To: Anthony Star, Director of the Illinois Power Agency
From: Gregory J. Poulos, EnerNOC, Manager of Regulatory Affairs
Date: July 25, 2014
Re: IPA Workshop: Energy Efficiency as a Supply Resource

Director Star,

Thank you for the opportunity to participate in the IPA Workshop on June 18. We also appreciate the opportunity to assist the IPA by providing responses to the IPA's eight follow-up questions. Demand response programs are typically the cheapest, fastest, and cleanest ways to meet energy demand. In addition, demand response programs provide local businesses with a means to profit from their energy curtailment. We look forward to further dialogue.

Questions

1. The IPA has traditionally looked at procurement blocks using regular definitions of those products as on-peak (16 hours on the 5 weekdays) or off-peak (8 hours on 5 weekdays, weekends and holidays). Should the IPA consider procurement of a new resource of demand reducing resources during the summer months for a narrower peak period? If so, how should that "super-peak" period be defined?

Yes – the IPA should consider procurement of a new resource of demand reducing resources during the summer months. In order to assemble a truly cost-effective portfolio, any procurement must include demand side resources, in particular demand response resources, which correspond most closely to high-heat rate peaking units. There is an inverse relationship between the number days and hours within each day, and the number and costs of customers willing to participate. The super-peak should encompass those days and hours within those days, based upon modeling, in which there is an expectation that reserves may fall below acceptable levels.

Some successful programs (e.g., PJM's) impose limits on the number of days and hours DR resources are required to respond or face some sort of penalty (response beyond that point is encouraged if needed, but not required.) These limits are based on periodic system modeling. Other programs (NYISO) define no limits, but instead limit the circumstances under which DR resources can be called to times when system conditions are sufficiently infrequent that they impose a *de facto* limit (e.g. a NERC Emergency Energy Alert Level 2 situation.)

Regardless of the approach taken, EnerNOC's experience has been that customer willingness to participate begins to decline sharply if there is an expectation that they will be called upon more than 60-80 hours per year. Assuming a summer-peaking load window of noon until 6pm or 8 pm on weekdays, this would imply a practical maximum for an attractive program of 10-14 days. .

2. What types of products should qualify for delivery as a super-peak product? What measures can the IPA take to ensure that super-peak demand-side resources feature an actual lower delivered cost than supply side alternatives? Please provide evidence (either empirical, or modeled) for demand-side resources with delivered costs that could be lower cost than supply side resources.

A true super peak product would be one that is capable of being exercised during the highest demand hours of the year. Demand response (DR) programs are the only demand-side option that meet this definition. IPA can assure that a DR resource is competitive with the supply side alternative by simply paying DR the same amount paid to the highest cost (marginal) generation currently on line. It would actually be more appropriate to provide DR with additional payment to account for such variables as avoided line losses and avoided transmission and distribution costs.

DR is proven to be a cost-effective alternative to supply side resources by the fact that it effectively competes with supply-side resources in most wholesale markets (today's MISO market notwithstanding), and by the fact that utilities regularly procure firm DR capacity from DR aggregators on a bilateral basis as part of their supply portfolio.

The PJM Independent Market Monitor evaluated the 2017/2018 PJM Reliability Pricing Model (RPM) Base Residual Action (BRA) results and determined that demand response resource participation in that auction resulted in a net savings of approximately $16.4 billion. Clearly, under the right circumstances, DR can provide capacity at a substantially lower cost than generation alternatives. Some DR resources, similarly, can provide energy at a cost lower than the wholesale price, especially during peak and super peak periods.

3. Should a resource for this procurement also be eligible to participate in other energy efficiency (and/or demand response) programs? If so, how should the value of each be accounted for? For example, could a product have its kWh reductions separated between multiple programs? What timing challenges may result from including resources in both supply resource procurement and existing energy efficiency (and/or demand response) programs, and how can those be resolved?

The same MW of DR cannot be used as a supply resource by two different parties at the same time, but there is no reason why it can't be delivered to two different parties at non-concurrent times. It would be valued by each party against that party's avoided cost during the hours it is used. By contrast, if an energy efficiency program's attributes were to be divided among two different supply portfolios, this would create a fairly complex accounting scenario where costs (energy efficiency rebates paid to customers, for example) are shared by the two parties, and benefits are accounted for in a similar fashion. It is not clear how the benefits of an air

conditioner rebate program, for example, might be shared among two parties, as these benefits accrue during the cooling season when both parties would want claim to the energy efficiency attributes.

4. How could delivery of demand-side resources be metered and/or verified? What provisions should apply for non-delivery?

These are "solved problems" in utility and ISO programs around the world. Accurate and cost-effective metering solutions that are used for measurement, verification and settlement purposes, are a standard part of every DR program. Similarly, measurement and verification protocols have been established in many regions that ensure consumers get what they are paying for. DR aggregators have stand alone hardware and software solutions that are proven and trusted by hundreds of utilities and grid operators.

Performance guarantees are a critical part of any DR program, or indeed any resource procurement effort, however a balance needs to be struck between providing sufficient incentives to perform, while not being so onerous as to deter participation. A DR program typically has some sort of non-delivery provision at the aggregate level. For example, if IPA contracted for a 50 MW DR resource from an aggregator, the aggregator might pay IPA's marginal cost of supply, plus a penalty for any shortfall during a curtailment event. Again, this is a solved problem, with many proven approaches existing in ISO and utility DR programs.

5. What limitations, if any, should be placed on customer classes that could provide these resources? Specifically, should it only be potentially eligible retail customers, or all customer classes? Should the resources have to be located within the service territory of the utility to which they are delivered?

All customer classes should be allowed to provide demand-side resources, <u>so long as the benefits accrue to eligible retail customers</u>. If the benefits accrue to eligible retail customers, it would not be necessary for the resource to be located within the service territory of the utility to which it is delivered.

6. In 2014 the IPA is procuring energy blocks of 25 MW, down from 50 MW in previous procurements. What size block would be appropriate for this potential procurement?

There are significant fixed "start up costs" for any DR program related to marketing and recruitment that need to be recouped. For an initial procurement, EnerNOC would suggest

procuring not less than 25 MW of DR for reasons of cost effectiveness and economies of scale. However, beyond an initial procurement, the resource can be grown incrementally with no lower bound on block size.

7. If the IPA were to propose the procurement of super-peak demand-side resources as part of its 2015 procurement plan, could these resources be procured for the upcoming delivery year (starting June, 2015), or should there be more time given to ramp up any new programs that would deliver these resources?

DR resources could be procured and in place by June of 2015. The size of the resource that could be procured by that date would depend upon when the request for such resources is issued. If the request is not issued until late 2014, the size of the 2015 resource will be significantly diminished.

8. Are there other approaches the IPA should consider in its procurement plan for procuring resources other than what it has traditionally procured that could lower the total cost of the portfolio used to serve eligible retail customers?

The most cost effective and lowest risk approach is one in which a dispatchable resource such as DR is procured in a separate RFP. Among all demand-side options, DR comes the closest to matching supply with demand on an operational basis, and is the approach that requires the least "over build". There are significant additional logistical questions that need to be answered to determine how viable a dispatchable resource might be as part of IPA's supply portfolio. EnerNOC suggests further discussion among the interested parties to formulate these questions and explore potential solutions.