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R01-10
P.C. #108

Dorothy Gunn, Clerk
Illinois Pollution Control Board
100 West Randolph, Suite 11-500
Chicago, IL 60601
November 6, 2000

Dear Dorothy Gunn,

Please file the enclosed comments under the IPCB Docket R01-10 in the matter of natural gas fired, peak-load electrical power generating facilities (peaker plants). Thank you.

Sincerely,

Jeannine Kannegiesser

Jeannine Kannegiesser

Enclosure

TO: Illinois Pollution Control Board
FROM: Jeannine Kannegiesser, Analyst, Center for Neighborhood Technology
RE: Docket R01-10, Natural gas fired, peak-load electrical power generating facilities (peaker plants)
DATE: November 6, 2000

What is peak demand and why are peaker plants appearing in Illinois?
Demand for electricity varies daily and seasonally. Afternoon demand is higher than demand during the rest of the day and summer demand is greater than during the other seasons of the year (as measured in kW of demand at a given time. This variation is caused by the behavior of electric customers and summer "peaks" are driven largely by consumption of air conditioning to cool interior spaces. Figure 1 and figure 2 illustrate the daily variation in demand and the seasonal variation in consumption of electricity respectively.

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. Power prices during these periods of high demand can be extremely high as higher cost power generating systems come on-line or power becomes scarce. The cost to the utility to serve peak demand is much higher than the cost to serve the base load.

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. Applications for construction permits to build peak power plants – natural gas fired turbines – have fueled many local debates over the siting of these facilities.

Because the prices for power during the times of peak demand are relatively high, peak power producers expect to make a profit by running their plants for a limited number of hours during the year. Operating a limited number of days also allows many plants to fall under the annual emissions threshold for "major source" and escape stringent environmental review. 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?
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.

Energy efficiency is simply getting the most out of every kWh spent on an end use; increasing efficiency can help reduce the peak and limit growth in demand. Because air conditioning causes much of the summer peak load, improving 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.

Important benefits can also be realized by improving the efficiency of newly constructed buildings so that their impact on load growth is minimized. 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 not being selected?
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 small 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. An intermediary in the market can help to share the utility benefit of demand side measures with customers making the investment in efficiency and load management.

What are the benefits?
Managing peak demand and load growth can bring benefits to Illinois customers. 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. Effectively, the characteristic demand curve becomes "flatter" as consumers begin to implement load management.

Such demand management provides other benefits. The distribution system will experience less stress if peak demand is maintained below capacity. Lower demand means less pollution as generators operate less to serve customers. Inasmuch as reduced peak demand makes peak power plants less profitable, there might be a reduction in permit applications for these facilities and the associated land use battles may become less frequent.

What is CNT doing about it?
The Center for Neighborhood Technology has begun to test these new models of energy service in selected communities in northeastern Illinois through its Community Energy Cooperative and is currently contributing to an effort to improve state programs to promote energy efficiency and distributed resources. As the 1997 law is implemented over the next five years, CNT hopes that the state programs will provide incentives for customers to invest in efficiency and distributed generation in preparation for a competitive market.

On October 17, CNT participated in a meeting hosted by State Senator Steven Raushenburger 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. Demand reduction is a cost effective and environmentally preferable alternative to additional peak power plants, one that should be made available to consumers.

What does CNT suggest?
CNT urges IPCB to promote energy efficiency and distributed generation as an alternative to increased commodity production by including these options in its report to the Governor. Encourage the Governor's office to support a statewide energy policy that promotes efficiency and distributed generation as well as it currently supports peaker plant construction. The IPCB 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.

Figure 1. Daily variation in demand for electricity

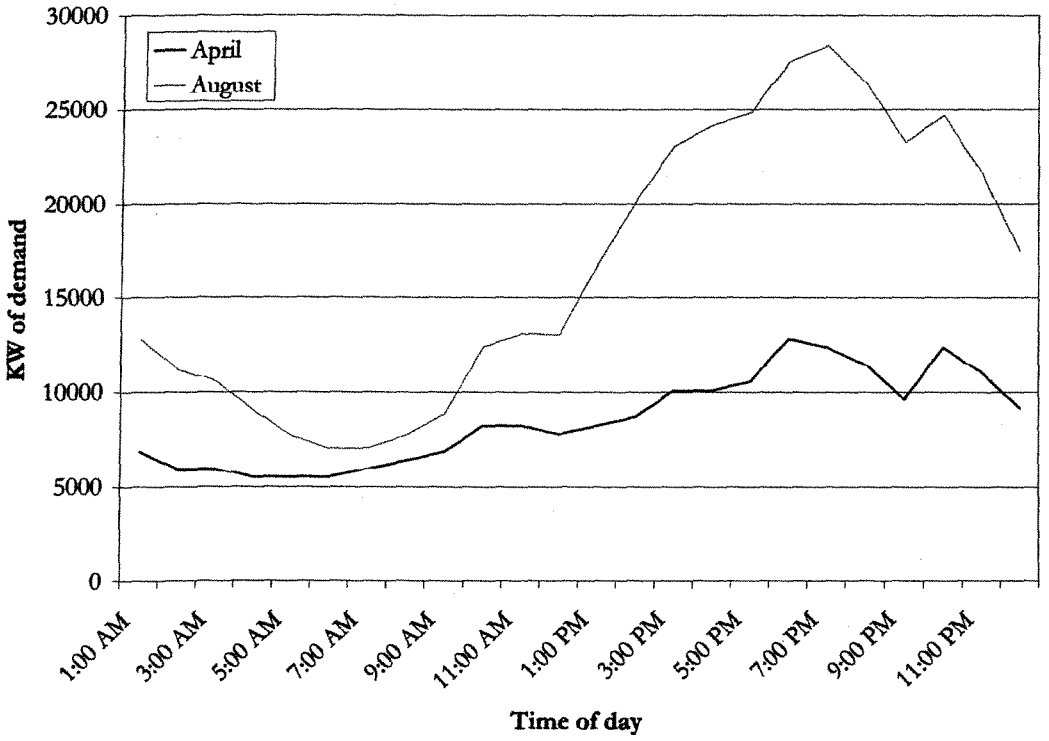

Figure 2. Commonwealth Edison system demand Nov 1998-Oct 1999