**STATE OF ILLINOIS**
**ILLINOIS COMMERCE COMMISSION**

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| Illinois Commerce Commission<br>On its Own Motion | )<br>)<br>) | Docket No. 06-0525 |
| Consideration of the Federal Standard on<br>Interconnection in Section 1254 of the<br>Energy Policy Act of 2005. | )<br>)<br>)<br>)<br>) | |

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**NEW INITIAL COMMENTS OF THE ENVIRONMENTAL LAW & POLICY CENTER**

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## I. Introduction and Summary of Comments

These comments respond to Judge Sainsot's order dated December 5, 2006, striking all previously filed comments and requesting additional comments in this proceeding. Briefly, by way of background, on July 26, 2006, the Illinois Commerce Commission initiated this proceeding to consider whether to adopt standards for interconnection of distributed generation (DG) resources to the electric utility grid. The ICC's action was triggered by Section 1254 of the Energy Policy Act of 2005 (EPAct), which requires each State regulatory authority to "consider" and "determine" whether to develop interconnection rules modeled on a federal standard. The federal standard would require the state to establish agreements and procedures that promote the "current best practices" of interconnection and ensure that the interconnection process is "just and reasonable, and not unduly discriminatory or preferential." *See* EPAct Section 1254 (adding Public Utility Regulatory Policy Act (PURPA) Section 111(d)(15), 16 U.S.C. 2621(d)(15)).

In November 2006, the parties submitted two rounds of comments regarding the Commission's required determination. Virtually every party supported, in principle, implementing the federal standard for interconnection services. However, the parties differed somewhat on the scope of the inquiry and the best way to implement interconnection rules. For example, Ameren, ComEd, and MidAmerican focused primarily on the technical and engineering aspects of interconnection, such as the IEEE 1547 Standard, while ELPC focused on the "agreements and procedures" necessary to reduce the current business practice barriers to interconnection. ELPC suggested that a rulemaking would be most appropriate to implement uniform interconnection rules, while the ICC Staff recommended a tariffing procedure.

On December 5, 2006, the parties convened for a status conference before Administrative Law Judge Claudia Sainsot. Judge Sainsot requested a second round of briefing in order to better focus the discussion and guide the Commission's determination. Specifically, Judge Sainsot asked the parties to clarify the proper scope and purpose of the EPAct inquiry, including a clear explanation of the standards and procedures that are or should be part of this proceeding. Judge Sainsot also requested further explanation of the proper methods of implementing interconnection rules, including both high level concepts (i.e. whether interconnection standards should be implemented through rulemaking, a tariff regime, utility guidelines, etc.) and the details of rule design (including paperwork, timing, deadlines, fees, etc.).

These comments respond to Judge Sainsot's questions and provide additional context for this proceeding. We will address the following:

- A summary of "distributed generation" power sources and how and why they must "interconnect" to the electric power grid;
- Technical and procedural barriers to interconnection that impede energy development and commerce in Illinois;
- Review of the requirements of the EPAct and the Public Utility Regulatory Policies Act (PURPA) and how those requirements affect the scope of this proceeding.
- The "nuts and bolts" of interconnection rule design, examining several methods proposed in model codes or adopted in other states, including ELPC's model interconnection rules (Attachment A).
- Options available to the Commission for implementing interconnection rules that are consistent with the federal standard.

ELPC believes that the Commission should issue a proposed rule establishing tiered interconnection rules that would apply equally to all requests for interconnection in Illinois. Although we prefer a rulemaking, it is possible that a Commission Order establishing a tariff regime could work, as long as it is designed correctly and subject to close oversight by the Commission. These options will be discussed in more detail below.

## II. BACKGROND

### A. Types of Distributed Generation

The electric power industry was once a collection of vertically integrated electric utilities operating very large and centralized power plants at sizes of up to 1000 megawatts (MW)[1]. The existing system of utility regulation was developed, in

[1] The basic unit of electric power is a watt, which is a rate of producing or consuming energy. A typical lightbulb, for example, consumes electricity at the rate of 75 watts, or 75 watt-hours of electricity in one hour of operation. One kilowatt (kW) is 1,000

large part, to accommodate this centralized power generation model. Although these power plants still provide most power to consumers, technological and legal advances now allow smaller power systems to generate power at or near the place of consumption. In contrast to centralized power plants (typically between 500 and 1000 MW in size), most "distributed generation" (DG) is smaller than 100 MW, with much DG as small as 1 MW or less.

DG technologies are typically fueled by either renewable or fossil energy. Examples of renewable energy DG systems include wind turbines, solar photovoltaic panels, and a variety of engines and boilers that can run on liquid, gaseous and solid "biomass" energy such as soy-based biodiesel and methane gas produced from livestock manure. Other DG systems—usually reciprocating engines (essentially large-scale car engines), microturbine engines (similar in concept to jet engines) and boiler/turbine combinations—run on natural gas, coal or diesel fuel.

Some of the most efficient boiler and engine systems generate both heat and power. For example, a university campus could use a "combined heat and power" (CHP) system to generate electricity for campus use and also use exhaust heat from the engines to heat buildings. The University of Illinois at Chicago uses exactly this kind of CHP system to power and heat most of its campus. There are more than 3,000 of these CHP facilities in the United States today, with a combined generating capacity of approximately 83,500 MW (around 9 percent of the total US generating capacity). Illinois has 1,239 MW of installed CHP capacity at 139 sites.

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watts. One megawatt (MW) is 1,000 kilowatts (or 1,000,000 watts). The average household in the United States uses almost

This represents only 2.8 percent of the total generating capacity in Illinois— a figure that lags significantly behind the national average.[2]

One example of DG that is relatively common in Illinois is a reciprocating or turbine engine that uses methane generated from landfills to produce electric power. As of January 2007, over 420 of these "landfill gas" (LFG) power systems were operational in the United States, with a generating capacity of nearly 1,200 MW. At present, Illinois has more LFG systems than any other state except California -- nearly 40 such systems with approximately 135 MW of generating capacity.[3]

Renewable energy generation, a significant portion of which is DG, currently accounts for a relatively small fraction of the nation's energy supply (approximately 6 percent in 2004), but it is growing rapidly. From 2003 to 2004 wind power increased by 27 percent and total shipments of PV cells and modules reached a record high of 181,116 peak kilowatts, a 66 percent increase from 2003.[4] In Illinois, however, the market share of renewable net electric power generation (not including hydroelectric) was only 0.5 percent in 2003 – much less than the national average of 2.3 percent.[5] New policies are needed to improve Illinois' share.

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12,000 kilowatt-hours (12 million watt-hours) per year.

[2] Sources: Midwest CHP Application Center website (http://www.chpcentermw.org/home.html), and the Energy and Environmental Analysis, Inc., Combined Heat and Power Database (http://www.eea-inc.com/chpdata/index.html).

[3] United States EPA, Landfill Methane Outreach Program state-by-state database (available at http://www.epa.gov/lmop/proj/index.htm).

[4] U.S. Energy Information Administration, Renewable Energy Overview (http://www.eia.doe.gov/neic/infosheets/renewableenergy.html).

### B. Why DG Interconnection Is Important

Although some DG resources operate independently of the existing electrical grid, most DG systems must physically connect to a utility's electrical distribution or transmission system. When DG resources are "interconnected" they are said to operating in ***parallel*** with the grid. Parallel operation is critical to the operators of many residential and commercial users of DG. For example, since wind blows at different speeds and the sun shines only part of the time, wind turbines and solar panels do not always produce power at uniform levels. Parallel interconnection to the grid allows the power grid to help "balance" the power flowing through the complete system from the power lines to the customer, and provides a backup power source.

Many DG systems also allow the customer-generator to export power onto the grid and sell the power to the utility. This function also requires the DG resource to be interconnected to the grid. Even DG sources that do not export power, including most CHP facilities and engines that run on renewable or fossil fuels, still must interconnect to the grid for back-up power.

Although the size of DG applications can vary widely, as a legal matter this proceeding affects primarily DG systems of 20 MW or less in size that are connected to the utility grid at the distribution (as opposed to transmission) level.[6]

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[5] U.S. Energy Information Administration, Renewable Market Share of Net Generation By State (http://www.eia.doe.gov/cneaf/solar.renewables/page/trends/table27.html).

[6] The electricity grid is divided into high-voltage transmission lines that carry power between the large centralized plants and the interstate wholesale power market and lower voltage distribution networks that transport electricity for the final few miles to the customer (think of a hub and spokes, with the spokes being individual distribution lines). The distribution network is the portion

This is because the federal government and the Federal Energy Regulatory Commission (FERC) have jurisdiction over interstate transmission of electric power and wholesale power markets, and FERC already has approved interconnection rules for these larger DG systems.[7] In many but not all cases, the larger the generator, the more likely the power will be exported to the interstate market.[8]

DG systems, nearly all of which are owned by non-utility entities, offer several advantages for the user, the electric system and Illinois in general:

- Because DG systems are close to the power users, there is less need to transmit electricity over long distances, which can eliminate some of the "line losses" and capacity bottlenecks that often affect high-voltage transmission lines.[9]
- Distributed generation can help provide highly reliable power. Because utility planners must determine a basic reliability target for all customers in a given area, industrial or commercial customers that require a higher level of reliability can install DG equipment to obtain uninterrupted service without imposing their requirements and associated costs on other customers.[10]
- DG can also offset some of the peak utility power demand which can reduce the overall price of power and help utilities reduce their investment in costly central power plants. More DG results in a smoother load curve and a more secure electric system that is less vulnerable to widespread service disruptions.
- In addition, because DG systems also use renewable or efficient energy technologies, and often displace power from older and dirtier plants, more DG can mean less air pollution and a healthier environment.

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of the electricity system that is owned and operated by local retail utilities and subject to the authority of state public utility commissions like the ICC.

[7] *Detroit Edison v. FERC*, 334 F.3d 48 (D.C. Cir. 2003). FERC issued its interconnection standards that apply to federally jurisdictional interconnections in 2005. *See* FERC Small Generator Interconnection Procedures, Order No. 2006 (May 12, 2005).

[8] While the precise boundary between state and federal jurisdiction is complex, somewhat unsettled, and beyond the scope of this filing, the important thing to note is that FERC expects the "vast majority" of small generator interconnections less than 20 MW and connected to the distribution network to be state jurisdictional. FERC Order 2006-A at pp. 52-53 (Nov. 22, 2005).

[9] Congressional Budget Office's report, *Prospects for Distributed Energy Generation* (2003), chap. 3 (available at http://www.cbo.gov/ftpdoc.cfm?index=4552&type=1) ("CBO Report").

[10] *See* Energy and Environmental Analysis, Inc., *The Role of Distributed Generation in Power Quality and Reliability*, (June 2004) (http://www.eea-inc.com/natgas_reports/DGPowerQualityReport-NYSERDA.pdf).

### C. Barriers to interconnection

Despite the promise of distributed generation, some utilities have resisted the widespread interconnection of distributed resources either because of unfamiliarity with the technologies or because increased reliance on DG reduces demand (and therefore profits) from the utilities' large central generating plants. The time and expense required to comply with utility interconnection requirements can be a significant barrier to new DG projects.

In a comprehensive report, the National Renewable Energy Lab (NREL) identified interconnection barriers as one of the "principal obstacles" preventing the effective adoption of renewable and energy efficient generation in the United States.[11] The NREL report concluded that the utilities' technical requirements to ensure engineering compatibility with the grid — i.e. "engineering reviews, design criteria, engineering and feasibility studies, operating limits, and technical inspections"— are often viewed as "unnecessarily costly and duplicative" for certain classes of small DG applications. (NREL at ii) NREL also identified several utility business practices that often hinder the interconnection process, including "contract length and complexity, contract terms and conditions, application fees, insurance and indemnification requirements, necessity for attorney involvement, identification of an authorized utility contact, consistency of requirements, operational requirements, timely response, and delays." (NREL at ii) For the operators of small-scale distributed generators, these business practice barriers can

be "particularly severe." (NREL. at ii). This is because these delays and costs can represent a sizable part of the total expense of interconnecting with the grid— in many cases they are steep enough to jeopardize the economic viability of the project.

### D. Interconnection in Illinois

Each utility in Illinois follows its own procedures for evaluating interconnection requests. These steps are outlined in the utilities' responses to Staff Data Requests 1.01 to 1.06, filed with Staff and served on the parties on October 20, 2006. Some utilities are further along than others in trying to standardize this process;[12] but in every case the procedures that have been made available by Illinois utilities are highly technical engineering documents that do not directly address the business practice barriers discussed above. The result is that different standards apply in different parts of the state with sometimes indecipherable technical requirements, no clear deadlines, and inconsistent fee scales.

It is not surprising, then, that many Illinois businesses, consumers, farmers and homeowners have been stymied while trying to navigate the utilities' DG interconnection process. The testimonials and case studies attached to this filing highlight the kinds of real, ongoing, and substantial problems that frustrate consumer choice and impede electric reliability, economic and environmental gains in Illinois.

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[11] National Renewable Energy Laboratory, *Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects* (May 2000) -- http://www.nrel.gov/docs/fy00osti/28053.pdf ("NREL Report").

[12] For example, ComEd is in the process of replacing its "Guidelines for the Interconnection of Distributed Generation" with two new technical guidelines applicable to small generators 2 MVA or less, and larger generators between 2 MVA and 20 MVA. (See ComEd 11/02/06 Comments).

The developing market for DG technologies and the current problems facing Illinois consumers have important implications for the State's economy and environment. The Government Accountability Office (GAO), for example, has explained in great detail how wind power can benefit rural communities by providing additional investment, employment opportunities and tax revenues.[13] This market can only be expected to grow as the value of renewable energy is now routinely touted in Presidential speeches and debated in statehouses across the nation. For example, the 2002 Farm Bill's Section 9006 Renewable Energy and Energy Efficiency Program offers substantial grants and loans to jumpstart clean energy projects that are mutually beneficial for farmers and ranchers, national energy security, rural economic vitality and the environment. The Rural Energy for America Act of 2006 (bill number S3890), introduced by Senator Tom Harkin, proposes a 10-fold increase in annual funding to support rural renewable energy projects and energy efficiency projects to $250 million.

Interconnection is a critical step in bringing new renewable and efficient electricity resources online. If expensive, time consuming, and unnecessary steps are required, businesses and individuals will be deterred from investing in new renewable energy projects in Illinois and the environmental and economic benefits may never flow into the state. The transition to a new distributed model of

[13] Government Accountability Office (GAO), Report to the Ranking Democratic Member, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate: Renewable Energy: Wind Power's Contribution to Electrical Power Generation and Impact on Farms and Rural Communities (Sept. 3, 2004), available at http://www.gao.gov/new.items/d04756.pdf; *see also* Iowa Policy Project, *Small Packages, Big Benefits: Economic Advantages of Local Wind Projects* (Apr. 2005, updated July 2005), *available at* http://www.iowapolicyproject.org/2005_reports_press_releases/050405-wind.pdf.

electricity generation requires a new suite of policies and procedures. Illinois needs to adapt quickly to avoid falling too far behind.

### E. State interconnection rules

Fortunately, there is a solution. State public utility commissions can adopt standardized interconnection rules that establish a safe, clear and efficient process for connecting DG resources to the grid. According to the Congressional Budget Office, this is one of the "most important initiatives" states can adopt to allow an economic and wider use of DG. (CBO p. 29) As of December 2006, 18 states have adopted standard interconnection rules for DG and 15 additional states are in the process of developing rules.[14]

State interconnection rules "ensure access to the grid under uniform technical and contractual terms and charges for interconnection." (CBO p. 29) These standards help reduce uncertainty about the costs of the controls and equipment necessary for interconnection, help lower costs by fostering a market for pre-certified controls and equipment, and help prospective investors in DG by clarifying the liability, insurance, and other conditions for interconnection, and by ensuring the even-handedness of their provisions. (CBO p. 30).

By adopting clear and fair interconnection rules in Illinois, the ICC could reduce the uncertainty and cost of connecting to the grid, help encourage the diversification of electricity generation, provide economic benefits, and stimulate the development of efficient and clean sources of power in the state. The basic

structure of these rules, along with a discussion of how they could be implemented in Illinois, will be addressed below, following a discussion of the Commission's obligations under the Federal Energy Policy Act of 2005.

## III. DEFINING THE SCOPE OF THIS PROCEEDING

In order to fulfill its obligations under the EPAct and PURPA, the Illinois Commerce Commission must "consider" the federal standard on interconnection (EPAct section 1254) and "make a determination concerning whether or not it is appropriate to implement such standard to carry out the purposes of this title." (PURPA Sec. 111(a), 16 U.S.C. 2621(a))

The 2005 EPAct contains over 1,700 pages of wide ranging and complex legislation. The electricity title (Title XII) alone has ten subtitles dealing with reliability standards, transmission infrastructure and rate reform, consumer protections, and other topics. Subtitle E, "Amendments to PURPA," has four sections, one of which (section 1254) includes the federal standard on interconnection, which Congress intended to "encourage[] states to promote …distributed generation."[15] It states:

> **(15) Interconnection** – Each electric utility shall make interconnection service available, upon request, to any electric consumer that the electric utility serves. For purposes of this paragraph, the term 'interconnection service' means service to an electric consumer under which an on-site generating facility on the consumer's premises shall be connected to the local distribution facilities. Interconnection services shall be offered

[14] *See* U.S. EPA, Combined Heat and Power Partnership, Interconnection Standards webpage, http://www.epa.gov/CHP/state_resources/interconnection.htm.

[15] *See* Report of the Senate Committee on Energy and Natural Resources on S. 10, to enhance the energy security of the United States (Senate Report 109-78) (June 9, 2005).

> based upon the standards developed by the Institute of Electrical and Electronics Engineers: IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems, as they may be amended from time to time. *In addition, agreements and procedures shall be established whereby the services are offered shall promote current best practices of interconnection for distributed generation, including but not limited to practices stipulated in model codes adopted by associations of state regulatory agencies.* All such agreements and procedures shall be just and reasonable, and not unduly discriminatory or preferential.[16]

PURPA contains several procedural steps.[17] First, the Commission must "consider" this new PURPA standard and then "determine" whether to (a) implement rules that are consistent with the federal standard, (b) decline to implement such rules, or (c) implement different or modified rules. (PURPA section 117(b), 16 U.S.C. § 2627(b)). However, if it declines, the Commission must state in writing the reason for its decision and make that statement available to the public. (PUPRA section 111(c)(2); 16 U.S.C. § 2621(c)(2)). This determination must be complete by no later than August 8, 2007 (two years after the enactment of EPAct 2005).

***What does Federal law require the Commission to "consider"?***

The Commission's determination must be guided by the "purposes" of PURPA Title I, which are: (1) conservation of energy supplied by electric utilities; (2) the optimization of the efficiency of use of facilities and resources by electric utilities; and (3) equitable rates to electric consumers. (PURPA section 101; 16 U.S.C. 2611).

[16] 16 U.S.C. § 2621(d)(15) (Section 1254 of EPAct) (emphasis added).

[17] The Public Utility Regulatory Policies Act of 1978 (PURPA) began the process of utility deregulation that has led to the proliferation of distributed generation. Title I directed state utility commissions and non-regulated utilities to "consider" the

In order to determine what the Commission must actually "consider," we must parse the language of the federal standard carefully:

- ***"Interconnection services shall be offered based upon the standards developed by the Institute of Electrical and Electronics Engineers: IEEE Standard 1547 … as they may be amended from time to time."***

As electricity restructuring proceeded through the late 1990s there was increasing pressure from DG manufacturers and developers, as well as utility regulators, to develop standardized technical and hardware requirements for interconnection. In response to this need, the Institute of Electrical and Electronics Engineers (IEEE), which sets standards for the electric industry, initiated a multi-year collaboration between engineers, regulators, utilities, and other industry experts, culminating in the publication of a collection of technical "standards" known as IEEE 1547.[18]

IEEE 1547 focuses on the technical aspects of interconnection, the surrounding equipment utilized for control and automatic disconnection, and the operational standards that must be met while interconnected. These technical standards are intended to ensure that the addition of customer-generation to a

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adoption and implementation of six different rate design and regulatory standards. (PURPA section 111(d)). EPAct 2005 added five additional federal standards to PURPA section 111(d) for state commissions and utilities to consider.

[18] *See* http://grouper.ieee.org/groups/scc21/dr_shared/. The IEEE 1547 series includes:

- **1547 (2003**) – Standard for Interconnecting Distributed Resources with Electric Power Systems;
- **1547.1 (2005)** – Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems
- **P1547.2** – Draft Application Guide for IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems
- **P1547.3**. – Draft Guide for Monitoring, Information Exchange and Control of Distributed Resources Interconnected with Electric Power Systems
- **P1547.4** – Draft Guide for Design, Operation, and Integration of Distributed Resource Island Systems with Electric Power Systems
- **P1547.5** – Draft Technical Guidelines for Interconnected Electric Provider Sources Greater than 10MVA to the Power Transmission Grid
- **P1547.6** – Draft Recommended Practice For Interconnecting Distributed Resources With Electric Power Systems Distribution Secondary Networks

utility's system will not have negative impacts on safety, power quality or reliability. IEEE 1547 was intended to be "technology neutral," which means that it focuses on the technical specifications for, and testing of, the interconnection itself, and not on the types of DG technologies. Other organizations have focused on testing and approval of actual DG equipment. For example, Underwriters Laboratory (UL) has developed testing standards for some interconnection equipment, notably UL 1741 "Inverters, Converters, and Controllers for Use in Independent Power Systems." Because the collaboration that led to the development of IEEE 1547 is still ongoing, the language of EPAct is intentionally flexible, stating that interconnections shall follow 1547 as it updated and amended from time to time.

- ***"In addition, agreements and procedures shall be established …"***

IEEE 1547 is a technical standard. It does not cover the contractual and procedural requirements for interconnection. As Congress recognized, these aspects of interconnection must not be ignored. Therefore, <u>in addition</u> to the IEEE 1547 technical standards, EPAct section 1254 requires consideration of "agreements and procedures" to promote the current best practices of interconnection. These procedures should address concerns such as application fees, study procedures and timing, cost allocation, liability, insurance, dispute resolution, and many other issues that may arise when attempting to interconnect a DG resource to the grid.

The different uses of the word "standard" can be confusing. The "federal standard" or "PURPA standard" at section 1254 of EPAct references but is broader

than the technical standards at IEEE 1547. To make matters more confusing, the state rules established by utility commissions to implement section 1254 are often referred to as "interconnection standards." These three uses of the word "standard" must always be kept be clearly distinguished for the purposes of this proceeding.

- ***"… whereby the services are offered shall promote current best practices of interconnection for distributed generation, including but not limited to practices stipulated in model codes adopted by associations of state regulatory agencies."***

Congress recognized that the "best practices" for interconnection would be constantly evolving and that many resources would be available for states undertaking to establish their own interconnection rules. For example, a number of regional and national organizations have developed model state interconnection rules, including:

- the National Association of Regulatory Utility Commissioners (NARUC), Model Interconnection Procedures and Agreement for Small Distributed Generation Resources (2003)[19]
- the Interstate Renewable Energy Council (IREC), Technical Interconnection Standards and Procedures for Small Generator Facilities (2005);[20]
- the Mid-Atlantic Distributed Resources Initiative (MADRI), Model Small Generator Interconnection Procedures (2005);[21] and
- ELPC's Model Interconnection Standards (2005).[22]

Congress specifically directed states to use these kinds of "model codes" as guides for incorporating the "current best practices" of interconnection into their own rules.

[19] http://www.naruc.org/associations/1773/files/dgiaip_oct03.pdf.
[20] http://www.irecusa.org/connect/modelrules.pdf.
[21] http://www.energetics.com/madri/pdfs/inter_modelsmallgen.pdf.
[22] http://www.elpc.org/energy/repower/index.php and attached as Exhibit A.

- ***"All such agreements and procedures shall be just and reasonable, and not unduly discriminatory or preferential."***

Congress enacted section 1254 of EPAct to encourage states to develop "just and reasonable" interconnection rules to eliminate the artificial barriers to distributed generation that often result from unnecessary or unreasonable utility practices. This should be the fundamental purpose of the Commission's consideration and determination in this proceeding. If Illinois chooses to implement rules consistent with the federal standard, the rules must, at a minimum (1) incorporate the technical criteria developed by IEEE and (2) establish "just and reasonable" agreements and procedures that promote the current best practices of interconnection.

## IV. NUTS AND BOLTS OF INTERCONNECTION RULE DESIGN

### A. Basic elements of interconnection standards

As noted above, one of the Commission's primary obligations in this inquiry is to consider the types of agreements and procedures that are necessary to promote the current best practices of interconnection. This section explains the basic elements of an interconnection rule and summarizes interconnection standard "best practices."

Customer-generators typically apply directly to the utility in their service area for interconnection service. The utilities' contractual and procedural requirements for interconnection vary widely from utility to utility (such variance is one of the reasons to adopt uniform standards), but usually include: (1) completion of an application form and payment of fees; (2) one or more engineering reviews to

ensure grid safety and performance and safe equipment operation; and (3) execution of an "interconnection agreement" that sets out the terms and conditions governing the operation of the customer-generator's DG equipment. The interconnection agreement may also include indemnity and liability clauses as well as insurance requirements for the customer-generator.

As explained previously, utilities in jurisdictions that lack standard interconnection rules (including Illinois) are essentially free to set their own requirements and reach their own decisions with regard to each of these elements of the interconnection process. In order to overcome the technical and business practice barriers described in Section II of these comments, standardized interconnection rules are needed that, at a minimum, achieve the following basic functions:

1. reduce the uncertainty, delay, and administrative cost of interconnection by providing a clear and fair application process, including specific timelines and fees for major milestones in the process;
2. ensure the safety and reliability of the electric grid and provide greater transparency for project developers by incorporating standards for the type of equipment that can be interconnected to the grid and by providing guidance for the engineering and technical reviews of proposed DG projects; and
3. ensure that the terms of the interconnection agreements between utilities and DG customers are just and reasonable, and not unduly discriminatory or preferential.

### B. Tiered levels of interconnection review

Interconnection rules must have the flexibility to handle the very different kinds of DG projects that may be expected to apply to utilities for interconnection

service. For example, a 10-kW wind turbine, a several hundred kW generator fueled by digester gas, and a 15-MW CHP plant have very different potential effects on the grid and a "one-size-fits-all" interconnection process will not work. Therefore, most states and model codes use "tiered" interconnection rules that use different fees, forms, and contract terms for several different categories of DG applications. They include expedited review procedures for smaller (< 2 MW) DG applications and "super-expedited" review for very small applications (such as those under 10 kW). In many cases, these very small projects are not subject to costly and time-consuming engineering reviews if pre-certified equipment is used and certain technical screening criteria are met. Projects that do not pass the screens are subject to an individualized review to make sure that everything will operate safely. These tiered standards ensure that the resources devoted to a particular interconnection application are commensurate with the nature of the individual project. They also help to streamline and minimize the application and approval process— both for the system owner or developer as well as the utility. They free utilities to devote their limited resources to the evaluating the larger or more complex DG applications, and provide utilities the flexibility to ensure that those applications receive the necessary case-by-case review.

There is an emerging consensus regarding the appropriate tiers for interconnection review. Many of the new state and private organization interconnection rules have established four levels of review and processing.

- Level 1 – "super expedited" review for certified equipment with a power rating of 10 kW or less that meet specified screens;

- Level 2 – "fast-track" review for certified equipment with a power rating of 2 MW or less that meet specified screens;
- Level 3 – special rules for certified facilities that do not export power beyond the point of interconnection; and
- Level 4 – Rigorous, individualized review for all facilities that do not qualify for Levels 1, 2, or 3.

### C. Examining a model interconnection rule

In order to understand how interconnection rules work, it is easiest to refer directly to one of these models. ELPC's model rules are attached to these comments for the reader's convenience.

Section 3.0 of ELPC's model sets out the four general review paths for interconnection of DG. Facilities that pass the technical screens for Levels 1, 2, or 3 review (specified in Sections 7.0-9.0 of the rules) are subject to "fast-track" interconnection procedures specified in sections 11.0 to 13.0 of the rules. For example, in order to qualify for **Level 1** review, the facility must:

- Be a certified under IEEE and UL standards;
- have a power rating of 10 kW or less; and
- meet the technical screening criteria at Sections 5(a), 5(e), 5(f), 5(i), and 5(j).

If a facility meets these requirements and qualifies for Level 1 review, then the interconnection request is subject to the "super-expedited" timelines and conditions described in Section 11.0.

The **Level 2** screening criteria are found at Section 8.0, and apply to facilities that:

- are certified under IEEE and UL standards;

- have a power rating of 2 MW or less; and
- meet the technical screens at 5(a) through 5(j).

Facilities that meet these conditions are entitled to the "fast-track" procedures for interconnection at Section 12.0.

**Level 3** review applies to facilities up to 10 MW that do not export power to the grid. This category is important to facilities that cannot meet the size thresholds of Level 1 or Level 2 review, but are still expected to have minimal grid impacts because they interconnect solely to draw backup power from the grid. Many CHP facilities fit into this category.

Facilities that fail to qualify for fast-track review under Levels 1, 2, or 3 must undergo the in-depth engineering review specified at Section 14.0. Importantly, reviews under this subsection are not "standardized." Since each application will be unique, the utilities are given the flexibility to ensure that all aspects of generator performance and grid interaction are covered. Furthermore, no set deadlines or fees are included for studies under this subsection. This feature should assuage the utilities' understandable concerns about rules that would mandate inflexible timelines and fees for larger, more complex projects. Modern interconnection rules (like ELPC's model discussed here) simply do not include those kinds of harsh mandates.

No matter which review path a facility qualifies for, the rules include certain provisions to ensure that the application and review process is easily accessible and understandable to the public. For example, Section 3.0 calls for the designation of a

single point of contact at the utility from which applicants can obtain basic information about the application process and requires the use of standardized application forms and documents. Section 15.0 requires the utility to provide, prior to the start of any interconnection study, a good-faith estimate of the hours and total charges that will be required to complete the study. If an application for interconnection is denied, Section 10.0 requires the utility to provide the unsuccessful applicant with a list of additional information and/or modifications to the customer's facility that are necessary for the customer to obtain an approval.

The rules also contain general provisions and requirements to ensure "just and reasonable" treatment of the customer following a successful review. For example, Section 15.0 provides that when a customer-generator complies with all of the conditions and standards set out in the rules, the utility shall not require that customer to install additional equipment, perform or pay for additional tests, or purchase additional liability insurance in order to obtain approval to interconnect.

Finally, good interconnection rules should also contain a dispute resolution process and standardized forms and documents. These standardized forms should be tailored to the different tiers of interconnection review pathways. For example, a very simple 5 kW residential solar facility qualifying for Level 1 review should only require a short, simple application form (e.g. 1 page front and back) and a standard form interconnection agreement. Examples are provided on ELPC's website.[23]

[23] http://www.elpc.org/documents/FinalmodelinterconnectionregsONLY-11-02-2006.pdf.

## V. IMPLEMENTATION OPTIONS

The parties have identified two potential approaches for implementing a solution to interconnection problems in the state. The approach used in most other jurisdictions, and ELPC's preferred approach here, is for the Commission to issue a proposed rule establishing an interconnection process applicable to all utilities in the state. Statewide rules are important because, in many cases, the discontinuities between utility rules are serious barriers in themselves, aside and apart from the substance of those rules (*see* NREL at 36). Adopting a utility-by-utility approach would result in a patchwork of rules, requiring considerable effort on the part of regulators, developers, and customers across the state.

On August 9, 2006, the Commission posted draft interconnection provisions to "serve as a starting point for a proposed rule in this docket." The Commission's proposal has many good features, including clear timelines and deadlines for the major milestones in the interconnection process. The rules appear to be based on a model developed in 2003 by the National Association of Regulatory Utility Commissioners (NARUC). This approach is now a bit outdated. For example, it does not include a "super-expedited" process for very small (< 10 kW) applications, nor does it carve out a separate process for projects that do not export power to the grid. The Commission could, however, adopt the draft provisions as a proposed rule, with the understanding the certain improvements are necessary in order to incorporate the "current best practices of interconnection" referenced by EPAct section 1254. In

the alternative, the Commission could adopt proposed rules based on one of the more recent organizational models like MADRI, IREC, or ELPC.

It would not take a lot of effort to implement a good statewide rule that would be acceptable to all the parties. A great deal of progress has been made in this area since interconnection was first discussed at the Commission several years ago, and consensus regarding the appropriate provisions could likely be reached quickly. For example, the technical screening criteria in ComEd's new interconnection guidelines[24] are very similar to the screening criteria for Level 2 interconnection reviews in ELPC's model rule. It would probably not take long to hash out the differences in these approaches and apply them consistently to all utilities in the state. A proposed rule from the Commission would provide the structure necessary to allow the parties to reach this consensus.

In the earlier round of comments, the ICC Staff suggested that instead of proposing a new rule, the Commission could issue an order requiring the utilities to embody their interconnection procedures and services in tariffs. These tariffs would be subject to Commission review and could be fully litigated, utility by utility via a tariff investigation. ELPC has some concerns about this approach. First, one of the principal advantages of standardized interconnection rules— harmonization of requirements across utilities— would be lost under this tariff approach. Interconnection rules are already starting to converge within and between states and even across regions. The tariff approach is inconsistent with this trend.

[24] *See* Exelon's Interconnection Guidelines for Generators 2 MVA or less, cited in ComEd comments dated Nov. 22, 2006.

Secondly, a utility-by-utility approach would likely result in more work for the Commission. As recognized by the Staff, each utility tariff would have to be separately reviewed by the Commission and disputes would have to be litigated on a case-by-case basis. The statewide rulemaking approach avoids these shortcomings.

Although ELPC prefers a statewide rulemaking, we agree that a tariff approach, **if designed correctly and aggressively enforced,** could significantly improve the current situation in Illinois. For this approach to work, the Commission's order establishing the tariffing regime would need to clearly define the contours of acceptable utility submissions and specify the elements required for a strong, progressive interconnection process. For example, if the Commission decides to follow the tariff approach, it should order the utilities to follow the best existing model interconnection rules whenever possible and require the utilities to justify the need for any significant deviations. The utilities' tariffs should include, at a minimum:

- a tiered set of procedures including an expedited review pathway for smaller, less complex projects or projects that do not export to the grid, and a "super-expedited" review process for very small DG projects;
- reasonable and fair fees and costs;
- clear timelines for major milestones in the interconnection process;
- standard application forms and interconnection agreements;
- nondiscriminatory terms of agreement, including limits on redundant equipment requirements or additional insurance obligations;
- any other requirements necessary to ensure that the tariffs filed by the utilities are equivalent to the "current best practices for interconnection of distributed generation."

## VI. CONCLUSION

The positions advanced in this proceeding are closer than they may initially appear. Each party wants to make sure that interconnections take place safely, quickly, and without unreasonable complications or delay. Many stakeholders across the nation have expended a great deal of time and effort developing simple, fair, and transparent rules to govern requests for interconnection. These models are converging on several consensus "best practices" that could be adopted here without controversy. By enacting Section 1254 of the Energy Policy Act of 2005, Congress encouraged states to consider adopting interconnection rules to promote distributed generation. It would be a shame to miss this opportunity to improve the diversification of electricity generation, provide economic benefits, and stimulate the development of efficient and clean sources of power in the state.

We look forward to the Commission's decision.

Dated this 30th day of January, 2007.

Respectfully submitted,

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(312) 795-3706

## Additional Support for Interconnection Standards in Illinois

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Dan McGuire, CEO

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Gerald Nelson, Professor
**Dept. of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign**
315 Mumford Hall
1301 W. Gregory
Urbana, IL 61801

## Testimonials and Case Studies

Doug Block, President
**Hunter Haven Farms**
Pearl City, IL

*Located in Northwestern Illinois, Hunter Haven Farms was recently awarded a grant under the Farm Bill Section 9006 program and a cost-sharing grant from the State of Illinois to install an anaerobic digester and 145 kW generator system to produce electricity from cow manure. However, the physical interconnection process with the utility grid was repeatedly delayed, which led to cost overruns for the project. The engineering firm responsible for this project has completed projects in 7 states, and reported that the interconnection process here took nearly twice as long as what it normally experiences.*

Mark Burger, President
**Illinois Solar Energy Association**
mark.burger@illinoissolar.org
PO Box 634, Wheaton, IL 60189-0634
http://www.illinoissolar.org/

*There is compelling public interest in Illinois developing a single, statewide interconnection policy. The photovoltaic and wind power industry are presently businesses doing over $25 billion dollars worldwide, and over $2 billion a year in the United State alone.*

*Competitiveness is critical to assure that Illinois gets its share of these growing enterprises. A single, reasonable standard will facilitate business interest to commit resources in manufacturing and technical centers that will benefit Illinois' economy, as well as assure that installations will be connected the state's electrical grid to a high degree of safety and efficacy.*

John Cuttica, Director
**Midwest Combined Heat & Power (CHP) Application Center**
The University of Illinois at Chicago
1309 S. Halstead St. (MC 156)
Chicago, Illinois 60607
http://www.chpcentermw.org/

*I'd like to express the need for a "fair & equitable" grid interconnect standard in Illinois. Without it, the potential for CHP and renewable technologies will continue to be stymied by often times, inconsistent, arbitrary and unrealistic time, cost, and technical requirements. The draft Illinois standard as presently put forth by the ICC, is not adequate and is in need of major review and revisions. I urge the commission to evaluate several existing standards that have been adopted by numerous states and have successfully bridged the gap between utility and DG industry interests.*

Patrick Enright
Homer Glen, IL 60491

*I'd like to express my support for the ICC establishing a standard for the statewide interconnection standard for solar, wind and other forms or renewable energy.*

*I'm not an expert, just a fan of renewable energy, but I feel its important for us to move away from fossil fuels as much as possible. We need to do this to secure reliable sources of energy for the future and also to protect the environment from pollution - including gases that cause global warming.*

*Coming from an "average Joe" taxpayer, please move forward with a state-wide interconnection standard to provide our children with clean, reliable energy.*

Carol Gulyas
7753 Van Buren #213
Forest Park, IL 60130

*I am writing to encourage Illinois to adopt a statewide interconnection standard for wind and solar.*

Chrystal Marshall
chrystalm1@yahoo.com

*As an Illinois consumer of energy at the residential level, I would like the Illinois Commerce Commission to establish clear and simple to implement standards for the interconnection of energy from different sources.*

David Martindale
**Ballard Engineering**
3555 Electric Ave.
Rockford, IL 61109
www.BallardEngineering.com

*Ballard Engineering recently assisted the Rock River Reclamation District (Rockford) complete a project to install generators to utilize the biogas produced by anaerobic digesters at their facility. The Illinois Department of Commerce and Economic Opportunity supported this renewable energy project with a $550,000 grant. However, the interconnection process between the District's electrical system and the ComEd grid was plagued by cost overruns and delays. The lack of clear upfront guidelines and opportunity for recourse to a third-party to help resolve interconnection disputes were particularly problematic.*

*Clear and fair statewide interconnection standards would significantly smooth the process for customers like RRRD and would encourage others to develop similar renewable energy resources.*

Gerald Nelson, Professor
**Dept. of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign**

*I am in the process of negotiating an interconnection agreement for a 4.5 kW photovoltaic system on the roof of my garage. Even though this is a relatively small system, the interconnection process is not a simple matter for the average homeowner. I was required to pay my utility to conduct an engineering study and complete a lengthy technical agreement that included schematic drawings, a site plan, and insurance requirements.*

*Statewide interconnection rules that included standard forms and contract language for small generators would greatly simplify this process and would help other Illinois homeowners interested in installing renewable energy systems.*

Allan L. Poole, P.E., BCEE
Director
**Department of Public Utilities**
**Naperville, IL**
poolea@naperville.il.us

*The ability of sustainable energy sources to interconnect with the electric grid from which the customer obtains "traditional" electric power is essential in today's market. It allows the customer to have the choice that the Energy Policy Act of 2005 mandates. This choice is especially important to the residential customer whose electricity usage is lower than the commercial, and who have the ability to offset a higher percentage of their daily usage through the use of alternative resources.*

*We are supportive of the Illinois Commerce Commission establishing a statewide interconnection standard for solar, wind and other forms of renewable energy, especially intermittent energy.*

John Porterfield
**Informed Energy Decisions**
Chicago, IL
www.energydetectives.com

*I support "openness" in development of and access to new technology.*

*A uniform standard for connection of new power production to the grid will be helpful, e.g., where alternative energy electricity producers and service providers are active across utility distribution company service areas.*

Jesse Rowell
Chicago, IL
773.817.5377

*Illinois is one of the leaders among states in pushing for sustainability into alternative energy, and ensuring efficient and hassle-free interconnection with the existing power grid is crucial for our state to maintain our preeminence.*

*In the next five years, thousands of Illinois citizens will be investing in solar, wind or hybrid energy systems for their homes and commercial buildings. One of the significant issues facing anyone planning to install this technology is the interconnection of the device to the electric utility system. There is a lack of uniformity nationwide in this area—common standards for interconnecting renewable, electricity-producing devices into the utility system do not presently exist.*

*Illinois can lead the way for other states, and meet the growing public interest needs of its citizens by establishing a standard for statewide interconnection. This standard will make it easier for people to make the switch to alternative energy, and that is something the state of Illinois should push for. Please ask the Illinois Commerce Commission to make it their responsibility to reduce the administrative and logistical hassles that now exist for interconnection.*

James Schwarz Jr.
Home owner in Illinois
Deerfield, IL.
jj_1511@comcast.net

*I not only urge the Illinois Commerce Commission to adopt the energy act of 2005 and all of its provisions, but also consider this a basic underlying duty of this commission in their responsibilities to the public interest. This act, especially the sections on interconnection, provide clear and consistent means for both companies and individuals to connect energy provided via numerous renewable sources, to our states supply grid, thus reducing our reliance on fossil fuel based sources. This then becomes an incredible enabler of alternate energy sources, as well, enables fair and consistent means to provide competitive market supply options, adding balance to the market based systems that typically provide very efficient and effective long-term incentives to a fair and balanced economic energy model.*

*I urge the commission to adopt and implement all provisions of The Energy Policy Act of 2005 (Section 1254).*

Justin D. Turner, PE
**Sun Phocus Technologies, LLC**
55 West 34th Street, suite 117n
University Technology Park at IIT
Chicago, IL 60616
http://sunphocus.com/

*As a solar energy advocate and a developer of solar energy products at Sun Phocus Technologies in Chicago, I am writing to express my support for a statewide interconnection standard. The adoption of a statewide standard will aid in the dissemination of solar energy systems by drastically reducing the effort and up-front system engineering costs associated with solar systems and will result in increased economic viability of solar energy projects throughout Illinois. In particular, standardization will aid Illinois-based companies, like Sun Phocus, which are a seeking to provide a green, low-cost solar energy solution to clients who interested in purchasing solar energy systems.*

Daniel Simon
Illinois homeowner in South Beloit, IL
773-271-9120

*I hope Illinois can establish interconnection standards that will allow more people to easily and cost effectively connect their solar panels to the grid. Earlier this year my parents were considering purchasing solar PV panels (and/or a small wind turbine) and installing them on the roof of their farmhouse. Their farm is in IL along the Illinois/Wisconsin border. While I don't want to pick on our utility (they seem quite open to renewables), they wanted us to provide some sort of bond/insurance guarantee to indemnify them from any of our equipment failure before they would allow us to interconnect with the local grid.*

*I fully understand the utilities' concerns; they want to be sure that nothing we might install will impact (negatively) the rest of their customers. But it seems that if there were well established standards it would make it easier to adopt & install renewable technologies at the residential level. We ultimately decided to "hold off" on installing either a PV or small wind system in part because of this extra uncertainty/burden of proof thrust on us.*

Brian Urbaszewski
**American Lung Association of Metropolitan Chicago**
http://www.lungchicago.org/

*The ALAMC has been working for years to limit emissions of harmful pollutants from fossil-fueled power plants in Illinois, particularly coal fired plants. Coal power plant emissions now cause tens of thousands of asthma attacks in Illinois annually, contribute to hundreds of premature deaths a year, and contribute to excessive numbers of maladies from heart attacks to strokes to lung cancer.*

*Such coal and gas power plants are large and generally have little difficulty in connecting or retaining connections to the grid. Clean renewable energy has had a much more difficult and varied experience, with both large and small scale projects experiencing administrative delay, excessive costs, and unreasonable barriers apparently designed to discourage renewable interties. The lung association is particularly supportive of decreasing barriers to interconnection by clean renewable sources of electricity, as the more of those sources are producing electricity and are making that energy available to the grid, the quicker such emissions from older, and much dirtier sources can be displaced in the overall mix of power being provided.*

*Small scale sources should be particularly encouraged, as these small scale providers typically faces much larger proportional hurdles to grid interconnection than larger entities. Increased small scale renewable electricity generation can increase grid reliability by providing power closer to actual power consumption and, in the case of solar generation, provide peak power in areas where the grid may be stressed because of demand and transmission constraints. Lowering barriers for small scale interties will increase both reliability of the local grid and the safety of the air we breathe.*

**STATE OF ILLINOIS**
**ILLINOIS COMMERCE COMMISSION**

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| **Illinois Commerce Commission** | ) | |
| **On Its Own Motion** | ) | |
| | ) | **No. 06-0525** |
| **Consideration of the federal standard** | ) | |
| **on interconnection in Section 1254 of** | ) | |
| **the Energy Policy Act of 2005** | ) | |

## VERIFICATION

John N. Moore, being first duly sworn upon oath, deposes and states that he has read the foregoing Response of the Environmental Law and Policy Center in ICC Docket No. 06-0525, that he knows the contents thereof, and that to the best of his knowledge, information and belief, based upon reasonable inquiry, that said contents are true and correct.

John N. Moore
Attorney for ELPC

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Subscribed and sworn to me on January 30, 2007.

Notary Public

JACLYNN JUTTING
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
September 18, 2010

**STATE OF ILLINOIS**
**ILLINOIS COMMERCE COMMISSION**

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|---|---|---|
| **Illinois Commerce Commission** | ) | |
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| **on interconnection in Section 1254 of** | ) | |
| **the Energy Policy Act of 2005** | ) | |

## NOTICE OF FILING

PLEASE TAKE NOTICE that on this date, January 30th, 2007, I caused to be filed with the Chief Clerk of the Illinois Commerce Commission via e-docket the enclosed Comments of the Environmental Law & Policy Center.

John N. Moore
One of the Attorneys for the
Environmental Law & Policy Center

## CERTIFICATE OF SERVICE

PLEASE TAKE NOTICE that on this date, January 30, 2007, I, John Moore, hereby certify that I did electronically file with the Illinois Commerce Commission the foregoing Comments of the Environmental Law & Policy Center and electronically served the same upon the persons identified on the attached Service List.

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One of the Attorneys for the
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