is allocated for expert witnesses and technical assistance to the communities and the stakeholders. * * * For example, under Article X of the New York Public Service Law, it's a 50-50 split on projects where projects are assessed at $1,000 per [MW] up to $300,000 maximum for a project, and that—those funds can actually be split between the municipality involved and interested stakeholders.

[19] For descriptions of the New York and California processes for siting electric generating plants, please refer to Appendix H.

Any balance of funds that are not exhausted are then returned to the applicant. That would be—That's one part. We're not saying that that's the only solution or the best solution for Illinois. That's an option that we thought it was important to mention and provide some solution and a greater sense of control.

* * *

The siting process for the State of New York is based on Article X of the New York Public Service Law. It creates a New York state board on electric generation siting and the environment. Most of the board members are appointees of the governor or are actually the heads of various state agencies or their appropriate representatives. It actually requires a multistep review process. There's a preliminary scoping statement that's first required to be submitted. The applicant then has to publicize the project and actually establish a presence in the potential host community to ensure that there's adequate opportunity for the public to gain information. I mentioned in passing that there was a requirement that when the full application is filed that a fee equal to the prorated amount of its maximum generating capacity up to $300,000 be made available to provide for expert witnesses and public assistance to the host community and any interested parties or organizations, and that it go through an open hearing process and—but ultimately—and we're not taking a position one way or the other—the—under Article X, the siting board does have the authority to supersede local municipal zoning ordinance, so that's something that I wanted to point out.

* * *

I think that for Illinois, it would be quite worthwhile to look at most of these processes that offer integrated evaluation. I don't think that it's necessarily the best approach. Another example that's immediately adjacent to you is Wisconsin, which has a long and a fairly well—highly regarded among energy officials and energy analysts as having a very good process of evaluation. Now, that doesn't mean that the—it's going to be a great fit for Illinois' circumstances. I think when it comes down to it, frankly, you're going to have to pick and choose among what the existing programs are defined, what works best. I'm also saying that, frankly, recognizing political realities, that a lot of the stakeholders in this process have interests that they're seeking to protect, and they will probably lobby quite forcefully to protect those interests. So I am not suggesting that a comprehensive perfect siting law is the only thing you should be looking at, but I think the whole process of looking at good siting laws that offer an inclusive process for municipalities in particular that currently are feeling like they're getting battered by the current existing process . . . . Tr.2 at 62-63, 77-78, 103-104; see also McCarthy Exh. 2.

Ms. Zingle stated: "No state that we found yet leaves the siting of power plants exclusively to local control with no guidance or supervision from state environmental regulatory bodies." Tr.2 at 173.

7. 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. Ms. Zingle suggested that an appropriate approach to siting peaker plants would be one similar to SB 172:

> The landfill siting procedure commonly described as SB 172 has great potential for easing some of the distress over determining the proper locations for peaker electrical generating plants. Among other things, it calls for the issuance of an overall permit to operate the facility; it provides structure for the decision-making process and highlights areas of concern; it provides for expert technical advice and guidance; it provides for input and some control from neighboring communities. Most importantly, it allows, I think, for local control of the process and upholds local zoning ordinances. Now, I read that from Director Skinner's comments on SB 172. I've had some conversations with folks here in the audience today that think that SB 172 trumps local zoning ordinances. I don't—I want to keep an element of local control in all of this. Villages have a right to be stupid or not as they choose with some—within some parameters, so I'm supporting SB 172, assuming that it does in fact provide for local control input. The first seven criteria[20] used in the landfill siting decision process are fairly easy to adapt to the peakers. Points 8 and 9 pertaining to counties with solid waste management plants obviously don't apply to peaker plants. There is need, however, for more specificity in point 2, which is the facility is so designed, located and proposed to be operated that the public health, safety and welfare will be protected. There is no way for the local community or the siting board to adequately ascertain those facts without, one, the draft air permit, including analysis of the effect of PSD increments and future economic development in the area, the point of maximum impact, the effect on local and regional air quality in conjunction with other pollution sources in the area, effect on soils, livestock, habitat and so forth. Tr.2 173-176; see also Tr.1 at 462-463 (Dorge), 554 (Johnson).

Ms. Zingle advocated a siting process for peaker plants that "requires that neighboring

[20] Under the Act, the local siting authority must determine whether the proposed pollution control facility meets each of nine statutory criteria. See 415 ILCS 5/39.2 (1998). Those criteria are set forth in Appendix I.

villages be allowed to testify and cross examine witnesses" and that "delineates some of the standards under which the decision has to be made and then allows the neighboring villages to sue if the host village does something completely out of line." Tr.1 at 531. Elaborating, Ms. Zingle considered SB 172 "[t]he best model I think that I can find so far" for a number of reasons:

> [I]t requires—the host community still makes the decision, but it requires them to have a hearing or a series, if necessary, that would involve the community, neighboring communities within a mile and a half, the company that's looking to site the plant and it allows cross-examination. It starts to spell out the standards under which the decision will be made so you can't have a sham hearing, we'll just have the hearing and vote to do it anyway regardless of the effects, which would give the neighboring communities the right to sue if, in fact, a decision is not made appropriately. It still needs local control, but, in fact, if I understand it right, but that starts the participation of other groups. I would like to see that hearing take place at about the same time as the IEPA air hearing because there's information in those permits that is invaluable to the city. Tr.1 at 669.

Ms. Zingle does not want State siting standards to be voluntary:

> I don't completely want to leave it up to just do a model and then if there is a greedy or stupid or whatever village board out there that the citizens left hanging again. I want them to have to meet some standards in how they make the decisions. Tr.1 at 531.

Mr. Eaton had reservations about using SB 172:

> I think it is a little bit of a square peg in a round hole problem. I really think that [a procedure for siting peaker plants] needs to be its own creature. Landfills, for example, strike me as being more uniquely local in impact than these power plants. I guess I say that primarily because of the air pollution and noise aspects, especially the NO_x emission and noise aspects and VOCs and so forth that you don't—those are problems that are more regional, statewide, interstate, in effect, not so much the noise but particularly the NO_x and also that I think there are some problems with SB-172 that have been alluded to earlier that the problem that Wadsworth has with Zion, for example, is not fully addressed I guess under SB-172. I guess all I am saying is that some aspects, something similar to that might well be suitable. I would just not like—I don't think we want to force our plant siting into a strictly SB-172 mold, to the extent I understand the SB-172 mold. Tr.1 at 901-902.

C. Information from State Government

1. Citizen Concerns as Perceived by IEPA

Director Skinner of IEPA provided extensive testimony about siting and local land use considerations, though noting that "[l]ocal units of government are in a far better position to evaluate the effectiveness of their existing zoning requirements." IEPA Grp. Exh. 1, Skinner at 8. He emphasized that a facility other than a new pollution control facility is subject to local zoning requirements, regardless of whether IEPA issues a permit to the facility. Tr.1 at 63.

Director Skinner testified that citizens have two basic objections to using only local zoning laws to site peaker plants. The first is that "most local government[s] are not sophisticated enough to undertake the necessary analysis with regard to these peaker facilities." Tr.1 at 68. The second objection is that if a peaker plant is "located on the edge of town, residents of the adjacent community do not have a meaningful opportunity to impact its neighboring community's land use decision." Tr.1 at 68. Mr. Romaine of IEPA testified that "members of the public also routinely express concerns about the impacts of proposed plants on property values, local water wells and the character of the area in which the plant is proposed to be located." Tr.1 at 105; see also Tr.1 at 135 (Zak).

Regarding the alleged lack of sophistication of local governments to address peaker plant siting, Director Skinner stated that "[l]ocal governments address the aesthetic issues, traffic issues, property value issues every day. To a large extent, that is what local governments are there for . . . ." Tr.1 at 68. He testified that IEPA addresses the technical issue of air analyses: "while local communities can undertake air analysis separate from the air analysis that we undertake if they so desire and can impose, in fact, through their local process, stricter requirements, if they so desire, it is not necessary that they do that." Tr.1 at 68.

However, Director Skinner acknowledged that concerns over the inability of neighboring communities to impact a host government's siting decision are "a legitimate issue and is something that the Board and perhaps the [G]eneral [A]ssembly ought to consider." Tr.1 at 69. While stating the "the siting aspects of this deserves some scrutiny," Director Skinner testified that he does not know if the "full blown SB172 requirements ought to be applied in the peaker context." Tr.1 at 202. He "can see an argument" as to why:

> [S]ome subset of those ought to be applied, if only the subset that prescribes certain procedures with regard to consideration of these applications because those procedures provide resources to the local hearing panel that allow them to deal with some of these issues, to hire the lawyers and the consultants that they might find necessary to address the concerns that are being raised by the constituents. Tr.1 at 202-203.

In evaluating whether IEPA sufficiently regulates peaker plants, Director Skinner noted that "if gaps exist[] right now, they largely exist on the sitings or local control side of this issue. Property values, noise, esthetics, those are to a large extent the complaints that . . . we're hearing that ring truer, if you will, than some of the complaints about emissions." Tr.1 at 201.

2. IEPA Authority Over Peaker Plants

Director Skinner addressed the scope of IEPA's ability to regulate peaker plants:

> [W]e frequently receive comments regarding the potential effect of peakers on things like aesthetics, appearance, traffic, property values, things that the folks in the local community would be expected to be concerned about. I will state first that [IEPA] is not authorized by state law to consider these types of issues in its review of permit applications. These types of land use issues are left to local units of government. And while we attach conditions occasionally to these air permits, we don't have the latitude to impose conditions that are unrelated to air quality. Tr.1 at 61-62; see also IEPA Grp. Exh. 2 , No. 20 at 2.

Mr Romaine stated that IEPA's "authority under state law is narrowly limited to consideration of environmental issues and in the case of construction permits for emission sources, matters related to emissions and air quality." Tr.1 at 105. Director Skinner emphasized that IEPA's air permit to construct a peaker plant does not supercede local zoning." Tr.1 at 63; see also IEPA Grp. Exh. 2, No. 20 at 2.

3. Cross-Jurisdictional Authority

State Representative Cowlishaw offered these thoughts:

> [W]hile respecting the zoning jurisdictions of municipalities, which I believe it is our obligation, still county governments perhaps should also be involved in final approvals for proposed sites of peaker power plants at least in the northeastern Illinois area, but even beyond that, this is a regional matter and I think that it would be very helpful to involve the Northeastern Illinois Planning Commission or what's commonly called NIPC. Tr.1 at 387.

State Senator Link testified:

> Since the effect of peaker power plants, air quality, water supply, natural gas supply, noise, taxes, are felt regionally, not just locally. I believe we must take a regional approach in regulating the peakers. We cannot have patchwork local decisions. The state needs to step up in a responsibility to guide this process. Tr.1 at 752-753.

4. SB 172

Director Skinner stated that, before SB 172, "the comments of local authorities in Illinois were not binding on the state and specifically were not binding [on IEPA] in the siting and permitting of sanitary landfills and other pollution control facilities such as transfer stations and incinerators." Tr.1 at 65.

Director Skinner testified that "SB 172 dramatically changed that scenario, or dramatically changed the permit process by requiring the county or municipalities in which the facility was located to conduct hearings, specifically on the proposed project in order to determine whether the facility met certain enumerated statutory criteria." Tr.1 at 65. He continued: "The end result of placing 172 siting, local siting's approval in their permitting issuing process was to place local government in the role of making all relevant decisions regarding location, suitability for a proposed facility either to the local siting approval process or through [traditional] zoning ordinances." Tr.1 66-67. IEPA cannot issue a permit to develop or construct until the criteria are met and local siting is obtained. Tr.1 at 65. He added that IEPA has "no direct involvement in the actual SB 172 hearing process," and that IEPA's role is "essentially limited to making sure that the permit applicant submits [proof that] . . . local siting [approval] was obtained pursuant to SB 172." Tr.1 at 63-64.

Director Skinner explained that Section 39.2 of the Act provides that local authorities are to consider "nine criteria in reviewing applications for siting approval." Tr.1 at 66. He noted that Section 39.2(g) "provides siting approval procedures, criteria and appeal procedures to be followed." Tr.1 at 66. Director Skinner stated that "peakers are currently not subject to SB172." Tr.1 at 67. He explained that a natural gas-fired peaker plant does not meet the definition of a "pollution control facility" and that natural gas used in "the peaker fashion" does not meet the definition of "waste." Tr.1 at 67.

Director Skinner also testified that the inapplicability of SB172 does not "relieve the peaker applicant from going to the local community in order to assure that it is compliant with all necessary zoning approvals as were necessary in obtaining either a special use permit or some other sort of zoning changes from the local government." Tr.1 at 67.

5. Noise

Mr. Zak of IEPA stated that siting issues are relevant to potential problems with peaker plant noise. Mr. Zak testified that "setbacks are an important concept in addressing peaker noise." Tr.1 at 134. Mr. Zak suggested that one method of addressing peaker noise is employing "setbacks, land buffers, consisting of land owned or controlled by the peaker plant." Tr.1 at 134. The amount of land necessary to remedy problems with peaker plant noise would "depend upon what level of noise abatement was included in the initial design of the peaker plant." Tr.1 at 135. As with any other type of industrial noise source, "if peakers

exceed the noise regulations, they could significantly affect negatively on property values." Tr.1 at 135. This is because noise at these levels would likely "be noticeable by prospective purchasers of property and any potential commercial investors." Tr.1 at 135.

6. Water Quantity

Dr. Winstanley of DNR noted that use of groundwater is not a local issue because "groundwater typically is found in discrete aquifers that transcends political jurisdictions. They cut across municipalities, counties and even states." Tr.1 at 157. Therefore, "plumbing management by individual communities will not solve problems in the long term," rather Dr. Winstanley suggests we need to take an "aquifer-wide perspective." Tr.1 at 157. Dr. Winstanley noted that comprehensive planning and management is necessary. Tr.1 at 159.

7. Role of the ICC

Executive Director Fisher of the ICC explained the ICC's role in siting power plants:

> For decades, electric utilities would come to the Commission requesting the authority to construct new generating plants in specific sites. Utilities seeking a certificate of public convenience and necessity for a new plant were required to demonstrate an economic need for the additional generating capacity. If they did, the ICC granted such authority, including, if required, eminent domain authority. Non-utility generators did not have to request such authority, either before or after the 1997 Illinois deregulation law: provisions of Illinois law addressing siting of electric generating facilities have not changed. What changed is that electric utilities could no longer be ordered to construct new generating plants if they did not request such an order. Also, as noted earlier, and probably more significantly, the FERC's 1995 order [FERC's Order 888 requiring electric utilities to provide open access to their transmission system to any entity interested in moving or "wheeling" electricity from one part of the grid to another for wholesale purposes] opened the interstate transmission system to wider access and made non-utility generation economically attractive, especially over short distances. Thus, the builders of new generating plants to meet demand in Illinois are not primarily utilities. ICC Exh. 1 at 5.

8. Siting Approaches in Other States

Executive Director Fisher of the ICC explained that some states have taken approaches to siting similar to that of Illinois. However, others have established state siting committees either as part of or separate from state public utility commissions. Unlike Illinois, California, New York, and Ohio, for example, use state siting committees to determine where peaker plants should be sited. Texas, on the other hand, has a system similar to the current system in Illinois: local zoning boards control siting, and the state environmental agency controls

permitting. PC 8 at 3. Wisconsin requires traditional certificates of convenience and necessity for peaker plants. Kentucky 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. PC 8 at 3.

D. Information from Industry

Mr. Erjavec of Indeck argued that there would not be a significant impact on residential areas regarding water use, noise, or air pollution. With respect to air pollution, Mr. Erjavec stated:

> [T]hat's the air concentrations that are generated in your home when you're cooking. Again, compare that to the ambient concentration that would be experienced or would, on the worst case level, be generated by the power plants; again, far below anything that we experienced from that. Another comparison that we've tried to make is to the impact that you would receive from a home or a school. Now, let me be very clear about this, we're not trying to imply that a home or a school emits on a pounds-per-year basis anywhere near what a peaking plant does. That's just not true. However, what we need to be concerned about is what people experience. If you were in your backyard, what would you breathe? If you were walking down the street, what would you breathe? These are typical numbers. Again, the power plant number we've seen, 0.028 micrograms per cubic meter, in the wintertime, the ambient concentration around the house outside in your yard is about .01. Tr.1 at 237-238.

With respect to noise, Mr. Erjavec testified:

> Board members from McHenry County were taken to a tour of a peaker plant operated by the local utility in Springfield, and, you know, there's a quote, they didn't hear anything. We've also talked to homeowners living near peaker plants that just do not hear them. Mrs. Carver here that I discussed—I had a few conversations with the lady. She operates a wildlife preserve between the plant that's down there and her home, and the deer come all the time and there's not been any impact, you know, from a noise issue in terms of deterring them from coming either. Tr.1 at 241-242.

Mr. Erjavek also stated that "there are other industries out there that have significantly larger impacts than a peaker plant would have in its own backyard, and this is from 45 miles away." Tr.1 at 250-251.

Mr. Erjavec discussed the issue of siting and noted:

> [W]hen people look out and they say, well, gee, a gas line has come very close to an electric line. That's where a lot of peaking plants are being sited. There's been suggestions that these plants be sited miles away from the gas and electric and that we run lines to them. Yes, it's technically feasible. I think the amount of disruption to be created by that is a lot more than by siting them nearby. We've just discussed the impacts, and they're minimal. It doesn't always make sense. Yes, it can be done. Tr.1 at 242-243.

Mr. Erjavec compared siting peaker plants to siting rail stations:

> [A] rail station was being built. It was built adjacent to a parking lot and a rail line. Now, are there impacts from that rail station? Probably. There's traffic. There's noise. There's cars. But at the same time, you've got the infrastructure there, and we would agree with the developer that that makes sense. Now, if I was to turn around and suggest that he put the rail station three miles away and run a rail spurt, he'd probably think I was nuts, and I think that the same thing can be said in terms of siting peaker plants. Tr.1 at 243-244.

In discussing whether there should be additional siting regulations, Mr. Erjavec noted that "well, we've already taken a look through peaking plant impacts. For many measure, the impacts are minimal. If you review a lot of local zoning codes, most zoning codes already allow for somewhere in the code for uses that have greater impacts, whether it be noise, air pollution, water use, what have you. Really, right now, they are handling that end of the things." Tr.1 at 252-253.

Mr. Erjavec testified about how peaker plants are sited in other states:

> [O]ther states have a coordinated approach. All issues are directed through a single siting agency. It should be noted that in most of those states the siting Board then will overrule any local zoning too. It tends to make it a one-handed process instead of a process that plays off between two different entities, and it works more efficiently for them. Tr.1 at 254-255.

Ms. Greenberg of MWIPS stated:

> The developer typically works with the community to address the concerns that are raised with respect to noise, and I think the statement we heard yesterday that there have been no noise complaints to the EPA about peakers is really very telling because what it says to me is that, in fact, these developers have succeeded in addressing the concerns or we certainly would have complaints because people tend to be vocal about their concerns with respect to these plants. I wanted to just share with you one anecdote that I did hear from a member when a group of local officials was visiting one of the peaker plants.

> The officials came to the plant and started their tour, and at one point, somebody asked when is this plant going to start up so we can hear it, and the answer was, it's been operating since you arrived here. Tr.1 at 329-330.

Ms. Greenberg attributed electric industry problems in California to siting and stated:

> Illinois should be very cautious about imposing stricter than necessary siting requirements in order to avoid the very situation that we're seeing in California. We don't want to create a situation that would risk a power shortage and the accompanying increase in the cost of wholesale power as well as possible reliability problems. California has had great delay in plant siting and is now seeking ways to streamline and expedite the process. We've heard from the experts in the EPA that the current siting process addresses the various needs and requirements for these plants, and our recommendation is that anything stricter would be detrimental and would have no further value. Tr.1 at 330-331.

Ms. Greenberg noted that other states use different siting processes and stated:

> [T]here are the state permitting process and a local process, and a smaller number of states have adopted a process for siting and permitting the peaker facility or other generating facilities that's administered in one stop in one place or a combined hearing at the state level. Oftentimes, those proceedings are a carryover from the permitting of utility-owned generation, and in Illinois that's not the case. California is an example of a state that's currently experiencing the consequences of a very bureaucratic and time-consuming process for siting plants. In California, a plant of 50 [MW] or more must be approved by the California Energy Commission. Many proposals there have taken more than a year to get through this process, and California has not been able to add the generation that it needs at a rate which reflects its growth. Tr.1 332-333.

Ms. Greenberg asserted that peaker plants typically only want to site where they are welcomed and once they are there they do not adversely affect the community:

> In conclusion, you need to keep in mind that an emergent plant developer does not typically wish to build and operate a plant where the plant is not going to be accepted by the community. They look for a place that's appropriate, appropriate both in terms of the electric transmission and the gas supply and the community and work with the community to achieve community support and to be a good member of the community. Communities which welcome the peaker plants and other generating plants recognize the benefits and positive impacts of this development on their communities. These might include new jobs, increased tax base, and possible attraction of additional economic development. There's also very little strain on the local resources when these plants are sited. They

> don't use schools, for example. They give a lot to the community and take little. A community that accepts the peaker plant understands that a peaker has these relatively few impacts and that it provides the necessary service to the community and benefits the public welfare by contributing to the electric supply of the community. Tr.1 at 333-334.

Mr. Smith of ISAWWA stated that his organization "believes that peaker plant siting requirements should encourage the siting of these plants near a sanitary water treatment plant, if practical, so as to utilize the discharge from the sanitary water treatment plant known as gray water or cooling water." Tr.1 23-24.

ComEd described the enhanced siting role that local government has in the restructured electric industry:

> Before restructuring, * * * [l]ocal input was limited, because a state Certificate of Public Convenience and Necessity generally preempts local ordinances such as zoning, and regional public utility power plants and transmission lines are considered matters of statewide, not local interest.
>
> In the restructured industry, in which generation is built by private companies based on market factors . . ., the [ICC] does not examine the need for the project. * * * However, the local counties and municipalities now have a significant role to play, using zoning and other land use regulation to direct new plants to suitable locations. ComEd Exh. 1 at 8-9.

ComEd claimed that the current system of siting new peaker plants is "clearly working":

> [U]nlike a state-regulated public utility, a private developer must fit its new plant into the zoning and siting scheme of the neighborhood it chooses. Municipalities are well aware of how to use their zoning power and have substantial discretion to grant or deny zoning changes or variances. For this reason, some plants have obtained approval, while numerous other plants have been turned down. (The latest example: since the first hearings before the Board in this docket, the Board of Trustees of the Village of Libertyville rejected a zoning request for a new peaking plant.) So, the current situation does not demand an overhaul of the siting mechanism. Certainly, a time-consuming, expensive, bureaucratic process would discourage independent power from locating in Illinois. PC 164 at 7.

PG&E stated that a siting process like SB 172 "could have benefits" but "could also pose significant costs and delays that could threaten reliability." PC 170 at 3. PG&E stated that in most states with:

> [C]omprehensive power facility siting processes, the decisions of the state run boards overrule local jurisdictional authority. This is the case in Wisconsin, New York, Massachusetts, Connecticut, California, and Florida, among others. This type of process has cause[d] delays in facilities siting in a number of these states, with delays in California being the most significant. PC 170 at 3.

PG&E stated that siting boards offer power plant developers a "venue in which local concerns can be balanced against other issues. In some cases, siting boards decide to certify a project over the objections of local citizens, deeming a proposed site the best alternative." PG&E added that, "[f]rom the perspective of home political authorities and citizens, . . . such boards have the ability to run roughshod over local preferences." PC 170 at 3.

PG&E made a recommendation:

> A process could be adopted to allow individuals or organizations with standing in a local proceeding to appeal to a state run board for assistance. This could occur if local authorities lack adequate resources to review project proposals, or if citizens or developers feel that a local process has produced an inappropriate result. The board could promulgate siting criteria in advance that would be applied to cases brought before the board. We believe the [Board] would be the appropriate agency in which to locate such authority. PC 170 at 3.

E. Information from Local Government

Mr. Shay, Senior Planner for Will County, stated that "I can tell you how land use goes and that is smaller jurisdictions have the authority—or not the authority, but have a clear and legal involvement in the decision-making of larger jurisdictions, but it does not go the other way." Tr.1 at 727. He continued:

> To create an example for that, a municipality can do as it pleases. When the county hears the petition near that municipality, then the municipality has a direct and active role in decision-making. In fact, municipality or a township can legally challenge certain decisions made by the county—the county and planning zoning commission and Will County Board and force a super majority vote of the County Board to affect a decision. So smaller localities could have a large impact on county-wide decision-making, but it's only one way. Obviously, we would prefer to be—have it both ways, but that's up to the legislatures, I guess. Tr.1 at 727.

Mr. Shay testified:

> We also face the additional problem that we're only in the unincorporated area. So if we regulate these facilities restrictively, they will do what many of them

> have already done and go to municipalities that feel that they have something to gain by the placement of these facilities regardless of what they are and that is why we feel action on part of the state or the federal government is required so that we can't simply hop jurisdictions or play an annexation war or play two municipalities off of each other for a lower level of regulation, which is exactly what is happening in placement of these facilities. Tr.1. at 712.

Mr. Hoss of the DuPage County Department of Development and Environmental Concerns testified:

> DuPage County is non-homerule county and as such is given zoning authority by the state of Illinois to regulate and restrict the location and use of structures, buildings and land pursuant to state statute. The authority from the state allows the county to develop rules and regulations consistent with the powers granted by the state of Illinois that supplement rather than supersede that authority. The zoning authority of DuPage County is limited to the unincorporated areas of DuPage County only. * * * It's important to note that DuPage County has no jurisdiction over the local municipal land use controls and development processes nor can the county intercede in local municipal development processes. There have been issues currently with respect to siting of peaker plants where some neighboring citizens felt that the county had some jurisdiction over municipal processes and we don't. We only have jurisdiction over the unincorporated areas of DuPage county. Tr.1 at 393-394.

Ms. Carter, a member of the Lake County Board, testified that aquifers do not end at municipal or political boundaries. She stated that the water consumed in one village not only limits the supply of its immediate neighbors, but impacts the supply of more distant villages, commercial wells, and deep community wells that draw from the same aquifer. Tr.1 at 796.

A number of local and State officials, including State Representative Cowlishaw, expressed concern that residents and officials in neighboring municipalities and surrounding counties have no voice in a given municipality's zoning approval process for a peaker plant, despite the potential cross-boundary environmental impacts of peaker plants. They also testified that potential cross-jurisdictional environmental impacts from individual or multiple peaker plants, such as from air emissions, noise emissions, and water use, cannot be addressed effectively by local government.

Mayor Lund of Warrenville testified that "all zoning authority is local and that's, of course, one of the reasons Warrenville does not have standing in the consideration of a peaker plant in another community." Tr.1 at 421. Mayor Lund explained why her constituents are concerned:

> Warrenville citizens live just on the other side of the railroad track and just the

> other side of the railroad track is Aurora where a peaker power plant has been sited, and because the prevailing winds blow this way, we are obviously in the path of whatever might from come that direction. Tr.1 at 389.

Mr. LaBelle, Chairman of the Lake County Board, stated that the regulations and the permitting process need to be comprehensive and cohesive. He stated that a single agency must be responsible for planning, licensing, and permitting peaker plants. Tr.1 at 781-782. Mr. LaBelle testified:

> [A]t a previous hearing, EPA director Tom Skinner indicated that IEPA rules and permitting did not supersede local zoning and land use control. However, the Lake County State's Attorney advises us that our options are severely limited in this area. There are 52 incorporated municipalities in Lake County. Each municipality has the authority to create its own zoning regulations and can approve zoning for a power plant without any consideration of the county, other municipalities or regional impacts. While there is a system of local control, there is no provision for impacts that cross boundaries. If any of Lake County's 525 municipalities chooses to allow a peaker plant to be built within their borders or agrees to annex unincorporated land, neither the county nor any other municipality has a voice in the matter. Yet the environmental impacts of peaker plants clearly extend beyond geographic boundaries. Air pollution can extend for miles. The high volume of groundwater usage can lessen the supply for any other entity tapping the same aquifer. Illinois counties and neighboring municipalities have no ability to participate in addressing these externalities. Tr.1 at 783-784.

Ms. Cole of the Lake County Board stated:

> [T]he environmental effects of peaker plants do not recognize political boundaries. The locations for these proposed facilities are oftentimes situated at the border of another local government. In many cases those most affected do not live within the political jurisdiction where the peaker is proposed, and in some cases are not allowed a voice in the proceeding, even though they will be most affected. Tr.1 at 789-790 ; see also Tr.1 at 516, 518 (Zingle), 475-476 (Goff).

Ms. Cole gave an example:

> As you know, the village of Libertyville has held extensive public hearings on the construction of a proposed peaker plant by Indeck Corporation. The site for the proposed facility is approximately 2 miles from this room. That location is at the extreme northwestern edge of Libertyville. If the facility is ultimately approved and constructed, the properties most affected by this facility would be

> properties located in the village of Grayslake or in portions of unincorporated Lake County. * * * During recent proceedings, nonresidents were not provided an opportunity to testify, even though they would be directly impacted by construction of the proposed facility. Tr.1 at 791.

Mayor Lund also noted that "[l]ocal governments have not had adequate time to respond to the zoning implications of peaker plant constructions." Tr.1 at 389. Mr. Hoss, Zoning Manager for the DuPage County Department of Development and Environmental Concerns, testified about the status of peaker plants in the local zoning ordinances:

> One of the main recommendations that we are looking into is better definition in our own zoning ordinances with respect to peaker plants and similar type industry. Currently, we have a definition of a public utility and public utility is currently exempt from local DuPage County zoning ordinances. They enjoy special exemption because they are a public utility. It is our understanding from all the research and the information gleaned from these various areas that the peaker plant industry is not considered a public utility and doesn't require the same exemptions to the county zoning ordinances, therefore, we're looking at straightening out public utilities from private utilities. * * * [A] peaker plant would be considered a private utility per our ordinances. As such, that facility would be required, in terms of siting, to be located in either l-1 or l-2 industrial zoning district in the county and only after approval of a special use by the DuPage County Board. Tr.1 at 397.

Mayor Lund testified that "[r]egional impacts and the accumulated multiple construction effects related to airborne pollution, water supply and disposal, esthetics, noise, property values and even airport safety have not been adequately reviewed and measured." Tr.1 at 389.

Regarding SB 172, Mr. Hoss stated:

> One of the concerns I think that we have of going through the pollution control siting process is that the siting process is very specific to the things that the county looks at, and some of those specific things don't necessarily deal with some of the fundamental zoning things that I was talking about in our zoning ordinance, so in a sense, if we were to go through that pollution control siting process, there might be the possibility that we ultimately might lose some local control at the zoning level. For instance, it's my understanding that once a facility is sited, it is actually taken out of local zoning control and, therefore, issues like noise could not be controlled by local zoning authority, and, therefore, I don't think it would be wise to go through the siting process with these facilities because, as I said, I think we lose local control. Tr.1 at 409.

Mr. Shay discussed the use of land buffers around peaker plants:

> It was intended so that if a peaker facility wanted to ameliorate themselves from the surrounding area because Will County is largely rural, they could actually purchase the land that's surrounding them and that would move any potential residence or conflicts under their umbrella of control. So we gave them the option to purchase that land and basically eliminate the problems presented by the radius. So we were looking for ways to make it so they could actually build a facility, but do it in sort of a responsible way. Tr.1 at 718.

Dr. Winstanley's concerns about water use were echoed by numerous local and State government officials and agency representatives, including State Senator Link, Mr. Kucera, an attorney with Chapman & Cutler appearing on behalf of the Lake County Public Water District, Mr. Shay, Senior Planner for Will County, and Ms. Carter of the Lake County Board. Tr.1 at 709 (Shay), 752 (Link), 765 (Kucera), 793 (Carter). For example, Ms. Carter testified about cross-jurisdictional impacts on water use:

> In the case of the Island Lake [peaker plant] proposal, adjacent villages would have realized significant financial impacts. Nowhere in the permit application process submitted by the applicant were those impacts acknowledged or addressed. One neighboring village, the village of Wauconda, would have incurred expenses close to $1 million to reset the pumping well head in two municipal wells. The taxpayers of this neighboring village, not the power company, would have borne this expense, $1 million. This village had no opportunity to voice its concern during the application review. Surely, this demonstrates why a regional application approach must be in place, must be put into practice. Tr.1 at 796-797.

Mr. Shay testified about what the respective roles of the State and local government should be in approving peaker plants:

> I would reserve for [local government] the site design, the general location, what zoning districts it's allowed in, that sort of thing. I would treat it like a normal land use in the sense of local authority. When you place how far it's going to be from a property line, how far does it have to be from other uses, how should the site look and appear? * * * [A]re construction vehicles from that city road appropriate or safe? Keeping in the standard land use format, but I think the [State should] adopt[] things that we cannot exercise full control over. Right now, most immediately apparent one of those is water use.
>
> * * *

> Pollution and environment issues do not obey jurisdictional boundaries. So I guess I'm asking the state to take additional authority in cross-jurisdictional issues, which is what they have shown a pattern of doing because it's efficient for the community as a whole to do so. Tr.1 at 725-726.

Mr. Shay testified that peaker plant developers search for the local jurisdiction with the least stringent regulations:

> [I]f [Will County] regulate[s] these facilities restrictively [in the unincorporated area], they will do what many of them have already done and go to municipalities that feel that they have something to gain by the placement of these facilities regardless of what they are and that is why we feel action on part of the state or the federal government is required so that we can't simply hop jurisdictions or play an annexation war or play two municipalities off of each other for a lower level of regulation, which is exactly what is happening in placement of these facilities. Tr.1 at 712.

Mr. Shay further testified that Will County is concerned that peaker plants are not being "distributed equitably throughout the [electric power] grid." Tr.1 at 708. He explained:

> We're concerned that Will County has a lower [income] level than any of the surrounding counties and it has a number of communities which have been economically troubled and we're concerned about the equitable locations. We're concerned that we would become a concentration by these facilities over time. Tr.1 at 731.

Mr. Shay stated that an inequitable concentration of peaker plants is a concern because of the additional use of Will County's infrastructure without an adequate tax revenue in return, and because of air and water issues. Tr.1 at 731-732.[21]

X. MORATORIUM

In this part of the Report, the Board summarizes information from the record on imposing a moratorium on peaker plants. The Board summarizes information from citizens first, then information from State government, and lastly information from local government.

A. Information from Citizens

Ms. Toni Larsen is a resident of Zion. She asked for "a statewide moratorium on

[21] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

licensing peaker plants until more research can be done regarding the impact of air pollution, noise pollution, zoning and groundwater supply and then I am asking that you act as a proactive preventive agent in protecting our environment." Tr.1 at 911.

Ms. Voitik of CAPPRA urged the Board to impose a moratorium: "I emphatically request a moratorium on all peaker plant activity with all new plants and plants with pending permits not to be grandfathered in." Tr.1 at 487; see also Tr.1 at 493 (Gravenhorst), 522, 525 (Zingle), 572 (Goff), 646 (Stark), 921 (Geiselhart), 935 (Snider), 945 (Owen); Tr.2 at 185 (Zingle).

Ms. Zingle argued that there is precedent for a moratorium:

> McHenry has a moratorium against the peakers. Waukegan just did a moratorium against the peakers. Lake County when we were doing our unified development ordinance this spring stopped all building permits and nobody sued us. Everybody understood we need to rework the system. The process is starting to catch up to the power companies too. Not only did Libertyville opponents spend money and time, so did Indeck, only to be turned down. And since Indeck's proposal was denied, they're now claiming that they were held to an unbearable standard. There's a headline, I left it over in the other book, the power company is stunned by Waukegan's decision to do a moratorium. The power companies are going to be looking for relief soon too as the fights escalate. Tr.1 at 523; see also Tr.1 at 532 (Zingle).

In response to a question about the Board's authority to impose a moratorium, Ms. Zingle stated: "We haven't found anything that says [the Board] can't." Tr.1 at 531.

Ms. DeJovine of Bartlett CARE stated: "We ask—I especially ask for a moratorium on these until everybody could come up on that learning curve and learn the right questions to ask and not drain the resources of our community." Tr.1 at 544.

Mr. Nesvig, a resident of Evanston, stated that he "would like to see a moratorium on issuing permits and construction of peaker power plants until [IEPA] and the [Board] can initiate regulations that determine what electric power generating capacity is actually needed in Illinois for its citizens and commerce as a whole and take suitable action . . . ." Tr.1 at 703.

Mr. Silva of NRDC suggested that a more-inclusive siting process would be more appropriate than a moratorium:

> [I]t's kind of football we have going on between, you know, the regulative and state agencies over whether or not they can stop this, whether or not they have the authority to make—issue a moratorium or not. I think it would be more useful actually seeing where you can actually collaborate and add some

> certainty, because the other thing is that many of these projects that you're looking at are worthwhile and will add a significant reliability to the system. Tr. 2 at 104.

B. Information from State Government

Director Skinner testified that IEPA cannot impose a moratorium:

> [T]here have been calls from various folks for [IEPA] and/or the Governor to impose a moratorium on issuance of peaker permits. We've looked at that issue extensively and concluded that we don't have the authority to do that. By operation of law, these permits issue after 180 days. So, we've had it suggested to us, well, just don't act on it. That doesn't do any good. I mean, if we don't act on it, the permit is granted. That actually is counterproductive compared to what we want to do. So we're forced to proceed. Similarly, the Governor has concluded that he doesn't have the legal authority to impose a moratorium by executive order. It literally requires legislative action. Tr.1 at 196.

An IEPA exhibit similarly stated that IEPA "does not have the legal authority to impose a moratorium on the issuance of permits to peaker plants. * * * [IEPA] is required to process the permit application for a new plant within 180 days." IEPA Grp. Exh. 2, No. 20 at 2.

State Senator Link testified:

> As many of you know, earlier this summer, I led a bipartisan group of suburban legislators in calling for a moratorium on permitting of peaker power plants. We made this call after receiving numerous questions from environmental groups, local residents and numerous elected officials. There remain too many unanswered questions regarding these peaker use power generators, and I believe that the public deserves to receive better information before we issue any additional permits. Tr.1 at 752; see also Tr.1 at 756 (Garrett), 757 (Ball on behalf of Gash).

State Representative Cowlishaw urged the Board to impose a moratorium: "I would urge you, the members of the . . . Board, to consider the possibility of imposing a moratorium on construction of peaker power plants until legislative action can be taken during the spring session of the year 2001." Tr.1 at 387.

C. Information from Local Government

Mayor Vivien Lund proposed a moratorium: "In order to protect the state of Illinois, a moratorium should be established to prevent further construction or approval for construction until these items are appropriately addressed. Newly constructed facilities should not be

grandfathered." Tr.1 at 390.

Mr. LaBelle of the Lake County Board stated: "We feel that a moratorium on permits is necessary in order to allow the state to responsibly plan for the oversight of these facilities and form comprehensive cohesive guidelines to the licensing of these operations." Tr.1 at 785; see also Tr.1 at 786 (Cole).

Ms. Carter, a member of the Lake County Board, testified: "Place a moratorium on all pending and new applications for power or peaker plants until such time as all agencies have collaboratively worked together reducing and/or eliminating the negative impact to our quality of life." Tr.1 at 801.[22]

XI. HEALTH AND SAFETY

In this part of the Report, the Board summarizes record information on health and safety concerns over peaker plants. First, the Board summarizes information on health and safety concerns generally. The Board then summarizes information concerns that peaker plants have raised regarding aviation, vibrations, and decommissioning.

A. Health and Safety Concerns Generally

1. Concerns of Citizens

Citizens expressed concern about numerous aspects of the safety of peaker plants. These concerns ranged from the safety of the physical structure, to potential for chemical explosion, to general health concerns.

Mr. Goff, a resident of Warrenville, expressed concern regarding the structural safety of peaker plants: "if you go into a situation where you're going to build a high-rise and you're up against the same analogy that you might be looking on city government to—there might be a new fire code reg or something like this and let's build this building as quick as we can before they find out about it or before they, quote, 'put the rules to ink,' is that a safe building? Does this make common sense? I mean I wouldn't want to walk into it." Tr.1 at 472.

Ms. Zingle expressed concern regarding the potential for an accident at a peaker plant: "I've been doing this with some intensity for close to a year now and I just found out that the turbines and the glazer are encased in hydrogen. I don't know what that means. Do they have hydrogen tanks on the property? Do we need to be worried about explosion? The companies

[22] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

will deny that they have wastewater." Tr.1 at 529; see also Tr.1 at 647 (Stark), 543 (DeJovine), 561-562 (Goebel).

Ms. Cathy Capezio expressed a more general concern about safety: "IEPA came back to us and said that they cannot guarantee that these are safe. They don't know if they're safe. That is written in their response to the public. I urge you, you need to prove that it is safe." Tr.1 at 480; see also Tr.1 at 482 (Capezio). Ms. Voitik added: "build the plants in safer areas away from ozone and environmentally sensitive areas. This includes residential areas where the health of citizens is at risk." Tr.1 at 503; see also Tr.1 at 493 (Gravenhorst), 647 (Stark), 984 (Jacobs), 524. (Zingle); CAPPRA Exh.1 at 2.

Ms. Geiselhart of CCLC stated:

> New research on environmental particulates provide—and I am quoting here, on the environmental and health impact of particulates that were sufficiently compelling that the federal EPA has proposed regulations in 2.5 that reduce the allowed levels of particulate emissions and apply these limits to substantially smaller particulants and that are covered by [PM 10] and right here I am quoting from a paper that was written by Richard Domanik, Ph.D. He has his Ph.D. in chemistry. He has extensively researched recent studies regarding environmental particulates, and I will turn over to you his letter, which was presented at an IEPA hearing in April of 2000. And it documents well research on both health and environmental effects. I am not sure that it has been shared with you prior to this time. And in his document he talks about the effects of creating acid rain. He talks about health effects. He talks about meteorological and climatological effects among other things. Many residents of nearby communities and users of ports facility must suffer the effects of increased pollution in the form of more asthma attacks, decreased lung function and other serious impairments since peaker plants tend to operate, again, as I said, during these periods of peak summer demand. Tr.1 at 913-915.

Mr. Wilson testified about "charged particles":

> There is a physicist over in England at Bristol University who has been working on a theory about electromotive force, electromagnetic radiation and the harm it is causing the people and causing cancer. And no one has been able to put a handle on this and what maybe is the cause of this particular problem. Well, what they are coming up with—and they are coming up with some pretty good proof—is that in areas where you have high pollution, and as high pollution passes through the power lines, the particles become charged, and those charged particles remain charged for up to five miles away from those lines. That means if you have people living in that area they will be breathing that atmosphere of the charged particles. And what they are stating is that those particles will stick

> in your lungs at a rate 100 times greater than it normally would if they were not charged. Now, a simple [experiment] that a person can do to get an idea of what is happening around the power lines is this. If you take a four-foot long fluorescent bulb and you just hold it in your hands and you walk underneath a power line at nighttime, it will light up. Now, you can be 50 feet from that line, but that fluorescent bulb lights up. Does that tell you that there is an energy field around those lines? So now take that energy field and those distribution lines and add in a power plant throwing out hundreds of tons of pollutants going right past those lines, and what happens to the people that are living right around that area? It is not a good situation. And to give—to give proof of this is that the National Institute of Environmental Health Sciences, the federal government, a medical body did research in this area also. And in 1998 they issued a statement, and they said that they believe that these lines are carcinogenic. And they said prudent avoidance of these lines is what should be done. Tr.1 at 975-976.

Mr. Urbaszewski of ALAMC and IEC testified about PM:

> Fine [PM] is composed of a number of tiny particles, both solid and liquid aerosol, that have diameter of less than two and a half microns. Inhalation of fine particles are associated with the following health impacts: Upper and lower respiratory infections, asthma attacks, development of chronic bronchitis and, most importantly, premature deaths. Due to these public health threats, USEPA established a fine particulate standard in 1997 based on the available medical evidence at that time. New studies done in subsequent years have validated the health impacts established in prior studies. Tr.1 at 112-113.

He added:

> Inhalation of fine particles are associated with the following health impacts: Upper and lower respiratory infections, asthma attacks, development of chronic bronchitis and, most importantly, premature deaths. Due to these public health threats, USEPA established a fine particulate standard in 1997 based on the available medical evidence at that time. New studies done in subsequent years have validated the health impacts established in prior studies. Tr.1 at 127.

2. Information from State Government

Director Skinner stated that "[i]t is [IEPA's] job to insure that there is a safe environment and that the state's citizens are being protected . . . ." Tr.1 at 176. Director Skinner testified that IEPA is "in the process of regularly reevaluating the standards that exist out there right now in order to make sure that we're adequately protecting human health and the environment and maintaining consistency with the national air quality standards." Tr.1 at 54. He concluded:

"Now, after a thorough analysis of computer runs and continuing that analysis and modeling, we do not believe the plants that have been proposed to date and permitted represent significant health or environmental threat." Tr.1 at 58. An IEPA "fact sheet" similarly noted that "the evaluations of new peaker power plants for which [IEPA] has received permit applications to date have indicated that the plants will not have a measurable impact on air quality. * * * [I]f a source does not have a measurable impact on air quality, there should not be a health impact." IEPA Grp. Exh. 1, No. 20 at 1.

Director Skinner stated, however, that:

> [A]s we gain additional experience with peakers, we will regularly re-evaluate whether the air requirements provide protection of health and environment, and be—are consistent with national air quality standards. If and when we find the existing requirements are lacking, we either administratively address the problem, if we have the legal authority to do so, or we will propose appropriate regulatory changes to the Board or legislative changes to the Illinois General Assembly. Tr.1 at 58.

State Senator Chris Lauzen asserted that "[w]e certainly are not against the power generation. We just want to be sure that as we generate this power that it is safe." Tr.1 at 383. He testified: "I think that our appeal is simple. If this is safe, prove it, but if it's not safe, then stop it." Tr.1 at 382. He continued:

> If it's not dangerous, if these plants are not dangerous, then I think that the folks who are responsible for making these decisions need to reconcile a couple of actions that all of us have read in the Naperville Sun, our local newspaper here, where it says that EPA officials do not believe plants represent a significant health or environmental threat; however, three paragraphs later it says that the director said in July that the EPA proposed to rule to reduce statewide [NO_x] from electrical generating facilities including peakers and the . . . Board is working on a rule which is expected to be completed at the end of the year. If there is no problem, then there would be no action it would seem to many of us who are watching as these decisions are being made on our behalf. Tr.1 at 382-283.

3. Information from Industry

According to Ms. Greenberg of MWIPS, "there's a strict set of regulations applicable to these plants, and the peakers do not pose a threat to air quality, to human health, or to the environment." Tr.1 at 327.

4. Information from Local Government

Mayor George Pradel of Naperville stated that "[w]e believe, as all of you do, that new generation should be environmentally sound and safely located." Tr.1 at 380.

B. Aviation Concerns

1. Concerns of Citizens

A number citizens raised concerns regarding flight safety in the vicinity of peaker plants. They were concerned about potential air turbulence for aircraft caused by peaker plant stacks emitting pollutants at very high velocities. Tr.1 at 447, 473, 964, 968. Mr. Goff, a commercial pilot residing in Warrenville, expressed concern about a peaker plant proposed to be built less than five miles from the DuPage County airport. He asserted that flying through high velocity emissions is not safe. Tr.1 at 474. Mr. Goff noted that the Federal Aviation Administration (FAA) requires any hazardous obstacles over 100 feet tall, such as buildings and towers, to be identified on flight maps. He urged the Board to ensure that peaker plants are also identified on flight charts to warn pilots flying in the vicinity of these plants. Tr.1 at 474.

Mr. Goff stated: "when you fly through a jet blast, there is substantial aerodynamic changes on the aircraft which you're going through this stuff and when you're flying through this kind of a velocity . . . . I don't think this is being looked at whatsoever." Tr.1 at 472-475 (Goff); see also Tr.1 at 486 (Voitik), 447-448 (Turnball), 518 (Zingle), 541 (DeJovine), 963 (Matijevich), 968-969 (Wilson).

Mr. Wilson stated that peaker plant stacks that emit gases at temperatures ranging from 1,000° F to 1,100° F, at a rate of couple of million cubic feet per minute, and velocity of 75 mile per hour, can be a very serious hazard for aircraft if the plant is located near a airport. Tr.1 at 968.

Mr. Silva of NRDC stated: "I've never heard of any aircraft actually suffering any harm from the flue gas exposure. * * * [T]hey actually do experience hitting and other downwash effects, but that's fairly unusual meteorology and not something that we've ever seen as a common or more difficult problem." Tr.2 at 79-80

2. Information from Industry

Mr. Jirik of CPI noted that "pilots using Midway Airport have been flying over our 250-foot tall boiler stacks for over 50 years and we have not heard of any difficulties and we have not heard of any complaints." Tr.1 at 635.

3. Information from Local Government

Mayor Lund of Warrenville stated that airport safety has not been adequately reviewed

or measured. Tr.1 at 390. Mr. Hoss, Zoning Manager for the DuPage County Department of Development and Environmental Concerns, testified that "[t]he county is not pursuing any additional studies with respect to the county airport at this time." Tr.1 at 412.

The DuPage County Board submitted an exhibit that addressed aviation concerns. According to the Versar report: "Concerns have been raised by the DuPage County Airport Authority, the Aircraft Owners and Pilots Association and others regarding the possible affect of peaker plant exhaust plumes on aircraft safety in the vicinity of airports." These concerns included "turbulence caused by large volumes of hot exhaust gasses that intercept landing or take off patterns," and "fogging, icing or visibility problems due to high water vapor content in peaker plant plumes." DuPage County Board Exh. 1 at 23.

4. Information from State Government

Mr. Roger Finnell is an engineer with the Division of Aeronautics, Bureau of Airport Engineering, Illinois Department of Transportation (IDOT). He stated:

> There are several issues associated with electrical generating facilities that have the potential for creating an aeronautical safety hazard. The main aviation concerns associated with peaker plant developments are as follows: Physical height of the structure—including construction equipment—penetrating critical airspace; emission of visible discharge obscuring pilot and/or controller vision within the airport environment; electromagnetic interference with aeronautical, navigational and communication radio signals; and finally, the exhaust plume's vertical velocity and its effect on aircraft structural integrity and aircraft controllability. The first three issues have been addressed by the department in our Airport Hazard Zoning Rules. Presently there are 56 airports which have airport hazard zoning enacted and enforced by the department. These rules effectively limit the height of structures around individual airports as well as address smoke emissions and electromagnetic interference. They can be adopted by the department for publicly-owned airports, but only at the request of the airport sponsor. Alternatives, publicly-owned airports may adopt their own hazard zoning rules that apply to hazards partially or totally within the public owner's territorial limits. IDOT has not been granted authority under Illinois statutes to enact airport hazard zoning for privately-owned open-to-the-public facilities. The only protection these airports have from structures encroaching on their airspace is local land use control. To date, we have not had a peaker plant proposal violate any airport hazard zoning surface nor create an adverse electromagnetic or visible plume concern. However, this does not preclude conflicts with future proposals. A concern to our office is the impact the vertical velocity of the plume has on flight safety. The majority of these plants are a gas turbine-fired—I'm sorry—gas turbine facilities which have relatively high exhaust velocities and temperatures. While the exit velocity of

> the plume dissipates rapidly upon leaving the stack, the buoyancy of the plume due to its heat still causes a significant vertical velocity several hundred feet above the point of discharge. The situation where this is an aeronautical issue is if the plant is within the traffic pattern to the airport. While pattern size is dependent on the speed and number of aircraft within the traffic pattern, the lateral dimensions of the pattern are usually within a mile of the airport. If a generating facility is within this area, it can result in arriving or departing aircraft passing only a few hundred feet over the smokestack of the facility. We have entered into discussions with [the FAA] and manufacturers of general aviation aircraft to find out what the effect of flight into an exhaust plume would have on aviation. To receive certification from the FAA, an airframe must be capable of withstanding a vertical gust of 30 feet per second. However, an aircraft in a landing or takeoff configuration at typical approach and departure speeds will likely lose lift and experience a momentary stall if subjected to a vertical gust of 15 feet per second or more. This is certainly an aviation safety concern. We would like to emphasize that this concern is only for generating facilities within the immediate airport environment. Once away from the airport, aircraft are bound by FAA regulations to be at least 500 feet above the highest obstacle within a horizontal distance of 2,000 feet over sparsely populated areas and 1,000 feet above the highest obstacle within a horizontal distance of 2,000 feet over congested areas. Aircraft operating outside the traffic pattern are also at higher operating speeds and therefore are not as prone to stalling should they encounter larger vertical gusts of more than 15 feet per second. IDOT is currently reviewing our rules and regulations to determine if further action is necessary to prevent discharges from interfering with air navigation and compromising aviation safety. During this time, we request that the . . . Board forward to IDOT any notification it receives of a generating facility being proposed within two miles of a public-use airport for further evaluation. This will afford us an opportunity to work with the proponent to mitigate any impact to aviation. Tr.2 at 15-18.

C. Vibration Concerns

1. Concerns of Citizens

Ms. Schmidt expressed concern that permits are being issued to peaker plants without assurance that "ground vibrations" from the plants are not jeopardizing the safety of the environment and its inhabitants. Tr.1 at 465. Ms. Schmidt continued:

> With numerous plants in close proximity to each other and to residential neighborhoods, this, too, poses a realistic concern. The previous concerns speak to air quality, but these same concerns can be raised for groundwater use, water treatment and release, vibrations near sensitive high tech areas such as Fermi

> Lab, which we are blessed to have in DuPage County and noise pollution. Tr.1 at 466.

2. Information from State Government

Mr. Zak discussed vibrations:

> [L]et's just say that we had some infrasonic sound that is associated with a peaker, and just throwing this out as a possibility, not that we've ever had this problem yet, but in infrasonics, what they will do is it will appear as vibration to most people and people will think that their house is vibrating, the ground is a vibrating and in effect, what it is is an air wave that is being generated by the [plant]. Tr.1 at 199.

3. Information from Local Government

The DuPage County Board's Versar report stated: " In order to protect the operational integrity of the turbines, an operator must maintain operations with very low levels of vibration." The report continued: "A vibration in a gas turbine would need to be corrected long before it reached the level where it was perceptible off-site." DuPage County Board Exh. 1 at 22.

D. Decommissioning Concerns

Mr. John Matijevich stated: "What are we going to do about when these plants and when somebody said they quit making money when they want to decommission?" Tr.1 at 967. Ms. Dorge of LCCA testified: "They are not adequate if we do not really know who is going to own and operate a facility and who will assure that it's properly decommissioned." Tr.2 at 140.

Mr. Kucera, on behalf of the Lake County Public Water District, testified:

> There is no apparent mechanism or regulatory oversight for the decommissioning of these plants, either prematurely or at the end of their service lives. This fact implies that the environmental burdens may arise from abandoned plants for which financial resources may not exist. For example, if a plant is terminated, who will be responsible for resulting excess capacity in the local public water supply? Who will be responsible for capping the plant's wells? Who will be responsible if leakage from the plant has contaminated the source of supply for the local water utility or for individual residential wells? Where is the accountability when these plants are closed down? It would seem appropriate to enact a decommissioning procedure to protect water sources and the public when these plants are removed from service. At the very least, there

should be a procedure for a state administered trust account, which peaker plants would be required to fund, to assure remediation and restoration funds will be available if plant owners abandon plants without protecting water resources. Another possibility is a requirement that a surety bond or letter of credit be posted to secure the obligation to protect water sources. Tr.1 at 767-768.[23]

[23] For additional summaries of public comments, organized with a topical index, please refer to Appendix K. Please refer to Appendix J for a comprehensive table on other states' laws and regulations that may affect peaker plants.

APPENDIX A

Summary of Informational Order

ILLINOIS POLLUTION CONTROL BOARD

December 21, 2000

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ILLINOIS POLLUTION CONTROL BOARD ADOPTS INFORMATIONAL ORDER ON PEAKER PLANTS DOCKET No. R01-10

In response to a request from Governor George H. Ryan, the Illinois Pollution Control Board (Board) today adopted an Informational Order on natural gas-fired, peak-load electrical power generating facilities (peaker plants). Peaker plants generate electricity during periods of peak electricity demand. The recent proliferation of peaker plants has been a source of much public controversy in the Chicago metropolitan area.

The Informational Order follows seven days of public inquiry hearings across the State (August 23 and 24 in Chicago; September 7 in Naperville; September 14 in Joliet; September 21 in Grayslake; and October 5 and 6 in Springfield). 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. The hearing transcripts comprise nearly 1,300 pages of testimony. The Board also received 195 written public comments. The transcripts and public comments are available on the Board's Web site at www.ipcb.state.il.us.

The Board was created by the Illinois Environmental Protection Act (Act) to "determine, define and implement the environmental control standards applicable in the State of Illinois." In addition to the Board's duty to promulgate environmental regulations and to decide contested environmental cases, the Board is authorized to conduct such other noncontested or informational hearings as may be necessary to accomplish the purposes of the Act. Specifically, the Board can conduct inquiry hearings to gather information on any subject the Board is authorized to regulate.

Citing public concern over the recent proliferation of peaker plants in Illinois, Governor Ryan, in a July 6, 2000 letter, asked Board Chairman Claire A. Manning to undertake Board inquiry proceedings. The Governor's letter specifically asked that the Board hold public hearings to address the following issues and to make recommendations on whether further regulation or legislation is necessary to safeguard Illinois' environment:

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?

In its Informational Order, the Board provides specific answers to each of the Governor's questions and makes recommendations. Copies of the Informational Order will be available to the public on Friday, December 22. The Board is also preparing a companion report that it expects to release sometime in January. This report will summarize all of the information received by the Board in these proceedings. The Informational Order and companion report, when released, will be posted on the Board's Web site at www.ipcb.state.il.us. Copies may be obtained by calling the Board's Chicago office at (312) 814-3620 or its Springfield office at (217) 524-8500.

In its Informational Order, the Board recommends that the State tighten current environmental regulations concerning peaker plants to ensure the protection of the environment.

In the area of air emissions, the Informational Order notes that peaker plants burn natural gas, which is a relatively clean fuel from an environmental perspective. While peaker plants emit various pollutants into the air, nitrogen oxides (NO_x) are of particular concern because they are ozone precursors. In Illinois, 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 air emissions during a concentrated period of time. This time period is generally the summer months when the ozone risk is highest.

In its Informational Order, the Board recommends that the Illinois Environmental Protection Agency (IEPA) and the Board engage in rulemaking under the Act to consider requiring these plants to use the "Best Available Control Technology" (BACT) in controlling 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. Generally in Illinois, BACT only applies to "major" sources, which are those that emit 250 TPY or more.

Also regarding air regulations, the Board recommends codifying two practices that IEPA Director Tom Skinner administratively 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 developers 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.

On the question of noise, the Board finds that Illinois' current noise regulations are adequate to address most concerns and that citizen's enforcement actions before the Board are available to enforce noise standards. Nonetheless, the Board recognizes that a "gap" exists in current Illinois noise regulation. While the State noise standards are strict, IEPA does not currently have a program in place to ensure at the time of air permitting that facilities will meet those noise standards. The Board recommends remedying that problem.

Finally, on the question of 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.

In announcing the Board's Informational Order, Board Chairman Claire A. Manning stated: "The Board very much appreciates the valuable and insightful public participation in these proceedings from all interested persons, businesses, and associations. The huge record that was created has allowed the Board to address the threshold issues presented to us by the Governor and by the participants. We have been able to make several valuable recommendations to enhance the regulations that apply to these plants—and to further safeguard Illinois' environment. We commend Governor Ryan for the leadership he has shown on these issues and thank him for the opportunity to have served him and the citizens of the State of Illinois on these important questions."

The Board is an independent State board comprised of seven technically qualified individuals, all of whom are appointed by the Governor with the advice and consent of the Senate. For more information about the Board and its members, please visit the Board's Web site at www.ipcb.state.il.us.

APPENDIX B

PERSONS TESTIFYING

Chicago Hearings

August 23, 2000

1. Charles Fisher, Executive Director, ICC

2. Thomas Skinner, Director, IEPA

3. Christopher Romaine, Manager, Utility Unit, Permit Section, Division of Air Pollution Control, Bureau of Air, IEPA

4. Robert Kaleel, Manager of Air Quality Modeling Unit, Division of Air Pollution Control, Bureau of Air, IEPA

5. Greg Zak, Noise Advisor, IEPA

6. Steve Nightingale, Manager, Industrial Unit, Bureau of Water Permits Section, IEPA

7. Rick Cobb, Manager, Groundwater Section, Bureau of Water, IEPA

8. Todd Marvel, Assistant Manager of Field Operations Section and RCRA Coordinator/USEPA Liaison/IEPA

9. Dr. Brian Anderson, Director, OSRA, DNR

10. Dr. Derek Winstanley, Chief, ISWS, DNR

August 24, 2000

1. Gerald Erjavec, Manager, Business Development, Indeck

2. Greg Wassilkowsky, Manager, Business Development, Indeck

3. Arlene Juracek, Vice President, Regulatory and Legislative Services, ComEd

4. Steven Nauman, Vice President, Transmission Services, ComEd

5. Deirdre Hirner, Executive Director, IERG

6. Richard Bulley, Executive Director, MAIN

7. Freddi Greenberg, Executive Director and General Counsel, MWIPS

8. Michael Kearney, Manager, Economic Development, Ameren

9. Richard Trzupek, Manager, Air Quality, Huff & Huff

Suburban Hearings

Naperville
September 7, 2000

1. Mayor George Pradel, Naperville

2. State Senator Chris Lauzen

3. State Representative Mary Lou Cowlishaw

4. Mayor Vivian Lund, Warrenville

5. Paul Hoss, Zoning Manager, DuPage County Department of Development and Environmental Concerns

6. Richard Ryan, President and Chairman, Standard Power and Light, Oak Brook

7. Dianne Turnball, consultant to several citzen groups, a private foundation, and businesses opposing certain peaker plants

8. Carol Dorge, Director, LCCA

9. Connie Schmidt, representative of the River Prairie Group of the Illinois Sierra Club

10. Mark Goff, resident, Warrenville

11. Cathy Capezio, resident, Aurora

12. Terry Voitik, resident, DuPage County, and founder of CAPPRA

13. Maurice Gravenhorst, member, CAPPRA

14. Lucy Debarbaro, member, CAPPRA

15. Terry Voitik on behalf of Steve Arrigo, CAPPRA

16. Susan Zingle, Executive Director, LCCA

17. Beverly DeJovine, representative, Bartlett CARE

18. Cathy Johnson, Vice Chair, Rural and City Preservation Association

19. Chris Gobel, member, CAPPRA

20. Elliot "Bud" Nesvig

21. Sandy Cole, Commissioner, Lake County Board

Joliet
September 14, 2000

1. Dr. Thomas Overbye, Associate Professor, Department of Electrical and Computer Engineering, University of Illinois, Champaign-Urbana

2. Alan Jirik, Director, Environmental Affairs, CPI

3. Carol Stark, Director, CARE, Lockport

4. Susan Zingle, Executive Director, LCCA

5. Keith Harley, Chicago Legal Clinic

6. Elliot "Bud" Nesvig

7. Michael Shay, Senior Planner, Will County

Grayslake
September 21, 2000

1. State Senator Terry Link

2. State Representative Susan Garrett

3. Tom Lynch, Trustee, Libertyville Township

4. Betty Rae Kaiser, Trustee, Village of Wadsworth

5. Daniel J. Kucera, Chapman & Cutler, appearing on behalf of the Lake County Public Water District

6. Jim LaBelle, Chairman, Lake County Board

7. Sandy Cole, Commissioner, Lake County Board

8. Bonnie Thomson Carter, Commissioner, Lake County Board

9. Greg Elam, CEO, American Energy

10. Larry Eaton, attorney, on behalf of the Liberty Prairie Conservancy, Prairie Holdings Corporation, and Prairie Crossing Homeowners Association

11. Toni Larsen, resident, Zion

12. Chris Geiselhart, Chairperson, CCLC

13. Dianne Turnball, representing Liberty Prairie Conservancy, CCLC, CARE from McHenry County, Bartlett CARE, and Southwest Michigan Perservation Association

14. Lisa Snider, Resident, Wadsworth

15. Verena Owen, Co-Chair, Zion Against Peaker Plants

16. Elliot “Bud” Nesvig

17. Carolyn Muse, resident, Zion

18. John Matijevich

19. Dennis Wilson, resident, Island Lake

20. Terry Jacobs, resident, Libertyville

21. Jim Booth, resident, Newport Township, Lake County

22. William McCarthy, resident, Libertyville

23. Susan Zingle, Executive Director, LCCA

24. Barbara Amendola, resident, Zion

25. Mark Sargis, attorney, working with citizens concerned about peaker plants

26. Cindy Skrukrud, resident, Olin Mills, McHenry County

27. Paul Geiselhart, resident, Libertyville

28. Dr. William Holleman, President, Illinois Citizen Action

29. Evan Craig, Volunteer Chair, Woods & Wetlands Group of the Sierra Club

30. Phillip Lane Tanton

31. Sally Ball, on behalf of State Representative Lauren Beth Gash

Springfield Hearings

October 5, 2000

1. Roger Finnell, Engineer, Division of Aeronautics, Bureau of Airport Engineering, IDOT

2. John Smith, representative of ISAWWA

3. Brent Gregory, representative of National Association of Water Companies, Illinois Chapter

4. James R. Monk, President, IEA

5. Patricio Silva, Midwest Activities Coordinator, NRDC

6. Brian Urbaszewski, Director, Environmental Health Programs, ALAMC, and board member of IEC

7. Elliot “Bud” Nesvig

8. Carol Dorge, Director, LCCA

October 6, 2000

1. Susan Zingle, Executive Director, LCCA

2. Scott Phillips, Deputy Counsel, IEPA

3. Kathleen Bassi, Assistant for Program and Policy Coordination for Bureau of Air, IEPA

4. Chris Romaine, Manager, Utility Unit, Permit Section, Division of Air Pollution Control, Bureau of Air, IEPA

5. Greg Zak, Noise Advisor, IEPA

6. Todd Marvel, Assistant Manager of Field Operations Section and RCRA Coordinator/USEPA Liaison, IEPA

7. Steve Nightingale, Manager, Industrial Unit, Bureau of Water Permits Section, IEPA

APPENDIX C

EXHIBIT LIST

Exhibit Number	Description
ICC Exh. 1 (8/23/00)	Prefiled testimony of Charles Fisher
IEPA Grp. Exh. 1 (8/23/00)	Prefiled testimony of IEPA witnesses (Thomas Skinner, Christopher Romaine, Robert Kaleel, Greg Zak, Steve Nightingale, Richard Cobb, and Todd Marvel)
IEPA Grp. Exh. 2 (8/23/00)	Set of 20 documents, beginning with "Simple Cycle Gas Turbine Application Diagram," and including two oversized maps
DNR Exh. 1 (8/23/00)	Prefiled testimony of Dr. Brian Anderson
DNR Exh. 2 (8/23/00)	Prefiled testimony of Dr. Derek Winstanley
Indeck Exh. 1 (8/24/00)	Prefiled testimony of Gerald Erjavec
Indeck Exh. 2 (8/24/00)	Copy of PowerPoint presentation and Supporting Documentation
ComEd Exh. 1 (8/24/00)	Prefiled testimony of Arlene Juracek and Steven Naumann
IERG Exh. 1 (8/24/00)	Prefiled testimony of Deirdre Hirner
MAIN Exh. 1 (8/24/00)	Prefiled testimony of Richard Bulley

MWIPS Exh. 1 (8/24/00)	Prefiled testimony of Freddi Greenberg
Ameren Exh. 1 (8/24/00)	Prefiled testimony of Michael Kearney
Huff & Huff Exh. 1 (8/24/00)	Prefiled testimony of Richard Trzupek, with attachments
CAPPRA Exh. 1 (9/7/00)	CAPPRA Mission Statement and photographs
CAPPRA Exh. 2 (9/7/00)	Steven Berning, *et al*. v. The City of Aurora, et al., 00-CH-0361, Second Amended Complaint for Declaratory Judgment pending in DuPage County Circuit Court
CAPPRA Exh. 3 (9/7/00)	Testimony of Michael Warfel
CAPPRA Exh. 4 (9/7/00)	Testimony of Steve Arrigo
DuPage County Board Exh. 1 (9/7/00)	Versar Report
DuPage County Board Exh. 2 (9/7/00)	Map—DuPage County Municipalities and Unincorporated Areas
DuPage County Board Exh. 3 (9/7/00)	Testimony of Paul J. Hoss, Zoning Manager for DuPage County Department of Development and Environmental Concerns
Standard Power and Light Exh. 1 (9/7/00)	Addendum No. 2 to Application for PSD Deterioration Construction

	Permit for Standard Energy Ventures, LLC Electrical Generation Facility
Bartlett CARE Exh. 1 (9/7/00)	Testimony of Beverly DeJovine
Zingle Exh. 1 (9/7/00)	"Peaker" Electrical Generating Plants Press Coverage—2000
Zingle Exh. 2 (9/7/00)	Testimony of LCCA
Zingle Exh. 3 (9/14/00)	Testimony of LCCA, with attachments
Zingle Exh. 4 (9/21/00)	Video Tape
Zingle Exh. 5 (10/6/00)	"Typical Daily Load Curve" of Reliant
Zingle Exh. 6 (10/6/00)	"The Status of U.S. Electricity Deregulation"
Zingle Exh. 7 (10/6/00)	Arthur Andersen's "Impact Analysis Mallory Parcel—Libertyville, Illinois"
Zingle Exh. 8 (10/6/00)	"Effects of the Proposed Indeck Facility on Property Values, Land Use and Tax Revenue"
Zingle Exh. 9 (10/6/00)	August 15, 2000 letter from Lake County State's Attorney, Michael J. Waller, to Kenneth L. Larson
Zingle Exh. 10 (10/6/00)	News Articles, beginning with "Ordinance Would Place Provisos on Peaker Plants"
Zingle Exh. 11 (10/6/00)	"Business Overview—Electrical

	Generating Companies"
Sierra Club Exh. 1 (9/7/00)	Testimony of Connie Schmidt
Overbye Exh. 1 (9/14/00)	"Need for New Peaker Generation in Illinois" PowerPoint presentation
CPI Exh. 1 (9/14/00)	Testimony of Alan L. Jirik
Stark Exh. 1 (9/14/00)	Testimony of Carol Stark
Stark Exh. 2 (9/14/00)	Newspaper article
Chicago Legal Clinic Exh. 1 (9/14/00)	Petition to USEPA requesting revocation of the NO_x waiver
Chicago Legal Clinic Exh. 2 (9/14/00)	Testimony of Keith Harley
Link Exh. 1 (9/21/00)	Statement of State Senator Terry Link
Lynch Exh. 1 (9/21/00)	Comments of Tom Lynch, Libertyville Township Trustee
Kaiser Exh. 1 (9/21/00)	Village of Wadsworth Resolution R130 and letter of December 21, 1999
Kucera Exh. 1 (9/21/00)	Comments on behalf of the Lake County Public Water District

Lake County Exh. 1 (9/21/00)	Testimony of Jim LaBelle, Chairman Lake County Board
Lake County Exh. 2 (9/21/00)	Testimony of Sandy Cole, Lake County Board Member
Lake County Exh. 3 (9/21/00)	Testimony of Bonnie Thomson Carter, Lake County Board Member
Lake County Exh. 4 (9/21/00)	Testimony of Greg Elam, CEO of American Energy, including PowerPoint presentation and FERC article
Lake County Exh. 5 (9/21/00)	Lake County 2000—Legislative Program
Eaton Exh. 1 (9/21/00)	Testimony of Larry Eaton on behalf of Liberty Prairie Conservancy, Prairie Holdings Corporation, and Prairie Crossing Homeowners Association
CCLC Exh. 1 (9/21/00)	Testimony of Chris Geiselhart, Chairperson
CCLC Exh. 2 (9/21/00)	Comments of Richard Domanik during an April 25, 2000 hearing in Libertyville, with attached articles
Nesvig Exh. 1 (9/21/00)	Testimony of E.M. Nesvig
Nesvig Exh. 2 (9/21/00)	"Electric Power Monthly" (July 2000 edition)
Nesvig Exh. 3 (10/5/00)	Written testimony of E.M. Nesvig
Nesvig Exh. 4 (10/5/00)	Hard copy of Air Permit Public Hearing Presentation (September

	28, 2000) by Elwood Energy II and Elwood Energy III
Nesvig Exh. 5 (10/5/00)	"U.S. Electricity Imports and Exports 1995–1999"
McCarthy Exh. 1 (9/21/00)	Correspondence of William McCarthy, PhD, regarding proposed Libertyville plant
McCarthy Exh. 2 (9/21/00)	Guidance for Power Plant Siting and Best Available Control Technology
McCarthy Exh. 3 (9/21/00)	"Catalytica" publication regarding "XONON™ Technology"
Sargis Exh. 1 (9/21/00)	Written comments of Mark R. Sargis (dated September 7, 2000)
IDOT Exh. 1 (10/5/00)	October 5, 2000 letter from James V. Bildilli to Chairman Claire A. Manning
Gregory Exh. 1 (10/5/00)	Written testimony of Brent Gregory
Monk Exh. 1 (10/5/00)	Written testimony of James Monk
Monk Exh. 2 (10/5/00)	"System Peak Load and Capacity—Historical 1990-2000 & Projected 2001-2003
ALAMC Exh. 1 (10/5/00)	Joint Comments of the ALAMC and IEC
Dorge Exh. 1 (10/5/00)	Written comments of LCCA

Dorge Exh. 2 (10/5/00)	"Peaker" Natural Gas Fired Turbines—Permits Issued
Dorge Exh. 3 (10/5/00)	"Peaker" Natural Gas Fired Turbines Permits Issued—PSD
Dorge Exh. 4 (10/5/00)	Group of four exhibits, beginning with "Lake County Conservation Alliance written comments in Carlton air permitting proceeding"

APPENDIX D

PUBLIC COMMENTS

1	Reliant, submitted by Cindy Conte, Manager, State Affairs
2	Debbie Halvorson, Sentator, 40th District
3	Ron Molinaro
4	Peter J. Cioni, Director of Community Development, City of Zion
5	Lake County Zoning Board of Appeals submitted by Bob Mosteller, Deputy Director
6	Larry Eaton
7	Susan Zingle
8	Response to Questions—Charles Fisher of the ICC
9	IEPA Response to Questions
10	John Smith, ISAWWA
11	"The Status of U.S. Electricity Deregulation" submitted by Susan Zingle, LCCA Executive Director
12	Gary Hougen
13	Robert Brooks
14	Amy Snyder
15	Gary A. Bellak
16	Sally J. Carr
17	Rollin and Sara Shaw
18	Paul and Cyndy Niles
19	Mike Miller
20	Bill O'Donnell
21	Wesley Landmeier
22	Lucille Landmeier
23	Julie and Curt Moon
24	Lester Landmeier
25	Joyce Landmeier
26	Jim Schindel
27	Diane Schindel
28	Joyce Sanders
29	Lawrence H. Robertson
30	Harold and Barbara Snyder
31	Curt W. Peters
32	Walter Quanstrom
33	Byron and Kristin Henn
34	Kris O'Donnell
35	John Geltz,
36	Brian J. Gelf

37	Veda E. Miller
38	Sheri and Keith Fitzgerald
39	Tim Geltz
40	Gail Geltz
41	Sue Andersen
42	Kenneth Andersen
43	Mrs. Arnold Nier
44	Gary Brigel
45	Jeanette Bower
46	James and Kelly Reuland
47	Linda J. Ott
48	Darrin J. Ott
49	Duane Rhoades
50	Steven R. Weissinger
51	William A. Thompson and Karen R. Thompson
52	Mary Backes
53	Ruth A. Brigel
54	Lisa Weissinger
55	Richard Pave
56	Marcia Lee
57	Leon Backes
58	Scott Ritter
59	Mr. and Mrs. Robert J. Krajecki
60	Dorothy Gum
61	Norman L. Curry, Fox
62	Mr. and Mrs. Jeffrey Berg
63	Doug Tuell
64	Jon and Lori Simon
65	David Young
66	Lynne B. Pave
67	Elaine Tuell,
68	Phyllis Pierson, Sugar
69	Margaret Kathleen McCrimmon
70	A. Gum, Big Rock
71	Robert E. Pierson
72	Nancy Fayfar
73	Ronnie Simpkins
74	Kelly Salazar
75	Sheila M. Simpkins
76	Patricia L. McKenzie
77	Wray V. McKenzie, Jr.

78	Marilyn Lasecki and Edmund Lasecki, Jr.
79	Patricia McBroom and Roger McBroom
80	Cheryl Romano and Thomas Romano
81	Dorothy Holland
82	Annie Buckmiller
83	Alice Hulka
84	Mary Copp
85	Patrick and Linda Barnes
86	Carla S. Miller
87	John and Carrie Loehmann
88	Helen LeBeau
89	James E. McCrimmon
90	Lynette and Dave Weidin
91	Jane Erdman
92	Frederick C. Runge
93	Julie A. Anderson, Elburn
94	(unable to read name) Elburn
95	Ben Halls
96	Kathryn M. Hellwig,
97	Anita Sennett,
98	Gregory G. Goss and Jo A. Goss
99	William and Cheryl Oeser
100	Debra E. Raymond, Big Rock
101	Lawrence Von Ohlen
102	Ricky Gum
103	John Hellwig
104	Diane M. Howard
105	Orville Howard
106	Rose Marie Diedesch and Bill C. Diedesch
107	Udo A. Heinze on behalf of Ameren
108	Jeannine Kannegiesser, Center for Neighborhood Technology
109	Patricia Silva, Midwest Activities Coordinator, NRDC, Washington, D.C.
110	IMEA, submitted by Ronald D. Earl, General Manager & CEO
111	AIEC, submitted by Earl W. Struck, President/CEO
112	Verena Owen
113	Simon Klambauer
114	Peter and Dawn Roberts
115	Cathy Jo Magee
116	C. Beau and Sue Carlson
117	Richard A. and Mary C. LaFleur

118	Jennifer E. Johnson
119	William P. Fischer
120	Karen Yoeler
121	Bill Yoeler
122	Judy M. Hoffman
123	David R. Mag
124	Daniel Salazar
125	JoAnn I. Kline
126	Laurie Kazmiercek
127	Pam S. Wedeen
128	Ramona A. Kline
129	William F. Kline, Sr.
130	Jeff Hoffman
131	Ronald L. Burgess
132	Ed Whatley
133	Elaine and Harold Morris
134	James Scott
135	Lois Long
136	Dale N. Johnson
137	Elaine Fischer
138	Larry Hawhes
139	Cynthia S. Polfer
140	Mr. and Mrs. Mau
141	Ruth Pessina
142	Fritz Landmeier
143	Patricia and Joseph Heimonen
144	Elizabeth Simmons
145	Tom Pattermann
146	Sheela A. Faulkner
147	A. Denise Farrugia
148	Barry and Leah A. Morsch
149	Mary Hankes
150	Andy and Barb Kearns
151	Jackie Beane
152	Michelle Drauz
153	Marilyn Hannemann
154	Sandy Madden
155	James R. Kidd
156	W.R. Hannemann III
157	Mark and Lisa Spangler
158	Allen and Jeanette Krodel

159	Robert and Sharon Phillips
160	James Gasdiel
161	Mary Thurow
162	Margaret Bock
163	Midwest Generation, submitted by Cynthia A. Faur
164	ComEd, submitted by Christopher W. Zibart
165	Joint testimony of ALAMC and IEC, submitted by Brian Urbaszewaki, the Director of Environmental Health Programs for ALAMC and a board member of IEC
166	Final Comments of Carol Dorge, Director, LCCA
167	IEA, submitted by James R. Monk, President
168	IEPA additional comments, submitted by Scott Phillips, Deputy Counsel
169	Sierra Club Woods & Wetlands Group, submitted by Evan L. Craig
170	PG&E, submitted by Stephen Brick, Director, External Relations and Environmental Affairs
171	MWIPS, submitted by Freddi L. Greenberg, Executive Director and General Counsel
172	Sierra Club, Illinois Chapter
173	Indeck, submitted by Gerald M. Erjavec, Manager, Business Development
174	Marvin and Eunice Gapinske
175	Ronald and Mary Jane Davis
176	Clifford and Gloria Sisko
177	Donald and Linda Czachor
178	Clara Arm Babel
179	Julie and Karl Kettelkamp
180	Audrey and David Boston
181	Suzanne Pyle
182	Terry and Sherilyn Sorensen
183	Donna Morris
184	Debra K. Galvan
185	Mr. and Mrs. Bradley Scott
186	Ersel C. Schuster, McHenry County Board, District 6
187	IERG, submitted by Katherine D. Hodge
188	Dr. Donna M. Lawlor and Lynn Hoeth
189	CCLC & Liberty Prairie Conservancy submitted by Dianne Turnball
190	Jim LaBelle, Chairman, Sandy Cole, and Bonnie Thomson Carter, Members of the Lake County County Board, submitted by Jim

	LaBelle
191	Marsha B. Winter
192	Ken Bentsen
193	Lois Scott and Burton Scott
194	Ralph N. Schleifer
195	Marci Rose

APPENDIX E

ABBREVIATION LIST

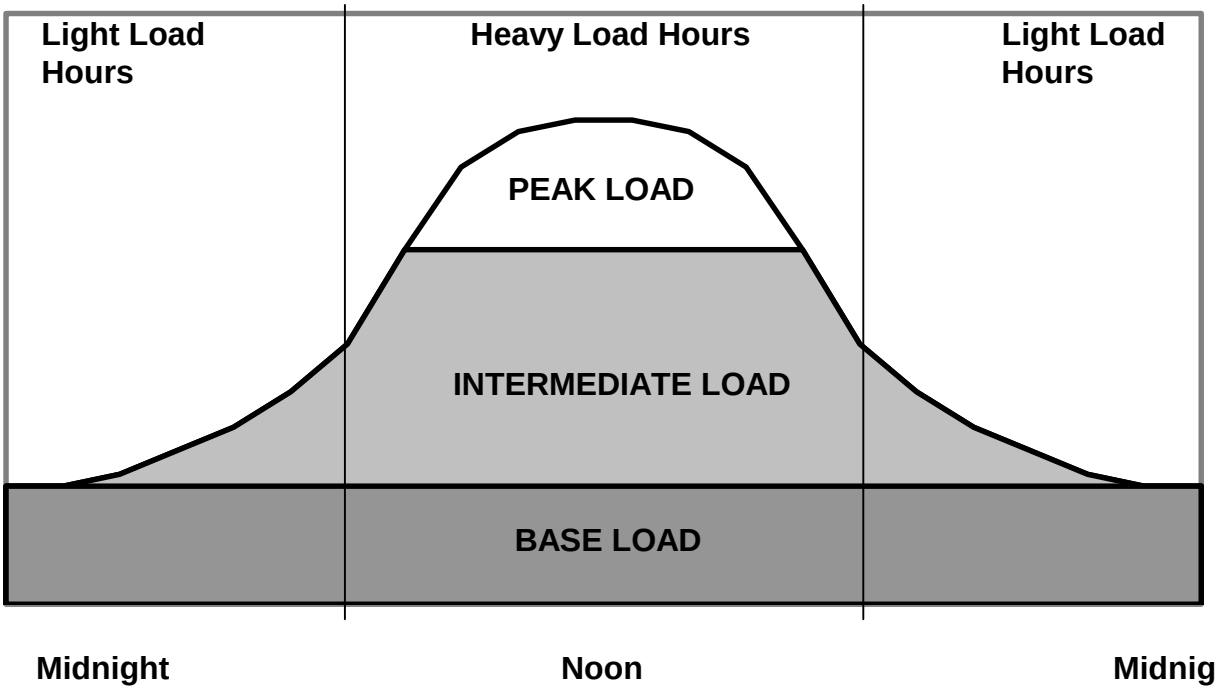
Acentech	ACENTECH, INC.
Act	ENVIRONMENTAL PROTECTION ACT
AIEC	ASSOCIATION OF ILLINOIS ELECTRIC COOPERATIVES
ALAMC	AMERICAN LUNG ASSOCIATION OF METROPOLITAN CHICAGO
Ameren	AMEREN CORPORATION
American Energy	AMERICAN ENERGY SOLUTIONS, INC.
BACT	BEST AVAILABLE CONTROL TECHNOLOGY
Bartlett CARE	BARTLETT CITIZENS ADVOCATING RESPONSIBLE ENVIRONMENTS
Board	ILLINOIS POLLUTION CONTROL BOARD
CAA	CLEAN AIR ACT
CAAPP	CLEAN AIR ACT PERMIT PROGRAM
CAPPRA	CITIZENS AGAINST POWER PLANTS IN RESIDENTIAL AREAS
CARE	CITIZENS AGAINST RUINING THE ENVIRONMENT
CCLC	CONCERNED CITIZENS OF LAKE COUNTY
CEC	CALIFORNIA ENERGY COMMISSION
CESQG	CONDITIONALLY-EXEMPT SMALL-QUANTITY GENERATOR
CNT	CENTER FOR NEIGHBORHOOD TECHNOLOGY
CO	CARBON MONOXIDE
CO_2	CARBON DIOXIDE
ComEd	COMMONWEALTH EDISON COMPANY
CPI	CORN PRODUCTS INTERNATIONAL, INC.
dB	DECIBEL
dB(A)	A-WEIGHTED DECIBEL
DNR	ILLINOIS DEPARTMENT OF NATURAL RESOURCES
EGU	ELECTRICAL GENERATING UNIT
EIS	ENVIRONMENTAL IMPACT STATEMENT
Illinois Electricity Choice Law	ELECTRIC SERVICE CUSTOMER CHOICE AND RATE RELIEF LAW OF 1997
ERMS	EMISSIONS REDUCTION MARKET SYSTEM
FAA	FEDERAL AVIATION ADMINISTRATION
FERC	FEDERAL ENERGY REGULATORY COMMISSION
HAP	HAZARDOUS AIR POLLUTANT
Huff & Huff	HUFF & HUFF, INC.
ICC	ILLINOIS COMMERCE COMMISSION
IDOT	ILLINOIS DEPARTMENT OF TRANSPORTATION

IEA	ILLINOIS ENERGY ASSOCIATION
IEC	ILLINOIS ENVIRONMENTAL COUNCIL
IEPA	ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
IERG	ILLINOIS ENVIRONMENTAL REGULATORY GROUP
IMEA	ILLINOIS MUNICIPAL ELECTRIC AGENCY
Indeck	INDECK ENERGY SERVICES, INC.
IPP	INDEPENDENT POWER PRODUCER
ISAWWA	ILLINOIS SECTION OF THE AMERICAN WATER WORKS ASSOCIATION
ISWS	ILLINOIS STATE WATER SURVEY
kW	KILOWATT
kWh	KILOWATT HOUR
LAER	LOWEST ACHIEVABLE EMISSION RATE
LCCA	LAKE COUNTY CONSERVATION ALLIANCE
MACT	MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY
MAIN	MID-AMERICA INTERCONNECTED NETWORK, INC.
MEAC	MIDWEST ENVIRONMENTAL ASSISTANCE CENTER
Midwest Generation	MIDWEST GENERATION EME, LLC
mmBtu	MILLION BRITISH THERMAL UNIT
MSSCAM	MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION
MW	MEGAWATT
MWh	MEGAWATT HOUR
MWIPS	MIDWEST INDEPENDENT POWER SUPPLIERS
NAA	NONATTAINMENT AREA
NAAQS	NATIONAL AMBIENT AIR QUALITY STANDARDS
NESHAP	NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANT
NIPC	NORTHEASTERN ILLINOIS PLANNING COMMISSION
NO	NITRIC OXIDE
NO_2	NITROGEN DIOXIDE
NO_x	NITROGEN OXIDES
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NRC	ILLINOIS NUCLEAR REGULATORY COMMISSION
NRDC	NATURAL RESOURCES DEFENSE COUNCIL
NSPS	NEW SOURCE PERFORMANCE STANDARD
NSR	NEW SOURCE REVIEW
NYS Siting Board	NEW YORK STATE BOARD ON ELECTRIC GENERATION SITING AND THE ENVIRONMENT
OSRA	OFFICE OF SCIENTIFIC RESEARCH AND ANALYSIS

OTAG	OZONE TRANSPORT ASSESSMENT GROUP
PG&E	PG&E NATIONAL ENERGY GROUP
PM	PARTICULATE MATTER
PM 10	PARTICULATE MATTER NOMINALLY 10 MICRONS AND LESS
PM 2.5	PARTICULATE MATTER NOMINALLY 2.5 MICRONS AND LESS
POTW	PUBLICLY OWNED TREATMENT WORKS
ppb	PARTS PER BILLION
ppm	PART PER MILLION
ppmv	PARTS PER MILLION BY VOLUME
PSD	PREVENTION OF SIGNIFICANT DETERIORATION
RACT	REASONABLY AVAILABLE CONTROL TECHNOLOGY
Reliant	RELIANT ENERGY POWER GENERATION, INC.
RTO	REGIONAL TRANSMISSION ORGANIZATION
SB 172	SENATE BILL 172 (REFERENCE FOR POLLUTION CONTROL FACILITY SITING PROVISIONS UNDER THE ACT)
SCR	SELECTIVE CATALYTIC REDUCTION
SCW&WG	SIERRA CLUB WOODS & WETLAND GROUP
SIP	STATE IMPLEMENTATION PLAN
SO_2	SULFUR DIOXIDE
TPY	TONS PER YEAR
USEPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UAM-V	URBAN AIRSHED MODEL—VERSION V
Versar	VERSAR, INC.
VOC	VOLATILE ORGANIC COMPOUND
VOM	VOLATILE ORGANIC MATERIAL
Water Use Act	ILLINOIS WATER USE ACT OF 1983
WRAC	WATER RESOURCES ADVISORY COMMITTEE

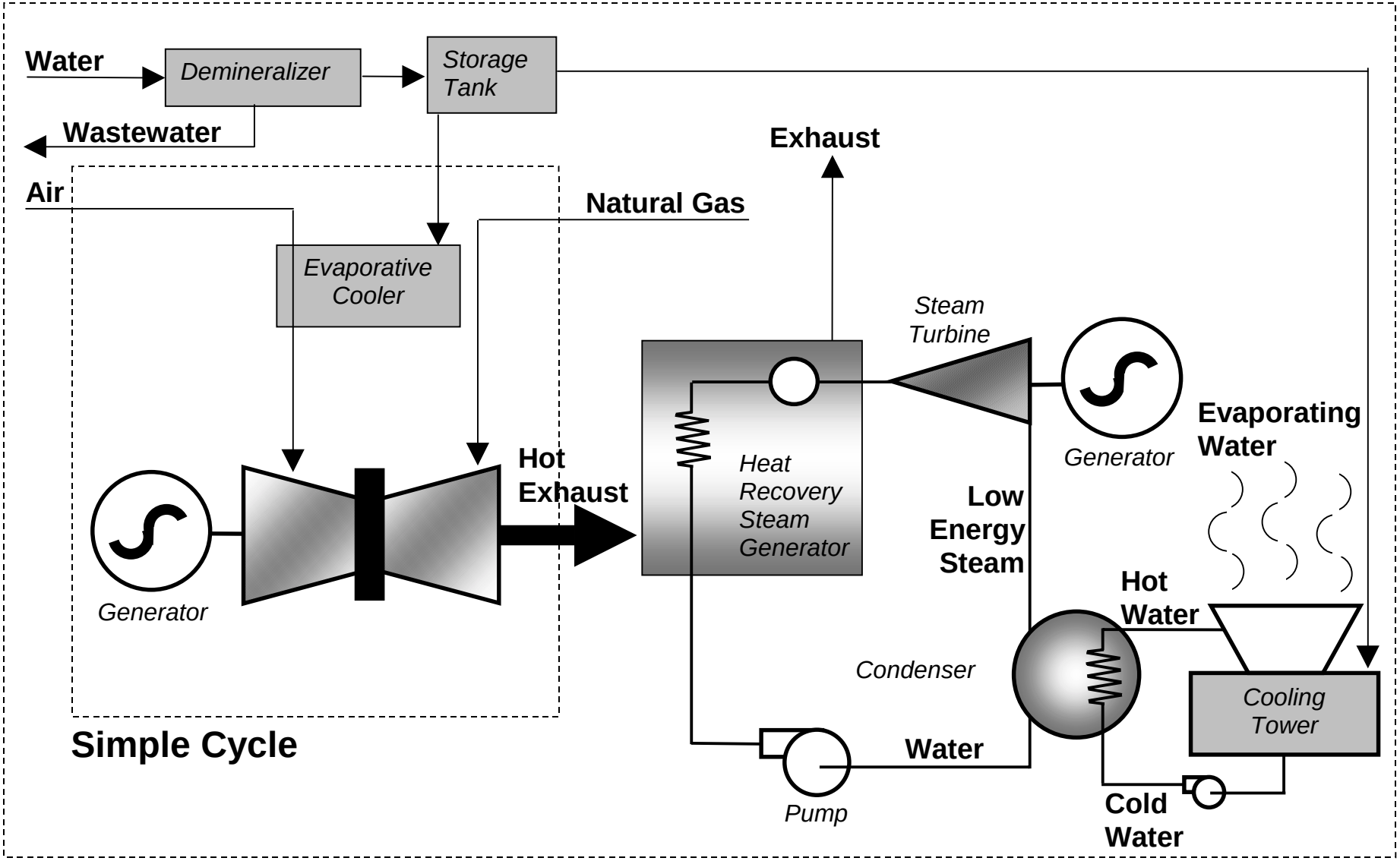
APPENDIX F

Figure 1: Typical Daily Load Curve



Based on drawing presented in Reliant's public comment (PC 1).

Figure 2: Simple Cycle and Combined Cycle Combustion Turbine Power Plant



Based on drawing entitled Peaking vs. Combined Cycle Facility. Indeck Exh. 2.

Table 1: Existing & New Natural Gas-Fired, Simple Cycle and Combined Cycle Units

based on IEPA Grp. Exh. 2, No. 7 and PC 168, Att. 2

Combined Cycle Units are shaded.

Map #	ID #	Company Name	City	County	EGU Site:	Permit			Total Capacity	Fuel Used	Load Type	NOx	Rule
					Existing or New	Number	Type	Status	(MW)			(tons/ yr)	
1	021814AAG	Dom. Energy-Lincoln Generation	Kincaid	Christian	Existing	00020011	C	Add. Info Ltr 3/6/00	688	NG	Peak		Major-PSD
2	025803AAD	Aquila Energy/ MEP Flora Power	Harter/ Flora	Clay	New	00050050	C	Review Pending	567	NG	Peak	245	NSPS
3	025804AAC	Entergy Power-Flora Peaking Stn	Flora	Clay	New	00030053	C	Public Notice	292	NG	Peak	212	NSPS
	025804AAC	Entergy Power-Flora Peaking Stn	Flora	Clay	New	00030053	C	Public Notice	296	NG	Peak	212	NSPS
4	031600AMI	Midwest Generation	Chicago	Cook	Existing	95090081	Title V	Review Pending	264	JP-4, NG	Peak		None
5	031600GGV	People's Energy/Calumet Power	Chicago	Cook	New	99100023	C	Permitted	266	NG	Peak	233	NSPS
6	031600GHA	Calumet Energy Team LLC	Chicago	Cook	New	99110107	C	Permitted	305	NG/ Oil	Peak	240	NSPS
7	031801AAI	Duke Energy Chicago Hts	Chicago Hts	Cook	New	00040068	C	Review Pending	620	NG	Base		Major
8	041806AAC	Ener Star- Montana Stn	Newman	Douglas	New	00060075	C	Review Pending	322	NG	Peak		NSPS
	041806AAC	Ener Star- Montana Stn	Newman	Douglas	New	00060075	C	Review Pending	40	NG	Peak		NSPS
9	043090ADB	Standard Energy Venture, LLC	West Chicago	DuPage	New	99120001	C	Draft Permit	800	NG/ Oil	Base/ Peak	732	PSD/BACT
10	043407AAF	Reliant Energy/Reliant DuPage Cty LP	Aurora	DuPage	New	99110018	C	Permitted	680	NG	Peak	247	NSPS
	043407AAF	Reliant Energy/Reliant DuPage Cty LP	Aurora	DuPage	New	99110018	C	Permitted	270	NG	Peak	247	NSPS
11	043412AAH	Grand Prairie Energy, LLC/ABB	Bartlett	DuPage	New	99090051	C	Permitted	500	NG/ Oil	Base	213	PSD/BACT

Map #	ID #	Company Name	City	County	EGU Site:	Permit			Total Capacity	Fuel Used	Load Type	NOx	Rule
					Existing or New	Number	Type	Status	(MW)			(tons/ yr)	
12	051030AAD	Spectrum Energy/C.I. C.S.Power	St. Peter	Fayette	New	99100013	C	Permitted	45	NG	Peak	85.9	NSPS
13	051808AAK	Cent.Ill. S C Pow./ Spectrum	St. Elmo	Fayette	New	99060052	C	Permitted	45	NG	Peak	85.9	NSPS
14	053803AAL	Ameren CIPS	Gibson City	Ford	New	99020071	C	Permitted	270	NG/ Oil	Peak	245	NSPS
15	055803AAB	Entergy -Franklin County Pwr	Thompsonville	Franklin	New	00080055	C	Review Pending	295.6	NG	Peak	250	NSPS
	055803AAB	Entergy -Franklin County Pwr	Thompsonville	Franklin	New	00080055	C	Review Pending	291.6	NG	Peak	250	NSPS
16	055807AAD	Gen Power	W. Frankfort	Franklin	New	00090005	C	Review Pending	0		Peak		PSD Minor
17	063800AAP	Kinder Morgan-Aux Sable Power Plt	Morris	Grundy	New	00030031	C	Draft Permit	176	NG	Peak	247.5	NSPS
18	077806AAA	Ameren CIPs	Grand Tower	Jackson	Existing	99080101	C	Permitted	600	NG	Base	1911.5	NSPS
19	089425AAC	DMG (Dynegy/Rocky Road)	East Dundee	Kane	New	98120016	C	Permitted	35	NG	Peak	245	NSPS
	089425AAC	DMG (Dynegy/Rocky Road)	East Dundee	Kane	New	98120016	C	Permitted	242	NG	Peak	245	NSPS
	089425AAC	DMG (Dynegy/Rocky Road)	East Dundee	Kane	New	99050098	C	Permitted	121	NG	Peak	245	NSPS
20	089802AAF	Fox River Pkng Stn/Coastal Power Co.	Big Rock	Kane	New	99110073	C	Final Review	345	NG	Peak		NSPS
21	091015AAD	Indeck-Bourbonnais Energy Center	Bourbonnais	Kankakee	New	00060010	C	No Action	683.2	NG	Peak		NSPS
22	091806AAM	Duke Energy	Manteno	Kankakee	New	00040067	C	Public Notice	620	NG	Base		Major
23	093801AAN	Kendall New Cent. Dev./Enron	Plano	Kendall	New	99020032	C	Permitted	664	NG	Peak	426.4	PSD/BACT
24	093808AAD	L S Power/Kendall Energy	Minooka	Kendall	New	98110017	C	Permitted	1000	NG	Base/ Peak	99 (SCT), 630.7 (CCT)	PSD/BACT

Map #	ID #	Company Name	City	County	EGU Site:	Permit			Total Capacity	Fuel Used	Load Type	NOx	Rule
					Existing or New	Number	Type	Status	(MW)			(tons/ yr)	
25	097190AAC	Midwest Generation	Waukegan	Lake	Existing	95090043	Title V	Consoldation	132	JP-4, NG	Peak	No Limit	None
	097190AAC	Midwest Generation	Waukegan	Lake	Existing	00050071	C	Review Pending	291.6	NG	Peak		NSPS
26	097200ABB	Skygen/Zion Energy Center LLC	Zion	Lake	New	99110042	C	Final Review	800	NG/ Oil (back-up)	Peak	697.5	PSD/BACT/NSPS
27	097810AAC	Carlton Inc./North Shore Power	Zion	Lake	New	99120057	C	Final Review	561	NG	Peak	245	NSPS
28	103814AAC	Lee Cty Gen. Facility/L S Power	Nelson	Lee	New	98080039	C	Permitted	1000	NG/ Oil	Base/ Peak	630.8	PSD/NSPS
29	103817AAH	Lee Generating Stn./Duke Energy	South Dixon	Lee	New	99090029	C	Permitted	664	NG/ Oil	Peak		PSD/BACT
30	107815AAC	Spectrum Energy-Logan County	New Holland	Logan	New	00050025	C	Permitted	270	NG	Peak		NSPS
31	111805AAP	Reliant Energy	Woodstock	McHenry	New	99050089	C	Permitted	510	NG	Peak	248	PSD/BACT
32	119090AAH	Reliant Energy (Cardinal Energy)	Roxana	Madison	New	98090064	C	Permitted	633	NG, Refinery Gas	Base	330.5	PSD/BACT
33	119105AAA	Ameren CIPS	Venice	Madison	Existing	95090017	Title V	Permitted	37	Oil	Peak	No Limit	None
34	121803AAA	AmerenEnergy Gen. Company-Kinmundy	Patoka	Marion	New	99020027	C	Permitted	270	NG/ Dis. Oil	Peak	245	NSPS
35	127899AAA	Electric Energy/Midwest Elec. Power	Joppa	Massac	Existing	99100060	C	Permitted	216	NG	Peak	349.3	Netted
	127899AAA	Electric Energy/Midwest Elec. Power	Joppa	Massac	Existing	99100060	C	Permitted	102	NG	Peak		Netted
36	145842AAA	AmerenEnergy Gen. Company	Pinckneyville	Perry	New	99090035	C	Permitted	388	NG	Peak		NSPS
	145842AAA	AmerenEnergy Gen. Company	Pinckneyville	Perry	New	00090076	C	Review Pending	192	NG	Peak		NSPS
37	147803AAA	MEP Investments-DeLand	Goose Creek	Piatt	New	00090082	C	Review Pending	567	NG	Peak		NSPS
38	161807AAN	Cordova Energy	Cordova	Rock Island	New	99020097	C	Permitted	500	NG	Base	306.6	PSD/BA

Map #	ID #	Company Name	City	County	EGU Site: Existing or New	Permit Number	Permit Type	Permit Status	Total Capacity (MW)	Fuel Used	Load Type	NOx (tons/ yr)	Rule
													CT
39	167822ABG	CWLP	Springfield	Sangamon	New	94120058	O	Permitted	100	NG/ #2 Oil	Peak	249	NSPS
40	171851AAA	Soyland Power	Alsey	Scott	New	98120050	C	Permitted	60	NG/ Oil	Peak		old unit
	171851AAA	Soyland Power	Alsey	Scott	New	98120050	C	Permitted	25	NG/ Oil	Peak		old unit
41	173801AAA	Shelby Enrgy Cntr/ Reliant Energy	Sigel	Shelby	New	99090085	C	Permitted	328	NG	Peak	198	NSPS
42	173807AAG	Holland Energy, LLC	Holland	Shelby	New	99100022	C	Permitted	336	NG/Oil (CT), NG (D.B.)	Base	342	PSD/BA CT
43	183090AAE	DMG/Tilton Energy Center	Tilton	Vermilion	New	98110018	O	Permitted	176	NG	Peak	197	NSPS
44	189802AAA	MEP Investments-Posen	Bolo	Washington	New	00090081	C	Review Pending	567	NG	Peak		NSPS
45	197030AAO	Power Energy Partners/ Crete Energy Park	Crete	Will	New	99120056	C	Draft Permit	393	NG	Peak	245	NSPS
46	197035AAG	Elwood Energy/Peoples Gas	Elwood	Will	New	00010076	C	Permitted	344	NG	Peak	217.56	Major-PSD
	197035AAH	Elwood Energy/Peoples Gas	Elwood	Will	New	00010077	C	Permitted	516	NG	Peak	326.34	Major-PSD
	197808AAG	Elwood Energy Center,LLC	Elwood	Will	New	98060091	C	Permitted	680	NG/ Ethane	Peak	1565.7	PSD/BA CT
	197808AAG	Elwood Energy Center,LLC	Elwood	Will	New	98060091	C	Permitted	2500	NG/ Ethane	Base	1565.7	PSD/BA CT
47	197810ABS	Rolls-Royce/Lockport Pwr Gen.	Lockport	Will	New	00050010	C	Permitted	372	NG	Peak	245	NSPS
48	197811AAH	Desplaines Greenland/Enron	Manhattan	Will	New	99020021	C	Permitted	664	NG	Peak	419.4	PSD/ BACT
	197811AAH	Desplaines Greenland/Enron	Manhattan	Will	New	99020021	C	Final Revision	167	NG	Peak		PSD/ BACT
49	197899AAB	Univ. Park Energy/ Constellation Po.	Univ. Park	Will	New	99120020	C	Permitted	300	NG	Peak	245	NSPS

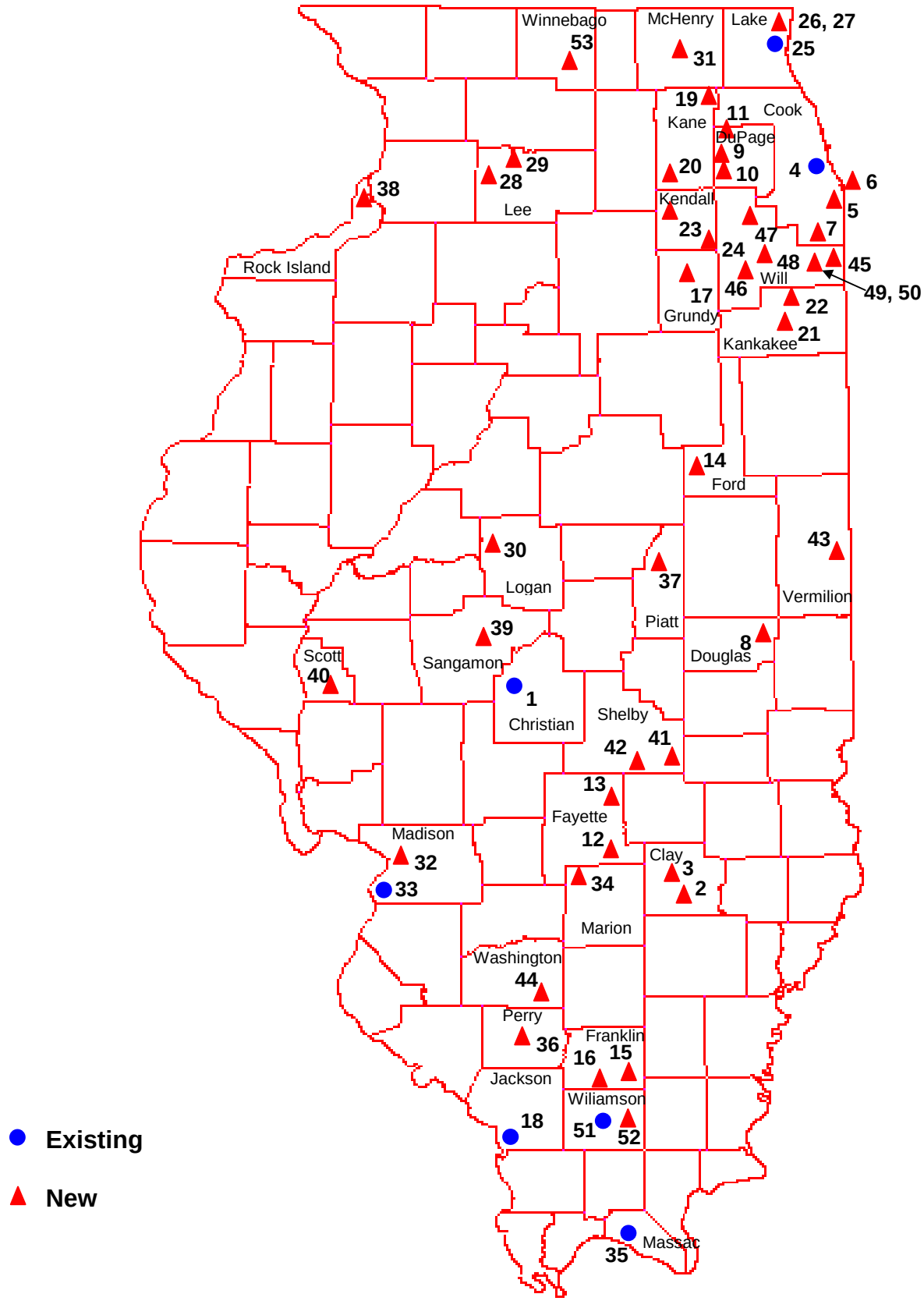
Map #	ID #	Company Name	City	County	EGU Site: Existing or New	Permit Number	Permit Type	Permit Status	Total Capacity (MW)	Fuel Used	Load Type	NOx (tons/yr)	Rule
50	197899AAC	Univ. Park Power (PPL Global)	Univ. Park	Will	New	00080078	C	Review Pending	530.4	NG	Peak		NSPS
51	199856AAC	Southern Ill. Power Coop.	Marion	Williamson	Existing	00070029	C	Draft Permit	166	NG/ Oil	Peak		Netting
52	199856AAK	Reliant Energy/ Williamson Enrgy Cntr	Crab Orchard	Williamson	New	99090084	C	Permitted	328	NG	Peak	198	NSPS
53	201030BCG	Indeck-Rockford	Rockford	Winnebago	New	99110088	C	Permitted	300	NG	Peak	199	NSPS
TOTALS			**36** Ozone Attainment **31** Nonattainment		**58** New **9** Existing	**67 Permits**			**27,329** MW Capacity	**8** Base **56** Peak **3** B/P		**16,183+** tons NO_x/yr	

Abbreviations:

EGU	Electrical Generating Unit
C	Construction
O	Operating
MW	Megawatt
NG	Natural Gas
FO	Fuel Oil
DFO	Distillate Fuel Oil
JP-4	Jet Fuel

Figure 3: Map of Existing & New Natural Gas-Fired, Simple Cycle and Combined Cycle Units

based on IEPA Grp. Exh. 2, No. 7 and PC 168, Att. 2

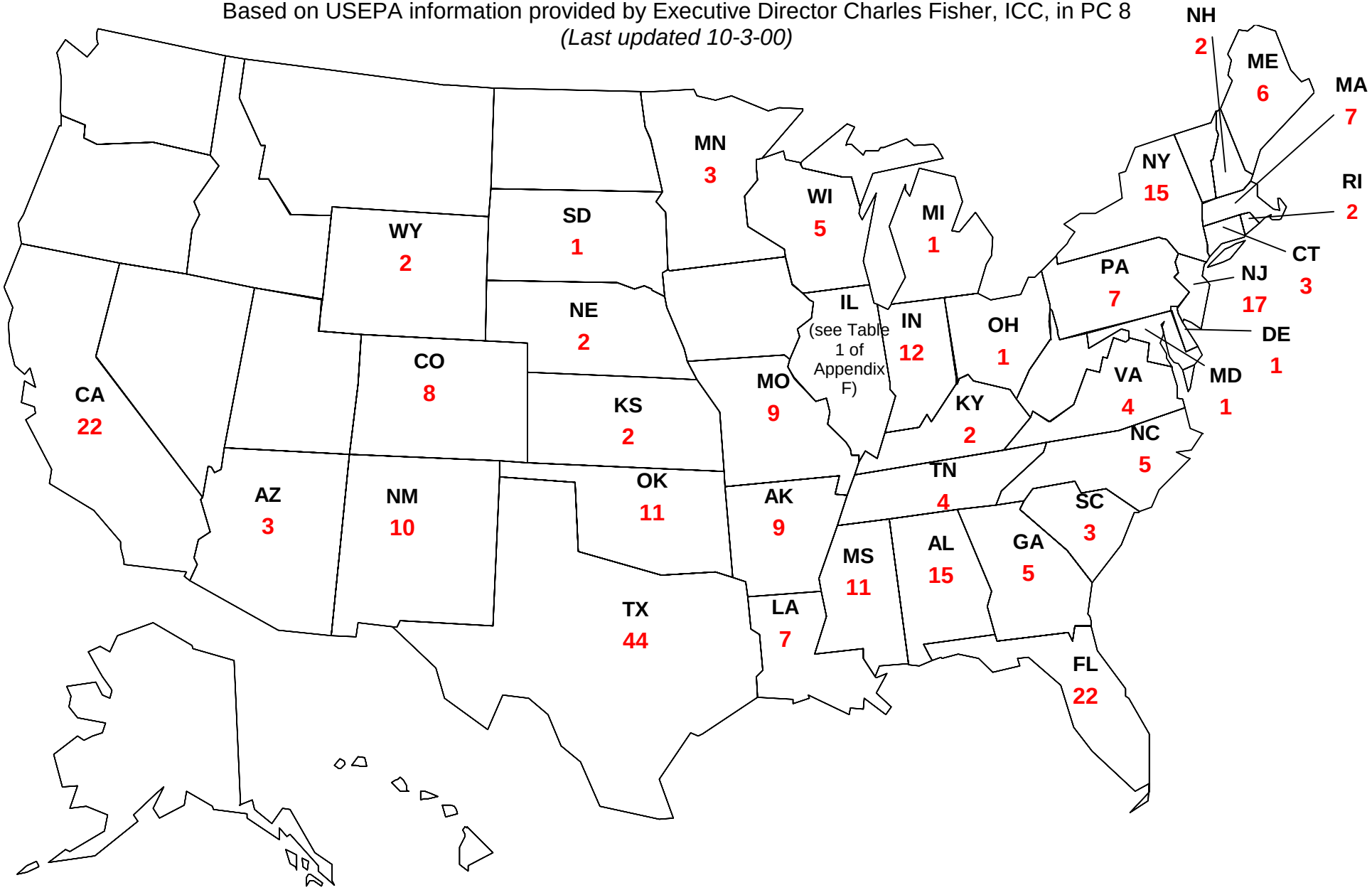


Note: Some locations have multiple air permits and gas-fired turbines.

Figure 4: National Combustion Turbine Projects

Based on USEPA information provided by Executive Director Charles Fisher, ICC, in PC 8

(Last updated 10-3-00)



Numbers represent numbers of facilities with draft permits or recently-issued final permits.
Some facilities have multiple turbines.

APPENDIX G

ILLINOIS POLLUTION CONTROL BOARD

600 South Second St. ♦ Suite 402 ♦ Springfield, IL 62704 ♦ 217-524-8500 ♦ Fax 217-524-8508

October 25, 2000

Thomas V. Skinner, Director
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Brent Manning, Director
Illinois Department of Natural Resources
524 S. Second Street
Springfield, Illinois 62701-1787

Dear Director Skinner and Director Manning:

On behalf of the Pollution Control Board, I am happy to present the following information for the review of the Water Resources Advisory Committee. While the Vonnahme-Park letter of October 5, 2000 to the Committee seeks commentary in three assignment areas, these remarks focus on "Assignment Number One": the need for substantive changes in law or regulation governing the usage of water in the State of Illinois.

In the June 6, 2000 press release announcing the establishment of this committee, Governor Ryan explained: "I want this new committee to take a close look at our water resources and specifically examine the impact of industry, agriculture and population on Illinois' groundwater and surface water supplies. It's important for us to look into the effects of our usage of our limited natural resources." More specifically, the Governor set forth the committee's task as follows: to focus on our water resources and its usage, including the effects of peaker plants on groundwater and surface water supplies.

As all of you know, at the same time Governor Ryan created this committee, he asked the Pollution Control Board to hold a series of Inquiry Hearings concerning the potential environmental impact of proposed new natural gas-fired peaker plants. Given the proliferation of these new facilities and the expressed public concerns, he asked the Board to specifically address the issue of whether further regulations or legislation is necessary to adequately protect the

environment. Pursuant to that request, the Board held seven days of public hearing (August 23-24, Chicago; September 7, Naperville; September 14, Joliet; September 21, Grayslake; and October 5-6, Springfield.) During those hearings, the Board heard testimony from over 80 individuals -- representing a broad variety of interests: state and local government officials; legislators; industry representatives, and concerned citizens. I have enclosed a list of those persons who testified. The complete transcript of testimony for each hearing is available on the Board's Web site at www.ipcb.state.il.us.

While water usage was NOT the focus of these Board hearings, the issue of water usage was nonetheless an expressed concern of many who testified. Since it is the function of this committee to address those concerns, the Board has prepared a summary of all testimony relevant to the issue of water usage. For review by this committee, I have attached that summary. Especially important, I believe, is the testimony of local government officials who seek greater regional or state regulation of the State's precious supply of water.

For review of this committee, I have also asked Board staff to research the regulatory framework of several other Midwestern states (Iowa, Indiana, Missouri, Minnesota, Ohio, Wisconsin) as it concerns the use of water in each state. Interestingly, Illinois is alone in the virtual absence of state controls or plans regarding the use of water.

Based upon the enclosed information, I believe it is time to focus the committee's 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 entities and citizens. I hope the enclosed information aids us in that important task. I look forward to seeing you both at the next meeting of the Governor's Water Resources Advisory Committee.

Sincerely,

Claire A. Manning

Claire A. Manning
Chairman

cc: Renee Cipriano
Members of the Water Resources Advisory Committee

PERSONS TESTIFYING AT BOARD PEAKER HEARINGS

Chicago Hearings

August 23, 2000

1. Charles Fisher, Executive Director, Illinois Commerce Commission
2. Thomas Skinner, Director, IEPA
3. Christopher Romaine, Manager, Utility Unit, Permit Section, Division of Air Pollution Control, Bureau of Air, IEPA
4. Robert Kaleel, Manager of Air Quality Modeling Unit, Division of Air Pollution Control, Bureau of Air, IEPA
5. Greg Zak, Noise Advisor, IEPA
6. Steve Nightingale, Manager, Industrial Unit, Bureau of Water Permits Section, IEPA
7. Rick Cobb, Manager, Groundwater Section, Bureau of Water, IEPA
8. Todd Marvel, Assistant Manager of Field Operations Section and RCRA Coordinator/USEPA Liaison/IEPA
9. Brian Anderson, Director, Office of Scientific Research and Analysis, IDNR
10. Derek Winstanley, Chief, Illinois State Water Survey, IDNR

August 24, 2000

1. Gerald Erjavec, Business Development, Indeck Energy Services, Inc.
2. Greg Wassilkowsky, Manager, Business Development, Indeck Energy Services, Inc.
3. Arlene Juracek, Vice President, Regulatory and Legislative Services, ComEd
4. Steve Nauman, Vice President, Transmission Services, ComEd
5. Deirdre Hirner, Executive Director, IERG
6. Richard Bulley, Executive Director of Mid-America Interconnected Network

7. Freddi Greenberg, Executive Director and General Counsel, Midwest Independent Power Suppliers

8. Michael Kearney, Manager, Economic Development, Ameren Corp.

9. Richard Trzupek, Manager, Air Quality, Huff & Huff

Suburban Hearings

Naperville
September 7, 2000

1. Mayor George Pradel, Naperville

2. State Senator Chris Lauzen

3. State Representative Mary Lou Cowlishaw

4. Mayor Vivian Lund, Warrenville

5. Paul Hass, Zoning Manager, DuPage County Department of Development Environmental Concerns

6. Richard Ryan, President and Chairman, Standard Power and Light, Oak Brook

7. Diana Turnball, Consultant to variety of citzen groups, private foundations and businesses who have been in opposition to some of the peaker plants

8. Carol Dorge, Attorney representing Lake County Conservation Alliance

9. Connie Schmidt, Representative of River Prairie Group

10. Mark Goff, Resident, Warrenville

11. Cathy Capezio, Resident, Aurora

12. Terry Voitik, Resident, DuPage County, and Founder of Citizens Against Power Plants in Residential Areas (CAPPRA)

13. Maurice Gravenhorst, Member, CAPPRA

14. Lucy Debarbaro, Member, CAPPRA

15. Terry Voitik on behalf of Steve Arrigo, CAPPRA

16. Susan Zingle, Executive Director, Lake County Conservation Alliance

17. Beverly Dejovine, Representative, Citizens Advocating Responsible Environments (CARE), Bartlett

18. Cathy Johnson, Vice Chair, Rural and City Preservation Association (R&CPA)

19. Chris Gobel, Member, CAPPRA

20. Elliot "Bud" Nesvig

21. Sandy Cole, Commissioner, Lake County Board

22. Chris Gobel, Member, CAPPRA

Joliet
September 14, 2000

1. Dr. Thomas Overbye, Associate Professor, Department of Electrical and Computer Engineering, University of Illinois, Champaign-Urbana

2. Alan Jirik, Director, Environmental Affairs, Corn Products International, Inc.

3. Carol Stark, Director, Citizens Against Ruining the Environment, Lockport

4. Susan Zingle, Executive Director, Lake County Conservation Alliance

5. Keith Harley, Chicago Legal Clinic

6. Elliot "Bud" Nesvig

7. Michael Shay, Senior Planner Responsible for Long-Range Planning, Will County

Grayslake
September 21, 2000

1. State Senator Terry Link

2. State Representative Susan Garrett

3. Tom Lynch, Trustee, Libertyville Township

4. Betty Rae Kaiser, Trustee, Village of Wadsworth

5. Daniel J. Kucera, Chapman & Cutler, appearing on behalf of the Lake County Public Water District

6. Jim LaBelle, Chairman, Lake County Board

7. Sandy Cole, Commissioner, Lake County Board

8. Bonnie Carter, Commissioner, Lake County Board

9. Greg Elam, CEO, American Energy

10. Larry Eaton, Attorney, on behalf of the Liberty Prairie Conservancy, Prairie Holdings Corporation, and Prairie Crossing Homeowners Association

11. Toni Larsen, Resident, Zion

12. Chris Geiselhart, Chairperson, Concerned Citizens of Lake County

13. Diane Turnball, Representing Liberty Prairie Conservancy, Concerned Citizens of Lake County, CARE from McHenry County, Bartlett CARE, and Southwest Michigan Perservation Association

14. Lisa Snider, Resident, Wadsworth

15. Verena Owen, Co-Chair, Zion Against Peaker Plants

16. Elliot "Bud" Nesvig

17. Carolyn Muse, Resident, Zion

18. John Matijevich

19. Dennis Wilson, Resident, Island Lake

20. Terry Jacobs, Resident, Libertyville

21. Jim Booth, Resident, Newport Township in Lake County

22. William McCarthy, Resident, Libertyville

23. Susan Zingle, Executive Director, Lake County Conservation Alliance

24. Barbara Amendola, Resident, Zion

25. Mark Sargis, Attorney, working with citizens who have been concerned about peaker issues

26. Cindy Skrukrud, Resident, Olin Mills, McHenry County

27. Paul Geiselhart, Resident, Libertyville

28. Dr. William Holaman, President, Illinois Citizen Action

29. Evan Craig, Volunteer Chair, Woods and Wet Lands Group of the Sierra Club

30. Phillip Lane Tanton

Springfield Hearings

October 5, 2000

1. Roger Finnell, Engineer, Division of Aeronautics, Bureau of Airport Engineering, IDOT

2. John Smith, Representative of Illinois Section of American Waterworks Association

3. Brent Gregory, Representative of National Association of Water Companies, Illinois Chapter

4. James R. Monk, President, Illinois Energy Association

5. Patricio Silva, Midwest Activities Coordinator, Natural Resources Defense Council

6. Brian Urbaszewski, Director, Environmental Health Programs, American Lung Association

7. Elliot "Bud" Nesvig

8. Carol Dorge, Attorney representing Lake County Conservation Alliance

October 6, 2000

1. Susan Zingle, Executive Director, Lake County Conservation Alliance

2. Scott Phillips, Attorney, IEPA

3. Kathleen Bassi, Attorney, IEPA

4. Chris Romaine, Manager, Utility Unit, Permit Section, Division of Air Pollution Control, Bureau of Air, IEPA

5. Greg Zak, Noise Advisor, IEPA

6. Todd Marvel, Assistant Manager of Field Operations Section and RCRA Coordinator/USEPA Liaison/IEPA

7. Steve Nightingale, Manager, Industrial Unit, Bureau of Water Permits Section, IEPA

Testimony and Comments Regarding Use of Water by Peaker Plants — given to IPCB in context of Peaker Plant Hearings

CHICAGO HEARINGS

Commonwealth Edison – Prefiled Testimony of Arlene A. Juracek and Steven T. Naumann

> Water impacts, including with regard to any potential contamination and water supply, are also carefully assessed during the planning and development of any peaker plant. Stringent state requirements regulate the discharge of contaminants while local authorities often directly oversee issues of water supply. In addition, the impact of peaker plants and other facilities on water resources and usage will be closely examined by Governor Ryan's newly appointed Water Resources Advisory Committee, which will present its recommendations to the Governor by December 2000.

Midwest Independent Power Suppliers Coordination Group -- Prefiled Testimony of Freddi Greenberg

> While water usage will vary depending upon the specifics of the plant involved, the simple cycle technology currently used for peaker facilities typically places a small demand on water resources. For example, the owner of one peaker plant located in Kane County advises that the plant consumes no more than *2.5* million gallons of water in a year. In comparison, the average golf course in the Great Lakes region consume[sj almost 31,000,000 gallons of water in a year. (Weathermetrics, Inc. 1999 website) MWIPS recommends that the Pollution Control Board defer its consideration of the impact of peaker plants on water resources so as to consider the report the impact of peaker plants on water supply which will be issued by Governor Ryan's Water Resources Advisory Committee.

Indeck Energy Services, Inc. -- Gerald M. Eriavec

> Prefiled Testimony
>
> To counter this effect, various methods are employed to cool the inlet air and increase its density. One such method is the use of chillers; however, these require power to operate and are sometimes counter productive. Another method is called evaporative cooling, in which the air stream is passed over water and the air is cooled through evaporation, much like perspiration cools the

skin. This cooling effect can be limited on humid days. While water consumption varies based on temperature and humidity, an evaporative cooleron a 300 MW plant will average about 40 gallons per minute (gpm) of water consumption.

Even though these hearings are directed at peaking plants, the subject of combined cycle plants is sure to come up, so a brief discussion of them is in order. Simply put, a combined cycle plant adds a steam cycle to the process but directing the hot exhaust gas from the combustion turbine through a boiler, which generates steam to turn a steam turbine. Because more energy from the fuel is recovered and used to produce electricity, combined cycle plants can be as much as 50% more energy efficient tha[n] "simple cycle" peakers; however, they are not suited to peaking use because they cannot be brought on line quickly enough to function as peakers. Combined cycle plants also have increased water needs compared to peakers. The first use of water, in the steam system, is minimal, about 25 gallons per minute in a system that has been coupled to 300 MW of combustion turbines to create a 200 MW steam cycle. Water can also be used to cool the steam after it passes through the steam turbine. If water is the sole medium, up to 2,500 gpm can be consumed, which may be significant in some areas. Fortunately, advances have been made in cooling technologies so that this use can be greatly reduced or eliminated if the situation calls for it.

* * *

Water consumption impacts were also compared against other enterprises and found, in most cases, to be at the low end of the impacts.

Testimony at Hearing

Water consumption can vary by humidity and temperature. For example, on a very humid day, you'll [evaporate] very little water. So very little water will be used. On a hot, dry day would probably be your maximum consumption. Typical for, say, a 300 megawatt unit would be about an average of 40 gallons per minute. It can range from about zero to 80, depending upon the temperature and the humidity.

One of the things that's a concern about this type of plant here is the water use, and I would like to bring that up. The water use, there's two places. Number one, there's water in the steam system going around this way. You have to -- you get some trace contamination going in there. So you have to occasionally blow it down. The steam cycle on this plant, this is based on putting a heat recovery unit on the back of a 300 megawatt plant, would probably be about 25 gallons per minute, which is not a lot.

* * *

You can use about 2500 GPM, which can trend toward, depending upon where you are, significant numbers.

Now, the good news is that there are other ways to attack this problem. They've made significant advances in dry-cooling systems, which would not require this water at all. There are some hybrid systems that cut down on the amount of water use.

Water use, as I noted before, when operating a typical 300 megawatt peaker plant with an evaporative cooler uses a maximum of 80 gallons per [minute], an average of about 50. Technology, the evaporative cooler generally is only used above 60 degrees.

* * *

What is 80 gallons per minute? Well, basically it's the equivalent of 11 homes watering their lawns at the same time. If you walk down the street and you saw 11 homes watering their lawns, you probably wouldn't think anything of it. On an annual basis, approximately the consumption of about 30 homes, 30 average homes. Other water impacts that need to be considered are wastewater and stormwater. Stormwater is captured on site.

* * *

Water consumption, a million gallons per year. Compare your 300 megawatt peaking plant to a 50-home subdivision, a typical high school, or a retirement home, a 200-bed medical center, or a 400-room hotel, way down at the low end, I think my laser pointer is dying here, of water consumption.

IDNR -- Testimony of Brian Anderson, Director, Office of Scientific Research and Analysis

In Illinois, except for withdrawals of water from Lake Michigan, there is extremely limited regulatory authorities associated with water withdrawals from our other surface waters and from groundwater. It's, therefore, more appropriate to deal with water quantity issues in front of -- in the context of Water Resources Advisory Committee, however, we do acknowledge the relationship between these issues and I have asked Dr. Derek Winstanley, Chief of the Illinois Water Survey, to provide a concise summary of some of the water quantity issues relating to peaker power plants.

Illinois State Water Survey, IDNR -- Testimony of Dr. Derek Winstanley, Chief of the Illinois State Water Survey

One focal point that I do wish to make is that the discussion of peaker power plants and the impacts on groundwater resources should be placed within the context of all other water demands including those for combined cycle plants as well as Illinois' growing water needs for domestic, municipal, agricultural and other industrial uses. We do need to look at total demands from groundwater resources as a basis for sound water resource management. The water demands

from the peaker power plants vary widely depending upon plant design, their intended use and the number of days of operation.

I would like to give you some examples of the quantities of water that may be associated with operations of peaker power plants by putting that in context of some other water uses. First of all, peaker power plants, and I am going to focus on just a simple cycle power plant when I refer to the peaker power plants, these are typically small producing a few tenths to a few hundred, perhaps a thousand megawatts of electricity. They do not operate everyday of the year. The typical period of operation is from perhaps 20 to 90 days per year. The range of water use there is from less than 100,000 gallons per day to about 2 million gallons per day. Translating that into an annual use that gives us a range of from about 1.4 to 180 million gallons of water per year.

Turning to baseload power plants, which is combined cycle, these are obviously much larger, typically generate maybe 500 to several thousand megawatts of electricity and are intended to operate more or less continuously throughout the year. They consume water within the range of about 5 to 20 million gallons per day. Translating that to an annual water use, that gives us a range from about 1,500 million gallons per year to 6,000 million gallons per year.

So in context, the peaker power plants consume about a fraction of 1 percent to about 3 percent of the water used by typical baseload combined cycle plants.

Another example of water use, municipal water use, and I give you data from Champaign, Urbana, for context. Champaign, Urbana, has a population of about 120,000 people, and they need that water supply regularly 365 days per year. Champaign, Urbana, currently consumes about 20 million gallons per day of groundwater, which translates into an annual use of about 7,300 million gallons per year.

So to put the water use by peaker plant in context of a municipal use, a typical peaker plant would use the same amount of water as between about 25 and 3,000 people, depending upon the nature of the peaker.

One concept that is important in examining not only peaker power plants but all groundwater use is the concept of sustainable yields. And in my written testimony, I refer to that as potential yield. Sustainable yield is a fairly diffuse concept but generally, it tends to mean the yield of water that can be sustained over the long term so that it can be used not only by the current population but also by future generations and a yield that will have no significant impacts.

The determining sustainable yield is a complex scientific exercise that involves consideration of variables such as rainfall, recharge rates, geology and impacts. Impacts not only on existing wells, but on peaker systems and on stream flows.

The point here is that for most aquifers in Illinois, we do not have a very highly accurate estimate of sustainable yield. We need much better scientific data and modeling capabilities to be able to estimate sustainable yields.

Another important point is that aquifers themselves are not very sensitive to the end uses of water. That is an aquifer doesn't really differentiate whether a million gallons of water is going to be used for drinking water or for peaking power plants or for golf courses but the public often does differentiate among those end uses and, I think, trying to incorporate the public values and preferences into the equation on water resource management is an important consideration as well as the actual amount of water used.

Water quality has been mentioned by people from Environmental Protection Agency giving previous testimony. There are natural occurrences of various chemicals in the groundwaters throughout Illinois. These lead to mineral concentrations that can effect not only the operation of the peaker plants, but also the discharges from the peaker plants. So the water quality also needs to be considered.

In conclusion, I would like to make two points, one focusing exclusively on groundwater, the other combining groundwater with surface water.

Focusing on groundwater, it's important to recognize that in the use of groundwater resources, all uses of groundwater, not just peakers, that we need to consider the scale of the natural resource, that is the aquifer.

Groundwater typically is found in discrete squifers that transcends political jurisdictions. They cut across municipalities, counties and even states. Plumbing management by individual communities will not solve problems in the long term, we need to take an aquifer-wide perspective. Beyond just groundwater, I think that we need much more consideration of the conjunctive use of surface and groundwater. There can be many efficiencies gained in water supplying usages by considering conjunctive uses of surface and groundwater.

So my bottom line is that I think Illinois would benefit from moving towards much more comprehensive regional water resource planning and management. This will bring together communities and cut across jurisdictions and we'd — much more appropriate to the scale of the natural resources, that is the aquifers in the case of the groundwater supplies and river basins and water sheds for surface waters.

* * *

Let me give you one example I think is an excellent model of what is going on in one part of Illinois and that is in central Illinois. We have a major aquifer, the [Mahomet] aquifer, that extends from the Illinois River across to Indiana,

which embraces 15 counties. Now, in the past couple of years, the local communities in that 15 county area have bonded together to form what is called the [Mahomet] aquifer consortium and they're collectively concerned about the future of their own water resources, want to better characterize those resources and opportunities as a basis for self-management to the water resources. So, I think, on the one hand we may need new laws, regulations, but I think we also need to encourage local communities to attempt to solve their own problems.

IEPA -- Prefiled Testimony of Richard P. Cobb, Manager of the Groundwater Section of Bureau of Water

However, the few Illinois court decisions since the enactment of the Water Use Act have interpreted that "reasonable use" for groundwater does not restrict the use of groundwater except from malicious or wasteful purposes of the user.

Concurrent with the requirement for these hearings, Governor Ryan, by Executive Order, established a Water Resources Advisory Committee. The committee's task will be to focus on our water resources and its usage, including the effects of peaker plants on groundwater and surface water supplies. The committee will also examine the various economic and social issues related to energy producing facilities and water use in Illinois and present recommendations for action to the Governor by December 2000. I plan on attending this committee's first meeting on August 31, 2000.

IEPA -- Prefiled Testimony of Christopher Romaine, Manager of the Utility Unit in the Permit Section of Division of Air

A key factor in the design of a peaker plant is the capability to maximize the power output of the plant to be able to meet peak electric power demand. This leads to a number of variations on the basic simple cycle turbine, all due to the scientific fact that the power output of a gas turbine varies based on the density of the air being used in the turbine. The denser the air, the more air that can be pushed through the turbine and the higher the power output. This means that in the absence of any adjustments, the output of a given gas turbine will be significantly less on a 90°F day in July, when peak power is most likely to be needed, than on a 20°F day in January. To correct for this phenomenon, the modem simple cycle turbines used in peaking plants are routinely equipped with devices to cool the air going into the turbine. While it may appear counterproductive to cool the air in a turbine before heating it, cooling the air allows more air to be handled by the air compressor, thereby allowing more fuel to be burned and increasing the power output of the turbine.

Gas turbines can be equipped with several different types of air cooling systems that vary in the effectiveness with which they can cool the inlet air to boost a gas turbine's power output. In the simplest system, water is injected directly

into the incoming air to cool the air by evaporative cooling. Clean demineralized water must be used to prevent excess build up of scale or erosion of the blades in the air compressor of power turbine. In more advanced systems, water may also be injected at a point in the air compressor itself. The inlet air may also be cooled by indirect systems in which the air passes through cooling coils. In this case, water may still be used in an open cooling tower where evaporation of water is used to dissipate the heat generated by a mechanical refrigeration unit. Alternatively, a dry cooling system may be used in which the heat generated by a refrigeration unit is dissipated to the atmosphere by dry cooling towers or radiators. The more complex the cooling system, the greater the amount of energy that is consumed in its pumps and compressors, which accounts for some of the increase in power output.

Another approach to boost power output of a gas turbine is to inject clean water of steam into the burners or to inject steam after the burners. All these measures increase the gas flow through the power turbine and thus increase its power output. Because fuel must be burned to evaporate the water (either in the turbine itself or in a separate boiler to make steam), these measures to increase power output are accompanied by a loss of fuel efficiency by a gas turbine.

NAPERVILLE HEARING

Connie Schmidt, Representative of River Prairie Group

DuPage County is so close to Chicago, one would think it is very urban. I myself have a well and septic on my property and I am incorporated. I live within the city limits of Warrenville. So it is not totally unusual -- and all my neighbors do because we don't have city water in our neighborhood. So the groundwater use as well as what happens to it after it's been used, I think, is a realistic concern in our area.

Mark Goff, Resident, Warrenville

So obviously well water is a concern.

Lake County Conservation Alliance -- Testimony of Susan Zingle, Executive Director

A lot of people have talked about water supply. Some of the peakers do use vast amounts of water. Some of them as much as a combined cycle plant. We're looking at Zion is going to use over 200 gallons (sic) a day. That's as much as the entire city of Zion in itself. McHenry and parts of Wisconsin draw on that same aquifer. How can Woodstock and Zion even be aware of each other's plants let alone determine which of the two plants is built if either. Water supply is not a local issue

Rural and City Preservation Association (R&CPA), Cathy Johnson, Vice Chair

The water issue, which is a major one in McHenry County, is barely even considered in the new standards. A new peaker plant has to only respond to how the water it uses affects the area one-quarter of a mile around the plant. This is ridiculous. This standard isn't there to protect us.

JOLIET HEARING

Corn Products Internal, Inc., Alan Jirik, Director, Environmental Affairs

With regards to cooling water consumption, our plant currently takes water from the Sanitary and Ship Canal. The water is used for non-contact cooling purposed for the corn wet milling operating and then returned to the canal. In a clever and environmentally friendly approach, we plan to use the existing cooling water flow to supply cooling water to the new cogeneration operation. We accomplish this by routing an additional loop from our existing cooling water line to serve the cooling needs of the cogen. After servicing the cogen, the water will return to our existing line and be discharged the same as it is today. Thus, the project will not increase our current water withdrawal and will not result in any new water discharges, any new intake or outfall structures, or cause any other disruptions to water bodies, water tables, groundwater, aquifers or burden the community drinking water supply.

Citizens Against Ruining the Environment, Lockport, Carol Stark, Director and Exchange with Board Member Kezelis

We also have information that states the aquifers located **on this site** are joined together. This is the first of our concerns. The fact that the aquifers, our water supply, could be affected by this peaker using thousands of gallons a day is not a comforting thought.

* * *

Board Member Kezelis: Ms. Stark, do you know what the source of your public water supply is in Lockport?

Ms. Stark: We do -

Board Member Kezelis: Is it the aquifer?

Ms. Stark: Yeah. We do have -- and then there are some people that are on wells, but yes, it's the aquifer. We have never tied into Lake Michigan water.

Will County, Michael Shay, Senior Planner Responsible for Long-Range Planning and Exchange with Chairman Manning, Board Members Flemal, Girard, Kezelis and McFawn

The largest thing that we found that concerned us was that Will County's aquifer reserve water is about 66 million gallons a day. That's how much we have — it's currently recharging -- that we could use for water supply. We contacted several facilities and went on several industry websites and they said five to 12 million gallons a day per facility for a combined cycle facility and roughly a million gallons a day for a simple cycle facility.

So we contacted some of them that actually started operation in Will County, including the one that you visited today. We arrange tours. On our tour, we found out they're actually planning -- or they were planning for an expansion and this comes to a key point that I'd like to discuss today. There was discussion earlier about separating simple and combined cycle plants. We do not think you can separate those two facilities.

Simple cycle facilities are designed and physically organized to be converted to combined cycle facilities down the road and that plans that we received as we reviewed these petitions explicitly and clearly state that; that they are designed to be converted or added Onto at a later date. So we do not want to see those two issues separated at all.

So they -- we get into more discussions with them and they say 16 million gallons a day for one of the facilities which we visited, which means that four such facilities of which there are already that many could eat up the entire reserve water capacity for Will County. We are not likely to get more lake water. River water is another issue altogether regarding quality of our water. So when you add that to the fact that we are the fastest growing -- numerically growing county in Illinois and also the fastest in the sunbelt, we see a problem for a collision between growth and these facilities for that resource.

We are also concerned -- when we continue to do our research, we said, that's a lot of water to draw from one facility. How do you get that? Well, they drop wells in the aquifer obviously and they pull it up at such a rate that it creates a drawdown. It creates a reverse cone or a cone of water supply and the radius on that for a facility of the magnitude that we were discussing is six miles drawdown, 300 feel drawdown at the point of the well and still 35 to 50 feet of the six-mile radius.

Will County has thousands and thousands of wells; residential, industrial or group wells. We're concerned about well failure because we continue to place

these facilities over time and if they're to be converted to combined use facilities.

* * *

Board Member Kezelis: I have a question. I, too, hope to be brief, Mr. Shay.

That status of the suggestions that you and the planners for Will County propose to your board, what is the current status?

Mr. Shay: Well, we have a first set of regulations in place. We're currently discussing the second set of -- we're researching and discussing the second set. If I had to provide a guess, which bureaucrats despise doing, but I will do nonetheless, I would suspect that they will prohibit the use of aquifer water for electric generation.

* * *

Board Member McFawn: Is the only industry that you're concerned about the drawdown well or is that general a concern?

Mr. Shay: It's the only industry we know of that draws that amount that quickly. We can't find another that draws from the aquifer at that rate, but we're unaware of one that draws at that rate.

Let me illustrate this real quickly. When you're talking about 16 million gallons a day, that means that three of those facilities could put a pipe on the end of the Fox River in St. Charles and the river would end while it was in operation.

Chairman Manning: Where did you get those figures in terms of the drawdown effect and how much water is actually being used by these facilities?

Mr. Shay: We got from the-- well, we got the information on flow and amount of the aquifers and reserve capacity from the Illinois Water Survey. They regularly publish those statistics and we acquired them from them and then we acquired numbers on the use actually directly from the industry itself.

The engineers who built the Elwood plant, we -- our land use and zoning committee and planning and zoning committee visited those facilities. In those discussions, we asked them about water use and they gave us very frank answers on that. The number that they gave us came out to 16 million gallons a day and we confirmed with them that that was an accurate assessment. So we're fairly confident of those numbers.

* * *

Board Member Kezelis: Mr. Shay, what's your understanding about the Elwood facility; single or combined?

Mr. Shay: My understanding is that it is currently a single cycle plant that the two additional -- the Elwood two and Elwood three will also be simple cycle.

All three of those phases, though, are designed to be converted to combined cycle should they wish to do so.

Board Member Kezelis: So the 16 million gallons per day --

Mr. Shay: Would be if they became a combined cycle. They are not currently. They do have a well, but it's comparably small.

* * *

Board Member Girard: Mr. Shay, if Will County passes an ordinance that prohibits the use of aquifer water or electrical generating facilities, would that also apply to a facility that tried to site itself inside a municipality in Will County?

Mr. Shay: No. That's why we're concerned about jurisdiction hopping, but it would also cover a number of the intersections of pipelines and transmission facilities.

Board Member Flemal: One of the things that this board may see it necessary to do ultimately in our decision here is to address the issue of how much local and how much regional or state level oversight there ought to be in the siting of these facilities.

We've heard quite a range of perspectives from it should be entirely in the hands of the locals with the facility to what I think I heard you say that there should be a strong top-down oversight on the plants.

First off, have I characterized where you're coming from correctly?

Mr. Shay: Okay. I would like a strong state or national presence on the issue of drawing from wells.

Board Member Flemal: Soley on that issue?

Mr. Shay: And issues that affect cross-jurisdictional -- an aquifer doesn't make a jurisdictional boundary. It could go across several counties and several municipalities, et cetera. Well, local authorities, because we are competing for economical development efforts and because of the nature of the politics between them, are often played against each other by the private industry

Board Member Kezelis: Mr. Shay, the water use, as you know, is not something that we are to address. The Governor has appointed the water commission to address water use for the state. Nonetheless, your reference to the water use a few moments ago, I needed clarification of.

You indicated that approximately 16 million gallons per day would be used by a combined peaker facility and that the drawdown for such a facility would impact roughly a six-mile radius, is that correct?

Mr. Shay: That's correct, according to the information we have from the Illinois Water Survey.

Board Member Kezelis: So you received that information from the Water Survey itself?

Mr. Shay: Yes. We got it off their website. They have a very graphical explanation.

GRAYSLAKE HEARING

Testimony of State Senator Terry Link

Since the effect of peaker power plants, air quality, water supply, natural gas supply, noise, taxes, are felt regionally, not just locally, I believe we must take a regional approach in regulating the pearkers.

Testimony of State Representative Susan Garrett

Our aquifer is on the verge of being mined. We are concerned for our long-term water supply. We need to resolve this.

Testimony of Sally Ball on behalf of State Representative Lauren Beth Gash

Our friends and neighbors are understandably worried about the impact of so-called peaker plants on air quality and water supplies.

Appearing on behalf of the Lake County Public Water District, Daniel J. Kucera, Chapman & Cutler and Exchange with Board Member Kezelis

Now, the term peaker plants is a misnomer because it implies an oversimplification. The types of electric generating facilities being proposed throughout the state, and which are raising environmental concerns for many people, are both base-load plants and peak-demand plants. The environmental impact issues raised by such plants, including water use, differ only in magnitude.

In addition, these plants can be both simple cycle and combined cycle. Accordingly, demand for water and resulting environmental impact of that demand can vary according to the type of plant. Clearly, a combined cycle plant, which uses steam to generate a portion of its electricity, can be expected

to use more water than a small simple-cycle plant, which uses water only for cooling.

A witness for the Illinois State Water Survey in these proceedings, Mr. Winstanley, has testified that simple-cycle peaker plants can use up to 2 million gallons of water per day. And combined-cycle plants can use 5 million to 20 million gallons per day.

* * *

Presently with very limited exception, there is no permitting process or regulatory oversight over the uses of water by peaker plants. Witnesses for IEPA in these proceedings have acknowledged that IEPA currently has no jurisdictional responsibility over peaker plant water use.

A public water supply providing Lake Michigan water to a peaker plant would have to have a sufficient allocation from the Department of Natural Resources to enable it to supply peaker plant demand.

The Illinois Water Use Act of 1983, 525 ILCS *45/ et seq.*, was cited by one of the IEPA witnesses in this proceeding. Section 5 of the Act does provide that a land owner who proposes a new well expected to withdraw over 100,000 gallons per day must notify the local soil and water conservation district. The district is then to notify other units of local government whose water systems may be impacted. And the district is to review the impact and make findings. However, the statute provides no enforcement mechanism.

Moreover, this provision does not even apply to the region governed by diversion and allocation of Lake Michigan water under 615 ILCS 50/1 *et seq.*

The Water Use Act states that the rule of reasonable use does apply to ground water withdrawals, but it does not provide supporting, permitting or regulation.

As to the need for permitting and regulator oversight, I would first address Lake Michigan water. Lake Michigan is a valuable and limited domestic water supply resource. It is valuable because in northern Illinois lake water is perceived to be superior to ground water.

Aquifers in the region commonly contain high levels of iron, manganese and other constituents which raise esthetic issues and which can require costly treatment facilities. Deep wells often contain high radium or alpha-particle contents.

Further, in portions of northern Illinois, water levels in the aquifers have diminished and some deep wells have been mined into salt water. Obviously, there is a great demand for lake water to provide the domestic water supply for as many communities as possible. However, Lake Michigan

water is a limited resource because of legal limits on how much water Illinois may withdraw. Accordingly, the use of Lake Michigan water by peaker plants for cooling, steam production or even as backup to ground water for these uses should be limited or even prohibited.

As to ground water, because peaker plants can be heavy users of ground water, upwards of several million gallons per day, there should be regulatory oversight over such uses. In particular, the potential effects upon aquifers and ground water domestic water supplies should be evaluated as part of the permitting and regulatory process. Mr. Winstanely has well stated the issues in his testimony in this proceeding.

It is also important to point out that the ground water is a limited resource in certain portions of the state. For example, in parts of central Illinois ground water is extremely limited, even for domestic water supplies and, of course, aquifers in northern Illinois have been subject to diminishment.

Finally, other surface water, needless to say where a peaker plan may withdraw water from a stream or inland lake, the impact of such withdrawal also could be evaluated. For example, it could reduce the resource value of the water body for domestic water supply, aquatic life or recreation.

There are now some additional water issues that I would like to bring to your attention, one of them is decommissioning.

For example, if a plant is terminated, who will be responsible for resulting excess capacity in the local public water supply? Who will be responsible for capping the plant's wells? Who will be responsible if leakage from the plant has contaminated the source of supply for the local water utility or for individual residential wells? Where is the accountability when these plants are closed down?

It would seem appropriate to enact a decommissioning procedure to protect water sources and the public when these plants are removed from service. At the very least, there should be a procedure for a state administered trust account, which peaker plants would be required to fund, to assure remediation and restoration funds will be available if plant owners abandon plants without protecting water resources.

Another possibility is a requirement that a surety bond or letter of credit be posted to secure the obligation to protect water sources.

Another issue is competition. Public water supplies can be expected to remain a highly regulated industry so as to continue to assure safe drinking water for the public. Unlike other utility functions, public water supply is not likely to

be deregulated or to be subject to the competitive marketplace. The investment in water infrastructure per customer far exceeds the comparable investment for other utilities. This investment in water infrastructure will only continue to increase under the Sale Drinking Water Act amendments as new requirements are proposed. Redundant water systems do not make sense.

It is important, therefore, that electric generating plants not be permitted to engage in helping to finance new public water supplies which may compete with existing public water supplies. Such predatory competition could deny customer the benefits of economies of scale.

Another issue we believe is siting. Presently siting of electric generating plants is considered to be a local issue. However, there may be siting concerns of a broader interest, as related to water use. Recent proposals indicate multiple peaker plants in close proximity to each other. What is the impact of multiple draw-downs on an aquifer at a particular location?

Another concern relates to soil conditions at a proposed site. How vulnerable are site conditions to a contamination spill? Could a shallow aquifer be adversely impacted? Presently, there is no regulatory oversight of these siting issues.

* * *

Finally, cross-connection. When an electric generation facility is partially served by a public water supply and partially served by the facility's own wells, there must be assurance that no cross-connections will exist. For example, the public water supply may provide water for domestic use and fire protection, while the facility uses its own wells for process water. However, the public water supply might also provide backup in the event the wells are out of service.

Local governments may not necessarily have the staff with skills to constantly monitor for cross-connections in generating plants. Indeed, it is not clear that they ever would have access to the plants. Who then will be responsible for policing for cross-connections and protecting the public water supply?

The District understands that the Governor's water advisory committee may be considering water issues related to peaker plants. We are not aware whether that committee is soliciting public comment. Therefore, we believe it is important that the Pollution Control Board in its report to the Governor include water issues related to peaker plants discussed in the testimony and comments submitted in this proceeding.

In conclusion, we suggest that the Illinois legislature should adopt a permitting of regulatory oversight requirement for process water used by all electric generating facilities, including both base-load and peaker plants.

* * *

Board Member Kezelis: I just have a question. Can you for the record tell us what your rate of capacity is and roughly how many gallons per day your customers do take?

Mr. Kucera: Our peak day capacity is 6 million gallons per day. I think in actuality the customers average between 3 and 4 million gallons a day.

Lake County Board, Jim LaBelle, Chairman

The process should not only consider air quality but also other environmental factors such as water consumption impacts on aquifers or Lake Michigan water allocations.

* * *

In addition to the IEPA considering the polluting impact of multiple plants, the Department of Natural Resources and the ICC need to consider the impact on ground water resources, natural gas availability and pricing impact if numerous peakers operate at the same time.

* * *

The high volume of ground water usage can lessen the supply for any other entity tapping the same aquifer.

Lake County Board, Sandy Cole, Commissioner

In addition to air quality, peaker power plants may affect the region's water supply as they need to draw significant amounts of water from Lake Michigan or local aquifers.

Lake County Board, Bonnie Carter, Commissioner

The village of Island Lake was being asked to annex the land. The plant proposed for the small community on the far western edge of Lake County was not a peaker plant. The plant was proposed to provide base-load power year round with ground water usage of 4 to 8 million gallons daily.

Local officials, myself included, and concerned citizens began investigating the issues surrounding the type of power plant involved. Many issues such as air quality, noise and lighting were raised. Water usage was by far the most overwhelming environmental concern. While gathering information, I became well acquainted with the work of the Illinois State Water Survey, a division of the Department of Natural Resources and an affiliate of the University of Illinois at Urbana-Champaign. According to data assembled by the ISWS, the volume of water required to supply the proposed plant for a year would have been far greater than what was required for the village's entire population.

I further learned that neither the Illinois Environmental Protection Agency, nor the ISWS or any other state agency had any authority limiting ground water withdrawal. The proposal for the Island Lake plant was eventually withdrawn and most of the subsequent plant proposals in Lake County are for peakers, not base-load. This, I feel, is a direct result of the hightened awareness of the water withdrawal issue and how precious a resource water is. Though the issue of water usage is not as critical with peakers, it is still significant enough to warrant scrutiny.

In February 1999 I drove to Springfield with my two constituents who had originally brought this issue to my attention. We met with IEPA Director Tom Skinner, officials from Storm Water Management, Illinois Department of Natural Resources, Fish and Wildlife, the IEPA Bureau of Water, the IEPA Bureau of Air and two state legislators. We expressed our deep concerns with the permitting process of a 90-day review on construction applications, the lack of regulatory authority over ground water withdrawal and the lack of public hearings. We also discussed air quality impacts along with the noise and lighting.

We all felt that the IEPA directors and supervisors that sat among us were frustrated with having to review permit applications without being able to take the regional impacts of these plants into consideration. They agreed that a regional element should be included in the review. We were surprised and shocked to learn that each division did not review the applications together. One division follows the application approval process after the other division has completed its work. They may never have been aware of the combined impact on adjoining property owners or cumulative environmental impacts. In other words, they didn't talk to each other.

After we left Springfield that day, some minor changes did take place. The 90-day review process was reversed back to 180 days. Public hearings started to take place on applications and the IEPA Director Skinner never forgot us in Lake County.

As you may see, we are still dealing with this issue today and we are still very frustrated. I hope and pray we will all be heard today and that, as a result, you recommend improvements, not only to the process, but to help reduce the negative impact power plants could have depending on where they are sited.

As with many of the issues surrounding peaker plants, it is important to recognize that ground water is a regional issue. It is also important to recognize while one peaker plant may not threaten a region's water supply, multiple peakers may. Aquifers do not end at municipal or political boundaries. The water consumed in one village not only limits the supply of its immediate

neighbors, but impacts the supply of further villages, commercial wells and deep community wells which draw from the same aquifer.

In the case of the Island Lake proposal, adjacent villages would have realized significant financial impacts. Nowhere in the permit application process submitted by the applicant were those impacts acknowledged or addressed. One neighboring village, the village of Wauconda, would have incurred expenses close to $1 million to reset the pumping well head in two municipal wells. The taxpayers of this neighboring village, not the power company, would have borne this expense, $1 million. This village had no opportunity to voice its concern during the application review. Surely, this demonstrates why a regional application approach must be in place, must be put into practice.

Determining the amount of water available for peaker use as well as all other users is a significant undertaking for any local community. Dr. Derek Winstanley of the ISWS in his written testimony to this Board wrote of the expense of collecting ground water data. Conducting a study to determine the sustainable level of water usage for Lake County is estimated to be a multi-million dollar project. To expect local communities to shoulder this burden is unreasonable. Yet without regional data, a single community cannot make an informed decision on water supply.

At the August 18th, 1999 meeting of the Lake County Public Works and Transportation Committee, Illinois State Water survey Director Dr. Derek Winstanley reported that around the year 2030, Lake County will maximize its water use. Today, we are at the maximum sustainable level of the northeastern Illinois deep bedrock. We cannot continue to increase withdrawals from the deep aquifer. Water demand is up 20 percent, and we are at the point where supply and demand are beginning to conflict.

Another large source of water for the Lake County area is Lake Michigan. Here again, the County's usage impacts the supply of other counties and states. The supreme court fixes allocations. Local governments do not have an endless supply.

Peaker plants will either draw ground water, which will have an impact on neighboring wells, or draw on Lake Michigan water that has already been fully allocated. Clearly this issue needs to be understood and addressed.

The quality of water will also be impacted by extensive withdrawal. Research has shown that when too much water is pumped, surface waters can be impacted. Water availability to stream beds, wetlands and lakes can decrease, and the quality of the existing water may be threatened. Eventually, animal and plant life will be threatened. Since the technology exists to convert peaker plants to combines plants at any time, peakers should not be considered as a

minor use, but rather as a major use with regional impact. I would suggest that all applications should be specific as to whether they are peaker or base-load. Applications for peakers should question the intention toward possible future conversion to a base-load.

Allowing one industry that provides a very few number of jobs to have unlimited use of our water supply impacts the economic growth in communities where other industries also require water.

Officials in Lake realize that it is not only peaker plants that threaten our water supply. Development of any kind, whether residential, commercial or industrial will place an additional burden on limited resources. County officials further realize that electricity may be one of the resources in short supply. However, our analysis of the realities of peaker power plants and the marketing of power do not convince us that peaker plants located in Lake County will alleviate a power shortage in Lake county. We feel we are being asked to give up one precious natural resource with no guarantee that the sacrifice will realize a benefit for the county's citizens.

The Water Use Act of 1983 and the Water Authorities Act do not give counties the authority to regulate ground water withdrawal. A plan that regulates major aquifer draw-downs is needed. The Lake County Board recommended legislation to do just that. It is believed that there is support from state agencies to clarify regulatory authority for ground water withdrawal. These initiatives are included for your review.

The state needs to determine what the reasonable use is. I finally realize that the IPCB does not have the authority to regulate ground water withdrawal. I have the pleasure of being a member of the Water Resources Advisory committee that was recently initiated by Governor Ryan. This issue will be covered in this committee and our recommendations will be made to the Governor in December. I feel it is imperative to point out that we need to share our expertise with all governing state agencies in order to be better equipped to make decisions involving the power industry. It is too complex an issue for one agency to comprehensively see all facets. I believe that the Pollution Control Board, the ICC, the IEPA, the ISWS also all need to support each other and work together. We need a regional cooperative group with regulatory authority when reviewing applications.

The Lake County Board has made a decision last year to be proactive and not reactive. Our actions support that position. I ask you to support this board and the people of Lake County by doing the same. Place a moratorium on all pending and new applications for power or peaker plants until such time as all agencies have collaboratively worked together reducing and/or eliminating the

negative impact to our quality of life. Thank you, Chairman Manning and the IPC Board.

Toni Larsen, Resident, Zion

In the Zion area, there are at least five pending permits which will be licensed separately for future plants. I believe all facilities within Lake County need to be evaluated regionally to assess the cumulative effect. One of the sites is in Zion and it is zoned industrial, although most of the neighboring properties are not in Zion.

These neighboring communities have no say what goes in their backyard. These communities get their water from wells. One of the proposed peaker plants plans on drilling an industrial well. This plant can use up to 2 million gallons of water a day. I believe that needs to be more study on ground water supply issues.

Concerned Citizens of Lake County, Chris Geiselhart, Chairperson

There is a potential drawdown of hundreds of thousands of gallons of water from Lake Michigan, which already exceeded water usage for the mining of deep well aquifers as sources of water for these facilities.

Zion Against Peaker Plants, Verena Owen, Co-Chair

Environmental impact studies for peaker plants are required by other states, for instance, Wisconsin, Indiana and Ohio. The environmental impact studies should contain at a minimum hydrology and water quality, water usage, waste water, water run-off and potentially polluted run-off containment, air quality, biology, loss of habitat, loss of agricultural land, land use and community character, archaeology, socioeconomic impact, visual impact, impact on local services, traffic, noise and public health and safety.

Jim Booth, Resident, Newport Township in Lake County

Upon investigation, I learned that the city of Zion, who purchases their water from the Lake County Public Water District had exceeded its 822.345 million gallons of Lake Michigan water by 22 million gallons. They purchased 844 million gallons from the Lake County Water District in the period May 1999 through April of 2000.

* * *

Zion, of course, is [considering] the peaker power plant, which would use a maximum peak of 2.124 million gallons of water per day when they are operating their five turbines. And they divide this by 365 days a year, of course. And that would run 230,000 gallons per day. Unless Zion files and is

awarded an increased allocation of Lake Michigan water, they cannot serve my business nor can they serve the proposed peaker plant.

The state of Illinois is in debt to Canada for exceeding their Lake Michigan water allocation. This debt is to be repaid by 2019. I assume you are familiar with that. For 20 years, Illinois took more than their allotted amount of water out of Lake Michigan, and now they have to pay it back. The bottom line is that there is less water to be divided among the municipalities, 177 or so, that use Lake Michigan water.

But the peaker power plant has an alternative which I do not have. They can drill wells and tap into the Ironton Galesville Sandstone Aquifer.

Circular 182 from the Illinois Department of Natural Resources Water Survey by Adrian A. Zuchowski addressed the water level trends and pumpings into the deep bedrock aquifers in the Chicago region in the period 1991 through 195. On page 15 he wrote that Schlect in 1976 estimated that the practical sustained yield of the deep bedrock aquifers regardless of the scheme of well development cannot exceed *65* million gallons a day.

The practical sustained yield of the deep aquifers is defined as the maximum amount of water that can be withdrawn without eventually dewatering the most productive water yielding formation, that is the Ironton Galesville Sandstone Aquifer.

In a fax dated August 15th of this year, Mr. Scott Meyer of the Illinois State Water Survey faxed me and said I recently estimated deep bedrock withdrawals in that area, referring to Zion, at about 71 million gallons a day. That is 6 million gallons above the practical sustained yield.

The point is this. One peaker power plant drawing 230,000 gallons per day from the Ironton Galesville Sandstone may not seem overly significant. But it is reported that there is some 55 peaker power plants proposed in the state of Illinois. How many will be drawing water from the Ironton Galesville Sandstone aquifer in the eight-county area?

Now, the survey that I referred to, the circular 182 involved water being taken from the following eight counties: Cook, DuPage, Grundy, Kane, Kendall, Lake, McHenry and Will. Now, five plants the size of the proposed Zion plant would draw 1,150,000 gallons of water per day from that aquifer. For 20 months plants would draw 4,600,000 gallons per day average, but at peak would draw 42 million gallons in one day. Now, this is out of an aquifer that can only sustain 65 million gallons and is currently being drawn at 71 million gallons.

The former state senator and minority leader Everitt McKinley Dickson once said after attending his first budget meeting, a billion dollars here and a billion dollars there, and pretty soon it added up to some real money. The same thing is true of the peaker power plants and their great appetite for water.

I ask you to consider the following questions. Should quality Lake Michigan water by used for peaker power plants or should that be reserved for human consumption? Should there be a limit on the quantity of water mined from the Ironton Galesville Sandstone Aquifer considering eight counties depend upon this water source, Cook, DuPage, Grundy, Kane, Kendall, Lake, mclienry and Will Counties? This is not a local issue. This is a regional issue.

And remember, this Ironton Galesville Sandstone Aquifer begins in Minnesota, runs through Wisconsin, northern Illinois, central Illinois, into Missouri and finally into the state of Iowa. It can be mined dry.

William McCarthy, Resident, Libertyville

As far as water use is concerned, these plants do use a lot of water.

* * *

Peaker Plants are inefficient. They only covert 28 percent of the power that they burn into electrical energy. Combined-cycle plants convert 56 percent. Obviously, you are going to get a lot more bang for your buck with a combined-cycle plant.

The problem is combined-cycle plants use more than 2 million gallons of water a day. Peaker plants use maybe 120,000 gallons a day. That is a big difference.

And as has been mentioned before, Illinois is under water use restrictions because they don't want Lake Michigan being drained for all different kinds of uses. And probably some of you read National Geographic and you are aware of the Arrow Sea disaster in the Soviet Union. The Arrow Sea was completely drained within a period of 20 years by overirrigation. And it is a water body one fourth the size of Lake Michigan. So they drained -- I think it was 100 billion trillion gallons of water. It is practically gone. If you could just look it up on the Internet, you will see.

Cindy Skrukrud, Resident, Olin Mills, McHenry County

First, relating to the State's commitment to water conservation, ground water withdrawals, McHenry County is one of the many counties in Illinois totally dependent on ground water for our drinking water. Combined-cycle plants with their massive need for water pose a real competitive threat to these water supplies. This is an issue we need to address.

SPRINGFIELD HEARINGS

Illinois Section of American Waterworks Association - Testimony of John Smith and Exchange with Chairman Manning and Board Members Girard and McFawm

Number three: Should new or expanding peaker plants be subject to siting requirements beyond applicable local zoning requirements? ISAWWA believes that peaker plant siting requirements should encourage the siting of these plants near a sanitary water treatment plant, if practical, so as to utilize the discharge from the sanitary water treatment plant known as gray water or cooling water." We only wish to comment on the use of water resources by these facilities. Number one, the State of Illinois must manage, protect and enhance the development of the water resources of the state as a natural and public resource. Number two, water resources have an essential and pervasive role in the social and economic well-being of the people of Illinois and is of vital importance to the general health, safety and economic welfare. Number three, water resources of the state must be used for beneficial and legitimate purposes. And number four, waste and degradation of water resources must be prevented.

ISAWWA is not opposed to the use of water resources by peaker plants. We are only asking for the responsible use of water resources by these facilities and all major new water consumers. We believe the regulation or permitting of large water resource withdrawals should be the responsibility of regional agencies, such as municipalities, counties or water boards, and that a state agency should have oversight of these regional agencies.

We believe that the basis for the decision on how much water can be safely used from a designated water resource be based on the existing knowledge and scientific studies of that resource, and, if knowledge of that resource is lacking, then additional research into the adequacy of this source should be done before allowing major withdrawals. The decision to allow the development of existing or new water resources must be based on sound science, not politics. We believe that funding must be adequate for the state agency to perform these studies.

In conclusion, Illinois Section AWWA is not opposed to peaker facilities. We are calling for the rules and regulations of water resources be based on scientific studies of our valuable water resources and that an unbiased state agency be charged with oversight of regional water use. Adequate funding for the state agency must allow for the scientific study of our state water resources, and the State must have a plan for the efficient management of water resources.

Chairman Manning: Thank you for being here today. I do have just one question. Are you aware of any projects right now that are ongoing between a

peaker plant developer and a sanitary treatment facility in the state we could *speak to*?

Mr. Smith: I'm not aware of any

Board Member Girard: So what you're advocating is that we have a state water resources board that allocates these large withdrawals? Is that what you're saying:

Mr. Smith: What we are saying is that we believe a state agency such as the Illinois State Water Survey should have some oversight over the regional agencies that normally would have some control over water. We believe that in most cases, the regional agency has at least some knowledge of the water resource and how much of that resource can be used safely without impacting other consumers or their industries. However, if the local agency has — unreasonably tries to restrict the use of these water resources, then a state agency could have oversight of the local agency.

* * *

Board Member McFawn: Is your association involved at all with any studies of water resources, be they groundwater or surface water, and their adequacy or even just their quantity?

Mr. Smith: Yes, we are. Illinois Section of AWWA is involved with the Mahomet Aquifer Consortium, which has — is trying to secure federal funding to do further studies of the Mahomet aquifer located in the central part of Illinois. This consortium and the action that we are doing to try to study this reservoir has already generated interest from other states in that they have inquired how we have put together the consortium and how we are going about to try and initiate these studies.

Our friends and neighbors are understandably worried about the impact of so-called peaker plants on air quality and water supplies.

National Association of Water Companies, Testimony of Brent Gregory, Representative of Illinois Chapter and Exchange with Board Members Melas and McFawn

The ability to provide water of sufficient quality and quantity to sustain commercial, industrial and residential growth goes hand-in-hand with the availability of electrical power. Water suppliers rely on adequate available electricity, and generating plants rely on an adequate supply of water. NAWC supports the development of new electrical generating capacity as needed for the economic advancement of Illinois.

We do not believe that peaker plants pose a unique threat to the environment compared to other types of state-regulated facilities. We believe that existing environmental regulations are adequate to address air and water quality concerns from peaker plants.

We emphasize the need for water use decisions to be based on sound scientific assessment of local and regional water resources. Where existing knowledge is insufficient, the state technical agencies should provide the scientific studies needed to permit or deny water withdrawals. State funding must be adequate to support these efforts. The right of existing public water supplies to condition withdrawing at their current installed capacities should be grandfathered into any program that is developed. The state should consider competent third-party assessments presented by those seeking to utilize the water resource.

We believe that permitting of new peaker plants and siting requirements should encourage conservation measures such as recycling of cooling water and use of other discharges for cooling when possible, such as those from sanitary treatment plants.

In summary, NAWC believes that the ability to expand power and water resources is important to the economic growth of Illinois.

* * *

Board Member Melas: Do you have any comments about the quantity of the — or the adequacy of particularly groundwater supplies?

Mr. Gregory: Well, we recognize that in certain areas of the state in particular, there may be some quantity concerns. We're traditionally known as a water-rich state, and yet due to concentrations of industry and populations and other circumstances, there are areas where, particularly in long-term outlook, water quantity is a concern. That's why we concur that there is a need for sound comprehensive management of the state's water resources with regard to quantity.

Board Member McFawn: You mentioned you thought that the quantity -- I believe it was the assessment of it should be done by an independent third party? Could you explain that a little bit more?

Mr. Gregory: Yes, I can. If there is some legislative or regulatory control set up over the use of Illinois water resources, it needs to be based on sound scientific assessment of the resource, which we believe that the state has — is the appropriate — has the appropriate technical resources to conduct those. However, if there would arise a dispute over the use or the application for the use of water or withdrawal of water and there is better science to be presented by a petitioner for the use of that water, that should be allowed.

Board Member McFawn: We are talking about just quantification, not quality?

Mr. Gregory: That is really in the context of quantity.

Mr. Gregory: If somebody wants to withdraw water from an aquifer or from a watershed and is able to hire a qualified consultant to demonstrate the reasonableness of that petition, then that should be considered.

Natural Resources Defense Council - Testimony of Patricio Silva and Exchange with Board Member McFawn

Mr. Silva: The water withdrawals were in part because there was some concern about adverse impact from the water withdrawals on the Hudson River for several fish species in that section of the Hudson River. I cannot remember off the top of my head if there was any impacts for nesting birds, but I don't believe so.

* * *

Board Member McFawn: [Y]ou said that NRDC was concerned about water used in single-cycle units. I've always thought that the single-cycles didn't cause that concern and it was the combined-cycles.

Mr. Silva: A great many single-cycle combustion turbine projects that we've seen -- not just the few that we've looked at in Illinois, but -- in elsewhere across the country -- rely on once-through cooling. Water is used once for evaporative cooling at the inlet duct and then essentially discarded. That, depending on the size of the unit -- and remember, the single-cycle turbines, we've seen anywhere from 80, some projects have 1,000 megawatts, so the water demand is going to be quite dramatic. Some of the combined-cycle units we've seen actually rely on dry cooling where there is essentially a process that involves a closed loop and onetime withdrawal of water.

So the demands — even though the unit — the technology's more efficient, in some applications the combined-cycle units can be hogs as well. They can be quite water intensive. So — But there is — there are technology options.

Exhibit from Reliant Energy

How much water will the plant use?

The plant does not require a large amount of water. Unlike many older plants, Reliant Energy Aurora does not use steam to generate electricity and its demand for water is similar to other light industrial uses. The primary use of water will be to cool the air flowing into the units and to control emissions.

The only other uses of water will be for the purposes of employee sanitation and for fire

The plant will use an average of only 300 gallons per minute (gpm) during the summer months and that the peak water usage rate will be gpm. The water will be provided from a deep aquifer well (Cambrian Ordovician650) which is at least one mile away from any known deep aquifer wells in the area. Compared with the water used in the City of Aurora on an annual basis, the maximum consumption from this well is less than 1% of the city's water use.

Public Comment #3 -- Ron Molinaro

Thirdly, there is the amount of water used. These plants can consume up [tol 2 million gallons of water a day. At a recent Zion City Council meeting a gentleman who owns a local confectionery company spoke of the possibility of the expansion of his business. When checking into the accessibility of additional water he discovered that the city of Zion exceeded its allocated amount for 1999 by 22 million gallons. If we were to allow these plants to be constructed in Zion, will there be enough water allocated for the expansion of existing business or the construction of new homes? This is a question that needs to be answered before we allow any power plants to be constructed in this region.

Public Comment #7 — Susan Zingle

Attachments to Public Comment #7 submitted by Susan Zingle - three letters from the Illinois State Water Survey.

Attachments to Public Comment #7 Submitted by Susan Zingle

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois State Water Survey

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SWS

December 4, 1998

Mr. Robert Wargaski
Lake-McHenry Environmental Cooperative
P.O. Box 134
Wauconda, IL 60084

Dear Mr. Wargaski:

This letter is in response to your request of December 1, 1998, concerning the development of two 5-million gallons per day (mgd) ground-water supplies from the Cambrian-Ordovician-Age aquifer system for the purpose of steam generation in electrical power generating facilities. One site (designated herein as the Island Lake Project) will be located in the SW¼ of Section 9, T.44N., R.9E., Lake County. The other site (designated herein as the Libertyville Project) will be located in the NE¼ of Section 12, T.44N., R.10E., Lake County. The distance between these sites is approximately 9 miles. You have asked the Water Survey to comment on the potential impacts these ground-water withdrawals may have on surrounding water wells finished within the same aquifer system. You also inquired about ground-water law and regulation. The following are responses to the specific questions you posed to the Water Survey concerning this matter:

"The proposed Island Lake and Libertyville sites are within 10 miles of each other. Each would draw up to 5 million gallons of water per day. Please comment on the impact they would have operating together and simultaneously on the aquifer and the surrounding community wells. Which community wells would be affected by the interface drawdown."

Withdrawal of ground water from a well may cause water levels in nearby wells tapping the source aquifer to decline. This water-level decline is referred to as interference drawdown or, more simply, as interference. Interference drawdown decreases with increasing distance in all directions from a pumping well, defining an inverted conical water-level surface around the well. This is known as the cone of depression. The size and shape of the cone of depression created by a pumping well will depend on the areal extent and hydraulic properties of the aquifer, the pumping rate, and the duration of pumping at the well. When interference drawdown causes the water level in a well to decline below the pump intake (in which case the pump breaks suction) or below a level at which the pump can lift the desired volume of water to the surface, remedial measures such as lowering the pump setting or sizing a higher capacity pump may be necessary to restore a normal supply. The risk posed by a pumping well on the ability of a nearby well to deliver its normal supply is, therefore, a function both of the amount of interference and of various construction features of the affected well -- chiefly the pump setting, dynamic head rating of the pump, and well efficiency.

For the Island Lake and Libertyville Projects, nearby existing wells finished within the Cambrian-Ordovician-Age aquifer system, pre-dating the Lake Michigan water allocations to the area of question, may not be severely impacted by the proposed well field because those wells were engineered and

constructed when regional water levels were considerably lower than at present. Prior to Lake Michigan water allocations, pump intakes in water wells were set at lower depths and had greater water lifting capacities because of lower ground-water levels caused by regional pumpage. However, wells finished in the deep sandstones within the last few years could see more severe impacts because they were constructed after the regional "recovery" of water levels within the Cambrian-Ordovician-Age aquifer system.

The impact of the withdrawal of 5 mgd from two sites on ground-water levels with the Cambrian-Ordovician-Age aquifer system was determined through the use of an analytical mathematical model using regional values for the hydraulic properties of this aquifer system. The use of this model required that significant assumptions be made to simplify the natural variability often encountered in aquifer systems. Assumptions include homogeneous and isotropic aquifer hydraulic properties (as opposed to properties that may vary vertically and horizontally in three dimensions), no ground-water recharge, infinite aquifer extent (as opposed to geologic and hydraulic features which may limit the size of the aquifer), and a continuous pumping schedule (as opposed to a time-variant pumping rate).

The hydraulic properties and pumping scenarios were assumed to be identical at the Island Lake and Libertyville Projects sites. As you requested, each proposed well field pumped simultaneously in our model simulation. For purposes of construction of the model, we assumed each well field would consist of eight wells (finished in the St. Peter and Ironton-Galesville Sandstone aquifers) supplying 5 mgd (about 434 gallons per minute each) on a continuous basis for 20 years. Given these parameters, the model provided the graphic output shown in accompanying Figure 1.

Under the pumping and hydraulic conditions described in the above scenario, mutual interference effects between the well fields may cause water level declines of as much as 280 feet. Interference effects decline to approximately 150 feet at 12 miles.

This analytical model also suggests that as much as 520 feet of drawdown would be observed in the centers of each well field. This would lower the potentiometric head of the Cambrian-Ordovician-Age aquifer in the study area into the St. Peter sandstone. Dewatering of any artesian aquifer can lead to the reduction in pumping capacity. For a properly designed well field, the Cambrian-Ordovician-Age aquifer should be able to yield the desired quantity of water on a sustainable basis.

Given the possibility that the aquifer properties, number of pumping wells, well spacing, pumping rates, pumping periods, and total pumpage of the proposed wells may be different than what was assumed for this report, we recommend a more detailed analysis be made of the number of existing wells and their distance from the proposed high-capacity well fields. In addition, static water levels, pumping water levels, and pump intake settings of nearby water wells could be analyzed to determine if, and which, domestic, industrial, or municipal water wells would be potentially impacted.

Pumping water from this aquifer in the Island Lake and Libertyville areas has wider ranging effects than simply being a local phenomenon. Consideration should be given to the effects on the practical sustained yield of the entire aquifer system including the effects of pumping on ground water within the State of Wisconsin. The aquifer system is currently being pumped at, or slightly above, its estimated practical sustainable yield of 65 mgd per day. Further development is likely to contribute to the mining of ground-water in northeastern Illinois. A more sophisticated ground-water model of northeastern Illinois, one that

can incorporate regional variations in aquifer properties (unlike the simplistic analytical model we used to calculate drawdowns for this letter), would be a very important planning tool for state and local governmental leaders to have available to them in their efforts to manage this natural resource.

We recommend that a three-dimensional numerical ground-water model be used to better predict what long-term impacts the proposed ground-water development would have on the Cambrian-Ordovician-Age aquifer in northeastern Illinois. The Illinois State Water Survey has previously modeled this aquifer system (Prickett 1971, Visocky 1982, Burch 1991); however, the Water Survey's most recent model (Burch 1991) will need extensive updating. A three-dimensional numerical ground-water model could incorporate natural variations in aquifer properties, thickness, and withdrawals from existing high-capacity wells. Such a model would also allow studying the aquifer in a more regional context.

To reiterate, estimates of water-level decline contained in this letter were determined from a strictly theoretical consideration of aquifer hydraulics, making use of regional aquifer property data. More accurate estimates would be possible given better aquifer property data and recharge rates collected through properly conducted "on-site" aquifer tests. It is possible that the predictions in this letter will not prove to be accurate. We, therefore, recommend that further study be made of this particular issue. The Illinois State Water Survey has the expertise to provide these services to the residents of Lake and McHenry Counties; however, such involved research would require a contractual agreement (administered through the University of Illinois) between interested parties and the Water Survey.

As to your question relating to which municipal water wells would be affected by the theoretical well fields, the total number of wells impacted and corresponding economic repercussions are impossible to quantify at this time without further in-depth study.

"Does Illinois have any regulations on the limits of water that can be drawn from the aquifer? Do other states have limits and which ones."

The State of Illinois does not have any specific laws that limit ground-water withdrawals. The Rule of Reasonable Use allows "property owners to unlimited and non-permitted use of the water beneath their land as long as the use is 'reasonable' and injury to a neighboring well does not arise but of malice" as stated by Bowman (1991). We suggest that you contact Mr. Gary Clark of the Office of Water Resources, Illinois Department of Natural Resources, at (217) 785-3334 for further information on this matter. Mr. Clark is one of the State's leading experts on ground-water law, and we are confident he will be able to address any ground-water law related questions that you pose to him. For your information, we have enclosed a copy of an Illinois Department of Transportation 1985 report to the Illinois Groundwater Association ***Illinois Groundwater Law: The Rule of Reasonable Use***. Mr. Clark is the author of this document. We are also enclosing a copy of Illinois State Water Survey Report of Investigation 114 ***Ground-Water Quantity Laws and Management***, for additional discussions of Illinois ground-water laws and the law practiced in several other midwestern states.

"What is the change in the level of the deep sandstone aquifer since communities switched from aquifer wells to Lake Michigan water."

For your information on this particular subject, we have enclosed Illinois State Water Survey Circular 182 *Water-Level and Pumpage in the Deep Bedrock Aquifers in the Chicago Region, 1991-1995*. This

publication is an excellent resource for the analysis of water level trends in the Cambrian-Ordovician-Age aquifer system. Figure 9 on page 30 of this document shows changes in the potentiometric surface of the deep bedrock aquifers between 1991 and 1995. In Lake County, there were areas that observed an increase in water levels (potentiometric head) of over 250 feet. Wauconda Municipal Well 4, located in Section 24, T.44N., R.9E., Lake County, experienced a rise in ground-water levels of 45 feet between 1991 and 1995.

"With the growing population trend in Lake and McHenry County, what limitations would you suggest be incorporated to protect the aquifer and keep it healthy for future generations."

The Illinois State Water Survey is a strictly an objective scientific organization. We do not make, nor do we enforce, rules and regulations. However, our research and guidance is often utilized in the development of water-related laws and statutes. In the case of the issues addressed in this letter, we have the knowledge and expertise to offer the citizens and their governmental representatives to make informed decisions about how to develop their natural resources. However, additional research will be needed before we can more accurately address your many concerns.

For your information, I have enclosed all prior letter correspondence that deal with power generation in Lake and McHenry County areas. If we can be of any further assistance, please feel free to call or write.

Sincerely,

Andrew G. Buck

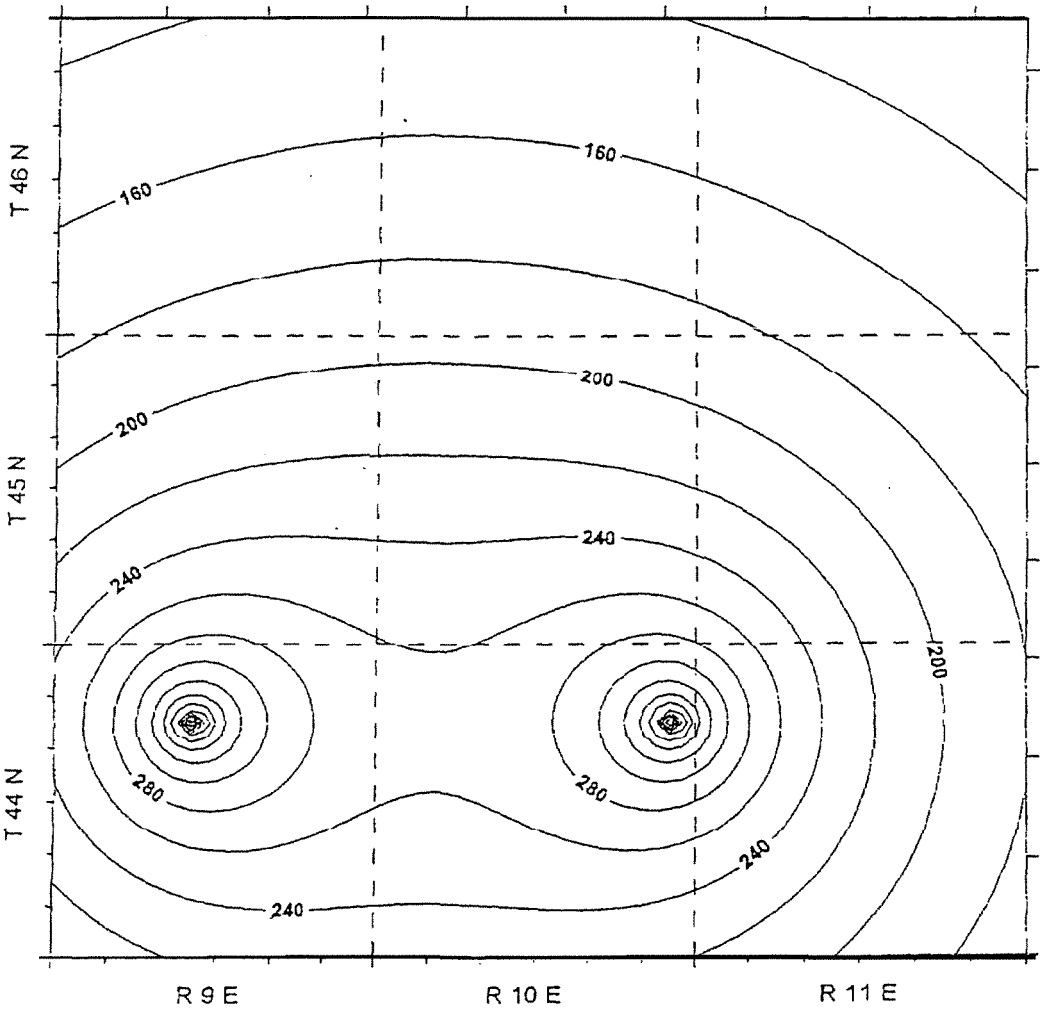
Andrew G. Buck, P.G.
Assistant Hydrogeologist
Ground-Water Section
Phone: (217) 333-6800

agb

Enclosures as stated

cc: Winstanley, ISWS
Bhowmik, ISWS
Roadcap, ISWS
Clark, IDNR-OWR

Drawdown created by two wellfields
each pumping 5 MGD from 8 Wells.
(T = 15,000 gpd/ft, S = 0.0004)



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SWS

December 2, 1998

Mr. Kenneth C. Hopps
Natural Gas Pipeline Company of America
747 East 22nd Street
Lombard, Illinois 60148-5072

Dear Mr. Hopps:

This letter is in response to your request concerning the development of a 2.5 million gallon per day (mgd) ground-water supply from the Cambrian-Ordovician-Age aquifer system for the purpose of steam generation in an electrical power generating facility. We understand that the proposed power plant will be located in the SW¼ of Section 9, T.44N., R.9E., Lake County. You have asked the Illinois State Water Survey to comment on the potential impact this ground-water withdrawal may have on surrounding water wells finished within the overlying unconsolidated sand and gravel deposits and Silurian-Age dolomite bedrock aquifer. It should be noted that the Water Survey has previously provided estimates of theoretical water level drawdowns in the Cambrian-Ordovician-Age aquifer system given several different water withdrawal scenarios. These previous letter reports to your company were dated September 3 and October 13, 1998, and addressed the interference effects caused by a theoretical well field on wells finished within the Cambrian-Ordovician-Age aquifer.

Withdrawal of ground water from a well will cause water levels in nearby wells tapping the source aquifer to decline. This water-level decline is referred to as interference drawdown or, more simply, as interference. Interference drawdown decreases with increasing distance in all directions from a pumping well, defining an inverted conical water-level surface around the well known as the cone of depression. The size and shape of the cone of depression created by a pumping well will depend on the areal extent and hydraulic properties of the aquifer, the pumping rate, and the duration of pumping at the well. When interference drawdown causes the water level in a well to decline below the pump intake (in which case the pump breaks suction) or below a level at which the pump can lift the desired volume of water to the surface, remedial measures such as lowering of the pump setting or sizing a higher capacity pump may be necessary to restore a normal supply. The risk posed by a pumping well on the ability of a nearby well to deliver its normal supply is, therefore, a function both of the amount of interference and of various construction features of the affected well -- chiefly the pump setting, dynamic head rating of the pump, and well efficiency.

With respect to your question, the key variable when determining whether a well(s) withdrawing ground water will adversely impact a nearby well(s) is dependent on the hydraulic connection

between the source aquifers. In this case, you have asked us to address the potential impacts on wells finished in the unconsolidated sand and gravel deposits above bedrock and wells completed in the Silurian-Age dolomite when the deeper lying Cambrian-Ordovician-Age sandstone aquifers are pumped. For your reference, we have enclosed an excerpt from Illinois State Water Survey Circular 182, titled *Water-Level Trends and Pumpage in the Deep Bedrock Aquifers in the Chicago Region, 1991-1995* (Visocky et al., 1985, page 6 and 7, figure 2), which shows the stratigraphy, water-yielding properties of the rocks, and the character of the ground water in northeastern Illinois. In this part of Illinois, the Ordovician-Age Maquoketa shale separates the unconsolidated materials and Silurian-Age dolomite from the deeper lying Cambrian-Ordovician-Age (St. Peter and Ironton-Galesville sandstones) aquifers.

The Maquoketa shale is approximately 105 feet thick in the area of interest. Under natural conditions, the Maquoketa acts as an effective hydraulic barrier between the upper (sand and gravel and dolomite) and lower (Cambrian-Ordovician-Age sandstones) aquifer systems. Consequently, changes in ground-water levels in the Cambrian-Ordovician-Age are relatively independent of those in the shallower aquifer systems. Given this, pumping the Cambrian-Ordovician-Age aquifer system should not affect water levels in the shallower sand and gravel and dolomite aquifers. It should be noted that this assumes that a well finished in the Cambrian-Ordovician-Age sandstones must be constructed such that the geologic materials from the Ordovician-Age St. Peter sandstone and above are "cased off". An "open" bore hole hydraulically connecting the Silurian-Age dolomite and deeper-lying sandstone formations would render the above conclusions false. Water levels in the shallower aquifers probably will be impacted by water withdrawals from the Cambrian-Ordovician-Age sandstone aquifers if the geologic materials above the St. Peter sandstone were not sealed off by well casing.

If we can be of any further assistance, please feel free to call or write.

Sincerely,

Andrew G. Buck

Andrew G. Buck, P.G.
Assistant Hydrogeologist
Ground-Water Section
Phone: (217) 333-6800

agb/psl

Enclosure as stated

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois State Water Survey

Main Office • 2204 Griffith Drive • Champaign, IL 61820-7495 • Tel (217) 333-2210 • Fax (217) 333-6540
Peoria Office • P.O. Box 697 • Peoria, IL 61652-0697 • Tel (309) 671-3196 • Fax (309) 671-3106
Ground-Water Section • Tel (217) 333-4300 • Fax (217) 244-0777

SWS

October 1, 1998

Mr. Stan A. Smogorzewski
LS Power, LLC
13522 Calais Drive
Del Mar, California 92014

Dear Mr. Smogorzewski:

This letter is in response to your request concerning the development of a 10.8 million gallon per day (mgd) ground-water supply from the Cambrian-Ordovician-Age aquifer system for the purpose of steam generation in an electrical power generating facility. We understand that you are considering two sites for this facility. One site (designated herein as McHenry Project) will be partially located in the E½ of the NE¼, of Section 8, T.44N., R.9E., McHenry County and partially in the NW¼ of Section 9, T.44N., R.9E., Lake County. The other site (designated herein as Lee Project) will be located in the N½ of the SE¼ of Section 32, T.21N., R.8E., Lee County. You have asked the Water Survey to comment on the potential impacts these ground-water withdrawals may have on surrounding water wells finished within the same aquifer system given this pumping rate over a 1-year period. In this letter report, we will address the theoretical impact that a 7,500 gallon per minute (gpm) well may have on ground-water levels within the Cambrian-Ordovician-Age aquifer system.

Withdrawal of ground water from a well will cause water levels in nearby wells tapping the source aquifer to decline. This water-level decline is referred to as interference drawdown or, more simply, as interference. Interference drawdown decreases with increasing distance in all directions from a pumping well, defining an inverted conical water-level surface around the well known as the cone of depression. The size and shape of the cone of depression created by a pumping well will depend on the areal extent and hydraulic properties of the aquifer, the pumping rate, and the duration of pumping at the well. When interference drawdown causes the water level in a well to decline below the pump intake (in which case the pump breaks suction) or below a level at which the pump can lift the desired volume of water to the surface, remedial measures such as lowering of the pump setting or sizing a higher capacity pump may be necessary to restore a normal supply. The risk posed by a pumping well on the ability of a nearby well to deliver its normal supply is, therefore, a function both of the amount of interference and of various construction features of the affected well -- chiefly the pump setting, dynamic head rating of the pump, and well efficiency.

For the McHenry Project, nearby existing wells finished within the Cambrian-Ordovician-Age aquifer system, pre-dating the Lake Michigan water allocations to the area of question, may not be severely impacted by the proposed well field because those wells were engineered and constructed when regional water levels were considerably lower than at present. Prior to Lake Michigan water

allocations, pump intakes in water wells were set at lower depths and had greater water lifting capacities because of lower ground-water levels caused by regional pumpage. However, wells finished in the deep sandstones within the last few years could see more severe impacts because they were constructed after the regional "recovery" of water levels within the Cambrian-Ordovician-Age aquifer system. This situation does not apply to the Lee Project because water levels in that area have not been regionally lowered.

The impact of the withdrawal of 7,500 gpm on ground-water levels with the Cambrian-Ordovician-Age aquifer system were determined through the use of an analytical mathematical model using regional values for the hydraulic properties of this aquifer system. The use of this model required significant assumptions be made to simplify the natural variability often encountered in aquifer systems. Assumptions include homogeneous and isotropic aquifer hydraulic properties (as opposed to properties that may vary vertically, horizontally, and with direction), infinite aquifer extent (as opposed to geologic and hydraulic features which may limit the size of the aquifer), and a continuous pumping schedule (as opposed to a time-variant pumping rate).

Because the hydraulic properties and pumping scenarios were assumed to be identical at the McHenry and Lee Projects, the distance-drawdown estimates shown below apply to both sites. As you requested, the proposed well field was assumed to consist of only one well (finished in the St. Peter and Ironton-Galesville Sandstone aquifers) supplying 10.8 mgd (7,500 gpm) on a continuous basis for one year. Given these parameters, the model provided the following distance-drawdown relationships (also see the enclosed distance-drawdown plot and map):

Distance from pumped well	*Drawdown after pumping 1-year*
¼ mile	350 feet or less
½ mile	285 feet or less
1 mile	225 feet or less
2 miles	170 feet or less
3 miles	135 feet or less
4 miles	110 feet or less
5 miles	90 feet or less

Although these impacts are considerable, the available drawdown in deep sandstone wells is probably adequate for the desired amount of ground-water yield, assuming a properly designed well field. The number of wells impacted and corresponding economic repercussions are impossible to quantify at this time without further in-depth study.

Given the possibility that the aquifer properties, number of pumping wells, well spacing, pumping rates, pumping periods, and total pumpage of the proposed wells may be different than what was assumed for this report, we recommend a more detailed analysis be made of the number of wells and their distance from the proposed high-capacity well field. In addition, static water levels, pumping water levels, and pump intake settings of nearby water wells could be analyzed to determine if, and

which, domestic, industrial, or municipal water wells would be potentially impacted. Also, it would be prudent to run a sophisticated numerical ground-water model to better predict what long-term impacts the proposed ground-water development would have on the Cambrian-Ordovician-Age aquifer in northeastern Illinois. Such a model could incorporate natural variations in aquifer properties, thickness, and withdrawals from existing high-capacity wells. This would be a very important planning tool for local governmental leaders to have available to them in their efforts to manage this natural resource.

Another issue in any use of water from the Cambrian-Ordovician-Age aquifer system is water quality. There are reports of radioactive isotopes associated with these waters which can be a factor in its use.

To reiterate, estimates of water-level decline contained in this letter were determined from a strictly theoretical consideration of aquifer hydraulics, making use of regional aquifer property data. More accurate estimates would be possible given better aquifer property data collected through properly conducted "on-site" well tests. It is possible that the predictions in this letter will not prove to be accurate. We, therefore, recommend that further study be made of this particular issue. The Illinois State Water Survey has the expertise to provide these services to LS Power and the citizens of Lake, McHenry and Lee Counties; however, such involved research would require a contractual agreement (administered through the University of Illinois) between your firm and the Water Survey.

To further your knowledge of the water resources of the deep sandstones aquifers of Illinois, we have enclosed Cooperative Report 10, titled *Geology, Hydrology, and Water Quality of the Cambrian and Ordovician Systems in Northern Illinois* and Illinois State Water Survey Circular 182, titled *Water-Level Trends and Pumpage in the Deep Bedrock Aquifers in the Chicago Region, 1991-1995*. If we can be of any further assistance, please feel free to call or write.

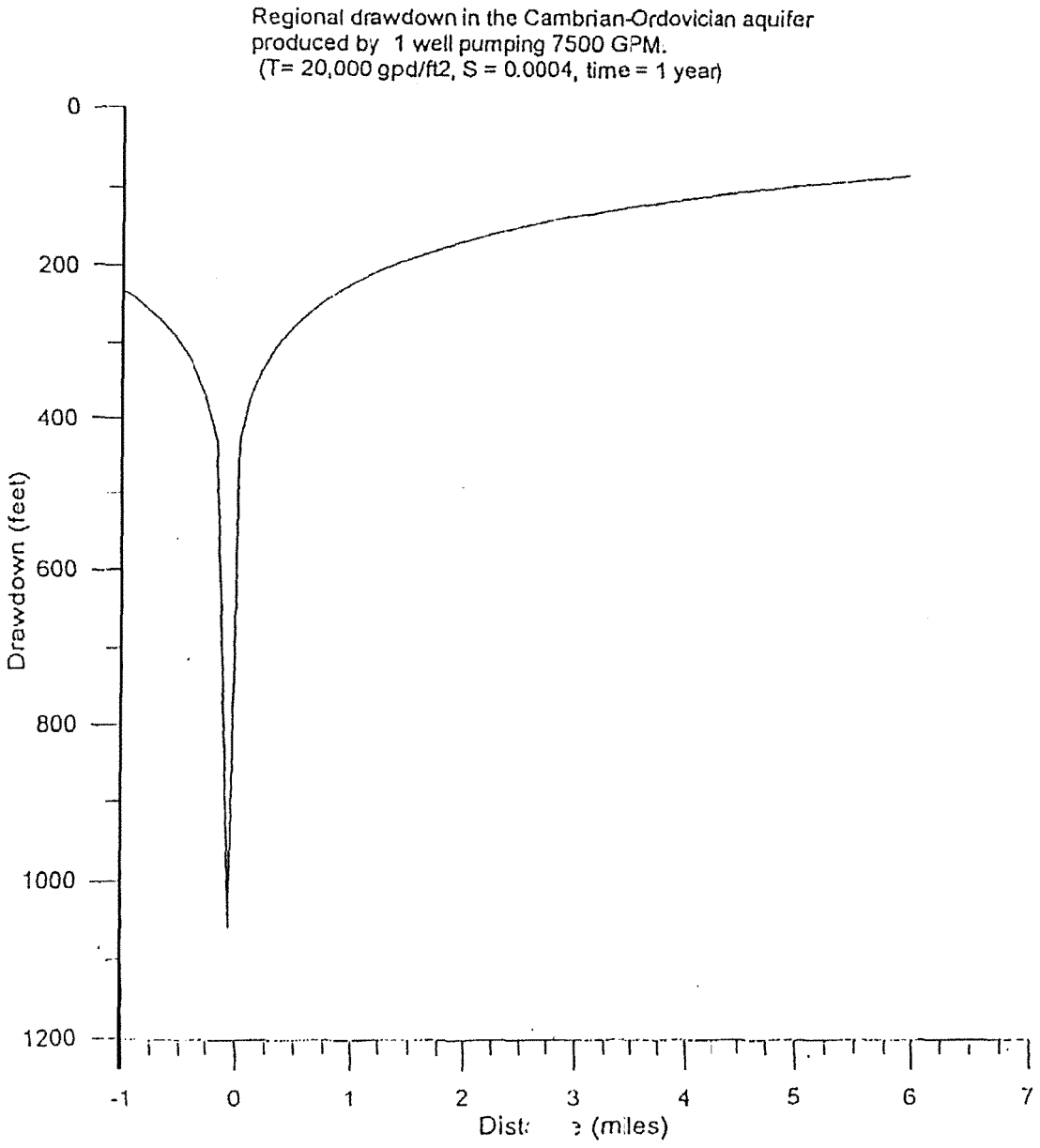
Sincerely,

Andrew G. Buck

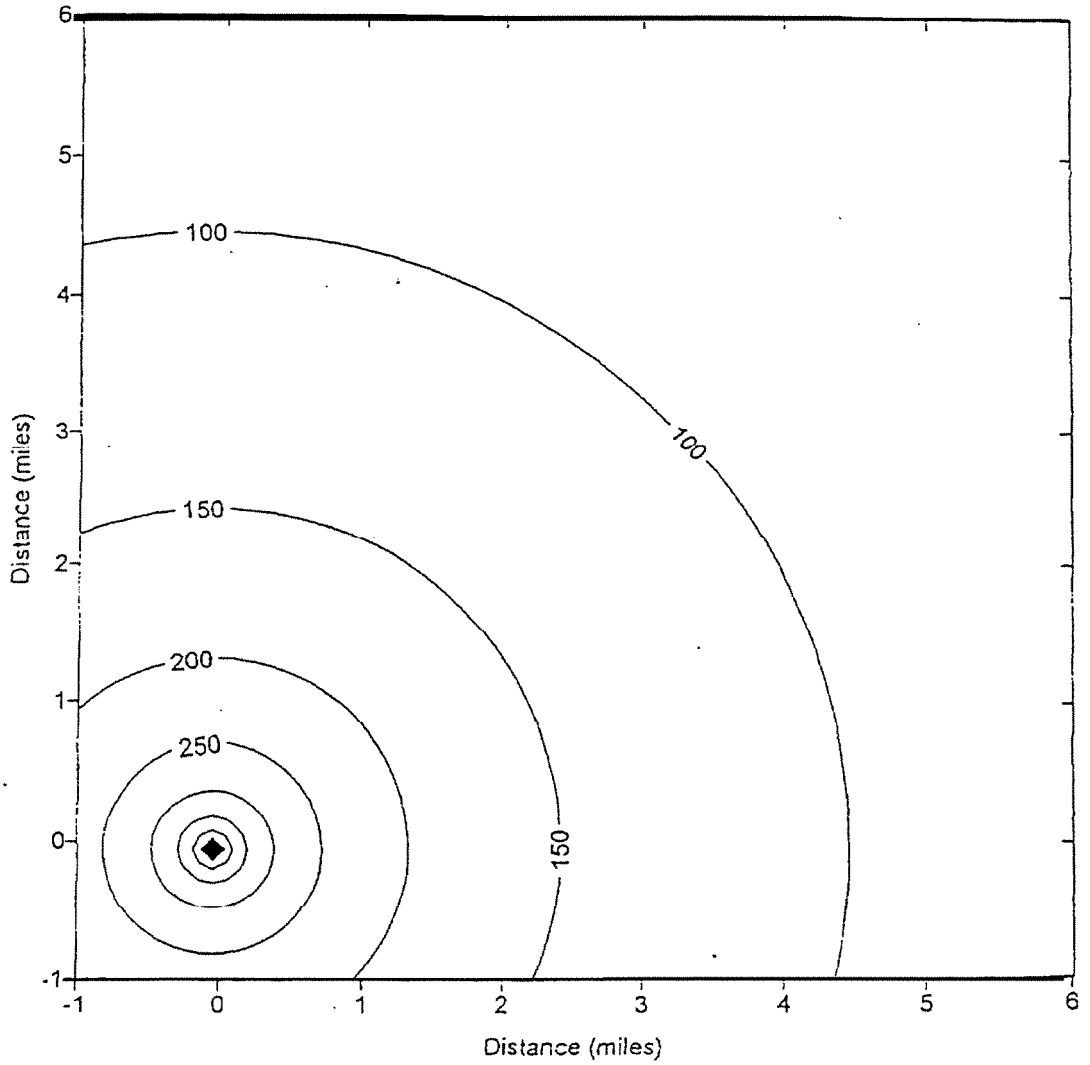
Andrew G. Buck
Assistant Hydrogeologist
Ground-Water Section
Phone: (217) 333-6800

agb/psl

Enclosures as stated


Regional drawdown in the Cambrian-Ordovician aquifer
produced by 1 well pumping 7500 GPM.
(T= 20,000 gpd/ft2, S = 0.0004, time = 1 year)
Drawdown (feet)
0
200
400
600
800
1000
1200
-1
0
1
2
3
4
5
6
7
Dist: ɜ (miles)

Regional drawdown in the Cambrian-Ordovician aquifer
produced by 1 well pumping 7500 GPM.
(T= 20,000 gpd/ft2, S = 0.0004, time = 1 year)



SUMMARY OF WATER QUANTITY LAWS FROM MIDWESTERN STATES

IOWA

Statute: Code of Iowa, 455B (1999)

Regulatory Entity: Department of Natural Resources; Environmental Protection Division

Summary: Permit is required for any person who diverts, stores or withdraws more than 25,000 gallons of water per day (surface or groundwater); Permits are generally issued for 10 years but, depending on geological conditions, can be for lesser period of time; Permit program insures consistency in decisions on allocations; Allocations based upon concept of "beneficial use" the key points of which are (1) water resources are to be put to beneficial use to the fullest extent; (2) waste and unreasonable uses are prevented; (3) water conservation is expected; (4) established average minimum instream flows are protected; Administrative process resolves water use conflicts; Provisions in place for public involvement in issuing water allocation permits and in generally establishing water use policies.

MINNESOTA

Statute: Minnesota Statute 103G.265

Regulatory Entity: Department of Natural Resources; Waters Office

Summary: Permit is required for all users withdrawing (surface and groundwater) more than 10,000 gallons per day or 1 million gallons per year (Exceptions include: domestic uses serving less than 25 persons, certain agricultural drainage systems, test pumping of a groundwater source, and reuse of water already authorized by permit, e.g., water purchased from a municipal water system); Permits granted for no longer than 5 years; Policy: to manage water resources to ensure an adequate supply to meet long-range seasonal requirements for domestic, agricultural, fish and wildlife, recreational, power navigation, and quality control purposes; Water Appropriation Permit Program exists to balance competing management objectives that include both development and protection of Minnesota's water resources; Permitted users required to submit annual reports of water use; Reported information used to evaluate impacts and to aid in resolving conflicts.

OHIO

Statute: Ohio Revised Code Sections 1521.16; 1521.17; Sections 1501.30 and 1501.33

Regulatory Entity: Department of Natural Resources; Division of Water

Summary: Permits are required for those making a new or increased consumptive use of water greater than an average of 2 million gallons per day over a 30-day period; Registration is required for any facility or combination of facilities with the capacity to withdraw more than 100,000 gallons of water (surface or ground) daily; Chief of DNR Division of Water has authority to designate "ground water stress areas" and to require water withdrawal registration in these areas for users of water less than the normal 100,000 gallon threshold; Annual reporting is required of those who must register; Purpose of registration and reporting requirements: to gather data to assist in resolving future water use conflicts; Chief also has responsibility to maintain Water Resources Inventory which must include information to assist in determining the reasonableness of water use; While "reasonable use" is used by courts to determine water conflicts, legislature has set forth nine specific factors (applicable to both surface and groundwater) which define reasonableness; Consumptive use is defined as a use of water resources, other than a diversion, that results in a loss of that water to the basin from which it is withdrawn and includes, but is not limited to, evaporation, evapotranspiration, and incorporation of water into a product or agricultural crop.

INDIANA

Statute: Indiana Code, 14-25

Regulatory Entity: Department of Natural Resources (DNR); Natural Resources Commission (NRC)

Summary: Registration and annual reporting requirement for owners of significant water withdraw facilities (withdrawal of 1,000,000 gallons per day of surface water, groundwater, or combination); NRC has statutory authority to require, by rule, a permit for most water withdrawals from navigable waters, but authority has not yet been exercised; NRC is required to develop and maintain inventories, gather and assess all information needed to properly define water resource availability; NRC can establish, by rule, minimum stream flows; Where groundwater threat, DNR may designate a "restricted use area." Permit then required for withdrawal of more than 100,000 gallons per day beyond use at time of restricted use designation; In granting or refusing a permit, the DNR considers the concept of beneficial use.

MISSOURI

Statute: Missouri Revised Statutes, Chapter 256

Regulatory Entity: Department of Natural Resources (DNR)

Summary: Major water users must register with DNR; A major water user is defined as an entity that is capable of withdrawing or diverting 100,000 gallons or more per day from any water source; Failure to register may result in DNR request that Attorney General file action to stop all withdrawal or diversion; Purpose of registration program is to insure the development of information required for the analysis of certain future water resource management needs.

WISCONSIN

Statute: Wisconsin Statutes, Chapter 281; DNR Rules, Chapter NR 142

Regulatory Entity: Department of Natural Resources (DNR)

Summary: Wisconsin law provides for (1) development of statewide water quantity resources plan; (2) registration and annual reporting (with fees) of major withdrawals (over 100,000 gallons per day in 30-day period); (3) permit approval process (with administrative hearing process) for construction, development and operation of wells where capacity and rate of withdrawal of groundwater from *all wells on one property* is in excess of 100,000 gallons a day; *Specifics of Permit Approval Process*: 90-day approval process. Approval withheld or restricted if withdrawal will adversely effect or reduce availability of public utility water supply or doesn't meet grounds for approval which are: (a) No adverse effect on public water rights in navigable waters; (b) No conflict with any applicable plan for future uses of waters of state or water quantity resources plan; (c) Reasonable conservation practices have been incorporated; (d) No significant adverse impact on environment and ecosystem of the Great Lakes basin or the upper Mississippi River basin; (e) Plan for withdrawal consistent with the protection of public health, safety and welfare and not detrimental to public interest; (f) No significant detrimental effect on the quantity and quality of the waters of the state; (Even more factors apply if the proposed withdrawal will result in an "interbasin diversion). Regulations define water loss and consumptive use; Also, permit is required for any diversion of water from any lake or stream for diversions of 2,000,000 gallons per day in any 30-day period; If DNR receives application for a withdrawal from the Great Lakes basin that will result in a new water loss averaging 5,000,000, gallons per day in any 30-day period, DNR notifies governor of other Great Lakes States, requesting their input. The rules incorporate methods for citizens to initiate DNR investigations of alleged violations.

APPENDIX H

NEW YORK SITING PROCESS

In the State of New York, applications to construct and operate an electric generating facility with a capacity of 80 MW or more are ruled upon by the New York State Board on Electric Generation Siting and the Environment (NYS Siting Board) after various filings and hearings. The NYS Siting Board is comprised of chairmen and commissioners of various state agencies. The NYS Siting Board also includes two members of the public, appointed by the Governor of New York for each project, who reside near the proposed site.

The New York siting process requires the applicant to file a preliminary scoping statement for the proposed project, describing the following: the proposed facility and its environmental setting; potential environmental impacts from construction and operation; proposed mitigation of potential environmental impacts; and reasonable alternatives to the proposed facility. During this pre-application phase, a hearing examiner may mediate disagreements on the scope and method of any environmental impact studies needed in the application.

The application itself must contain the following: a description of the facility and the site including all applicable environmental characteristics; studies of impacts on air, water, visual resources, land use, noise levels, health, and other matters; proof that the proposed facility will meet state and federal health, safety, and environmental regulations; applications for air and water permits; and a complete report of the applicant's public involvement program activities and how it encouraged citizens to participate.

The applicant must publish notice that it filed the preliminary scoping statement and the application, and serve copies of those documents on interested state agencies, members of the legislature, municipalities, local libraries, and other interested persons and organizations. During the siting process, the applicant must carry out a meaningful public involvement program. The applicant is expected to hold public meetings, offer presentations to individual groups and organizations, and establish a presence in the community (*e.g.*, establishing a local office, toll-free telephone number, Web site, or a community advisory group).

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. When the applicant submits the application, it must include 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. At least 50% of the fund is designated for the use of municipalities. The applicant receives any intervenor funds remaining at the end of the case.

The New York State Department of Environmental Conservation reviews applications for air and water permits submitted as part of the siting process application. That department must provide the permits to the NYS Siting Board before that board decides whether to

approve siting by granting the applicant a Certificate of Environmental Compatability and Public Need. To grant a Certificate, the NYS Siting Board must determine:

- Either:

  Constructing the facility is reasonably consistent with the most recent state energy plan (the final 1994 plan assesses the state's current energy supplies, infrastructure, and policies, and forecasts energy needs and supplies through 2012), or

  The electricity generated by the facility will be sold into the competitive market;

- The nature of the probable environmental impacts, including evaluating cumulative air quality impacts;

- The facility minimizes adverse environmental impacts, given environmental and other pertinent considerations;

- The facility is compatible with public health and safety;

- The facility will not discharge or emit any pollutants in violation of existing requirements and standards;

- The facility will control the disposal of solid and hazardous wastes;

- The facility is designed to operate in compliance with state and local legal provisions, other than those local legal provisions that the NYS Siting Board finds unreasonably restrictive; and

- The construction and operation of the facility is in the public interest.

Various state agencies involved in the environment, public health, or energy are normally active parties in the New York siting process. Any municipality or resident within a five-mile radius of a proposed facility can become a party to the proceeding. Any organization or resident outside of the five-mile radius may request party status. Party status enables the person or entity to submit testimony, cross-examine witnesses, and file legal briefs. The NYS Siting Board's goal is to decide whether to grant siting within 14 months after it receives the application.

CALIFORNIA SITING PROCESS

California has empowered the California Energy Commission (CEC) to conduct a consolidated approval process for siting all power plants that will have electric generating capacities of 50 MW or larger. The CEC'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.

The CEC has exclusive authority to approve constructing and operating these plants. While the CEC's authority supercedes the authority of other state and local agencies, the CEC 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 CEC.

The California siting process, which has public hearings and allows the public to participate, has two main phases. The first phase is expected to take nine months to one year to complete. It typically involves a conceptual review of the project, determining the need for a proposed plant, site suitability and acceptability, and alternatives to the proposed project. The second phase is expected to take 12 to 18 months to complete. It involves considering the specific site, technology, and equipment. In the second phase, the design, construction, operation, and closure of the power plant is reviewed against applicable laws, rules, and ordinances. The second phase is used to identify negative environmental effects and ways to mitigate them. The CEC also determines, or reconfirms, the need for the facility.

The California siting process includes a public adviser, nominated by the CEC and appointed by the Governor of California to a three-year term. The public adviser is responsible for ensuring that the public and other interested parties have full opportunities to participate in the siting process. The public adviser does not act as the public's legal counsel before the CEC but instead advises the public on how to effectively participate in the proceedings.

California has experienced delays with its siting process, resulting in changes to the program. The CEC amended its procedures to allow any proponent of a natural gas-fired merchant power plant to proceed to the second phase without applying for an exemption from the first phase. Apparently the California legislature created a "fast track" siting process of six months for new electric generating facilities presenting no significant adverse environmental impacts. It also appears that, under that legislation, a simple cycle peaker plant can receive a three-year operating permit in less than four months if it presents no significant adverse environmental impacts and is equipped with certain stringent emission control technology. A permit condition, however, requires the facility, within three years, to either convert to a combined cycle operation or cease operating.

APPENDIX I

ILLINOIS SB 172 SITING CRITERIA

The Act's pollution control facility siting criteria are as follows:

i. the facility is necessary to accommodate the waste needs of the area it is intended to serve;

ii. the facility is so designed, located and proposed to be operated that the public health, safety and welfare will be protected;

iii. the facility is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property;

iv. (A) for a facility other than a sanitary landfill or waste disposal site, the facility is located outside the boundary of the 100 year floodplain or the site is flood-proofed; (B) for a facility that is a sanitary landfill or waste disposal site, the facility is located outside the 100-year floodplain, or if the facility is a facility described in subsection (b)(3) of Section 22.19a, the site is flood-proofed;

v. the plan of operations for the facility is designed to minimize the danger to the surrounding area from fire, spills, or other operational accidents;

vi. the traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flows;

vii. if the facility will be treating, storing or disposing of hazardous waste, an emergency response plan exists for the facility which includes notification, containment and evacuation procedures to be used in case of an accidental release;

viii. if the facility is to be located in a county where the county board has adopted a solid waste management plan consistent with the planning requirements of the Local Solid Waste Disposal Act or the Solid Waste Planning and Recycling Act, the facility is consistent with that plan; and

ix. if the facility will be located within a regulated recharge area, any applicable requirements specified by the Board for such areas have been met. 415 ILCS 5/39.2(a) (1998).

APPENDIX J

State Laws & Regulations
Peaker Plants

Area	LAWS and REGULATIONS	DESCRIPTION
	ARIZONA	
Energy Portfolio	**Electric Utility Restructuring Efforts** (5/00) http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	The AZ Commerce Commission issued an order that requires electricity providers to derive 1.1% of their total product from renewable energy sources by 2007. Implementation will begin with 0.4% from renewables by January 1, 2001. 50% of their renewable power must be derived from solar-generating facilities.
	CALIFORNIA	
Siting	"**Guidance for Power Plant Siting and Best Available Control Technology**," July 22, 1999 http://www.arb.ca.gov/powerpl/powerpl.htm	In July 1999, the CA Air Resources Board approved guidelines for major power plant permits. The guidelines are intended to ensure that air districts require power plants to use the cleanest emissions control technology currently available. Districts will also be expected to require newer, cleaner control technology as it becomes available. This document does not establish any new laws or rules but provides guidance on applying existing state & federal rules and authority to peaker/merchant power plants. • **SITING:** CEC and local Air Districts have control over siting power plants >50 MW. Electric generating facilities >50 MW are required to receive certification from the Energy Facilities Siting and Environmental Protection Division. Certifications are open to the public. In the siting phase, the design, construction, operation, and closure of the power plant is closely examined in relation to applicable laws, ordinances, rules, and standards. Adverse environmental effects are identified and mitigation measures established. The need for the facility is determined, or reconfirmed, if preceded by a Notice of Intent. The siting process ensures that the proposed power plants are safe, reliable, environmentally sound, and comply with all applicable requirements. The Siting Division also oversees construction and operation.
Air		• **AIR DISTRICTS:** Local Air Districts provide analysis and recommendations to the CEC on proposed projects to determine compliance with air pollution control regulations. The Local Air Districts use a permitting process to control emissions from non-vehicular sources (stationary sources) that is incorporated into the CEC's power plant siting process. The CEC's power plant siting regulations specifically provide for the district's participation in the process. Each district's regulations may vary depending on the air quality conditions in the district and the district's policies and strategies for attaining or maintaining compliance with the federal and state ambient air quality standards. The district's analysis and recommendations are provided to the CEC in a document known as a Determination of Compliance (DOC).

Air		• **BACT/LAER:** Major sources are required by permit to use "California BACT," which is equivalent to the more stringent federal LAER in most CA air districts. • **EMISSIONS OFFSETS:** Air pollution control and air quality management district (district) NSR rules and regulations employ both BACT and emission offset requirements to reduce the impact on air quality from new or modified stationary sources. If emission increases are above certain specified levels, district NSR rules require applying BACT. If the emission increases after installing BACT are still above specified levels, then emission offsets may be required. • **AIR IMPACT ANALYSIS:** CA Health & Safety Code requires Air Districts to evaluate air quality impacts in addition to the federal CAA requirements on PSD. This ensures new permits will not be issued for emission units (sources) that will prevent or interfere with the attaining or maintaining any applicable air quality standard. • **HEALTH RISK ASSESSMENT:** Power plant applicants are asked to submit a Health Risk Assessment under the CA Environmental Quality Act and the Health & Safety Code. A health risk assessment addresses three categories of health impacts from all pathways of exposure, if appropriate: acute health effects from inhalation only, chronic non-cancer health effects, and cancer risks from multiple exposure paths. • **ADDITIONAL PERMITTING CONSIDERATIONS:** Permits address start-up/shut-down emissions, continuous air monitoring, sulfur content of fuel, and ammonia slip from air pollution controls.
Water	**Water Recycling Act of 1991** http://leginfo.ca.gov	• Established grants and loans for water reclamation projects and encouraged water reuse among suppliers. • Applies only to public entities that produce or supply water and to entities responsible for groundwater replenishment.
	CONNECTICUT	
Energy Portfolio	**An Act Concerning Electric Restructuring** *(RB 5005)* (4/98) http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html#CT	• The bill requires renewable energy funding, a 5.5% renewable portfolio standard, and environmental protections.
Noise	**State Policy Regarding Noise** *(CT General Statutes Ch. 442, Sec. 22a-67 to 22a-76)* http://www.cslib.org///statutes/title22a/t22a-p5.htm	• Noise regulations address impulse noises and a model ordinance.

	FLORIDA	
Siting	**Electrical Power Plant Siting Act, 1973** *(FL Statute Section 403.501-.518)* http://www.dep.state.fl.us/siting/Programs/progER-pps.htm	• FL has an **Siting Coordination Office** responsible for siting of: ➢ Electrical Power Plants ➢ Electrical Transmission Lines ➢ Natural Gas Transmission Pipelines ➢ High Speed Rails ➢ Hazardous Waste Facilities • Electrical Power Plant Siting Act applies only to steam or solar electric generation > 75 MW. This would include combined cycle plants but not simple cycle combustion turbines. • Final approval body for the permits is not the Siting Board, but the Department of Environmental Protection. • Fees are charged to the applicant. • BACT for NO_x is 9 ppm based on dry low NO_x combustion technology.
	Ten Year Site Plan Requirements (TYSP) *(Part of the electrical power plant siting process)*	• FL Public Service Commission (PSC) oversees the submission of plans by the utilities that describe current generation capacity and anticipated need for more capacity. The TYSPs also provide information on future sites for power plants to accommodate the anticipated need. This information includes land use data, environmental factors, and similar topics. Other state and local agencies can comment on the plans to the FL PSC. Based on this information and its own conclusions, the FL PSC will determine the suitability of the plan.
	Need Determination *(Part of the electrical power plant siting process, s. 403.519, F.S.)*	• Need Determination is a formal process and is conducted by the FL PSC. The FL PSC reviews the need for the generation capacity that would be produced by the proposed facility in relation to the needs of the region, and to the state as a whole. The FL PSC also looks at whether the facility would be the most cost-effective means of obtaining the capacity.
	EIS *(Statute section 62-1.211(1), F.A.C.)* http://www.dep.state.fl.us/siting/Law_Rule/apform-pps-a.htm	• Site certification application forms for power plants resemble an EIS. Site Certifications are issued by the Governor and Cabinet. Before issuing a Site Certification, the Department of Environmental Regulation (DER), Department of Community Affairs (DCA), FL PSC, Water Management Districts (WMD), and other affected agencies are required to assess the potential effects upon the environment, ecology, and society by the proposed plant to ensure that the construction and operation of the plant will be consistent with applicable environmental standards.
	GEORGIA	
Water	**Water Withdrawal Permits** http://www.ganet.org/dnr/environ/aboutepd_files/branches_files/wrb.htm	• GA has a Water Withdrawal Permit Program. • Develops short-term and long-term water management policies and strategies to address environmental problems induced by unsustainable use of GA's water resources.
Air	**Air Permit Modeling** http://167.193.59.200/metdata/	• GA maintains a Web site with geographical meteorological data for air permit modeling based on 5 years of data.
	HAWAII	
Noise	**Noise Pollution** *(HI Revised Statutes Chapter 342F)* http://www.capitol.hawaii.gov/hrscurrent/Vol06/hrs342f/HRS_342F.htm	• HI's noise regulations incorporate both a permit program and enforcement provisions.

	ILLINOIS	
Air	**Air Pollution** *(35 Ill. Adm. Code, Subtitle B)* http://www.ipcb.state.il.us/title35/35conten.htm	• State rules follow federal requirements.
Energy Portfolio	**Renewable Energy Initiatives** http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• 09/00 - Chicago Mayor Richard M. Daley announced that the City of Chicago and 47 other local government bodies plan to buy electric power as a group, requiring that 20% of the purchase (80 MW) come from renewable energy. The City has issued a request for proposals to the 13 licensed power providers in IL. This is the first opportunity that government agencies have had to purchase power competitively since IL passed its restructuring law. • 10/99: ComEd plans to allocate $250 million to a special fund to support environmental initiatives and energy-efficiency programs throughout the State.
Noise	**Noise** *(35 Ill. Adm. Code 900 – 952)* http://www.ipcb.state.il.us/title35/35conten.htm	• According to Greg Zak of IEPA, IL is more active than other states in regulating noise. However, some states may have cities that regulate noise through local ordinances.
	INDIANA	
Air		• Requires BACT for all new projects emitting >25 TPY VOM.
Siting		• Requires public utilities to obtain a *certificate of necessity* before constructing electric generating facilities. (The IN Utility Regulatory Commission considers IPPs to be public utilities.)
Water	**Water Rights & Resources** *(IN Code, 14-25)* http://www.ai.org/dnr/index.html http://www.ai.org/legislative/ic/code/title14/ar25/ch4.html	• Registration and annual reporting requirement for owners of significant water withdrawal facilities (> 1,000,000 gallons/day of surface water, groundwater, or combination). • IN Natural Resources Commission (NRC) has statutory authority to require, by rule, a permit for most water withdrawals from navigable waters, but authority has not yet been exercised. • IN NRC is required to develop and maintain inventories, gather and assess all information needed to properly define water resource availability. • IN NRC can establish, by rule, minimum stream flows. • Where groundwater is threatened, IN Department of Natural Resources (DNR) may designate a "restricted use area." Permit is then required for withdrawal of >100,000 gal/day beyond use at time of restricted use designation. In granting or refusing a permit, the IN DNR considers the concept of beneficial use.
	IOWA	
Energy Portfolio	**Electric Utility Restructuring Legislation** *(3/00)* http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html#CT	• The IA Department of Natural Resources has proposed including a Renewable Portfolio Standard in restructuring legislation. The proposal would require renewable energy sources, such as wind, to be 4% in 2005 and increase to 10% by 2015. • Each peaker plant application is reviewed for acid rain potential and, in some cases, new sources must purchase credits from USEPA.

Water	**Water Allocation and Use; Flood Plain Control** *(Code of IA, 455B.261-290)* (1999) http://www.state.ia.us/dnr/organiza/epd/wtrsuply/alloca.htm http://www.legis.state.ia.us/cgi-bin/IACODE/Code1999SUPPLEMENT.pl	• Permit is required for any person who diverts, stores or withdraws >25,000 gal of water/day (surface or groundwater). Permits are generally issued for 10 years but, depending on geological conditions, can be for lesser period of time. • Permit program ensures consistency in decisions on allocations. Allocations are based upon concept of "beneficial use," the key points of which are: 1. water resources are to be put to beneficial use to the fullest extent; 2. water and unreasonable uses are prevented; 3. water conservation is expected; 4. established average minimum instream flows are protected. • Administrative process resolves water use conflicts. • Provisions are in place for involving the public in issuing water allocation permits and in generally establishing water use policies.
	KENTUCKY	
Air		• State rules follow federal air requirements.
Noise	**KY State Noise Control Act** *(KY Revised Statutes: KRS 220.30-100 to 220.30-190)* http://162.114.4.13/KRS/224-30/CHAPTER.HTM	• Regulations address a model ordinance.
	MAINE	
Energy Portfolio	**Electric Utility Restructuring Legislation** (5/97) http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• ME's restructuring legislation contains the nation's most aggressive renewables portfolio, requiring 30% of generation to be from renewable energy sources (including hydroelectric).
	MASSACHUSETTS	
Energy Portfolio	**Electric Utility Restructuring Legislation** Http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• MA's restructuring legislation includes a renewable portfolio requirement and established a renewable energy fund, funded via a system benefits charge. Funds will also be used to create initiatives to increase the supply of and demand for renewable energy.
	MICHIGAN	
Air	**Emissions Limitations and Prohibitions – New Sources of VOC Emissions** *(R336.1702)* Http://www.deq.state.mi.us/pub/aqd/rules/part7.pdf	• Requires BACT for all new sources of VOCs.

Siting	MINNESOTA	
	Power Plant Siting Act *(MN Adm. Code 116C.51-69.)* http://www.revisor.leg.state.mn.us/stats/116C/	• Power Plant Siting Act applies to facilities greater than 50 MW. • The siting authority is the MN Environmental Quality Board (EQB). Its purpose is to locate facilities compatible with environmental preservation and efficient use of resources. The MN EQB is to choose locations that minimize adverse human and environmental impact while insuring continuing electric power system reliability and that electric energy needs are met. • The MN EQB develops an inventory of study areas to guide the site selection process. The inventory is developed in a public planning process where all interested persons can participate in developing the criteria and standards to be used by the MN EQB. • A utility (public or private) must apply to the MN EQB for designation of a specific site for a specific size and type of facility. The application must contain at least two proposed sites. The MN EQB has 12-18 months to issue a decision. When the EQB designates a site, it issues a *certificate of site compatibility* to the utility with any appropriate conditions. No large electric power generating plant can be constructed except on a site designated by the MN EQB. • In designating a site, the MN EQB considers: ➢ effects on land, water and air resources; ➢ effects of water and air discharges and electric fields resulting from these facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including base line studies, predictive modeling, and monitoring of the water and air mass at proposed and operating sites and routes; ➢ new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment; ➢ sites proposed for future development and expansion and their relationship to the land, water, air and human resources of the state; ➢ effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects; ➢ potential for beneficial uses of waste energy from proposed large electric power generating plants; ➢ direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired; ➢ adverse direct and indirect environmental effects that cannot be avoided; ➢ alternatives to the applicant's proposed site ➢ irreversible and irretrievable commitments of resources should the proposed site or route be approved; and ➢ where appropriate, consideration of problems raised by other state and federal agencies and local entities. • The MN EQB must hold a public hearing in the county where the proposed facility is to be located.

Water	**Water Supply Management** *(MN Statutes: Ch. 103G)* http://www.revisor.leg.state.mn.us/stats/103G http://www.dnr.state.mn.us/waters/programs/water_mgt_section/appropriations/permits.html http://www.dnr.state.mn.us/waters/programs/water_mgt_section/appropriations/progdesc.html	• Permit is required for all users withdrawing (surface and groundwater) more than 10,000 gallons per day or 1 million gallons per year. (Exceptions include: domestic uses serving less than 25 person, certain agricultural drainage systems, test pumping of a groundwater source, and reuse of water already authorized by permit, *e.g.*, water purchased from a municipal water system.) • Permits are granted for no longer than 5 years. • Policy is to manage water resources to ensure an adequate supply to meet long-range seasonal requirements for domestic, agricultural, fish and wildlife, recreational, power navigation, and quality control purposes. • Water Appropriation Permit Program exists to balance competing management objectives that include both developing and protecting MN's water resources. • Permitted users are required to submit annual reports of water use. Reported information is used to evaluate impacts and to aid in resolving conflicts.
Noise	**Noise Pollution Control** *(MN Rules Chapter 7030)* http://www.revisor.leg.state.mn.us/arule/7030/ http://www.pca.state.mn.us/programs/pubs/noise.pdf	• The MN Pollution Control Agency is empowered to enforce the state noise rules.
	MISSOURI	
Air		• State air rules follow federal requirements. • Major source threshold is 100 TPY.
Water	**Geology, Water Resources and Geodetic Survey** *(MO Revised Statutes, Chapter 256)* http://www.dnr.state.mo.us/dgls/wrp/wateruse statutes.htm http://www.moga.state.mo.us/statutes/c200-299/2560400.htm	• Major water users must register with MO Department of Natural Resources (DNR). A major water user is defined as an entity that is capable of withdrawing or diverting 100,000 gal or more per day from any water source. • Failure to register may result in MO DNR request that Attorney General file action to stop all withdrawal or diversion. Purpose of registration program is to ensure the development of information required for the analysis of certain future water resource management needs.
	NEVADA	
Energy Portfolio	**Electric Utility Restructuring, AB 366** *(6/99)* http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html#CT	• AB 366 provides that the NV Public Utilities Commission establish portfolio standards for renewable energy. The standard will phase-in a requirement (beginning with 0.2% by January 2001 and adding 0.2% of a percent biannually) that 1% of energy consumed be from renewable energy resources.
	NEW JERSEY	
Water	**Water Supply Management Act** *(NJAC 7:19-1)*	• Water resources management is required for >100,000 gallons per day.

Noise	**Noise Control Rules** *(NJAC 7:29)* http://www.state.nj.us/dep/enforcement/pcp/olem-noise.htm	• The NJ Department of Environmental Protection (NJDEP) has developed a Model Noise Ordinance that can be adopted by local municipalities. • NJDEP does not have a noise control program and does not investigate noise complaints. Noise control is handled locally.
Energy Portfolio	**Electric Utility Restructuring** http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• The restructuring legislation in NJ requires spending $230 million for home weatherization, renewable energy and other programs, and increases spending on new energy conservation programs. Also, electric generation companies must disclose a set of environmental characteristics, including power plant fuels and emissions.
	NEW YORK	
Siting	**Siting and Approval** *(Article X of Public Service Law)* http://www.dps.state.ny.us/articlex.htm	• The NYS Siting Board is in charge of siting and approval of all new power plants. • Article X of the Public Service Law sets forth a unified and expedited review process for applications for power plants > 80 MW. • Proceedings are open to the public • NYS Siting Board may preempt local zoning. • Siting may take up to 18 months. • NYS Siting Board must determine: **1.** either: (a) constructing the facility is reasonably consistent with the most recent **State Energy Plan**, or (b) the electricity generated by the facility will be sold into the competitive market; **2.** the nature of the probable environmental impacts (including evaluating cumulative air quality impacts); **3.** the facility minimizes adverse environmental impacts, given environmental and other pertinent considerations; **4.** the facility is compatible with public health and safety; **5.** the facility will not discharge or emit any pollutants in violation of existing requirements and standards; **6.** the facility will control the disposal of solid and hazardous wastes; **7.** the facility is designed to operate in compliance with state and local legal provisions, other than those local legal provisions that the Siting Board finds unreasonably restrictive; and **8.** the construction and operation of the facility is in the public interest.
	Intervenor Fund for Siting Review *(Article X, Section 164)*	▪ Power plant applicants are required to pay $1,000 per MW of capacity up to $300,000 to establish an Intervenor Fund. ▪ Funds are used to defray expenses associated with the siting review.
	Proposed Amendment to Article X *(NY State Bill A09039)*	▪ The bill would authorize the Commissioner of Environmental Conservation to issue environmental permits necessary to the siting of an electric generation facility if the NYS Siting Board is unable to do so and would make some technical changes to the siting law. ▪ The bill would also require the Energy Planning Board to do a reliability study of the state's transmission and distribution systems.

Water	**New York State Energy Plan 1994** *(NY State Energy Office)*	• The Final 1994 State Energy Plan calls for significant reductions in state energy taxes and endorses greater competition in utility purchases of electricity to lower electric rates in the state. The plan reaffirms the state's long-term energy, economic and environmental goals and its commitment to energy efficiency, but places increased emphasis on the use of energy policy as a means to promote sustained economic development. The plan assesses NY's current energy supplies, infrastructure and policies, and forecasts energy needs and supplies through the year 2012. Based on those findings, the plan sets policy goals and objectives and recommends 180 specific actions. The plan was prepared by the staffs of the State Energy Office and the State Departments of Environmental Conservation and Public Service in response to 1992 legislation that formalized NY Governor Mario Cuomo's model for integrated energy planning. The State Energy Planning Board, which approved the plan on October 31,1994, is made up of the commissioners of those three agencies. State energy law requires that any state action related to energy be reasonably consistent with the plan's findings and recommendations.
	Water Supply Permits *(Chapter 6, NY Codes, Rules and Regulations. Part 601: 6 NYCRR 601)*	• Required for suppliers of potable water with 5 or more service connections. • Applicants must demonstrate: 1. Plans are justified by public necessity. 2. Plans properly consider other sources of supply that are or may become available. 3. Plans provide for proper and safe construction of all work connected therewith. 4. Plans provide for proper sanitary control of the watershed and proper protection of the supply. 5. Plans provide for an adequate water supply. 6. Plans are just and equitable to the other municipal corporations and civil divisions of the state affected thereby and to the inhabitants thereof, particular consideration being given to the present and future necessities for sources of water supply. 7. Plans make fair and equitable provisions to determine and pay any and all damages to persons and property, both direct and indirect, that result from acquiring the lands or executing the plans. 8. Plans, in accordance with local water resources needs and conditions, include a description of an adequate near term and long range water conservation program. • Entities holding Water Supply Permits must report average and peak use to the NY Department of Environmental Conservation annually. If customer demand grows (*i.e.*, new peaker plant begins withdrawing from the water supply), supplier must re-demonstrate the above to the state if the demand exceeds amount authorized in the Water Supply Permit.
	Water Well Program *(Environmental Conservation Law 15-1525)*	• Pre-notification must be filed with the state before drilling specifying desired yield. • No restrictions are specified on the amount of water withdrawal. However, under NY Civil Law, property owners have water rights. If a well causes drawdowns that impact an off-site property owner's water use, then they can sue.

	Water Withdrawal Registration *(6 NYCRR, Chapter X, Subchapter A, Article 1)*	• Applies to withdrawals from Great Lakes: • Great Lakes (6 NYCRR 675): ▪ withdrawals >100,000 gallons per day averaged over 30-day period *- OR -* ▪ lake water loss > 2,000,000 gallons per day averaged over 30-day period • No restrictions are specified on the amount of water withdrawal, just that withdrawals must be registered. Registration fee is $100/year.
	Long Island Water Withdrawal Restrictions	• Water withdrawals from wells are restricted by quantity on Long Island because over pumpage of groundwater on Long Island can cause infiltration of saltwater into the aquifer.
	Electric Utility Restructuring	• Funds to support energy conservation and renewable energy are made available to energy suppliers from the NY State Energy Research and Development Authority. Funds were created through the NY Public Service Commission order establishing a system benefits charge on electricity sales.
Siting	**OHIO**	
	OH Adm. Code 4906: **Ohio Power Siting Board** http://onlinedocs.andersonpublishing.com/oac/	• The OH Power Siting Board (PSB) within the Public Utilities Commission is the approval authority for all major utilities > 50 MW. • Meetings of the OH PSB where action is taken or deliberations conducted are open to the public. • Applicants for new facilities must consider at least 1 alternate site. • Applications are required to address: ➢ Justification of Need: ▪ Description of generation and associated facility alternatives ▪ Type, number of units, and estimated net demonstrated capability, heat rate, annual capacity factor, and hours of annual generation ▪ Land area requirement ▪ Fuel quantity and quality ▪ Types of pollutant emissions ▪ Water requirement, source of water, treatment, quantity of any discharge and names of receiving streams ➢ Siting issues: ▪ location ▪ major features ▪ the topographic, geologic, and hydrologic suitability for each alternate site ➢ Water: ▪ natural and man-affected water budgets ▪ existing maps of aquifers that may be directly affected ➢ Emissions control & safety equipment ➢ Local ambient air quality of proposed sites ➢ Locations of major and anticipated sources of air pollution ➢ Plans for future additions and the maximum generating capacity anticipated for the site. ➢ Financial data ➢ Environmental data

		➢ Social and ecological data: ▪ Noise ▪ Health & Safety ▪ Impact of water use ▪ Economics, land use, and community development ▪ Cultural impact ▪ Agricultural district impact • After the OH PSB certifies applications for new facilities, public hearings are held in the local vicinity of the proposed facility. • The OH PSB collects application fees.
Air	**NO_x – Reasonably Available Control Technology (RACT)** *(OAC 3745-14)* http://onlinedocs.andersonpublishing.com/oac/	• According to IEPA, certain minor sources must use BAT (Best Available Technology), OAC 3745-14-3. • Major sources are required to use BACT per federal regulations: 15 ppm NO_x for natural gas turbines, 42 ppm NO_x for oil burning. • For NO_x sources >100 TPY, Reasonably Available Control Technology (RACT) is required in certain counties. RACT for combustion turbines is 75 ppm for those firing gaseous fuels and 110 ppm for those firing distillate oil or diesel fuel.
Water	**Application for Permit for major increase in withdrawal of waters of the State** *(OH Revised Code 1501.30 & 33)* **Registration of facilities capable of withdrawing >100,00 gal/day; Groundwater Stress Areas** *(OH Revised Code 1521.16)* **Determination of reasonable use of water** *(OH Revised Code 1521.17)* http://onlinedocs.andersonpublishing.com/revisedcode/ http://www.dnr.state.oh.us/odnr/water/waterinv/waterinv.html	• Permits are required for those making a new or increased consumptive use of water than an average of 2 millions gallons per day over a 30-day period. • Registration is required for any facility or combination of facilities with the capacity to withdraw more than 100,000 gallons of water (surface or ground) daily. Annual reporting is required of those who must register. The purpose of registration and reporting is to gather data to assist in resolving future water use conflicts. • Chief of OH Department of Natural Resources Division of Water has authority to designate "groundwater stress areas" and to require water withdrawal registration in these areas for users of water less than the normal 100,000 gallon threshold. • Chief also has responsibility to maintain water Resources Inventory that must include information to assist in determining the reasonableness of water use. • While "reasonable use" is used by courts to determine water conflicts, legislature has set forth nine specific factors (applicable to both surface and groundwater) to define reasonableness. • "Consumptive use" is defined as a use of water resources other than a diversion that results in a loss of that water to the basin from which it is withdrawn and includes, but is not limited to, evaporation, evapotranspiration, and incorporation of water into a product or agricultural crop.
Energy Portfolio	**Electric Utility Restructuring** Http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• Restructuring legislation includes a provision for a $110 million revolving load fund for residential and small commercial energy efficiency and renewable energy projects. Also, electricity marketers must disclose environmental information to consumers.
	OREGON	
Noise	**Noise Control Classification of Violations** *(OR Adm. Rules 340-012-0052)* http://arcweb.sos.state.or.us/rules/OARS_300/OAR_340/340_012.html	• Regulations address a model ordinance.

	PENNSYLVANIA	
Air	**Stationary Sources of NO_x & VOCs** *(PA Code Ch. 129.91)* http://pacode.com/secure/data/025/chapter129/chap129toc.html	• PA charges emissions fees: $42/ton (1999). • PA requires RACT for all major sources of VOC, NO_x.
Energy Portfolio	**Electric Utility Restructuring** *(9/00)* http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• A $21 million Green Energy Fund was created by the PA Public Utilities Commission (PUC) to be used for investment in green energy projects, such as wind, solar, and biomass. The fund, which currently has $5 million, is expected to grow to more than $20 million over the next six years. The fund was created as part of a negotiated settlement between the PA PUC and PPL in the utility's restructuring case two years ago. Businesses and nonprofit organizations that wish to invest in green energy within PPL's territory may apply for the funds.
	TEXAS	
Water	**Use of Reclaimed Water**, *(TX Adm. Code Title 30 Part 1 Chapter 210)* (1997) http://www.tnrcc.state.tx.us/oprd/rules/index.html	• Establishes general requirements, quality criteria, design, and operational requirements for the beneficial use of reclaimed water that may be substituted for potable water or raw water. • Due to limited supply and high demand, reclaimed water can be much less expensive than using municipal drinking water or treating groundwater. The rule is intended to conserve surface and groundwater and to help ensure an adequate supply of water resources for present and future needs. • Use of reclaimed water is voluntary. • Locating reuse facilities near the municipal wastewater treatment plant helps to minimize infrastructure costs in constructing a distribution line. • Reclaimed water is provided to the user on a demand-only basis. • Approved uses include cooling tower make up water under §210.32 (2)(F).
	Water Use Permits *(TX Water Code, §11.121)* http://www.capitol.state.tx.us/statutes/wa/wa001100toc.html	• TX industries must obtain water rights to use surface water or protected groundwater. The authorization may be with or without a term, on an annual or seasonal basis, or on a temporary or emergency basis.
Siting	**Siting**	• Does not have a siting commission for power plant projects. • TX requires *certificates of convenience and necessity* for power plant projects that utilities initiate, but not for projects that IPPs initiate.
Energy Portfolio	**Electric Utility Restructuring** *(9/00)* http://www.eia.doe.gov/cneaf/electricity/chg_str/pbp.html	• TX's renewables portfolio standard requires that the State's utilities install or contract to buy power from 2,000 MW of renewable generating capacity by January 1, 2009.

Siting	**WISCONSIN**	
	State Energy Policy *(WI Statute: 1.12)* http://folio.legis.state.wi.us/cgi-bin/om_isapi.dll?clientID=111571&infobase=stats.nfo&jump=ch.%20196 **Power Plant Siting** *(WI Adm. Code Ch. PSC 111, 112)* **Environmental Analysis** *(WI Adm. Code Ch. PSC 4)* http://folio.legis.state.wi.us/cgi-bin/om_isapi.dll?clientID=95483&infobase=codex.nfo&jump=top	• WI's State Energy Policy includes policy on: ➢ Considering the maximum conservation of energy resources as an important factor when making any major decision that would significantly affect energy use ➢ reducing the ratio of energy consumption to economic activity in the state ➢ renewable energy resources ➢ protecting natural areas, including wetlands, wildlife habitats, lakes, woodlands, open spaces and groundwater resources. • Ch. PSC 111, 112 require the WI Public Service Commission (PSC) to develop a Strategic Energy Assessment (SEA) for power plants. The SEA involves an assessment of electric demand and supply, and information from electricity suppliers on economic, pollutant, and energy conservation data. • Ch. PSC 111,112 require *Certificates of Public Convenience and Necessity* for electric generating facilities. According to the ICC, this requirement applies to facilities > 100 MW. Applications for certificates include: ➢ at least 2 sites: preferred & alternate ➢ number of units, type, size, fuel ➢ hours of operation ➢ generating capacity ➢ pollutant emissions ➢ need for facility in terms of demand ➢ alternative sources of electric supply including energy conservation & efficiency ➢ Natural resources affected ➢ Ecological resources affected ➢ Community information • According to IEPA, siting is required for facilities >12,000 kW. • Ch. PSC 4 establishes procedures to provide the WI PSC with adequate information on the short- and long-term environmental effects of its actions as required by the WI Environmental Protection Act, ch. 274, section 1, laws of 1971 and s. 1.11 of the WI Statutes. PSC 4 requires the WI PSC to prepare an Environmental Assessment (EA) to assist the WI PSC in determining environmental impact of proposed facilities. Combustion turbines are included as types of projects requiring an EA. The WI PSC can approve or deny siting based on the EA or EIS. The EA is made available to the public, and hearings are held.

Water	**Water Resources** *(WI Statutes, Chapter 28, Subchapter II)* **Water Quality and Quantity; General Regulations** *(WI Statutes, Chapter 28, Subchapter III)* http://www.legis.state.wi.us/rsb/Statutes.html WI DNR Rules, Chapter NR 142	• WI law provides for: 1. Developing statewide water quantity resources plan 2. Registration and annual reporting (with fees) of major withdrawals (>100,000 gal/day in 30-day period) 3. Permit approval process (with administrative hearing process) for constructing, developing, and operating wells where capacity and rate of withdrawal of groundwater from all wells on one property is in excess of 100,000 gal/day. Approval is withheld or restricted if withdrawal will adversely effect or reduce availability of public water supply or does not meet grounds for approval, which are: ➢ no adverse effect on public water rights in navigable waters ➢ no conflict with any applicable plan for future uses of waters of state or water quantity resources plan ➢ reasonable conservation practices have been incorporated ➢ no significant adverse impact on environment and ecosystem of the Great Lakes basin or the upper Mississippi River basin ➢ plan for withdrawal consistent with protecting public health, safety, and welfare, and not detrimental to public interest ➢ no significant detrimental effect on the quantity and quality of the waters of the state (even more factors apply if the proposed withdrawal will result in an "interbasin diversion") 4. Permit approval process for diverting water from any lake or stream >2,000,000 gal/day in any 30-day period. If WI Department of Natural Resources (DNR) receives application for a withdrawal from the Great lakes basin that will result in a new water loss averaging 5,000,000 gal/day in any 30-day period, WI DNR notifies governors of other Great Lakes States, requesting their input. • Regulations define "water loss" and "consumptive use." • Rules incorporate methods for citizens to initiate WI DNR investigations of alleged violations.

Note: *This list is not meant to be all-inclusive.*

APPENDIX K

ADDITIONAL SUMMARIES OF PUBLIC COMMENTS—INDEX

#	PUBLIC COMMENT	Air: Emissions Control Technology	Air: Modeling	Air: Ozone Nonattainment	Air: Pollution	Air: Quality	Energy: Alternatives/Efficiency	Energy: Capacity	Energy: Demand	Energy: Deregulation	Energy: Market	Energy: Policy	Energy: Power Distribution	Health: Effects	Health: Safety	Moratorium	Noise	Regulations: Air	Regulations: Applicability	Regulations: Enforcement	Regulations: Permitting	Regulations: NOx SIP Call	Regulations: NOx Waiver	Regulations: Other States	Siting: Zoning	Siting: Local Guidance & Public Involvement	Siting: Number of Plants	Water: Use	Other: Taxes
1	Cindy Conte, Reliant	•	•					•																					
2	Debbie Halvorson, State Senator, 40th District															•													
3	Ron Molinaro, Winthrop Harbor, IL					•					•						•										•	•	
4	Peter J. Cioni, Dir. of Community Development, Zion																										•		
5	Bob Mosteller, Deputy Dir., Lake Cty. Zoning Board of Appeals																							•					
11	Susan Zingle, Exec. Dir., LCCA									•	•																		
12	Gary Hougen, Winthrop Harbor, IL													•														•	
13	Robert Brooks, Waukegan, IL	•																											
14-30, 32-90, 92-106, 113-160, 174-185, 188, 193	Big Rock Form Letter			•		•															•				•			•	
31	Curt W. Peters, Winthrop Harbor, IL																								•				•
91	Jane Erdman, New Holland, IL				•									•															
107	Udo A. Heinze, Mgr., Strategic Projects, Ameren				•										•			•	•		•				•			•	•
108	Jeannine Kannegiesser, Center for Neighborhood Technology						•		•	•	•		•																

#	PUBLIC COMMENT	Air: Emissions Control Technology	Air: Modeling	Air: Ozone Nonattainment	Air: Pollution	Air: Quality	Energy: Alternatives/Efficiency	Energy: Capacity	Energy: Demand	Energy: Deregulation	Energy: Market	Energy: Policy	Energy: Power Distribution	Health: Effects	Health: Safety	Moratorium	Noise	Regulations: Air	Regulations: Applicability	Regulations: Enforcement	Regulations: Permitting	Regulations: NOx SIP Call	Regulations: NOx Waiver	Regulations: Other States	Siting: Zoning	Siting: Local Guidance & Public Involvement	Siting: Number of Plants	Water: Use	Other: Taxes
109	Patricio Silva, Midwest Activities Coordinator, NRDC				•		•	•	•	•			•	•									•	•	•		•	•	
110	Ronald D. Earl, General Manager & CEO, IMEA						•	•	•		•																		
111	Earl W. Struck, AIEC							•		•								•							•				
112	Verena Owen, Winthrop Harbor, IL								•			•						•											
161	Mary Thurow, Big Rock, IL																					•			•				
162	Margaret A. Bock, Libertyville, IL				•												•	•	•					•				•	
163	Cynthia A. Faur, Sonnenschein, Nath & Rosenthal on behalf of Midwest Generation							•	•								•	•	•		•	•			•			•	
164	Christopher Zibart of Hopkins & Sutter; Sharon Neal on behalf of ComEd							•	•	•	•	•						•	•					•	•				
165	Brain Urbaszewski on behalf of ALAMC & IEC													•																
166	Carol Dorge, LCCA		•	•	•			•	•						•		•	•	•		•	•	•		•		•	•	•
167	James R. Monk, President, IEA										•						•	•	•					•	•				
169	Evan L. Craig, Group Chair, Sierra Club Woods & Wetland Group, Vernon Hills, IL						•														•		•			•			
170	Stephen Brick, Director, External Relations & Environmental Affairs, PG&E		•					•	•	•											•	•	•	•	•	•	•		

#	PUBLIC COMMENT	Air	Emissions Control Technology	Modeling	Ozone Nonattainment	Pollution	Quality	Energy	Alternatives/Efficiency	Capacity	Demand	Deregulation	Market	Policy	Power Distribution	Health	Effects	Safety	Moratorium	Noise	Regulations	Air	Applicability	Enforcement	Permitting	NOx SIP Call	NOx Waiver	Other States	Siting	Zoning	Local Guidance & Public Involvement	Number of Plants	Water	Use	Other	Taxes
171	Freddi Greenberg, Executive Director and General Counsel, MWIPS						•			•			•							•	•	•			•		•	•	•	•		•			
172	Sierra Club, Illinois Chapter																		•			•										•			
173	Gerald Erjavec, Manager, Business Development, Indeck	•																		•	•	•						•	•			•		•	
186	Ersel C. Schuster, McHenry County Board																							•											
187	Katherine Hodge & Karen Bernoteit, Hodge & Dwyer/IERG			•		•	•													•	•	•							•		•	•	•		
189	CCLC and Liberty Prairie Conservancy			•						•	•														•										
190	Jim LaBelle, Sandy Cole, Bonnie Thomson Carter—Lake County Board Members					•													•						•				•				•		
191	Marsha B. Winter, Zion, IL															•				•										•			•		
192	Ken Bentsen, Sugar Grove, IL				•														•			•			•				•			•	•		
194	Ralph N. Schleifer, Kaneville, IL				•														•													•	•		
195	Marci Rose, Big Rock, IL						•									•													•						

ADDITIONAL SUMMARIES OF PUBLIC COMMENTS—SUMMARIES

PC 1—Ms. Cindy Conte, Reliant

Reliant has a 345 MW peaker plant in Shelby County. It currently has an 870 MW peaker project under construction in DuPage County, scheduled to become operational in June 2001. Reliant stated that the industry standard is to have 15 to 20% extra capacity (*i.e.*, reserve margin). Figures from MAIN, which includes Illinois and nearby states, show that the reserve margin in 1998 was 9.6% and 7.6% in 1999. Reliant asserted that it will not be possible to maintain a 15-20% reserve margin without peaker plants in Illinois.

Reliant believes that Illinois has a shortage of peaking capacity in the State, and Illinois should construct additional power plants in the State. It noted that peaker plants are not new to Illinois. For over 30 years, there has been a dual fuel (natural gas/fuel oil) peaking unit in Aurora. Reliant noted that the technology for peaker plants has changed for today's peaker units. Namely, Reliant's peaker project in DuPage County will use turbines with advanced generation and clean emissions control technology fueled by natural gas only.

Reliant alleged that today's peaker plants are among the cleanest power plants operating and are significantly less harmful to the environment than existing fossil plants. Reliant's plants use state-of-the-art, dry-low NO_x and water-injection to control emissions. Reliant completed an air modeling study to determine where the greatest concentration of NO_x emissions would occur from the peaker project in DuPage County. The modeling showed, among other things, that the plant's maximum emissions are concentrated in a small area radiating out a few hundred feet to the north of the property.

Reliant cautioned that in California, due to a booming economy and unseasonably hot temperatures, the state's electricity reserve has gone from 35% in the early 1990s down to almost nothing. Reliant recommended that building peaker plants will help Illinois avoid a similar shortage, brownouts, and high costs for consumers. Reliant supports the current procedures in place for permitting and approval of peaker plants. It also cautioned that Illinois needs more power supplies, and should not rely on neighboring states to fill the gap.

PC 2—State Senator Debbie Halvorson, 40th District

State Senator Halvorson asked the Board to consider delaying the issuance of any air permits until the Board's inquiry proceedings are finished and the Board's recommendations are enacted. She joined State Senator Link in asking Governor Ryan for a moratorium on peaker plants this summer, until they could better understand the plants' effects on communities and general air quality.

PC 3—Mr. Ron Molinaro of Winthrop Harbor

Mr. Molinaro is concerned that if two peaker plants are built in Zion, then the area within a ten-mile radius of Zion would have two coal-burning plants and two peaker plants.

He fears that the cumulative effect of all four of these plants operating would be very detrimental to air quality. He is also concerned that the noise from the proposed plants would disrupt the homes located a few hundred yards away. Mr. Molinaro also wondered if there would be enough water available to new homes and businesses in the area if the plants were built. He mentioned that Zion exceeded its allocated amount of water in 1999 by 22 million gallons. Lastly, he questioned whether the price of electricity will increase if the plants are built.

PC 4—Mr. Peter J. Cioni, Director of Community Development, City of Zion

Mr. Cioni wanted to clarify that Zion is only considering one peaker plant project, namely the Skygen project.

PC 5—Mr. Bob Mosteller, Deputy Director, Lake County Zoning Board of Appeals

Mr. Mosteller, in response to Board Member Flemal's request, sent a copy of the Lake County Zoning Ordinance addressing peaker plants. In his comment, he set forth the standards under which conditional use permits may be approved. He also noted that separate conditions apply to permits for electric generation plants.

PC 11—Ms. Susan Zingle, Executive Director, LCCA

Ms. Zingle stated that, on August 14, 2000, The Wall Street Journal published an article entitled Volatile Electricity Market Forces Firms to Find Ways to Cut Energy Expenses. According to the article, during the summer of 2000, several of the states that had opened their electricity markets to deregulation were struck by extreme price volatility and, in some cases, power shortages. The reasons were varied: higher-than-expected demand; fewer new generating plants than necessary to keep up with demand; an interstate transmission network that is not designed for deregulation; and complex regulations governing the switch from fixed to free market pricing.

The article stated that consumers in San Diego have seen their electric bills double. Legislators there have been trying to introduce bills to ease the expense, but none address the question of who would pay for the difference between wholesale prices and the prices paid by the newly-protected consumer. The shock is causing many to question the main assumption about deregulation: "that competition among power providers would lead to cheaper prices and greater efficiencies."

Big energy users are spending more money on manpower and consultants to cope with deregulation. Their goal is to keep down prices and limit power disruptions. Energy trading company Enron signed contracts to supply $3.8 billion in energy and energy services to customers during the spring of 2000. Enron offers packages that mix fixed and indexed rates much as a mortgage does. It also provides incentives to those firms that allow it to replace their energy infrastructure over time—which gives Enron a better sense of what the client will be spending.

Companies for which electricity is a make-or-break operating cost have less flexibility. They have been most affected by current market conditions. Phelps, a copper producer, has boosted in-house generation to reduce reliance on outside suppliers and is "juggling its production schedules" to avoid operating when power is expensive.

PC 12—Mr. Gary Hougen of Winthrop Harbor

Mr. Hougen is concerned about the proposed peaker plant for Zion. Specifically, he is concerned about the "heightened nitrate ion content in groundwater during summer low-flow water conditions. Heightened nitrate . . . content has been linked to various illnesses . . . ."

Mr. Hougen claimed that "[h]eightened nitrates would occur as the ambient level of this ion is increased during cooling water usage by (water-cooled) peaker plants." Mr. Hougen attached a map showing "Commercial Nitrogen Fertilizer Leaching Vulnerability."

Mr. Hougen requested that the Board "develop a protocol to assure that drinking water of those households on well water in the vicinity of the proposed peaker plant would not incur a significant deterioration from their operation." Mr. Hougen hopes that "the protocol would demonstrate through engineering studies that the EPA limit of 10 ppm would not be exceeded."

PC 13—Mr. Robert Brooks of Waukegan

Mr. Brooks claimed that "advanced distributed power generation technology is now in the demonstration phase which has the following advantages vs. currently proposed turbine peaker or base load systems":

- "Nearly twice the efficiency of simple cycle peakers"
- "Less than 1 ppm NO_x output"
- "Requires no water input (produces a small amount of water) . . . ."

Mr. Brooks also enclosed two recent articles from Ward's Engine and Vehicle Technology Update that describe a distributed power system installed at a California electric utility plant. The system was expected to achieve efficiencies of 60 to 65%. It could also be modified so that its CO_2 emissions could be injected into the ground. The system requires no water, but instead produces a small amount of water.

PCs 14-30, 32-90, 92-106, 113-160, 174-185, 188, 193—Form Letter Filed By a Number Citizens

According to these citizens, Illinois needs to develop a NO_x SIP plan, and the cumulative impact of these plants on the air quality of the Chicago metropolitan area needs to

be considered. They stated that this cannot be accomplished by "look[ing] at permits one at a time." In addition, the Chicago area is an ozone NAA, which also needs to be considered.

In Big Rock, a peaker plant is proposed that would use groundwater as its water source. The citizens stated that all residents of Big Rock depend on groundwater. They asserted that extraordinary care should be made in permitting this use.

The citizens stated that new or expanding peaker plants should be subject to siting requirements beyond applicable zoning requirements. The peaker plant proposed for Big Rock would be located in the middle of what is now agricultural land. The citizens argued that this plant siting is inconsistent with the Kane County 2020 plan. According to the citizens, the State should have a policy to encourage the siting of peaker plants in brownfields.

The citizens maintained that additional regulations or restrictions should apply to "all facilities, old and new." They also asserted that the Board should place a moratorium on air permits for peaker plants at least until the cumulative effects of these plants "on the NO_x SIP call is completed."

PC 31—Mr. Curt W. Peters of Winthrop Harbor

Regarding the proposed peaker plants for the Zion Benton Township area, Mr. Peters stated: "It is my opinion the Zion City Council should explore alternative options to obtain tax base revenue, as well as jobs for the community. I say NO to building power plants of any kind in our township."

PC 91—Ms. Jane Erdman of New Holland

Ms. Erdman is alarmed about having a peaker plant in her area "due to the high possibility of air pollution, within an 8 mile radius of the plant." Ms. Erdman claimed that the emissions of the plant, along with other emissions will contribute to acid rain, "create respiratory problems, affect crop production, erode solids like paint and rock and severely pit metals; possibly creating disasters for this area in order to supply electricity for other states to waste."

PC 107—Mr. Udo A. Heinze, Manager, Strategic Projects, Ameren

Mr. Heinze commented on (1) emissions, (2) siting, (3) water, (4) hazardous materials on plant sites, (5) property taxes, (6) new rule applicability, and (7) the five questions that Governor Ryan posed for the Board's inquiry proceedings.

Emissions

Mr. Heinze noted that NO_x emissions from peaker plants will be kept under the emissions "cap" that the NO_x SIP call ordered. He argued that there is no need for additional requirements to control SO_2 emissions because those are already capped under the federal acid

rain program. Mr. Heinze further noted that most new peaker plants are simple cycle gas-fired combustion turbines. He argued that requiring BACT or LAER controls on these types of plants would be impractical or very expensive. The expense, he argued, would make the units uneconomical to operate.

He acknowledged that mass emissions during start-up might be slightly higher than normal operations. However, they are still very low and do not last long, according to Mr. Heinze. He also noted that IEPA has a process in the permitting of the plants to account for the slightly higher mass emissions that occur during start-up conditions. He added that the permitting process requires IEPA to review any proposed facility, including the modeling of air quality emissions.

Siting

Mr. Heinze argued that zoning should be a local issue, and not a decision that a State agency imposes.

Water

Mr. Heinze noted that the testimony shows that for some high-density areas, water use may be a broader issue. For those areas, he suggested that it would be prudent to consider water use on a regional, rather that purely local basis.

Hazardous Materials on Plant Site

Mr. Heinze noted that not all peaker facilities have backup fuel capability. When they do, however, it is part of the permitting process and would be presented to both IEPA as part of its air construction permit application and the applicable zoning authority. He also argued that storing fuel oil as backup fuel is not a new risk that requires further regulation or control.

Property Taxes

Mr. Heinze asserted that because combustion turbines are portable and can be relocated, they generally are not considered real property for tax purposes. He argued that the local taxing authority is the appropriate jurisdiction to address whether the peaker plants must pay property taxes. He further argued that it is not a foregone conclusion that all proposed peaker plants will obtain tax abatements, noting that many have not.

New Rule Applicability

Mr. Heinze advocated that as regulations governing facilities change, it is more reasonable that those changes apply to facilities that have not committed to purchase orders for equipment rather than to facilities already completed or in the process. He believes that developing generation requires “regulatory certainty.” He believes that any new rules should

not apply retroactively.

Governor Ryan's Questions

With respect to the questions that Governor Ryan posed for the inquiry proceedings, Mr. Heinze submited that Ameren thinks (1) peaker plants do not need to be regulated more strictly than Illinois' current air quality statutes and regulations provide; (2) peaker plants do not pose a unique threat, or greater threat than other types of facilities, with respect to air pollution, noise pollution, or groundwater or surface pollution; (3) peaker plants should not be subject to siting requirements beyond applicable local zoning requirements; (4) any new regulations or restrictions should be applicable on a date-certain basis, prospectively applied; and (5) other states' approaches to peaker plants should not necessarily be applied in Illinois.

PC 108—Ms. Jeannine Kannegiesser, Center for Neighborhood Technology (CNT)

What is peak demand and why are peaker plants appearing in Illinois?

CNT commented:

> Summer peak demand can cause trouble for utilities and their customers as noticed in Chicago's summer of 1999. When demand across the distribution system exceeds the systems capacity to carry power, blackouts and brownouts occur to protect the system. * * *
>
> The 1997 electric restructuring law in Illinois created an attractive business opportunity for merchant power generators. In a state where peak demand is growing, it became legal for alternative suppliers to market their product directly to customers.
>
> [P]eak power producers expect to make a profit by running their plants for a limited number of hours during the year. * * * However, the "annual" peaker plant emissions might occur over only a matter of days or weeks, concentrated during the hot summer months.

What are the alternatives to peaker plants?

CNT stated:

> The motive for building a peak power plant might be reduced if electric customers in Illinois worked to decrease their demand for peak power. Customers can do this by improving end use energy efficiency or by generating their own power at the site of use.
>
> [I]mproving the efficiency of air conditioners is an attractive efficiency project. Upgrades in lighting and other end uses can contribute to decreases in peak load. Distributed generation, also called on-site generation, is the generation of electricity by small, clean generators located on or near the site where the power

> will be used. Distributed generation eliminates the need to transport power long distances over wires and can be dispatched to serve peak demand or to back-up a sensitive operation during power outages. Distributed generation might be a natural gas turbine, fuel cell, or renewable power source like photovoltaic cells.
> * * *
>
> Technologies for generating power at the site of use can decrease the growth in demand for utility power. Thermal storage can shift power usage to the time of day when power is much less expensive.

Why are alternatives to peaker plants not being selected?

> CNT stated:
>
> Because customers do not face real prices, there is no incentive for reducing usage during times when the cost of providing service is at its height. Residential and commercial customers, in particular, pay the same rate per kWh regardless of when they use it, despite the fact that the same kWh on a hot summer afternoon could cost the utility many times what a spring evening kWh costs.

What are the benefits of reducing peak demand?

> CNT claimed that:
>
> Reducing peak demand before the power market opens completely will give small consumers a stronger position in that market, particularly if groups of consumers can pool their more attractive demand and shop together for a lower price.

In addition, CNT maintained that the "distribution system will experience less stress if peak demand is maintained below capacity."

What is CNT doing about the change to a deregulated electric system?

> CNT explained:
>
> [T]hrough its Community Energy Cooperative[,] . . . [CNT] is currently contributing to an effort to improve state programs to promote energy efficiency and distributed resources. * * * On October 17, CNT participated in a meeting hosted by State Senator Steven Rauschenburger where we presented the case for state action to prepare consumers for the competitive market by promoting efficiency and distributed generation. State intervention is necessary during this transition when customers do not face real prices.

What does CNT suggest?

CNT urged the Board:

> [T]o promote energy efficiency and distributed generation as an alternative to increased commodity production by including these options in its report to the Governor. * * * The [Board] should also seek input on quantification of pollution prevention possible from energy efficiency to strengthen the argument for these measures becoming a focus of state policy.

PC 109—Mr. Patricio Silva, Midwest Activities Coordinator, NRDC

A "priority for NRDC is the enactment of state and federal electric utility restructuring legislation that insures that more open and competitive electricity markets do not yield unwanted dividends such as increased air and water pollution." NRDC stated that it:

> generally supports . . . new natural gas-fired combustion turbines as a transitional generating technology, alongside development of new renewable electric generating technologies and additional investment in energy efficiency . . . . The siting and permitting of new electric generating facilities ideally, should integrate evaluation of individual project and aggregate multiple project potential environmental and public health impacts.

According to NRDC, "[s]ince enactment of the [Illinois Electricity Choice Law], . . . Illinois has drawn considerable attention from merchant power plant developers." The result has been "the filing of numerous permit and zoning variance applications before state agencies and municipalities for over 55 new electric generating facilities, with a potential generating capacity of 22,000 MW . . . ." NRDC stated that "nearly all these new electric generating facilities will be . . . single cycle combustion turbines" operating "during periods of peak demand load."

NRDC explained the increase in peaker plant permit applications:

> Many developers of new electric generating facilities believe there are lucrative short-term profits to be made by siting as many peak load serving single cycle combustion turbines as they can within the next 18-24 months, anticipating peak demand episodes similar to that experienced by Illinois in 1999.

However, NRDC disagreed that peaker plants will alleviate the problems that Illinois faced in 1999: "Rather, improvements and upgrades of the distribution system infrastructure were and remain the principal problem and need."

NRDC stated that "[e]lectricity demand in Illinois is forecast to continue increasing. * * * The electric reliability council serving Illinois and portions of Wisconsin, MAIN, . . . projected available generating capacity at 56,523 MW" for the summer of 2000. NRDC noted

that the "Energy Information Administration . . . forecasts 'gas technologies are expected to dominate new generating capacity additions.'" NRDC stated that "[m]uch of this new natural gas-fired generating capacity is expected well before 2020."

NRDC reported:

> Illinois is experiencing the leading edge of an energy 'Oklahoma land rush' phenomenon that has already played itself out in New England . . . . Most relevant is
> that of the 36 combustion turbines being permitted at 19 electric generating facilities across New England, all are combined cycle natural gas-fired combustion turbines. * * *
>
> In the neighboring state of New York, 20 new electric generating facilities are undergoing siting review representing a total of 15,064 MW of generating capacity . . . . [T]hey will be equipped with combined cycle combustion turbines.

According to NRDC, it is not true that:

> [E]lectricity consumption in California is surging out of control . . . . In fact, the California system peak from 1990-1999 grew less than 2% per year . . . . Total statewide consumption of electricity increased less than 1% per year from 1990-1998 . . . .
>
> Electricity use spiked in June 2000, up almost 13% compared to the much cooler June of a year earlier. * * * This clearly contributed to sharply higher wholesale electricity prices for June 2000 . . . . It didn't help, obviously, that natural gas prices also were soaring above five dollars per [mmBtu] . . . . The first three weeks of July saw more moderate weather in California, [and] . . . average wholesale electricity prices dropped about 40%. However, . . . these prices were still very high by recent historical standards.

NRDC added:

> The short term reliability crises in California should be quickly and cost-effectively resolved by additional investment and deployment of energy efficiency and renewable energy on [a] sufficiently large scale, alongside entry into service of single and combined cycle natural gas-fired combustion turbines already in the siting and construction process.

NRDC claimed that the "deployment of energy efficiency and renewable energy investments have already made significant contributions to California's economy and electricity grid." Furthermore, the CEC wrote that "California continues to lead the nation in maximizing the amount of Gross State Product produced per unit of energy." NRDC

continued:

> California still has numerous untapped and inexpensive opportunities to get more work out of less electricity.
>
> Renewable energy is also a critical part of California's energy portfolio, with about one-ninth of the state's supply now generated from wind, solar, geothermal or biomass resources.

NRDC stated:

> Natural gas-fired combustion turbines represent the best available large-scale fossil fuel generation in terms of minimal adverse air quality impacts. Combustion turbines, particularly combined cycle applications are capable of obtaining 55-60% efficiencies . . . . Single cycle natural gas-fired combustion turbines are considerably less efficient, operating between 28-35% with combustion controls limiting NO_x emissions to 15-25 ppm.

However, "the aggregate impact of the proposed combustion turbine projects in Illinois would amount to several hundred tons, likely to be emitted during the worst ozone episodes."

NRDC recommended that USEPA "withdraw the section 182(f) NO_x waiver granted to the Chicago . . . ozone [NAA], which exempts proposed new single cycle combustion turbines from obtaining emission offsets or utilizing [BACT]."

NRDC discussed aggregate impacts from multiple peaker plants:

> In isolation single cycle natural-gas fired combustion turbines do not pose a greater threat to public health and the environment than other types of state-regulated facilities, particularly coal-fired steam turbine generating units. However, the aggregate impact of siting several single cycle natural gas-fired combustion turbines should be thoroughly evaluated since these units can emit quantities of NO_x . . . CO…PM 10…VOCs …SO_2…and sulfuric acid mist . . . in quantities sufficient to trigger permit review thresholds under the [CAA].

NRDC added that peaker plants can:

> [A]lso emit toxic air pollutants, including formaldehyde, acetaldehyde, benzene, lead, mercury and beryllium in quantities sufficient to trigger permit review thresholds under the [CAA].
>
> Toxic air pollutants emissions increase significantly at single cycle combustion turbines equipped to burn distillate fuel oils as an alternative fuel source.

NRDC commented that "many of these proposed single cycle combustion turbine projects maybe converted in the future to combined-cycle . . . . A single cycle generating unit may not tax available water resources for example, but its conversion to combined-cycle operation could create significant allocation quandaries for the host community."

NRDC stated that "[s]ingle cycle combustion turbines are not particularly water intensive, consuming less than 100,000 gallons per day." However, "[w]hen firing distillate fuel oil, water consumption rises to up to 1,000,000 gallons per day when steam injection is employed to reduce NO_x emissions. In comparison a 1,000 MW combined cycle natural gas-fired combustion turbine relying upon wet cooling consumes approximately 7,000,000 gallons per day."

NRDC stated that peaker plants:

> [S]hould avoid disproportionately burdening any community, but particularly low income communities and communities of color. * * * [M]any potential host communities are convinced from their experiences that existing local zoning requirements are not adequate to address all the public interest concerns. * * *
>
> That may be in part attributable to the lack of coordination between municipalities and Illinois regulatory agencies involved in permitting new electric generating facilities, particularly [IEPA] . . . .

NRDC advised that "[w]hen applications are pending for multiple facilities, siting boards should select those that best meet these criteria rather than approve applications on a first-come, first-served basis."

NRDC reported that "California and New York require a coordinated and systematic evaluation [of] the potential environmental and public health impacts of new electric generating facilities":

> The California energy facilities siting process is particularly rigorous, requiring demonstration of need, balanced against the potential environmental and public health impacts. An applicant seeking to site a new electric generating facility of 50 MW or greater is required to submit a pre-application. * * * The California energy facilities siting process requires a single regulatory permit (insured by simultaneous review of air, water quality permit requirements by relevant municipal, state and federal regulatory agencies). * * *
>
> The California Legislature amended the energy facilities siting process by establishing a "fast track" process of 6 months for new electric generating facilities presenting no significant adverse environmental impacts. * * *
>
> Single cycle natural gas-fired combustion turbines operating under contract with [the] California Independent System Operator which emit less than 5 ppm [of

> NO_x] . . . and displace[] more polluting existing generating capacity can obtain expedited air permit approvals. * * *
>
> The State of New York recently consolidated the permitting of new electric generating capacity greater than 80 MW under the [NYS Siting Board], under Article X of the New York Public Service Law. Prior to commencing construction, a power plant developer must obtain a "Certificate of Environmental Compatability and Public Need." * * * [The NYS Siting Board] "is authorized to issue both air and water permits. * * *
> Under [New York's] Article X, the project applicant is required to file a preliminary scoping statement explaining in detail: the proposed facility and its environmental setting; potential environmental impacts from the construction and operation of the proposed facility; proposed mitigation; reasonable alternatives to the proposed facility; and other information that may be relevant or required by the [NYS] Siting Board.
>
> The project applicant is responsible for ensuring the preliminary scoping statement is adequately publicized.
>
> Article X encourages public involvement by requiring the project applicant to hold public meetings, offer presentations to interested parties and establish a local presence in the community. * * * [T]he project applicant must submit with its application a fee to be used as an "intervenor fund," which the [NYS] Siting Board examiner will disburse to municipal and local parties to defray the cost of expert witnesses and other technical assistance. * * *
>
> At present NRDC is participating as an intervenor in 8 of the projects under Article X review.

NRDC believes that the Board should integrate "the currently disjointed local zoning review process with consideration of draft state administered air and water permits." NRDC supports:

> [S]iting laws that encourage new power plants to: (1) use renewable fuels[;] (2) implement state-of-the-art air and water pollution systems; (3) locate on or near existing power plant sites that do not require new fuel supply or transmission infrastructure; and (4) avoid disproportionately burdening low-income communities and communities of color. * * * [S]iting laws should ensure that cumulative environmental and public health impacts decline over time as capacity increases.

NRDC also stated that some entity should take over the ICC's old role and develop "a comprehensive energy strategy for Illinois."

PC 110—Mr. Ronald D. Earl, General Manager & CEO, IMEA

IMEA described itself as a:

> not-for-profit unit of municipal government made up of 39 of the State's 42 municipally-operated electric systems. * * *
>
> The IMEA's primary function is to provide wholesale electricity to its members. Not only does IMEA arrange for a sufficient quantity of electricity, it also schedules the delivery of that power to each community over the State's transmission grid on a real time basis.
>
> At this time, IMEA has contracts with 28 of the State's 42 municipal systems to provide all, or most, of their wholesale electricity.

IMEA claimed that "a reliable electric market requires generation sources in comfortable excess of projected peak demand." IMEA asserted that "generation sources should be located in relatively close proximity to the load they serve. * * * [H]igh volume, peak load days create transmission bottlenecks that have threatened parts of the State with mandatory curtailments as recently as this summer."

IMEA requested that "the State do nothing to create power shortages in Illinois through new and restrictive regulation of natural gas-fired, gas turbine peaking plants. They are . . . the cleanest source of power generation available today that can satisfy peak load needs." IMEA admitted that it would "be ideal if even greener sources of power, such as wind, solar, or hydro, could satisfy the State's growing needs. But such sources of power are not available on demand." IMEA stated that "[w]ithout sufficient power generation, higher costs and diminished reliability . . . will result."

PC 111—Mr. Earl W. Struck, President/CEO, AIEC

AIEC described itself as:

> [T]he statewide service organization for Illinois' 27 electric cooperatives. The 25 electric distribution cooperatives provide electric service[,] . . . primarily in rural areas. * * * Two generation and transmission cooperatives supply wholesale power to the majority of the state's distribution cooperatives.

AIEC stated that "Article XVII of Illinois' deregulation law grants co-ops and municipal systems 'local control' over decisions relating to a deregulated marketplace. * * * [A] number of cooperatives have taken steps to secure additional generation capacity."

AIEC reported:

> Two Illinois cooperatives have recently announced plans to increase coal-fired generation, using advanced 'clean coal' technologies. Several other

> cooperatives have decided to utilize natural gas-fired peaker plants. * * * In each case, planned peaker plants have been located in sparsely-populated and remote rural downstate areas, without objection from local residents, and with the support of local government.

AIEC believes that Board inquiry hearing testimony "indicates that peaker plants are among the 'cleanest' answers to the need for additional generation capacity." AIEC concluded: "The electric cooperatives of Illinois respectfully suggest that to impose new and burdensome regulations regarding installation of new gas-fired peaker plants, especially in light of California's recent experiences, would be unwise."

PC 112—Ms. Verena Owen of Winthrop Harbor

Ms. Owen stated:

> Under the [CAA] 160 (5), the IEPA has to consider all the consequences of a decision to increase air pollution. That includes the basic determination if a facility is needed or not needed. The IEPA has repeatedly refused to look at the need for the peaker proposals, however, the language in the permits tells otherwise. The IEPA has apparently concluded that they are all needed. The IEPA is operating in a [void], i.e. a missing energy policy . . . .

Ms. Owen quoted IEPA's Mr. Romaine (from the transcript of IEPA's Carlton hearing at page 132): "Or if, in fact, there has been a catastrophic change in Illinois' electric power supply system for the particular summer . . . . We have to contemplate potential operation of this facility as a major source." Ms. Owen is concerned that "IEPA is contemplating the possibility that the minors become majors? Again, the permitting section of the IEPA would be making energy policy . . . ."

Ms. Owen "would like to see the . . . Board recommend relieving the IEPA from the responsibility of making energy policy decisions and taking over the role the ICC used to have. I would like to see you ask the legislators to develop a comprehensive energy policy that benefits the citizens of Illinois and protects the environment."

PC 161—Ms. Mary Thurow of Big Rock

Ms. Thurow stated that "[i]f a peaker plant is located in Big Rock, it will destroy a major portion of our small agricultural landscape." Ms. Thurow asked that the Board "study the plans on the NO_x SIP before further plans are acted upon."

PC 162—Ms. Margaret A. Bock of Libertyville

Ms. Bock admitted that "[a]lthough peaker plants have benefits . . . such as generating electricity without nearly the quantity of air pollution as old coal-fired power plants, they also have some negatives such as producing a certain quantity of air pollution, as well as a certain

level of noise. [T]heir water requirements pose a problem."

Ms. Bock stated that "[e]ach village and municipality must assess the proposal in terms of its effect on the local area. And yet, many of the effects have a far wider effect than a local one." Ms. Bock commented:

> I believe that we must consider their impact statewide. We need a statewide discussion on how many peakers would be optimal, and how to decide which sites are appropriate. We need to review our air quality statutes and regulations, and probably make them more rigorous. And those additional regulations or restrictions should apply to currently permitted facilities and to new facilities and expansions. * * * I refer you to the California Environmental Protection Agency Air Resources Board "Guidance for Power Plant Siting and Best Available Control Technology" publication, as approved by the Air Resources Board on July 22, 1999, as an example of what other states are doing.

PC 163—Ms. Cynthia A. Faur, Sonnenschein, Nath & Rosenthal, on behalf of Midwest Generation

Midwest Generation commented:

> Midwest Generation is a subsidiary of Edison Mission Energy . . . . On December 15, 1999, Midwest Generation purchased the fossil fuel-fired assets of [ComEd]. Midwest Generation has an installed capacity of approximately 10,000 [MW] in Illinois—nearly 1,000 [MW] of which is existing peaking capacity.
>
> Midwest Generation has applied to [IEPA] for a permit to install an additional 300 MW of peaking capacity at its existing Waukegan Generating Station. These peaking units will be subject to [NSPS], which in this case will be equivalent to [BACT], and NO_x emissions from these units will be limited to less than 40 [TPY].
>
> Since purchasing the Waukegan Station from ComEd in December of 1999, Midwest Generation has commenced a project to significantly reduce NO_x emissions from that station. In permitting new peaking capacity at the Waukegan station, Midwest Generation is not using any of these emission reductions to offset emission increases from the new peaking units.

Midwest Generation claimed that additional peaking capacity will be required to meet the 17-20% reserve minimums and keep pace with increasing demand. Midwest Generation maintained that peaker plants do not "warrant more stringent regulation than currently provided in existing and proposed Illinois requirements." Midwest Generation continued: "As both Chris Romaine and Kathleen Bassi of [IEPA] testified[,] . . . peaker plants do not

threaten air quality." Midwest Generation stated that "it is important to note that these new peaking units are required to meet the NSPS for Stationary Gas Turbines, 40 CFR § 60.330 *et seq*. This NSPS contains requirements which limit the amount of NO_x and SO_2 that can be emitted from peaking units."

Midwest Generation added:

> [T]he construction permits issued for the peaking units contain both short and long-term emission limitations. Where a peaking unit is located at an existing facility, the requirements can be more stringent. In the case of Midwest Generation's proposed peaking units to be installed at its Waukegan station, Midwest Generation accepted an annual NO_x limitation of approximately 39 tons on emissions from its two peaking units combined to ensure that the addition of these units would be treated as a minor modification to the Waukegan station.
>
> In addition to permitting limitations on peaker plants, many peaking plants will be subject to the NO_x reduction rules currently pending before the Board. Under the NO_x SIP call rule, peaker plants will be allocated NO_x allowances from an allowance "set-aside" available for new sources. Under the NO_x SIP call, NO_x allowances can be purchased on the open market from other sources. Midwest Generation believes that the existing permitting rules, the NSPS standards, and the NO_x SIP rule will effectively regulate emissions from peaker plants.

Midwest Generation claimed that "[t]hese plants do not pose a unique or greater "environmental threat" than other types of sources in Illinois." Midwest Genration continued:

> The primary emissions from these plants will be NO_x, but peaker plants will only be a small portion of the NO_x emitted in the State. * * * With regard to water use, not all peaking units use a great deal of water. In fact, Midwest Generation's existing peaking units, as well as those proposed to be installed at the Waukegan station, use very little water. * * *
>
> [P]eaking units constructed in Illinois are subject to stringent noise regulations which require the operators of peaking units to address noise issues . . . . Midwest Generation does not believe that noise from these peaking units will constitute a unique threat.

Midwest Generation believes that "while [IEPA] can provide technical expertise on the air quality impacts of peaker plants, local governments are the best suited to make land use determinations for their jurisdictions . . . . [L]ocal governments have the authority to deny siting approval for peaker plant even if [IEPA] grants a construction permit for the proposed project."

Midwest Generation does not believe "that [any new] requirements should apply retroactively to existing peaking units":

> Midwest Generation currently operates 9 existing peaking sites—all of which are located in sites that are zoned for that purpose or at existing power plants. If additional requirements were made applicable to these peakers, it could significantly impact the ability of these units to provide needed power during peak periods.

Midwest Generation claimed that "[w]ithout additional peaking capacity in the State, it would be difficult, if not impossible, to maintain reliable electric service."

PC 164—Mr. Christopher Zibart of Hopkins & Sutter and Ms. Sharon Neal on behalf of ComEd

ComEd claimed that the "record accumulated in this docket supports the current regulatory scheme." ComEd stated that it:

> [S]upports the restructuring of the electric industry as crafted by the Illinois Legislature and the [FERC]. ComEd believes that, as designed by the Illinois Legislature, a free market for electric generation will lead to ample capacity at reasonable prices. A critical feature of restructuring is the availability of new privately developed electric generation to meet the State's increasing demand for power. No longer will the customers of a utility be at risk that too much generation will be built, resulting in high rates based on the cost of building it.

ComEd stated that "local governments possess substantial control over the process of siting non-utility generation." ComEd claimed that "[n]ew or more stringent regulation is not warranted." ComEd stated that "[w]hereas California has maintained tight regulatory control over wholesale prices and the approval of new generation, Illinois has allowed prices in a free market to determine what generation needs to be built."

ComEd asserted that additional peak generating capacity is good for Illinois. ComEd stated that "peak load is increasing substantially from year to year. * * * Because electricity cannot be stored, and must therefore be generated at the instant it is demanded, there must be enough generating capacity available to meet the peak load."

ComEd stated that "[i]t is important for Illinois citizens and consumers that many of these new peaker plants be located in Illinois . . . [for] [t]hree key reasons":

1. Illinois peakers will benefit Illinois consumers. * * * As the price of electricity in the future depends increasingly on market forces, keeping prices down in the face of increased demand requires more generation, and generation by a diverse group of electric producers. A large number

of sellers directly connected to an Illinois utility's transmission grid, will keep the price of electric power from jumping rapidly.

2. Illinois peakers promote reliability. Local generation helps support voltage on the system, especially near the generator. * * * The closer a generation source is to the load, the fewer potential problems there are with transmitting the power.

3. Distant peakers are not just as good. * * * Only so much power can be transmitted through a given line; at some point, to keep the lines from overloading, a transmission owner must turn down requests to transmit more power or curtail other transactions. * * * There have already been numerous instances on which transmission requests were denied. This is especially true during peak load conditions. It is therefore incorrect that either Illinois can depend heavily on generation in other states, or that Illinois-based generation will be used to supply huge amounts of load in other states. Unless or until massive new transmission line projects redefine the transmission grid, this condition will remain for the foreseeable future. And, regardless of interstate transmission availability, distant generation cannot support voltage on the local system to the same extent that local generation can. [citations omitted]"

ComEd asserted that environmental regulation should not unduly inhibit and frustrate the power market developed by the legislature. ComEd claimed:

> [T]he Legislature has entrusted the emerging free market for electric power to cause the appropriate amount of new generation to be built. This scheme will not function as the Legislature intended if Illinois' environmental regulatory scheme is changed unreasonably. The Board must realize that restrictions on peaker plants will reduce the supply of electricity generated and available to consumers.

ComEd stated that peaker plants are not different from other industrial facilities in Illinois so as to require more stringent regulation. ComEd maintained that "a well-designed peaker plant easily complies with all applicable federal and state environmental requirements and poses no significant environmental threat to the surrounding community."

"As to siting the new peaker plants," ComEd claimed:

> [T]he current system is clearly working . . . . [U]nlike a state-regulated public utility, a private developer must fit its new plant into the zoning and siting scheme of the neighborhood it chooses. Municipalities are well aware of how to use their zoning power and have substantial discretion to grant or deny zoning changes or variances. For this reason, some plants have obtained approval, while numerous other plants have been turned down. (The latest example:

> since the first hearings before the Board in this docket, the Board of Trustees of the Village of Libertyville rejected a zoning request for a new peaking plant.) So, the current situation does not demand an overhaul of the siting mechanism. Certainly, a time-consuming, expensive, bureaucratic process would discourage independent power from locating in Illinois.

ComEd stated that it is unnecessary to address applying new regulations retroactively "because no new regulations are needed." ComEd added, however, that "retro-fitting equipment is terribly expensive, and would be unfair considering that the facilities met the regulations pursuant to which they were permitted."

ComEd concluded that "in California, a slow bureaucratic process has kept construction of independent power plants to a minimum even though the electric industry has been restructured."

PC 165—Mr. Urbaszewski on behalf of ALAMC and IEC

Mr. Urbaszewski stated:

> At the hearing on October 5, 2000[,] . . . there was a request from the Board to provide more information on the estimated number of premature deaths in Illinois due to the effects or airborne [PM] . . . . [A] report published by [NRDC] in 1996 . . . [is] the source of the number of 60,000 premature deaths nationwide due to [PM], as well as being the source of information on deaths in the Chicago Metropolitan area . . . . The name of the report is BREATHTAKING: Premature Mortality due to Particulate Air Pollution in 239 American Cities.

Mr. Urbaszewski reported that, "[f]or the Chicago Metropolitan Area[,] the estimated number of premature deaths was a . . . range from 2075-4759, with a midpoint estimate of 3479. In our original testimony, I stated that the number of premature deaths due to particulate levels was over 2000."

Mr. Urbaszewski stated that the "report includes such estimates for eight metropolitan areas in Illinois. It does not include any figures for rural Illinois counties . . . . Our testimony indicated that there were over 3000 premature deaths statewide. The actual total from the eight metropolitan areas in the report was a range of 3052-7020 with midpoint of 5124."

ALAMC and IEC provided:

> A new report released in mid-October, 2000 that documents the connection between premature deaths and emissions from power plants nationwide. This study, The Particulate-Related Health Benefits of Reducing Power Plant Emissions by Abt Associates also breaks down the estimates of premature deaths by state and metropolitan areas." The summary of the Abt report is titled

> "Death Disease & Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants. Power plant emissions alone are associated with 1,700 premature deaths annually in Illinois, as well as 1,110 hospitalizations and 33,100 asthma attacks. Numbers for the Chicago Metropolitan Area are 995 premature deaths, 648 hospitalizations and 21,400 asthma attacks.

ALAMC and IEC "urged the Board to begin an inquiry into the threat to public health presented by existing coal-fired power plants. These plants are grand-fathered out of ever meeting modern emission standards and now emit the vast majority of [SO_2] emissions statewide—emissions that form airborne fine [PM] less than 2.5 microns (PM 2.5)."

ALAMC and IEC claimed that "[i]t is important to note that while the PM 2.5 standard is the subject of litigation before the Supreme Court, the health effects of PM 2.5 are not at issue. Even the District of Columbia Circuit Court of Appeals, the body that sent the case to the Supreme Court, agreed that the science shows there is a problem."

ALAMC and IEC "would like to correct a statement [at Tr.2 at 105-106], which states the number of people with lung disease in Cook County is 'over 14,000 people.' It should read 'over 400,000 people.'"

PC 166—Ms. Carol Dorge, LCCA

The Peaker Plant Industry

LCCA stated:

> The peaker plants that have been the subject of these hearings are natural gas fired [EGUs]. Some are also being permitted to use diesel fuel as an alternate fuel. Since these hearings commenced, in August, the number of peaker plants seeking air pollution permits from IEPA has grown from around 45 to over 60. Each plant has multiple turbines-usually three or more. We estimate their combined generating capacity to be 27,500 MW and their combined emissions (NO_x) to exceed 20,000 tons.

LCCA continued:

> The Board . . . need[s] to look at the numbers and recognize the reality. First, the fact that [it] is a big new industry and a real industry, and is not designed to serve only peak demand as peakers have in the past. Second, the fact that deregulation of the electric power industry, and relatively lax environmental regulations and local siting have contributed to an explosion in the number of plants choosing Illinois, over other states.

LCCA claimed:

> Simple cycle turbines are not "energy efficient" energy producers and they will contribute significantly to the ozone problem in Illinois and Wisconsin. These plants generate fewer jobs and less tax revenue than other types of industry. They take up large tracts of land. Most of the electricity they produce will be sold to out-of-state customers, and we can expect higher electric prices, and higher natural gas prices. There are few discernable benefits. Most of the municipalities that are approving these facilities are being enticed by financial incentives, through host agreements, or threatened by lawsuits.

LCCA stated that Illinois:

> [I]s currently issuing permits which would allow these sources to emit roughly 20,000 tons of NO_x (estimated), when the state's air regulations and SIP proposals project a NO_x demand for new sources of 1500 tons. Noise is a problem. The transportation and storage of millions of gallons of diesel fuel through and adjacent to residential areas is a problem. We are already observing clustering of facilities. Their combined impact needs to be considered. The state should be proactive and adopt regulations addressing these environmental impacts.

Air Permit Procedures Need to be Strengthened

LCCA commented:

> Almost all of these plants approach or exceed major source thresholds for NO_x, CO, VOM and toxics. [W]e note that facilities are being permitted to emit a wide range of emissions. Emissions of NO_x range from 2.5 ppm to over 40-55 ppm-even plants that are major and subject to BACT. Some of these plants are admittedly major, and subject to PSD and BACT. LCCA believes that even the sources being permitted as major sources are being allowed to emit far more air pollution than BACT should allow.

LCCA claimed that "[i]t is well known that pollutant emissions from combustion processes are higher during periods of start-up (and possibly shut-down)." LCCA also claimed that "IEPA has not been requiring applicants to obtain reliable emissions data from the manufacturers and include the information in their application."

LCCA stated that "[m]any of these plants are being permitted as synthetic minors with emissions of NO_x and CO approaching major sources thresholds. We believe these sources would be major, if all emissions (including emissions during startup) were properly accounted for. IEPA should establish standardized procedures for calculating emissions."

LCCA claimed that "permits are not being issued based on good engineering data" and that "[c]onstruction permits allow these plants to operate for a whole season (180 days) before demonstrating an ability to comply with permit limitations."

LCCA stated that the following items should be a part of every permit application:

- "Identity of the real operator and a demonstration of ability to operate, maintain and decommission the facility;"
- "Information on the duration and expected frequency of startup and shutdown, and emissions of all pollutants during startup;"
- "Information regarding emissions of toxics during normal operation;"
- "Good operating practices for their units;"
- "Information regarding operating factors;"
- "Standard procedures for calculating emissions during normal operation;"
- "Identification of monitoring procedures available to monitor all conditions impacting emissions;"
- "Modeling, including a demonstration that the facility will not contribute to the ozone non-attainment problem.;"
- "Offsets;"
- "[O]perator training;" and
- "Contractual warranties."

LCCA stated that "[t]hese facilities should install LAER, and every effort should be taken to prevent backsliding, particularly in the case of NO_x and VOM emissions. The NSPS (at around 75 ppm NO_x) is over 20 years old and grossly outdated. The Board should declare all of these sources "major" for purposes of all air regulations."

<u>These Sources Will Cause Nonattainment of the Ozone Standard</u>

LCCA reported:

> IEPA showed us, through modeling, that the combined impact of the roughly 45 plants in the pipeline would cause exceedences of the ozone standard, at least at Wisconsin locations. We also note that the Illinois attainment demonstration for ozone appears to account for roughly half of the plants that are being permitted, and does not account for additional plants that may be proposed. * * * These new sources are not currently securing offsets. Only a few of the proposed

sources will utilize LAER. It will not be technically feasible for these sources to reduce their emissions to 1500 Tons or to purchase the necessary allowances from Illinois sources. They will be purchasing allowances from out-of-state sources, while continuing to emit high levels of NO_x, in Illinois. Any regulatory initiative should include incentives designed to reduce levels of NO_x emitted within the state. There should be incentives which encourage the purchase of offsets from Illinois sources.

NO_x Waiver

LCCA stated that the "NO_x waiver should be lifted."

Noise

LCCA recommended that "[t]hese applicants should be required to hire noise experts and demonstrate noise will be controlled, before these plants are built."

Water Use

LCCA believes that "the state should adopt regulations governing water usage and that this should also be subject to review in a permit proceeding."

Water Discharge

LCCA acknowledged that the "NPDES program may adequately address concerns associated with water discharges, including storm water discharges, however, this should also be made part of the record in the permitting process."

Spills and Releases

LCCA claimed that "[c]itizens are extremely concerned about the possibility of spills, releases and possible explosions associated with peaker plant operations" and that "[n]o state agency has responded to those concerns."

Environmental/Engineering Review/Permitting

LCCA recommended "a state level environmental/engineering review and peaker plant permitting process which takes into account all of the environmental impacts associated with these plants, and imposes requirements to mitigate all environmental impacts. The permit applicant should include a financial demonstration of some sort, and a decommissioning plan."

Complete Application

LCCA also recommended that "[w]hen an application is truly complete, [IEPA] should issue Notice of Receipt of a Complete Permit Application to all parties to the permit proceeding."

Siting

LCCA believes "that there is also a need for some state involvement in siting in some, but not all cases."

LCCA's Siting and Permitting Proposal

LCCA's proposal includes:

- "Local siting and zoning approval;"
- "State siting approval may also [be] required;"
- "All property owners located within 2500 feet of the property line of a proposed facility should be provided with notice of the air permit application and peaker permit application;"
- "Any person could ask[] to be placed on the notice list and request service of all application materials;"
- "Hearings will be held upon the request of any party;"
- "Any party to a permit proceeding could appeal any permit that was issued;" and
- "[W]e feel an 'SB 172' type proceeding is warranted."

Questions That Governor Ryan Posed

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

> The answer is an unequivocal yes. They should be subject to LAER, MACT, [and] the ERMS program. Existing emission standards—particularly the NSPS—are terribly outdated. The regulations should also better define permit application requirements. * * * There must be a way to account for the combined contribution of these facilities, to the ozone problem. A noise standard should be adopted. Siting regulations are needed. * * * Storm water permits should also be required. The combined effect of these facilities needs to be considered.

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? LCCA answered: "Yes, based on the . . . number of units that have been proposed and their combined emissions."

Should new or expanding peaker plants be subject to siting requirements beyond applicable local zoning requirements? LCCA answered: "Absolutely. Local zoning is not adequate, particularly where facilities are sited near a municipality's boundary and near residential areas."

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? LCCA answered: "The regulations will only be effective if they are retroactive, to cover sources whose applications are pending, who have not commenced construction as of today."

PC 167—Mr. James R. Monk, President, IEA

IEA "is a trade organization representing investor-owned electricity and combination electricity and natural gas companies serving customers in the State of Illinois."

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

IEA answered:

> No. No credible evidence has been presented that would justify more restrictive statutes or regulations for peaker plants than is already imposed on such plants. Existing and newly proposed rules and regulations regarding nitrogen oxide emissions provide stringent emission control requirements to safeguard the health and welfare of Illinois citizens. The permitting process sufficiently guarantees that these plants will not pose air quality problems for the localities in which they are operated. * * * Illinois regulators have yet to receive even the first noise-related complaint regarding those peaker plants that have already been constructed and are operating under approved permits.

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?

IEA answered: "No. * * * [S]ingle-cycle peaker plants create little in the way of [NO_x] emissions or noise and use very small amounts of water. Larger combined-cycle plants are already held to higher standards under existing rules and regulations."

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

IEA answered: "No. * * * [L]ocal zoning authorities are on top of this situation and are exercising their extensive power. * * * [T]he State does not know and should not attempt to tell local zoning authorities what is best for their respective communities in the form of new state siting requirements."

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?

IEA answered:

> It would be patently unfair to apply any new, stricter rules or regulations to those facilities that have already been approved through the existing permitting process. To change those rules after the fact could have a tremendous chilling

effect on possible new investment to meet the state's growing demand for electricity. Such actions could also be perceived by potential investors in other similar industries as a sign of uncertainty in Illinois public policy.

How do other states regulate or restrict peaker plants?

IEA responded that "[n]o patterns have emerged in other states in this regard . . . . [W]hile we certainly should not ignore how other states deal with the peaker plant construction issue, we should not place too much emphasis on those states because they are not similarly situated in this regard."

General Comments

IEA said that "peaker plants cannot and should not be viewed only in the context of the environmental issues that are the crux of this inquiry," but instead should be viewed in light of "the broader public policy issue of how to supply safe, reliable, and affordable energy for the citizens of our state."

IEA continued: "Reliable electricity and affordable electricity are inextricably linked in our new deregulated power supply industry." Illinois must "make sure that the lights stay on even at times of peak demand" and provide for "affordable electricity prices . . . . [T]he only way to meet these twin goals in the near future is through the additional electricity capacity supplied by peaker plants."

Conclusion

IEA believes that "the record in this inquiry shows that there is no necessity for more strict regulation of peaker plants in our state."

PC 169—Mr. Evan L. Craig, Group Chair, Sierra Club Woods & Wetland Group (SCW&WG), Vernon Hills

These comments supplement those that Mr. Jack Darin submitted on behalf of the Sierra Club, Illinois Chapter. SCW&WG claimed that the "present reliance on local citizens to be experts is extremely taxing. * * * We need more help protecting our environment, and we expect more from our IEPA."

SCW&WG is bothered by "[f]rivolous applications. They're all the same. They are usually incomplete. They are all recommended by IEPA for approval." SCW&WG stated: "We've suffered from Grandfathered Coal. And then the NO_x Waiver. Those should stop. They should not be replaced by a new loophole: synthetic minors."

SCW&WG said that peaker plants "are compared to coal as cleaner, but we're being asked to accept peakers AND coal plants. Neither should be justified by comparison to the other unless one truly replaces the other." SCW&WG claimed that "[n]ew plants are not

needed until other measures have been exploited: Conserve, then Cogeneration on existing plants, then Renewable Energy, then, last of all fossil plants."

SCW&WG asserted that "[w]e need more comprehensive regulations of energy sources that considers the aggregate and various environmental burdens of each."

PC 170—Mr. Stephen Brick, Director, External Relations and Environmental Affairs, PG&E

PG&E stated that "the sheer number of plants being simultaneously permitted creates an unprecedented situation. * * * It is critical that a balance be struck between the pressing need for new sources of electricity and the desire to maintain and improve environmental quality."

Need for the Plants

PG&E commented:

> The testimony in the record supports the need for additional sources of generation to serve need in Illinois and elsewhere. * * * By the passage of the state's restructuring law, Illinois determined that the best way to encourage additional plant development is through market mechanisms. * * * [A] regulatory process would hamper the newly created competitive market.

Local Land Use Control

PG&E said that "[d]ecisions concerning the suitability of a proposed project should ultimately be left to the affected jurisdiction. * * * [T]he local zoning boards can share information and experiences, and we encourage the state to develop a process to facilitate this sort of exchange."

State Environmental Review

PG&E stated: "IEPA issues air permits for power projects. This is generally the most significant state level regulatory approval needed for a power plant." PG&E noted that "[m]ost of the power projects permitted thus far in Illinois have been permitted as synthetic minor sources. * * * [S]ynthetic minors are exempted from the air quality modeling requirements of the . . . PSD program."

PG&E stated:

> Most of the proposed projects . . . have submitted applications that request permits allowing them to emit just up to the major source threshold. * * * [N]umerous developers have requested permits to emit NO_x in the range of 245 to 249 [TPY]. * * * Because Illinois was granted a waiver under Section 182(f) of the [CAA], the major source threshold for NO_x emissions is 250 [TPY]. If

> this waiver were revoked, the threshold would drop to 25 [TPY]. * * * The 182(f) waiver was granted on the presumption that NO_x emission reductions were counter-productive to attaining the ozone standard in certain regions. This has since proven to be untrue, and states are in the process of implementing the SIP call on the assumption that broad, regional reductions of NO_x are needed to attain the ozone standard.
>
> PG&E suggested:
>
> The state could revise its permitting policy, and lower the major source threshold to 25 [TPY] for NO_x. This would greatly increase the credibility of air permits issued for peaking projects. This would provide more information to local communities and regulators on the impacts of proposed projects on local air quality. [IEPA] could also take care to insure that [USEPA] policies are followed in estimating emissions from start-up and shut-down, and to make sure that potential emissions estimates and worst case modeling includes these emissions, when appropriate. Finally, [IEPA] could insure that particulate emissions from proposed projects are being estimated using the required EPA methods that include both front-half and back-half emissions.

Need for a State Administered Siting Process

PG&E stated that a siting process like SB 172 "could have benefits" but "could also pose significant costs and delays that could threaten reliability." PG&E stated that in most states with "comprehensive power facility siting processes, the decisions of the state run boards overrule local jurisdictional authority." This is the situation in "Wisconsin, New York, Massachusetts, Connecticut, California, and Florida, among others. This type of process has cause[d] delays in facilities siting in a number of these states, with delays in California being the most significant."

PG&E stated that siting boards offer power plant developers a "venue in which local concerns can be balanced against other issues. In some cases, siting boards decide to certify a project over the objections of local citizens, deeming a proposed site the best alternative." PG&E added that, "[f]rom the perspective of home political authorities and citizens, . . . such boards have the ability to run roughshod over local preferences."

> PG&E made a recommendation:
>
> A process could be adopted to allow individuals or organizations with standing in a local proceeding to appeal to a state run board for assistance. This could occur if local authorities lack adequate resources to review project proposals, or if citizens or developers feel that a local process has produced an inappropriate result. The board could promulgate siting criteria in advance that would be applied to cases brought before the board. We believe the [Board] would be the appropriate agency in which to locate such authority.

PC 171—Ms. Freddi Greenberg, Executive Director and General Counsel, MWIPS

MWIPS is "an organization of leading competitive power suppliers with a common interest in promoting full and fair competition in the electric industry in the Midwest." MWIPS claimed that the "record in this proceeding strongly supports the conclusion that the present regulatory framework functions well and that peaker plants do not pose a unique threat to the environment."

Should peaker plants be more strictly regulated regarding air quality?

MWIPS stated that IEPA "testified that peaker plants comply with existing requirements and do not threaten air quality."

Are peaker plants unique with respect to pollution?

MWIPS claimed "[t]hey are not. Other industries emit NO_x, use water, discharge waste water and produce noise." Peaker plants' "impact on the environment is minimal."

Should peaker plants be subject to siting requirements beyond local zoning?

According to MWIPS:

> The answer to that question is "no." * * * The local process allows consideration of the issues that are unique to each situation. * * * [L]ocal zoning boards have the ability to address the issues raised with respect to a proposed plant. * * * To the extent that a community might desire assistance with respect to the siting of peakers, mechanisms to provide that assistance can be fashioned without creating mandatory statewide siting. An example would be the establishment of a statewide clearinghouse for studies and data developed through local siting processes.

Should any new regulations be applied retroactively to existing plants?

MWIPS maintained that "[t]he answer must be a resounding 'no.' A contrary result would be inherently unfair, not only to owners of peakers, but to owners of other existing industrial installations that also would be affected by a retroactive rule."

How do other states regulate peaker plants?

MWIPS claimed that "various approaches are employed with no clear pattern. * * * [D]elays in California's process for permitting electric generation have held up the construction of $10 billion worth of new generation."

Air Quality

MWIPS stated:

> The record in this proceeding overwhelmingly demonstrates that concerns over the impact of peaker plants on air quality are adequately addressed through existing regulation. [IEPA] requires each peaker applicant to conduct an air quality analysis of ambient impacts associated with the construction and operation of the peaker. * * * [T]hey assess whether emissions from a proposed source in conjunction with existing sources will not contribute to a violation of applicable NAAQS or PSD. * * * [IEPA] testified that modeling demonstrated that the impact of permitted and proposed peaker plants will not interfere with the ability to attain the ozone NAAQS.

MWIPS noted that IEPA also indicated that revoking the NO_x waiver "would have broad ramifications and that the waiver should not be revoked."

Water

MWIPS said that peaker plants "have two possible impacts on water resources: water usage and discharge of wastewater. The record has not demonstrated the need for further regulation in either regard."

MWIPS claimed that peaker plants "generally don't place as much pressure on local water supply as many other industries or activities" and that the WRAC "is in the process of analyzing the need for new laws or regulations to govern water usage in Illinois." MWIPS referred to Chairman Manning's October 25, 2000 letter to the WRAC (see Appendix G of the Report).

Noise

According to MWIPS, IEPA's Mr. Zak testified that "Illinois regulates noise more strictly than other states" and that IEPA "has received no complaints regarding noise from existing peaker plants." MWIPS stated that "the reasonable conclusion is that no further regulation is needed with respect to noise."

Peaker Plants Are Needed to Protect Reserve Margins

MWIPS claimed that "[p]rojected reserve margins for the years 2001, 2002 and 2003, taking into account capacity from existing peaker plants, but excluding capacity from proposed peakers are estimated at 13%, 11% and 10%, respectively, [are] substantially below the minimum industry standard."

Peaker Plants Will Benefit the State and Local Communities

MWIPS stated that "utilities have not built new capacity for a number of years during which there has been significant economic growth." MWIPS continued:

> [A] peaker plant is most profitable when its output is sold within the local electric grid. * * * [T]he most reliable manner of assuring adequate electric supply is to locate the plant within the utility transmission system where the electricity will be consumed. There may be times, however, when the output of a peaker plant is sold other than to meet local electric needs. * * * [A] developer who desires to meet capacity needs in another state has every incentive to build generation in the state where the plant's output will be consumed.

Conversion from Simple Cycle to Combined Cycle Involves an Additional Process

MWIPS stated that "such a conversion would increase the air emissions from the facility to the extent of requiring a new permitting process. This process would provide an opportunity for public participation."

Conclusion

MWIPS concluded that the "[t]estimony before the Board establishes that the present regulatory framework functions effectively."

PC 172—Sierra Club, Illinois Chapter

Sierra Club is concerned about the effects the proposed plants will have on air and water. Specifically, Sierra Club noted that the plants will consume large amounts of water, and argued that Illinois needs to take an active role in managing water use. It proposed that State approval should be required for any new withdrawal from surface or groundwater sources exceeding 10,000 gallons per day.

Sierra Club is concerned that the discharges from the plants could significantly degrade the habitat of a smaller stream by changing the flow regime. It argued that strong antidegradation rules should be adopted to protect the streams against the discharges.

Sierra Club urged Illinois to reconsider the current exemption of new pollution sources in the Chicago [NAA] from RACT requirements. It also recommended adopting more protective emission standards for the plants.

Sierra Club supports a moratorium on permitting and constructing new plants, to allow time to examine the policies that are drawing peaker plants to this State.

PC 173—Mr. Gerald Erjavec, Manager, Business Development, Indeck

Indeck argued that peaker plants do not need to be regulated more strictly than Illinois' current air quality statutes and regulations provide. It noted that State and federal programs tightly regulate air emissions from the plants. Indeck also argued that NO_x emissions from the plants are the lowest emitters of NO_x per kWh produced, when compared to other means of electrical production. Additionally, Indeck argued that the technologies mentioned at the hearings, that have the potential to reduce the minimal amounts of NO_x, have not been adequately proven on a commercial-sized scale. Most developers will not risk committing to a permit that relies on these technologies to comply.

Regarding water concerns, Indeck argued that the record shows that technology exists to reduce the amount of fresh water the plants require. Indeck commended the Board for referring deliberations on water use impacts to the WRAC.

Indeck argued that no further noise regulation is necessary. It relied on IEPA's report that it has not received a complaint regarding noise from the peaker plants that have existed since 1965.

Indeck asserted that little to no testimony was offered that compares the impacts of other State-regulated facilities to peaking facilities. It argued that peaker plants have impacts that are equal to or less than many other facilities that have no additional regulatory requirements. It believes that if additional regulation of peaker plants is considered, the State should also increase its oversight of most other industries.

Indeck argued that peaker plants should not be subject to siting requirements beyond applicable zoning requirements. It noted that most local zoning codes allow for uses that are more intensive than a peaking plant in one or more zoning classifications. It asked that if any alternate process is considered, it should be one that restricts the decision-making to facts in the record.

Indeck argued that a period of regulatory certainty is necessary to allow the industry to move forward. If there is any change in regulations and restrictions, those should be evenly applied to all other industries in the State.

Indeck commented that the process of regulating peaker plants in other states varies. It noted that other states have a process like Illinois' process—one or two local agencies handle the local issues and the State handles the state and federal issues.

In closing, Indeck asserted that the majority of the testimony did not address Governor Ryan's questions for the inquiry hearings, but instead addressed the "evils" of peaker plants.

PC 186—Mr. Ersel C. Schuster, McHenry County Board

Mr. Schuster stated that he supports the concepts and suggestions offered by Mr. Zak,

Mr. Urbaszewski, Dr. Winstanley, Ms. Turnball, Mr. Romaine, Ms. Zingle, Dr. Overbye, and others. His comment focused on enforcement. He argued that his board does not have the authority, technical expertise, or financial ability to ensure that the operator of a peaker plant is complying with the regulations. He argued that local officials must have a means to effectively enforce against these operations.

PC 187—Ms. Katherine Hodge and Ms. Karen Bernoteit, Hodge & Dwyer/IERG

IERG argued that the need for additional regulations, or lack thereof, depends on whether the goals of air pollution control are, or are not, being achieved. To determine whether the goals are being achieved, it contended one must look at the potential effect of peaker plants on ambient air quality standards and PSD increments. Citing the testimony of IEPA's Mr. Kaleel, IERG argued that the results of IEPA modeling shows that the natural gas-fired peaker plants permitted thus far will not threaten the NAAQS or PSD for NO_2, PM 10, SO_2 and CO. Based on this testimony, and absent evidence to the contrary, IERG declared that there is no need for additional controls.

IERG argued that the record shows that peaker plants do not pose a unique or greater threat than other regulated facilities, regarding air pollution. It noted that Mr. Zak, noise advisor for IEPA, testified that IEPA had not received any noise complaints regarding existing peaker plants. IERG supports providing the WRAC with a summary of all water-related issues; and believes that it would be inappropriate for the Board to make any recommendations regarding water issues at this time. IERG referred to Chairman Manning's October 25, 2000 letter to the WRAC (see Appendix G of the Report).

IERG believes that siting is the crux of the matter. It argued that local zoning should, and can, do the job of siting peaker plants.

IERG argued that there is no need to regulate peaker plants more stringently, and the plants do not pose a unique or greater threat than other regulated facilities.

IERG also stressed that the Board's informational order should precisely define the types of facilities that are the focus of any recommendations to the Governor. IERG noted that during the course of testimony, the scope of the hearings became blurred with discussion regarding combined cycle, co-generation, and base-load facilities. IERG argued that the focus of the hearings was supposed to be natural gas-fired peaker plants, not all power generation facilities. It wants the definition of peaker plants to be clear so that there are no potentially severe and unnecessary impacts on the business community.

IERG further stated that there should not be a concern that there are too many facilities being planned, or permitted, or constructed, relative to the demand for peak power. IERG argued that if too many peaker plants are built, only those willing to produce the needed power at the lowest possible cost will operate. The competitive marketplace will address the situation.

PC 189—CCLC and Liberty Prairie Conservancy

This comment offered a list of suggestions for IEPA to follow when a peaker plant seeks a permit, including:

- IEPA should maintain, both on the Web and hard copy, data regarding existing capacity, projected need, and detailed projected capacity throughout MAIN;
- Create an additional information form to be completed by each applicant;
- Post all permit applications on the Web; and
- Develop new air modeling parameters based on the proposed months during which the facilities will operate, not on annual averages.

PC 190—Mr. LaBelle, Ms. Cole, Ms. Carter, Lake County Board Members

This comment provided a number of recommendations for siting requirements, including:

- A moratorium on all pending peaker plant air quality permits until all outstanding peaker plant permitting issues are resolved;
- After current IEPA peaker permits expire, no "un-built" plants will be grandfathered;
- Emissions generated during equipment start-up and shut-down must be regulated differently to optimize emission control;
- The Board or another appropriate agency should govern the regional siting process;
- The impact analysis should not allow pollution outputs to be considered over a 12-month period, but rather a three month period when plants are likely to operate;
- More stringent permitting regulations if the power that the plants generate is sold outside of Illinois;
- The Board should recognize that water supply issues are a major concern and need to be addressed in the permitting process; and
- The Board should require the approved siting agency to work with the Midwest Independent System Operator on locating generation.

PC 191—Ms. Marsha B. Winter of Zion

This comment is in the form of a letter that Ms. Winter sent to Zion Mayor Lane Harrison and members of the Zion City Council. Ms. Winter was angry that neither the Mayor nor members of the Zion City Council attended a peaker plant forum on November 4, 2000. Ms. Winter is also unhappy that citizens who attend Zion City Council Meetings are not given the opportunity to address the peaker plant issue.

Ms. Winter claimed that Zion residents do not want the proposed peaker plants because they pollute and generate noise. She also claimed that Zion does not have the capacity to supply the proposed peaker plants with the water that they need (2 million gallons per day). Ms. Winter stated that proposed peaker plants would violate Zion zoning codes as well.

Ms. Winter alleged that the proposed peaker plants are "hideous eyesores" that will decrease property values. She also alleged that they will negatively impact public health.

PC 192—Mr. Ken Bentsen of Sugar Grove

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

Mr. Bentsen stated that peaker plants need to be more strictly regulated than current Illinois air quality statutes and regulations provide. He said that the State must examine all of the peaker plant applications together to determine the impact on air quality, especially air quality in the Chicago NAA.

Mr. Bensten asserted that peaker plants pose a unique threat or a greater threat than other State-regulated facilities with respect to groundwater. Mr. Bentsen is concerned that a peaker plant proposed for Big Rock would use groundwater that citizens currently use. He stated that the permitting process should be conducted with great caution and information on the proposed peaker should be made publicly available.

Mr. Bentsen asserted that peaker plants should be subject to siting requirements beyond local zoning: "The [p]eaker [p]lant proposed for Big Rock Township would be located right in the middle of agricultural land and is inconsistent with the Kane County 2020 plan." The State should have a policy for siting peaker plants on brownfields as opposed to farmland, according to Mr. Bentsen.

Mr. Bentsen also wants the State to impose a moratorium on granting air permits until the NO_x SIP call is completed.

PC 194—Mr. Ralph N. Schleifer of Kaneville

Mr. Schleifer maintained that peaker plants need to be more strictly regulated than Illinois' current air quality statutes and regulations provide. The cumulative effects of all of the peaker plant proposals need to be considered on the Chicago ozone NAA.

Mr. Schleifer asserted that the proposed Big Rock peaker plant would compete with residents there for use of groundwater. Mr. Schleifer asked the State to impose a moratorium on granting air permits until the NO_x SIP call is completed.

PC 195—Ms. Marci Rose of Big Rock

Ms. Rose recently moved to Big Rock from Wheaton, and did not find out about the proposed peaker plant for Big Rock until after she and her family moved. Several of her children have respiratory diseases (asthma, allergies, bronchitis) and they moved to Big Rock for its clean air. Ms. Rose is "sure there is somewhere else this power plant can be put." Ms. Rose also attached a copy of a form letter that others filed in these proceedings.