

**STATE OF ILLINOIS  
ILLINOIS COMMERCE COMMISSION**

The Citizens Utility Board and the  
Environmental Law & Policy Center

Petition to Initiate Rulemaking With Notice  
and Comment for Approval of Certain  
Amendments to Illinois Administrative Code  
Parts 466 & 467 Concerning Interconnection  
Standards for Distributed Generation.

Docket No. 14-0135

**VERIFIED INITIAL COMMENTS OF THE ENVIRONMENTAL LAW AND  
POLICY CENTER, THE CITIZENS UTILITY BOARD AND THE  
INTERSTATE RENEWABLE ENERGY COUNCIL, INC.**

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FOR: INTERSTATE RENEWABLE  
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## ***Introduction***

Now comes the Citizens Utility Board (“CUB”), Environmental Law & Policy Center (“ELPC”), and Interstate Renewable Energy Council, Inc. (“IREC”) through their attorneys and pursuant to the Administrative Law Judge’s Order of July 31, 2014, to file these Verified Initial Comments in the above-captioned proceeding. The purpose of this proceeding is to amend and update portions of Part 466 and portions of Part 467 of the Commission’s rules for the electric interconnection of distributed generation facilities, 83 Ill. Admin. Code §466.10 et seq. and 83 Ill. Admin. Code §467.10 et seq. These amendments are necessary to prepare Illinois for much higher levels of distributed generation (DG) as a result of falling solar prices, expanded legislative and policy support, and enhanced grid capability as a result of advanced metering investments under the Energy Infrastructure Modernization Act (“EIMA”). The proposed amendments are drawn from existing best practices at the Federal Energy Regulatory Commission (“FERC”) and other recently-adopted state rules. These changes will help streamline and expedite the interconnection process for more Illinois consumers while still ensuring the safety and reliability of the distribution grid as a paramount objective.

While the subject matter of these proposed amendments involve several technical issues, this proceeding involves a much broader policy decision. Specifically, the policy decision before the ICC is whether or not Illinois’ rules should be amended so that the Illinois rules continue to reflect current best practices just as it was back in 2006 when the General Assembly directed the ICC to undertake the first interconnection rulemaking. All of the technical issues in this rule proposal have been extensively negotiated and worked out at FERC and in other state proceedings. Now that the FERC Small Generator Interconnection Procedure (“SGIP”) has been completed, the time is right for the ICC to update the Illinois rules to ensure the Illinois rules are based on current best practices and consistent technical standards.

## **A. Background on Interconnection Standards**

Interconnection standards specify the technical, legal and procedural requirements that customers and utilities must abide by when a customer seeks to connect a distributed generation resource, often a renewable-energy system, to the electric grid. They incorporate technical engineering requirements, standards for “lab-certified” equipment, and standardized procedures for determining whether particular systems can be safely interconnected on an “expedited” basis without an expensive and time-consuming utility study process. In the existing Illinois rules, there are three levels of expedited review: Level 1 applies to systems that are smaller than 10 kVA in nameplate capacity and meet certain technical screens, Level 2 applies to systems that are smaller than 2 MVA and meet similar technical screens, and Level 3 applies to systems under 10 MVA in nameplate capacity that do not export power to the grid. Systems that do not fall into these expedited review categories or fail to meet one or more of the associated technical “screens” must undergo a full utility study process under Level 4, which includes three different studies and thereby substantially more time and expense.

State interconnection standards also typically include standard application forms and contracts that memorialize the interconnection agreement between self-generators and the utility. In the existing Illinois rules, these forms and contracts are included as appendices to the Part 466 and Part 467 rules. Forty-three states plus Washington D.C. and Puerto Rico have adopted interconnection standards.<sup>1</sup> Much more detail and background on Illinois interconnection standards in general can be found in the Commission’s Second Notice Order in docket 06-0525 (June 10, 2008) and in the Database of State Incentives for Renewables and Efficiency (“DSIRE”) policy guide, available at <http://www.dsireusa.org/solar/solarpolicyguide/?id=18>.

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<sup>1</sup> See DSIRE map ([http://www.dsireusa.org/documents/summarymaps/interconnection\\_map.pdf](http://www.dsireusa.org/documents/summarymaps/interconnection_map.pdf)).

## **B. History of Interconnection Standards in Illinois**

On July 26, 2006, the Commission commenced an interconnection rulemaking pursuant to the Energy Policy Act of 2005 (“EPAAct”), 16 U.S.C. Sec. 2621 *et seq.*, which required every state commission to consider adoption of state interconnection standards to “promote current best practices” consistent with the following federal standard:

(15) Interconnection. – Each electric utility shall make available, upon request, interconnection service 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 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 U.S.C. 2621(d)(15) (emphasis added); *see generally* ICC Docket 06-0525. While this rulemaking was pending, the Illinois General Assembly enacted a statute requiring the Commission to establish “standards for the interconnection of eligible renewable generating equipment to the utility system.” (220 ILCS 5/16-107.5(h)). The statute provided that:

The interconnection standards shall address any procedural barriers, delays, and administrative costs associated with the interconnection of customer-generation while ensuring the safety and reliability of the units and the electric utility system. The Commission shall consider the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547 and the issues of (1) reasonable and fair fees and costs, (ii) clear timelines for major milestones in the interconnection process, (iii) nondiscriminatory terms of agreement and (iv) *any best practices for interconnection of distributed generation.*

*Id.* (emphasis added). After many months of stakeholder workshops, the Commission adopted new standards at 83 Ill. Adm. Code Part 466, which apply to state jurisdictional interconnections

of systems with nameplate capacities equal to or less than 10 MVA. (ICC Docket 06-0525.) In 2010, the Commission extended its procedures through Part 467 to systems larger than 10 MVA that are not otherwise covered by the interconnection requirements of FERC or the two regional transmission organizations within Illinois, MISO or PJM. (ICC Docket 08-0481.)

In 2005, FERC adopted Small Generator Interconnection Procedures (“SGIP”) intended to serve as model rules for states. *See* FERC Order 2006 (“Standardization of Small Generator Interconnection Agreements and Procedures”) (May 12, 2005). IREC has also adopted and maintained “model rules” based on best state practices for many years.<sup>2</sup> The Commission’s existing Part 466 and Part 467 are largely based on the FERC SGIP and IREC’s model rules, tailored through the Commission’s workshop process to meet the specific needs of Illinois stakeholders.

Since 2008, Illinois utilities have processed hundreds of expedited interconnection applications under the Part 466 rules. The Part 466 rules have improved the interconnection process for both customers and the utilities, and feedback from all stakeholders has been largely positive. In 2012, ComEd began working with partners to transition to an electronic interconnection application process, which has served to further streamline the customer and utility experience.<sup>3</sup>

### **C. Evolution of Interconnection Best Practices**

Since FERC adopted the SGIP in 2005, the solar industry has grown dramatically and utilities and other stakeholders have learned that much higher penetrations of DG can be successfully and safely interconnected to the distribution grid than was originally anticipated nearly ten years ago. Over time, the U.S. Department of Energy and other technical experts

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<sup>2</sup> *See* <http://www.irecusa.org/regulatory-reform/interconnection/>.

<sup>3</sup> *See* <https://interconnect.comed.com/ComEd/Home/?ReturnUrl=%2f>.

learned that the technical screens embedded in the 2005 FERC SGIP (notably the “15% screen” also included in the Illinois rules) had become a barrier to efficient and streamlined processing of interconnection applications. These technical experts recommended revisions to the SGIP and state procedures in order to facilitate higher penetrations of DG interconnection.<sup>4</sup>

In September 2012, following a lengthy stakeholder process, the California PUC approved comprehensive reforms to California’s Rule 21 interconnection standards intended, in part, to accommodate higher penetrations of solar PV on the California electric distribution grid.<sup>5</sup> In November 2013, after another lengthy stakeholder process, FERC substantially revised its SGIP and incorporated many new best practices and innovations to improve the interconnection process for higher levels of DG. *See* FERC Order 792, 145 FERC ¶ 61,159 (adopting revised SGIP). The revised SGIP includes many innovations to streamline DG interconnection, including the creation of a pre-application report, adoption of new thresholds for participation in the expedited interconnection review process, and changes to the supplemental review process to allow a greater number of systems to proceed without full study without compromising system safety, reliability, and power quality. Other states, including Ohio, have recently adopted updates to their interconnection standards or are considering changes that include elements of the

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<sup>4</sup> *See, e.g.*, NREL Technical Report 5500-54063, *Updating Interconnection Screens for PV System Integration* (Feb. 2012) (available at <http://www.nrel.gov/docs/fy12osti/54063.pdf>); NREL Technical Report 5500-56790, *Updating Small Generator Interconnection Procedures for New Market Conditions* (December 2012) (available at <http://www.nrel.gov/docs/fy13osti/56790.pdf>); NREL Technical Report 550-45061 *Photovoltaic Systems Interconnected onto Secondary Network Distribution Systems – Success Stories* (April 2009) (available at <http://www.nrel.gov/docs/fy09osti/45061.pdf>); NREL Technical Report 581-42675, *Utility-Interconnected Photovoltaic Systems: Evaluating the Rationale for the Utility-Accessible External Disconnect Switch* (January 2008) (available at <http://www.nrel.gov/docs/fy08osti/42675.pdf>).

<sup>5</sup> *See* <http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/rule21.htm>.

updated SGIP.<sup>6</sup> IREC played a key role in developing and negotiating many of the innovations ultimately adopted by the states and at FERC.<sup>7</sup> The amendments proposed here reflect those discussions and best practices learned at FERC and in other recent state proceedings.

#### **D. The Energy Infrastructure Modernization Act and Procedural Background**

The Energy Infrastructure Modernization Act (“EIMA”), passed by the General Assembly in 2011, requires that benefits from distributed generation accrue to utility customers participating in the EIMA’s new formula rate structure as a result of implementing a Smart Grid Advanced Metering Infrastructure Deployment Plan (“AMI Plan”). 220 ILCS 5/16-108.5. “Smart Grid” is defined by law to mean investments and policies that together promote one or more of the following goals, including the “[i]dentification and lowering of unreasonable or unnecessary barriers to adoption of Smart Grid technologies, practices, services, and business models that support energy efficiency, demand-response, and distributed generation.” 220 ILCS 5/16-108.6(a).

CUB and ELPC have participated in the Commission’s dockets regarding the implementation of ComEd and Ameren’s AMI Plans and have consistently sought to expand the customer benefits of energy efficiency and distributed generation. In Docket 12-0298, ELPC and CUB informed the Commission that updates to the Part 466 and Part 467 rules may be necessary in order to incorporate current best practices to accommodate higher penetrations of distributed generation and achieve the customer benefits required by the EIMA. In its Final Order, the Commission concluded that the proper way to address the issues raised by CUB and ELPC was “through a petition for rulemaking pursuant to Section 200.210 of the Commission’s rules, which

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<sup>6</sup> See PUCO Docket 12-2051-EL-ORD (adopting amended interconnection rules in Chapter 4901:1-22 of the Ohio Revised Code) (December 4, 2013).

<sup>7</sup> See <http://www.irecusa.org/regulatory-reform/interconnection/>.

can be filed at any time.” Final Order at 50. On March 7, 2013, ELPC and CUB sent a letter to the Commission with a status update regarding the “substantial national developments affecting best practices for DG interconnection” and our intent to “engage interested stakeholders to determine how the Illinois interconnection process can be similarly improved.” (Exhibit 1). After this work to “build consensus on prospective changes,” CUB and ELPC filed the Petition requesting this proceeding be initiated on February 18, 2014.

The petition stated that the purpose of the rulemaking would be to align Illinois’ rules with best practices across the country and the recent updates at FERC. Rulemaking Petition at 1. Along with the petition, CUB and ELPC filed an appendix with suggested changes to the Part 466 and Part 467 rules that were drafted with the assistance of staff at IREC that had been involved in the FERC and other state rulemaking efforts.

In the petition, CUB and ELPC requested that the Commission waive hearings and conduct this case as a rulemaking with notice and comment, following an informal workshop process. At the Commission’s bench session on March 19, 2014 the Commission granted CUB/ELPC’s petition for rulemaking. The parties have held several workshops and two status hearings were held to discuss the procedure for the remainder of the proceeding. At the status conference on June 25, 2014, the parties expressed differing views on whether an evidentiary hearing might be necessary or whether verified comments would be adequate to address the proposed rule changes.

On June 2, 2014, CUB/ELPC served a Motion for Clarification, requesting that the Commission enter an order clarifying its intent to initiate this proceeding pursuant to rulemaking provisions with notice and comment rather than pursuant to the Commission’s contested case provisions, which require the opportunity for an evidentiary hearing. On June 30, 2014, this

Motion for Clarification was granted in part and denied in part, leaving the hearing process (evidentiary hearings or comments) to the discretion of the Administrative Law Judge. Parties convened for a status hearing on July 31, 2014, and the Administrative Law Judge directed CUB/ELPC/IREC to serve the Proposed Rule changes by August 8, 2014 and submit these accompanying Verified Initial Comments by August 22, 2014.

**E. The Illinois Rules Should Be Updated to Reflect New Best Practices**

**1. Current utility practices and interconnection rules are inadequate for facilitating the state's large upcoming investment in distributed generation.**

When initially directing the ICC to adopt the rules now found in Part 466, the General Assembly stated that the Illinois interconnection standards should be based on “best practices” and should “address any procedural barriers, delays, and administrative costs associated with the interconnection of customer-generation while ensuring the safety and reliability of the units and the electric utility system.” 220 ILCS 5/16-107.5(h). While the current rules have effectively managed the relatively small number of interconnection projects to date, they are incapable of providing clear, streamlined processes for the upcoming large-scale investment in distributed generation in the state.

As the experience in other states with robust distributed generation has recently demonstrated, as the number of interconnections grow, and the penetration of distributed generation on circuits increases, there is a need to ensure that the interconnection procedures in place are capable of handling these higher volumes efficiently. States using procedures similar

to the current Illinois procedures have experienced significant study backlogs and increased costs as a result.<sup>8</sup>

Up to this point, Illinois has experienced relatively moderate DG market growth in comparison to other states. However, Illinois is likely to experience a much faster pace of DG market growth in the near future due to the following national and local long-term trends:

- The specific carve-outs for solar energy development and distributed generation in Illinois' Renewable Energy Portfolio Standard ("RPS") call for substantial new distributed solar development. *See* 20 ILCS § 3855/1-75.
- The 2015 Illinois Power Agency ("IPA") Procurement Plan (issued on August 15, 2014) includes plans for substantial DG procurement in 2015. IPA 2015 Draft Procurement Plan at 90-109.<sup>9</sup>
- State legislation allocates \$30 million for solar procurement; much of this likely to be distributed solar as discussed in the accompanying IPA workshops. *See* Public Act 98-0672, adopting Section 1-56(i) of the Illinois Power Agency Act.<sup>10</sup>
- The Environmental Protection Agency's 111(d) Rule (also known as the "Clean Power Plan") implementation will also likely drive more renewable development.
- Costs for distributed generation—especially wind and solar—continue to fall in Illinois and across Midwest.<sup>11</sup>

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<sup>8</sup> *See, Small Generator Interconnection Agreements and Procedures*, Order No. 792, FERC Stats. & Regs. 145 FERC ¶ 61,159, at p. 51-65 [hereinafter FERC Order 792]; Nat'l Renewable Energy Lab. (NREL), *Updating Small Generator Interconnection Procedures for New Market Conditions* at 7-10 (Dec. 2012) [hereinafter NREL, *Updating Interconnection Procedures*], available at: [www.nrel.gov/docs/fy13osti/56790.pdf](http://www.nrel.gov/docs/fy13osti/56790.pdf).

<sup>9</sup> *See* [http://www2.illinois.gov/ipa/Pages/Plans\\_Under\\_Development.aspx](http://www2.illinois.gov/ipa/Pages/Plans_Under_Development.aspx).

<sup>10</sup> The IPA will be releasing its draft plan for this supplemental solar procurement on September 29, 2014. *See* <http://www2.illinois.gov/ipa/Documents/Section-1-56-i-Workshop-Announcement.pdf>.

Given these established policies and trends that will affect the state's distributed generation resources in the near- and long-term, the Commission should proactively seize the opportunity to update Illinois' interconnection rules to reflect best practices instead of constructing piecemeal solutions after the fact.

**2. Illinois interconnection standards, which reflected national best practices at the time of their adoption, are now outdated and are inconsistent with current best practices.**

Illinois' current interconnection process, finalized by the Commission from 2006 to 2008 in ICC Docket No. 06-0525 (Part 466) and from 2008 to 2010 in ICC Docket No. 08-0481 (Part 467), reflected national and regional best practices at the time. However, technologies, business models, and public policies associated with grid interconnection have dramatically advanced since that time. CUB/ELPC/IREC's Proposed Rules reflect the recent modifications to the FERC Small Generator Interconnection Procedures as well as best practices that have already been implemented and vetted by other states and utilities. In fact, IREC, which helped facilitate the crafting of Illinois' current interconnection standards in ICC Docket No. 06-0525, has been an instrumental partner in the development of the SGIP standards and has helped to successfully implement these best practices in other states including Ohio, California, Massachusetts, and Hawaii.

Adopting the Proposed Rule reaffirms the Commission's commitment to the SGIP standards as established in ICC Docket Nos. 06-0525 and 08-0481 and joins FERC and a growing number of states that have recognized the need to update standards to accommodate higher penetrations of distributed generation across the country.

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<sup>11</sup> See <http://www.seia.org/research-resources/solar-market-insight-report-2014-q1>.

**3. Regional consistency will streamline interconnection procedures, making the process easier and less costly for Illinois ratepayers and project developers.**

The EIMA set forth the following policy objective: “[i]dentification and lowering of unreasonable or unnecessary barriers to adoption of Smart Grid technologies, practices, services, and business models that support energy efficiency, demand-response, and distributed generation.” 220 ILCS 5/16-108.6(a). In an effort to meet this objective, the Commission should seek to align the state’s interconnection procedures with national and emerging regional best practices. Doing so provides consistency and ease of access to distributed generation project developers who often operate in multiple states. Limiting the administrative and regulatory burden for developers allows them to install projects and work with consumers in a streamlined fashion, bringing down administrative costs and minimizing inhibitory lag in the application review process.

**F. Purpose and Summary of Proposed Rule Changes**

The goal of these proposed rules is to align with well-vetted and national best practices in an effort to continue to provide clear regulatory and procedural framework for utility companies, distributed generation developers, customers, and investors. Using these best practices as a guide, and informed by the extensive discussions with staff, utilities and other parties in the workshop process, these proposed updates to Illinois’ rules will streamline the interconnection process for all interested parties—including the utilities and customers. The updated rules explicitly target elements of the interconnection review process by minimizing costly and inhibitory review when possible while also bolstering the review process when required. These changes translate to a more efficient process for all parties while continuing to ensure safety, reliability and power quality on the utilities’ system. The proposed changes strategically improve upon the existing

rules and lay the groundwork for higher penetrations of distributed generation in the following major ways:

- Increases transparency and minimizes administrative burden on utilities and developers by establishing a pre-application report process. This process can help identify unviable projects before they enter the review process or construction queues. 83 Ill. Admin. Code §§ 466.50, 467.50.
- Provides an avenue for projects that do not violate any of the technical screens in Levels 1-3, but still require some construction or “minor system modifications,” to avoid a costly and time consuming study process. 83 Ill. Admin. Code §§ 466.20, 466.90(a)-(c), 466.100(a), 466.100(b)(5), 466.110(a)(10), 466.110(c), 466.120(b).
- Increases the Level 1 (“Fast Track”) eligibility limit to 25 kW, allowing more projects to safely come online while enjoying the benefits of a more expedited review process. 83 Ill. Admin. Code § 466.90(a)(2).
- Refines the Level 2 size limit for inverter-based systems to utilize a more technically nuanced approach that evaluates not only system size but also the voltage of the line at the point of interconnection. This results in a lower size limit on lower voltage lines and higher limits on lines with higher voltage. 83 Ill. Admin. Code § 466.90(b)(2).
- Creates a more robust “supplemental review” process that provides applicants that fail one or more of the Level 2 screens the option of avoiding Level 4 study if the project passes three additional screens that evaluate potential system impacts. The utility is provided additional time to complete this review along with recovery for the costs of the review. 83 Ill. Admin. Code § 466.110(f).

- Streamlines the project application process by creating an online submission process that allows for electronic signatures and ensures that relevant information is publicly available on utility websites. 83 Ill. Admin. Code § 466.70(m)-(o), 467.70(m)-(o).
- Changes kilovolt-ampere (kVA) units of measurement to kilowatt (kW) where appropriate to comport with national standards and best practices.
- Eliminates an unnecessary and outdated provision requiring an external disconnect switch for inverter-based generators below 25 kW. 83 Ill. Admin. Code § 466.70(h).

### *Proposed Rule Updates*

#### **A. Increased Transparency Through the Provision of Pre-Application Reports for Both Smaller and Larger Generators Will Minimize the Number of Unviable Applications, Reducing the Study Burden for Utilities While Maximizing Use of the Existing Infrastructure.**

##### *Sections Affected: Parts 466.50, 467.50*

The proposed Pre-Application Report, 83 Ill. Admin. Code §§ 466.50, 467.50, is a significant enhancement to Illinois' interconnection procedures, and should make the processes for both smaller and larger generators more transparent and efficient. The Pre-Application report provides potential interconnection applicants the opportunity to request certain, readily available, system information about a particular point of interconnection. Upon submission of a request and \$300 fee, the utility has 20 days to provide this information.

The length of the interconnection process and the costs associated with upgrades on a distribution system can vary considerably depending upon the point of interconnection and can be one of the most important factors in determining project viability. When a utility provides access to relevant system information, developers can pre-screen locations that offer better

system conditions and reduce the number of applications submitted for projects that are later withdrawn because they are prohibitively expensive. Generators will not be able to use pre-application information to anticipate all potential issues or to determine fully the costs of upgrades, but the Pre-Application Report should assist them in evaluating interconnection viability at different locations. From the utility's perspective, the Pre-Application Report reduces the number of applications they have to process and relieves some of the burden on their resources.<sup>12</sup> As the distributed generation market in Illinois continues to grow, utilities will receive increasingly higher volumes of interconnection applications, which will only enhance the value of the Pre-Application Report for generators and utilities. Finally, ratepayers as a whole also benefit when developers are able to find the lowest cost points of interconnection as it can reduce the cost of procured energy and maximize use of existing system resources.

Although the utilities in Illinois likely make their best efforts to provide customers with relevant information upon request, unlike the FERC SGIP, § 1.2.1, the interconnection procedures in Illinois currently provide no identified process for customers to obtain information from the utilities to enable them to determine high-value system locations.

Following the Pre-Application Report process approved by FERC in Order 792, SGIP § 1.2.2 – 1.2.3, specific information is recommended for inclusion in a Pre-Application Report request by a generator, as well as specific information for the utility to provide in return. Sections 466.50(a) and 467.50(a) specify the information the generator shall provide to the utility in order

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<sup>12</sup> In Massachusetts systems above 500 kW are required to obtain a pre-application report, at no fee, because the utilities strongly wanted to encourage generators to evaluate system conditions. Massachusetts, DPU Order 11-75-E, Appendix A (MA Interconnection Standards), § 3.2; *see also* DPU 11-75-E at 7-8, 39 (adopting the pre-application report based on the distributed generation working group's suggestion that it will "reduce the number of speculative interconnection applications, thereby increasing the likelihood of viable interconnection application.").

to ensure that the utility has the information it needs to properly identify the applicant's proposed point of interconnection and to process the report efficiently.

Sections 466.50(b) and 467.50(b) identify the information the utility must provide to the generator. These data are intended to assist generators in optimally locating their systems and avoiding submission of unnecessary applications. Based on the FERC proceeding, as well as IREC's discussions with current and former distribution engineers from across the country, the items to be provided are both relevant for developers and can be provided without the need for additional analysis in many cases. If additional analyses would be required, however, 83 Ill. Admin. Code §§ 466.50(c) and 467.50(c) make clear that the utility *need only include existing, readily available data*. In certain cases, particularly with minimum or peak load data, the information may not currently be available without analysis. However, Illinois utilities have begun to make significant investments in smart grid infrastructure, supervisory control and data acquisition (SCADA) and other methods of gathering system information. The expectation is that these critical data points will be available on a much more granular basis in coming years and therefore the interconnection procedures should encourage utilization of such information when available.

The 20-day timeframe and \$300 fee proposed are appropriate for the effort required to provide the Pre-Application Report. Both the timeframe and the fee are consistent with the FERC SGIP, § 1.2.2. In most cases, there will be no reason that providing the information will take more than a few hours of staff time, especially given the limitation requiring only existing, readily available data. In addition, as utilities get more efficient at providing this information, they should be able to streamline the process and thus reduce the costs of providing the information. In fact, Ohio's recently updated interconnection procedures require just a 10-

business-day turn-around along with the \$300 fee. OAC § 4901:1-22-04(B)(2). Both California and Massachusetts have also incorporated Pre-Application Reports into their interconnection procedures with 10 day timeframe and similar, or no, fees. California, CPUC D.12-09-018, Attachment A (CA Rule 21 Tariff), § E.1 (\$300 fee and 10 business day turnaround) and Massachusetts, DPU Order 11-75-E, Appendix A (MA Interconnection Standards), § 3.2 (no fee and 10 business day turnaround).

A standardized Pre-Application Report request form can make the process more streamlined across the electric distribution companies (EDCs). IREC has developed a model form based on the forms used in Massachusetts and California, which we have attached to these comments as Exhibit 2.

**B. Removing the No-Construction Screen Can Help Avoid Unnecessary Studies and the Modifications Proposed Will Provide the Opportunity to Assess Which Upgrades Are Needed.**

*Sections Affected: Parts 466.20, 466.90, 466.100, 466.110, 466.120, 466.130, APPENDIX E, APPENDIX F*

As mentioned above, the expedited review provisions in Levels 1, 2 and 3 of the existing Illinois rules include technical “screens” to determine whether a project can be interconnected safely and reliably on an expedited basis without having to undergo a lengthy and expensive study process under Level 4. The “no-construction screen” refers to the technical screen in Levels 1, 2 and 3, which does not allow projects to receive expedited review if they would require construction of any facilities by the utility to accommodate the project. 83 Ill. Admin. Code §§ 466.90(a)(5), (b)(5), (c)(1)(F), (c)(2)(E), 466.100(a)(5), 466.110(a)(10) (current procedures). This screen is intended to provide utilities time to determine the extent of the construction needed on their own systems and a mechanism to estimate the cost of upgrades for which the applicant will be responsible. The effect of this screen, however, is that a project that

passes all the other screens may be required to pay for and undergo the full Level 4 study process even if there are no technical concerns warranting further system impacts review. Occasionally generators will pass all the other technical screens, but require some sort of minor, low-cost upgrade, such as a service entrance or other interconnection facilities. Less typically, more significant upgrades can be required. This screen can be particularly problematic for DG systems that interconnect in locations where there is no onsite load because in most of these cases the utility will need to construct some facilities to be able to electrically interconnect a proposed generator to its distribution system.

There are more efficient means to address the legitimate need to determine the cost and schedule for upgrades than sending an interconnection request that passes the other technical screens to the full study process, particularly where the required upgrades are minor. Instead of disallowing any construction to receive expedited treatment, the proposed amendments remove the no-construction screen and instead allowing utilities additional time to provide a cost estimate along with an Interconnection Agreement when it determines that upgrades are necessary. 83 Ill. Admin. Code §§ 466.100(b)(5), 466.110(c), 466.120(b). For generators requiring no construction of facilities, the utility would provide the Interconnection Agreement within five business days after the notification of review results. For generators needing only interconnection facilities or Minor System Modifications, the utility is given 15 business days to develop the cost estimate and provide the Interconnection Agreement.

The definition for “Minor System Modifications,” 83 Ill. Admin. Code § 466.20, is based on IREC’s *Model Interconnection Procedures* and was further informed by discussions held during the workshops. Finally, for generators requiring more than Minor System Modifications, the utility is given 30 business days to develop the cost estimate and provide the Interconnection

Agreement. Alternately, the utility can opt to conduct a Facilities Study<sup>13</sup> for these projects if necessary. In all cases, after reviewing the estimate provided by the utility, the generator will have to agree to pay the costs associated with the upgrades identified in order to sign the Interconnection Agreement.

The process we propose in place of the no-construction screen is similar to those seen in many state procedures, which do not require projects needing upgrades to proceed through study if they pass the expedited review screens, and is an emerging best practice nationally.<sup>14</sup> In addition, it is consistent with the treatment of interconnection requests that pass the FERC SGIP Supplemental Review Process. FERC SGIP § 2.4.5. FERC has also approved very similar processes for providing cost estimates in lieu of full study for FERC jurisdictional interconnections in Southern California Edison and Pacific Gas & Electric's territories.<sup>15</sup>

The timelines we propose for each case—no construction, Minor System Modifications, and more than Minor System Modifications—are reasonable and consistent with the timelines

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<sup>13</sup> The Level 4 review process employs a series of three studies. The Feasibility Study, a System Impacts Study, and a Facilities Study. A Facilities Study is the third study in the Level 4 review process that is used to determine the costs of necessary upgrades after the system impacts have been evaluated. *See* 83 Ill. Admin. Code § 466.130(e)(3)(b).

<sup>14</sup> *See, e.g.*, CA Rule 21 Tariff § F.2.a; Hawaiian Electric Company (HECO) Rule 14H, Appendix III (Interconnection Process Overview), § 1.c; IREC *Model Interconnection Procedures* §§ III.A.5, B.5, D.2; *Updating Interconnection Procedures* at 28-30.

<sup>15</sup> 135 FERC ¶ 61,093, at ¶¶ 76-80, 91 (April 29, 2011) (“SoCal Edison further states that the ability of a generating project to pass the first nine fast track screens . . . signifies that the proposed project will have an insignificant effect on the SoCal Edison distribution system, and that SoCal Edison can determine the interconnection requirements necessary to interconnect the project safely and reliably without additional studies. Therefore, according to SoCal Edison, denying fast track approval and, thereby forcing projects to undergo the study process simply because they require the construction of some interconnection facilities is an unnecessary burden, in terms of time and money, on interconnection applicants, and on the SoCal Edison study process. SoCal Edison states that unless fast track screen ten is revised, certain generating projects would be excluded from the fast track process simply because they require construction of some facilities to interconnect to the distribution system.”); 135 FERC ¶ 61,094, at ¶¶ 10, 27-28 (April 29, 2011).

used in other states. For example, California allows 15 days for the utilities to provide a cost estimate for upgrades after the provision of the equivalent Level 1 or 2 screening results. CA Rule 21 Tariff § F.2.a. The timelines also generally comport with existing timelines within 83 Ill. Admin. Code Part 466. For example, the 5 business days specified for the utility to provide an Interconnection Agreement to a project requiring no construction is analogous to the timeline for the determination of whether or not an interconnection request is complete (7 or 10 business days, depending on Level). 83 Ill. Admin. Code §§ 466.100(b)(2), 466.110(b)(2), 466.120(a)(2), 466.130(b). Similarly, the 15-business-day timeline for projects requiring only Minor System Modifications is analogous to the timeline for the utility to run the technical screens for Level 1 and 2 review (15 and 20 business days, respectively). 83 Ill. Admin. Code §§ 466.100(b)(3), 466.110(b)(5). The proposed timeline for providing a cost estimate and Interconnection Agreement to a project requiring more than Minor System Modifications is more generous than the current timelines for conducting full feasibility and impact studies (25 business days in both cases). 466.APPENDIX E § 8; 466.APPENDIX F § 7.

The utilities may have to develop a process for determining cost estimates in a timely manner, but developing this process could ultimately free up staff who would otherwise be required to conduct unnecessary system impact and facilities studies if the no-construction screen were retained. It is also reasonable to expect the utilities to be able to develop good-faith cost estimates more quickly than it would take them to complete a full Facilities Study. As a result, the interconnection review process will avoid unnecessary study and move more efficiently for all parties.

**C. Increasing the Level 1 Size Limit to 25 kW Allows More Projects to Benefit from the More Efficient Level 1 Process While Still Ensuring System Safety and Reliability.**

***Sections Affected: Part 466.90***

The Level 1 review process is the most basic of the four levels of review and is intended for inverter-based generators, such as solar PV generators, which are unlikely to trigger adverse system impacts or upgrades. Such generators require inverters to convert the direct-current (DC) power they produce to alternating-current (AC) power for use by the customer or utility. Inverter-based equipment has a lower likelihood of causing such impacts because it can quickly disconnect when a disturbance occurs. Nonetheless, Level 1 provides for rigorous technical screens similar to the Level 2 screens, but provides the additional benefit of faster timeframes and lower costs and the ability to submit a relatively short, combined application and interconnection agreement. This process efficiency benefits both customers and utilities.

The current size limitation for Level 1 review is 10 kilovolt-amperes (kVA). 83 Ill. Admin. Code § 466.90(a)(2). As the number and size of small inverter based systems grows there has been a recognition that the efficiencies in the Level 1 process can be extended to larger projects without creating additional system impacts. In order to allow more small, inverter-based systems, including small commercial systems, to take advantage of the benefits of Level 1 review, we propose increasing the size eligibility limit to 25 kilowatts (kW).<sup>16</sup> The suggested rules contain no other changes to the technical screens aside from the no-construction screen modifications discussed above. Therefore these screens continue to ensure that generators attempting to interconnect under Level 1 do not cause any safety, reliability or power quality impacts.

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<sup>16</sup> The proposal to use kW instead of kVA is explained further in section J below.

Several other states, including Ohio, Oregon, and Massachusetts, have already increased their Level 1 review size limit to 25 kW. OAC 4901:1-22-06(A)(2); OAR 860-082-025(2)(a); MA Interconnection Standards § 3.1 (at locations receiving three-phase service from a three-phase transformer configuration). In addition, both NREL and IREC have identified it as a best practice. NREL *Updating Interconnection Procedures* at 15-16; IREC *Model Interconnection Procedures* § III.A.2.a.

**D. Refining the Level 2 Size Limit by Using a Table Incorporating Certain System Characteristics Will Enable a Greater Number of Small Generators to Utilize the Benefits of the Process Without Sacrificing System Safety and Reliability.**

***Sections Affected: Part 466.90***

Similar to the proposal to increase the Level 1 size eligibility limit discussed above, the proposed rules refine and ultimately expand Level 2 eligibility takes into account the increasing demand for access to expedited interconnection procedures for small generators in Illinois. 83 Ill. Admin. Code § 466.90(b)(2). It recognizes that full Level 4 study of higher volumes of interconnection applications is neither necessary nor realistic and that the cost savings in this approach can be extended to more projects within the right technical parameters. As recognized by FERC, the proposed size table approach is a constructive method for achieving these goals and also balances the need for system safety and realistic customer expectations.<sup>17</sup>

Level 2 review was designed to enable utilities to efficiently review a proposed project by applying ten screens that are designed to quickly identify reliability or safety issues. Currently, in order to qualify for Level 2, a proposed generator must be sized below 2 MVA, regardless of generator type or location on the utility's system. It is important to recognize that the purpose of limiting Level 2 eligibility should be to filter out projects that would be highly unlikely to pass

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<sup>17</sup> FERC Order 792 at p. 51-65.

the Level 2 screens and more efficiently direct them immediately towards the study process. The technical screens are robust enough to identify projects needing study and the eligibility limits do not need to duplicate or go beyond the screens.

The original FERC SGIP did not elaborate on what specific safety and reliability issues projects exceeding the 2 MW eligibility limit were of particular concern, or why 2 MW was the appropriate limit.<sup>18</sup> While the size of a generator is indeed a critical indicator of whether a project is likely to require full study, and possibly upgrades, there are other technical factors that are also important. Distribution line voltage at the point of interconnection is one of the key factors in determining whether a project of a certain size can interconnect without full study.<sup>19</sup> Generally speaking, larger lines can accommodate larger systems, and most utilities operate lines of various voltages within their territory. Considering this variation, a fixed 2 MVA size limit for Level 2 may be unduly conservative in some cases, and not conservative enough in others. To address this, FERC recently modified the SGIP size limit for the equivalent process so that it is more targeted to the voltage on the line where the generator seeks to interconnect.<sup>20</sup> FERC also took into account that larger generators may pose a lower likelihood of causing impacts when

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<sup>18</sup> *Standardization of Small Generator Interconnection Agreements and Procedures*, Order No. 2006, FERC Stats. & Regs. ¶ 31,180 at p. 51 (¶172).

<sup>19</sup> At the July 17, 2012 Technical Conference hosted by FERC to discuss changes to SGIP, a number of experienced utility distribution engineers identified line voltage as an important factor in determining whether projects are likely to pass the Fast Track Review screens. *Review of Small Generator Interconnection Agreements and Procedures Technical Conference*, Docket No. AD12-17-000, Transcript of Technical Conference (“Transcript”); Carranza at p. 35 (“The distribution system voltage also plays a big part in the amount of penetration that could be afforded in a circuit. The higher the voltage, the stiffer the circuit, potentially allowing penetration to go up. Not all of us have the same voltage on our distribution system across our systems.”); Roughan at p. 105; *see also* NREL, *Updating Interconnection Procedures*, February 2011, at p. 19-21.

<sup>20</sup> FERC Order 792 at pp. 51-65.

located close to the substation and on main feeder lines.<sup>21</sup> Together these changes resulted in a variable size limit for the FERC Fast Track process (similar to Level 2 in Illinois) that is lower than the original 2 MW in some cases and higher in others. A similar approach is proposed here to allow for more technically valid method of sorting projects into the study process.

The table adopted by FERC and, subsequently Ohio, contains three columns for inverter-based systems. FERC SGIP § 2.1; OAC 4901:1-22-07(A). The first identifies the line voltage, the second provides the eligibility limit, based upon the line voltage, no matter where the generator is located on the circuit. The table provides for a smaller size limits for projects connecting to smaller lines (e.g.,  $\leq 500$  kW when connecting to lines  $\leq 5$  kV) and larger size limits for projects connecting to larger lines (e.g.,  $\leq 5$  MW when connecting to lines from 30 kV to 69 kV). The third column allows for greater size eligibility if the system is also located on a main line and within 2.5 miles of the substation.

After discussions with stakeholders, the proposed rule includes a more simplified table with only two columns that utilizes the eligibility limits in FERC's third column. This approach enables interconnection applicants to more easily determine their eligibility for Level 2 review, while still utilizing technically valid limits. The table reflects a more accurate prediction of whether a project will be capable of passing the other Level 2 technical screens. The proposed table shows that the Level 2 process would only be available to projects connecting to lines at or below 69 kilovolts (kV). All projects interconnecting to lines greater than 69 kV would be ineligible for Level 2 review. Although not all such projects require study, in many cases this will be true, and the costs of interconnecting to those larger lines are likely significant enough that those generators may benefit from the more thorough estimate developed through the study

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<sup>21</sup> *Id.*

process. The proposed approach also recognizes the important technical differences between the operation of inverter-based systems and synchronous, induction machines. The proposed table therefore applies only to inverter-based systems. The original 2-MW limit remains in place for synchronous, induction machines.

**E. Adoption of a More Structured and Transparent Supplemental Review Process Will More Efficiently Accommodate Higher Penetrations of Distributed Generation Without Undermining Safety, Reliability or Power Quality.**

*Sections Affected: Parts 466.100, 466.110*

As the amount of distributed generation on a circuit or line section grows there is an increased need to evaluate whether the addition of new generation will result in system impacts that warrant more thorough review. When processes for evaluating whether small generator interconnections required study were first being developed, one of the screens that was adopted widely asks whether the total generation on the circuit or line section, with the addition of the proposed generator, would exceed 15% of peak load on the circuit. *See* 83 Ill. Admin. Code § 466.100(a)(1); 466.110(a)(1). The intent of this screen was to determine whether there was a risk that generation would exceed load on the circuit at any point, and thereby possibly result in backfeeding electricity onto the distribution system.<sup>22</sup>

The 15% of peak load screen is imperfect. The relevant measurement is actually minimum load rather than peak load, but since peak load data was at the time generally more

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<sup>22</sup> “The 15% threshold is based on a rationale that unintentional islanding, voltage deviations, protection miscoordination, and other potentially negative impacts are negligible if the combined DG generation on a line section is always less than the minimum load.” Michael Coddington, Benjamin Kroposki, Barry Mather (National Renewable Energy Laboratory); Kevin Lynn, Alvin Razon (Department of Energy); Abraham Ellis, Roger Hill (Sandia National Laboratories); Tom Key, Kristen Nicole, Jeff Smith (Electric Power Research Institute), *Updating Interconnection Screens for PV System Integration*, National Renewable Energy Laboratory Technical Report NREL/TP-5500-54063 (hereinafter *Interconnection Screens Report*) (January 2012), at p. 2, available at [www.nrel.gov/docs/fy12osti/54063.pdf](http://www.nrel.gov/docs/fy12osti/54063.pdf);

readily available engineers identified the following method to use peak load as a proxy for minimum load:

For typical distribution circuits in the United States, minimum load is approximately 30% of peak load. The actual ratio varies widely depending on many factors such as the type of load served. Based on this generalization, the 15% penetration level (one half of the 30%) was selected as a conservative penetration level for general screening purposes.<sup>23</sup>

As the quote above indicates, it is a doubly conservative estimate of when projects are likely to require further review. With DG penetrations have increased across the country states have begun to evaluate whether use of a 100% of minimum load screen can be implemented to avoid needlessly sending projects to study as the volume of distributed generation applications grows.

Under the current rules, utilities have the option of conducting “additional review” when a facility fails one or more of the Level 2 screens, including the 15% peak load screen. 83 Ill. Admin. Code § 466.110(f) (current rules). The process is vague, however, with no timelines or detail about what it entails. The proposed rule has a more structured and transparent “supplemental review” process intended to help utilities handle increasing volumes and penetrations of distributed generation efficiently without compromising the safety and reliability of their electrical systems. This new process utilizes three new technical screens to help guide the review. Under the proposed 100% of minimum load penetration screen, the process recognizes that systems that will cause the generation to exceed the minimum load on the circuit likely require further review. 83 Ill. Admin. Code § 466.110(f)(4)(A). The safety, reliability, and power quality screens that form the backbone of the supplemental review process, 83 Ill. Admin. Code § 466.110(f)(4)(B)-(C), along with the provision of 30 business days for the application of the screens, 83 Ill. Admin. Code § 466.110(f)(4), provide the utilities with sufficient time and

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<sup>23</sup> *Id.*

flexibility to evaluate how a proposed generator will interact with the system as long as it is below 100% of minimum load.

States that are already seeing higher penetrations of distributed generation, such as California and Massachusetts, pioneered this approach to supplemental review. CA Rule 21 Tariff § G.2; MA Interconnection Standards Fig. 1, n.8 (as modified by DPU Order 11-75-F at 12-14). Both states, and now FERC, have adopted processes essentially identical to our proposal here, relying on a 100% of minimum load penetration screen and two additional screens addressing safety, reliability, and power quality. IREC recently analyzed interconnection data from the two largest California investor-owned utilities, Southern California Edison (SCE) and Pacific Gas and Electric Company (PG&E), to determine the impact adopting an enhanced supplemental review process has had on reducing the need for full system impact studies, and, as noted below in Table 1, supplemental review has enabled a significant number of projects to avoid full study.<sup>24</sup> This process has been in effect in California for approximately two years.

**Table 1: Interconnection at Higher Penetrations of Distributed Generation in California\***

	SCE	PG&E
Fast Track** projects that failed initial screening	46%	82%
Of projects that failed, those that failed the 15% of peak load screen	85%	92%
Of those that failed the 15% screen, those that later passed supplemental review (100% of minimum load screen)	21%	44%

\* *These data only reflect wholesale projects, not net metered projects, which are evaluated separately.*

\*\* *Fast Track is essentially equivalent to Level 2 review as described in this docket.*

<sup>24</sup> This data was collected from the quarterly interconnection reports filed by the California utilities, which can be found at:

<http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/rule21.htm>

As seen in Table 1, while many projects failed the 15% of peak load initial review screen due to high circuit penetration, PG&E, for example, was able to bypass the lengthy study process in 44% of cases by relying on the supplemental review process. This data provides a concrete illustration of the fact that a well applied supplemental review process can enable utilities to avoid requiring full study in many cases. FERC has also incorporated this supplemental review process into its SGIP, FERC SGIP § 2.4, and other states, including Ohio, OAC 4901:1-22-07(E), have begun to adopt it, as well.

**1. Utilization of a Minimum Load Standard Is a More Accurate Evaluation of System Risk and Utilities Are Capable of Adequately Determining Minimum Load in the Majority of Cases.**

When an expedited screening approach was first being developed in California’s Rule 21, and later in the FERC SGIP, the 15% of peak load screen was chosen as a proxy for minimum load data.<sup>25</sup> Although minimum load—that is, the time of lowest usage on the relevant circuit—is a more appropriate metric for determining whether distributed generation penetration could pose system issues, at the time that those rules were developed, the tools for tracking minimum load were not as common as they are today. Since that time, there has been a significant increase in the amount of data that is collected on the distribution system, and the availability of such data continues to increase at a rapid pace with greater deployment of SCADA and other smart grid technologies. Thus, many utilities (including those in Illinois) will now be capable of measuring minimum load data on their circuits. Where data does not exist, however, there are well-

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<sup>25</sup> *Interconnection Screens Report* at p. 2-3 [www.nrel.gov/docs/fy12osti/54063.pdf](http://www.nrel.gov/docs/fy12osti/54063.pdf) [www.nrel.gov/docs/fy12osti/54063.pdf](http://www.nrel.gov/docs/fy12osti/54063.pdf) [www.nrel.gov/docs/fy12osti/54063.pdf](http://www.nrel.gov/docs/fy12osti/54063.pdf); *Updating Interconnection Procedures*, at p. 22-24.

established methods for calculating or estimating minimum load using standard load profiles that are maintained by the utilities.<sup>26</sup>

For these reasons, it is appropriate to require the use of a penetration screen that relies on minimum load in supplemental review. In the proposed rule changes, the 15% of peak load screen would remain the technical screen for the initial Level 2 review and the determination of minimum load would only be required as circuits begin to see higher penetrations of distributed generation. In those cases, the proposed supplemental review process provides the utility time to obtain existing minimum load data, or to make the necessary calculation or estimation of minimum load. If the utility is unable to make a reliable estimation of minimum load, however, it may use the 15% of peak limitation as a default, as long as it offers a written explanation of why calculating or estimating minimum load calculation is not possible. 83 Ill. Admin. Code § 466.110(f)(4)(A).

The proposed screen also indicates that the minimum load measurement utilized should take into account the type of generator seeking to interconnect. For solar PV systems, the proposed screen utilizes the daytime minimum load, instead of the absolute minimum load, to reflect that PV systems only generate during the daytime.

Utilities in high-penetration states such as Hawaii, California and Massachusetts have already begun to use minimum load because of the recognized benefits doing so will have in accommodating PV systems in particular, that tend to operate at their highest output during periods where minimum load is higher.<sup>27</sup> In the nearer term, Illinois utilities that may not be experiencing high penetrations will not encounter the need to determine minimum load, and thus

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<sup>26</sup> *Interconnection Screens Report* at 6-9.

<sup>27</sup> For further explanation of the benefits of using a minimum load screen, particularly for screening PV systems, see *Interconnection Screens Report* at 6-9; *Updating Interconnection* at p. 22-24.

will have time to refine their process for making such an evaluation as penetration grows in their service territories. Illinois should not wait until there is a clogged study queue to consider making this improvement, however.

**2. A Supplemental Review Screen Using 100% of Minimum Load Is Necessary to Keep the Interconnection Process Moving with Greater Amounts of Distributed Generation and Does not Pose Unreasonable Risks or System Constraints for Utilities.**

As penetration of DG increases on a circuit, there is an increased potential for certain undesirable system conditions to arise. Those risks are relatively low where generation remains below minimum load since power is unlikely to feed back past the substation, however, and recent studies have shown that penetrations up to and even exceeding 100% of minimum load can be safely accommodated.<sup>28</sup> In addition, a full System Impact Study is not always necessary for each new generator as greater penetrations are reached. Rather, utilities operating in states where high penetration is becoming common have found that, with some additional time and screening, they are able to safely interconnect systems at high penetrations without conducting a full Level 4 review. Illinois can benefit from this experience and modify its procedures to prevent unnecessary study and accommodate more distributed generation in accordance with state and national policy goals and before study queues become problematically clogged as the number of project applications increases. The consequences of failing to do so will be increased

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<sup>28</sup> See K. Burman, J. Keller, and B. Kroposki (National Renewable Energy Laboratory); P. Lilienthal, R. Slaughter, and J. Glassmire (Homer Energy, LLC), *Renewable Power Options for Electrical Generation on Kaua'i: Economics and Performance*, NREL/TP-7A40-52076, p. 34 (November 2011), available at [www1.eere.energy.gov/office\\_eere/pdfs/52076.pdf](http://www1.eere.energy.gov/office_eere/pdfs/52076.pdf); J. Bank, B. Mather, J. Keller, M. Coddington, National Renewable Energy Laboratory, *High Penetration Photovoltaic Case Study Report*, January 2013. <http://www.nrel.gov/docs/fy13osti/54742.pdf>; see also these studies at <https://solarhighpen.energy.gov/resources/?type%5B%5D=73>.

costs for ratepayers and generators and the administrative burden of growing study queues for utilities.

Sometimes questions arise regarding how utilities would handle a significant load drop off, either unintentional or intentional, if the 100% of minimum load standard were adopted. It is important to remember that this is a question that could be raised for projects that undergo full study as well. There will always be a chance that load, in large or small amounts, could drop off suddenly, for example in the case of emergencies, or in a more anticipated manner as the result of economic fluctuations or other circumstances that cause changes in load. Utilities have always adapted to such changes. Increasing the number of generators that are able to interconnect without study does not heighten this problem of load changes, nor would studying a greater number of projects reduce this risk.

The 100% of minimum load screen should also be considered in view of the numerous features of inverter based systems that already minimize the risks that may arise at higher penetrations. As the experiences from high penetration states such as California, Hawaii, and Massachusetts show, a 100% of minimum load screen incorporated into a three-screen supplemental review process is a safe and effective way to enable efficient interconnections and to help utilities manage their interconnection queues. In fact, in Massachusetts, the state Technical Standards Review Group spent months considering the appropriate approach to supplemental review, and ultimately determined that the 100% of minimum load screen was appropriate “as long as the voltage/power quality and safety/reliability screens are defined by and conducted at each utility’s discretion.” DPU 11-75-E Compliance Report Regarding Penetration Test Screening.

**3. The Two Additional Supplemental Review Screens, Addressing Safety, Reliability and Power Quality, Provide Utilities with the Ability to Address Unique Circumstances that Might Require Further Study.**

In evaluating the proposed supplemental review process, it is important not to view the 100% of minimum load screen in a vacuum. The 100% of minimum load screen does not unduly restrict a utility's options for maintaining system safety and reliability. There are three main system risks that are often raised in the context of higher penetrations of DG: unintentional islanding, voltage control, and protection coordination.<sup>29</sup> The two additional proposed supplemental review screens are capable of identifying when further study is required to mitigate these impacts.

The two additional supplemental review screens provide utilities with ample flexibility to identify circumstances where high penetrations on a particular circuit may require further study. The "Voltage and Power Quality Screen," section 466.10(f)(4)(B), identifies the key technical standards for voltage regulation and requires compliance with those standards to proceed under Supplemental Review. In addition, the "Safety and Reliability Screen", section 466.10(f)(4)(C), was drafted to give utilities flexibility in identifying a full range of possible technical considerations. It identifies typical considerations that might be relevant to help applicants better understand the review process, but does not require that they be applied in every circumstance and also allows the utility the discretion to identify "other factors" in evaluating safety and reliability impacts. As long as the utility can articulate the technical concerns identified when providing the supplemental review results, it has the ability to require a system to proceed to full study. 83 Ill. Admin. Code § 466.10(g).

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<sup>29</sup> For a full explanation of the technical considerations see *Updating Interconnection Screens for PV System Integration*.

**F. Inverter-Based Generators with Nameplate Capacities of 25 kW or Smaller Should Be Exempt from the Requirement of an External Disconnect Switch Because this Requirement Does Not Increase Safety and Can Represent a Needless Expense for Customers.**

*Sections Affected: Parts 466.60, 466.70, 467.70*

As a redundant safety measure, some interconnection procedures, including those in Illinois, require that an interconnecting generating facility install an external disconnect switch (“EDS”) that is clearly marked and accessible by utility personnel. *See* 83 Ill. Admin. Code §§ 466.60(h)-(i), 467.70(h). An EDS allows utility employees to manually disconnect a customer-owned generator from the electricity grid. In instances of power outage, there is a possibility that a grid-tied system may continue generating electricity and export it to the grid, putting utility workers at risk of encountering energized lines. However, if a generating facility uses a certified inverter that prevents it from exporting power when the grid is de-energized, then many states have found they can waive the requirement or prohibit utilities from requiring an EDS for small generators without risking the safety of line workers or causing system impacts.

An EDS is not necessary for inverter-based systems under 25 kW interconnecting under Illinois procedures, that is, systems eligible for Level 1 review under our proposed modifications. Illinois requires that generators employ lab-certified equipment, including specifically UL 1741-certified inverters, 83 Ill. Admin. Code § 466.80. Therefore, all inverter-based generators already have automatic shut-off capabilities integrated into their systems. In the event the grid goes down, these modern inverters stop power flow to the grid automatically. As such, the EDS requirement for these systems is unnecessary. An NREL report assessing the need for an EDS likewise concludes that the switch is made redundant and unnecessary by UL and IEEE standards, and the extensive safety training utility workers receive and the procedures they must follow to ground

wires.<sup>30</sup> In addition, the Solar America Board of Codes and Standards (Solar ABCs) conducted a comprehensive review of this issue and similarly concluded that for “properly designed and installed code-compliant PV systems, the U[tility] EDS provides little, if any, additional safety, beyond what is already present.”<sup>31</sup> The proposed rules provide for a waiver for systems smaller than 25 kW because these systems are less able to absorb the substantial, additional cost associated with an EDS through economies of scale.

Moreover, in actual practice, experience suggests that utilities typically do not use the EDS for safety purposes. Going to the location of a generator and manually disconnecting it, tagging the location, and later returning to reconnect the facility is a labor-intensive prospect. As the number of distributed generation systems increase, it will become less and less practical to disconnect all the systems manually in the case of an emergency. As described in the two reports mentioned above, utility workers have other means available to them to verify that lines are no longer energized. Requiring generators to install an EDS that is unlikely to be utilized, and where other safety protections are in place, imposes an unnecessary cost on generators.

In California, many utilities ultimately voluntarily dropped the EDS requirement for small, inverter-based generators when they examined the efficacy of the requirement and found that the devices were not being used. Outside of California, a growing number of regulators and utilities agree that external disconnect switches are unnecessary for small inverter-based systems and can make compliance unduly burdensome and expensive. At least eleven other states

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<sup>30</sup> M. Coddington, R.M. Margolis, and J. Aabakken, NREL, *Utility-Interconnected Photovoltaic Systems: Evaluating the Rationale for the Utility-Accessible External Disconnect Switch*, Technical Report: NREL/TP-581-42675 (Jan. 2008), available at [www.nrel.gov/docs/fy08osti/42675.pdf](http://www.nrel.gov/docs/fy08osti/42675.pdf) [hereinafter NREL EDS Study].

<sup>31</sup> Michael T. Sheehan, P.E., IREC, *Utility External Disconnect Switch: Practical, Legal, and Technical Reasons to Eliminate the Requirement 2*, SolarABCs (Sept. 2008), available at [www.solarabcs.org/about/publications/reports/ued/pdfs/ABCS-05\\_studyreport.pdf](http://www.solarabcs.org/about/publications/reports/ued/pdfs/ABCS-05_studyreport.pdf).

prohibit external disconnect switches for certain generators.<sup>32</sup> These include states in colder climates similar to Illinois where certain equipment is indoors and inaccessible to utility personnel. For example, Maine prohibits the requirement of an external disconnect switch for generators that meet its certification requirements. CMR 65-407-324 § 12.E. More recently, a large Indiana investor-owned utility, Vectren Energy Delivery of Indiana, voluntarily agreed not to require generators smaller than 25 kW interconnecting to its system to install a visible EDS, concluding that “a visible disconnect switch is not required from a safety standpoint.” Ind. Util. Regulatory Comm’n, Cause No. 44344, Vectren’s Proposed Order and Brief in Support of Proposed Order 8 (July 18, 2014).

**G. The Incorporation of the Proposed Requirements Related to Electronic Submittal and the Utilities’ Websites Will Improve the Interconnection Process for Both Customers and Utilities.**

*Affected sections: 83 Ill. Admin. Code §§ 466.70(n)–(p), 467.70(m)–(o)*

For both larger and smaller generators, the proposed rule includes improvements to the procedures to encourage easier submittal of interconnection applications for customers, easier review by utilities, and the more transparent provision of interconnection-related information. 83 Ill. Admin. Code §§ 466.70(n)–(p), 467.70(m)–(o). These include:

- Allowing interconnection applications to be submitted through a utility’s web site.
- The utilities’ provision of a page on their web sites dedicated to interconnection procedures, to include at least the procedures and their attachments in an electronically searchable format, the interconnection application forms in a format

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<sup>32</sup> See Database of State Renewable Energy Incentives (DSIRE), [www.dsire.org](http://www.dsire.org) (individual state policies on external disconnect switches can be found on the interconnection policy page for each state); see also NREL EDS Study at 23 (noting that as of 2008 eight states had adopted this policy).

that allows for electronic entry of data, the interconnection agreements, and the point of contact for submission of interconnection requests.

- Allowing electronic signatures to be used for interconnection applications.

These improvements should promote a more streamlined, efficient process for both customers and Utilities. ComEd has already moved to adopt an electronic interconnection application system and the lessons learned can likely be easily extended to other Illinois utilities.

**H. Allowing an Interconnection Customer Whose Application Is Denied Under Level 1 Review to Retain Her Queue Position for 15 Days Promotes Fairness and Ease of Administration.**

*Affected Sections: Parts 466.110, 466.120*

The proposed rule includes a provision within the Level 1 review process that allows an applicant who fails the review screens to keep her queue position so long as she makes a new interconnection request under the study process within 15 days. 83 Ill. Admin. Code § 466.100(b)(7). This proposed provision is consistent with existing provisions within Levels 2 and 3. 83 Ill. Admin. Code §§ 466.110(g), 466.120(a)(5)(B), 466.120(e). All of these provisions promote fairness to customers by allowing them to address any utility concerns without losing their place in the queue, in addition to improving administration for utilities.

**I. Part 466 Should Include a Waiver Provision Similar to the Provision in Part 467, Which Allows an Appropriate Degree of Flexibility for the Utilities and the Commission.**

*Affected Sections: Parts 466.30, 467.30*

83 Ill. Admin. Code Part 467 contains a waiver provision that allows the Commission, on application of a utility or interconnection applicant, or on its own motion, to grant a temporary or permanent waiver from the interconnection procedures so long as the Commission makes certain findings. The burden of proof for establishing the waiver lies on the party seeking it. 83 Ill. Admin. Code § 467.30. In the interest of consistency, we propose an identical provision within Part 466, 83 Ill. Admin. Code § 466.30. This waiver provision gives flexibility to the utilities,

generators and the Commission to waive interconnection rules when appropriate, for example to improve the efficiency of the process for a particular project.

**J. The kW Unit Is Appropriate in Instances When the Rules Address a Size-Based Limitation.**

***Affected Sections: Parts 466.90, 466.100, 466.110***

The current rules specify distributed generation system limitations in kilovolt-ampere (kVA), which is the unit used for the apparent power in an electrical circuit, rather than kilowatt (kW), which refers to a system's output power. To be consistent with practices nationally, we believe using kW and megawatt (MW) would be more appropriate. However, based on workshop discussions, we propose changing kVA to kW only in instances where the size identified is not fulfilling a purely technical requirement. For example, we propose measuring the size limitations for each review Level in kW. 83 Ill. Admin. Code § 466.90(a)(2), (b)(2), (c)(1)(B). The proposed rule uses kVA in instances where the rules address a technically based limitation, for example the measurement of the aggregate capacity of all generation on a line or area or spot network, 83 Ill. Admin. Code §§ 466.90(c)(1)(E), 466.100(a)(2), (a)(3), 466.110(a)(7). This change is only applicable to Part 466.

***Conclusion***

For all of the foregoing reasons, the Commission should amend Parts 466 and 467 of the Illinois Administrative Code with the language proposed in the Revised Rule filed on August 8, 2014.

STATE OF ILLINOIS  
ILLINOIS COMMERCE COMMISSION

THE CITIZENS UTILITY BOARD and )  
THE ENVIRONMENTAL LAW AND )  
POLICY CENTER )

Petition to Initiate Rulemaking With )  
Notice and Comment for Approval of )  
Certain Amendments to Illinois )  
Administrative Code Part 466 )  
Concerning Interconnection Standards )  
for Distributed Generation )

Docket No. 14-0135

AFFIDAVIT OF BRAD KLEIN

I, Brad Klein, affirm that I have personal knowledge of the contents of these *Verified Initial Comments of the Environmental Law & Policy Center, The Citizens Utility Board, and The Interstate Renewable Energy Council, Inc.*, which are to the best of my knowledge, true and accurate.



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Sworn or affirmed before me  
this 22 day of August, 2014.



Notary Public

My commission expires: August 28, 2017



STATE OF ILLINOIS  
ILLINOIS COMMERCE COMMISSION

THE CITIZENS UTILITY BOARD and )  
THE ENVIRONMENTAL LAW AND )  
POLICY CENTER )

Petition to Initiate Rulemaking With )  
Notice and Comment for Approval of )  
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Concerning Interconnection Standards )  
for Distributed Generation )

Docket No. 14-0135

AFFIDAVIT OF MIKE MCMAHON

I, Mike McMahon, affirm that I have personal knowledge of the contents of these  
*Verified Initial Comments of the Environmental Law & Policy Center, The Citizens Utility  
Board, and The Interstate Renewable Energy Council, Inc.*, which are to the best of my  
knowledge, true and accurate.

Mike McMahon  
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Sworn or affirmed before me  
this 22<sup>nd</sup> day of August, 2014.

Notary Public  
My commission expires: 10/17/15



STATE OF ILLINOIS  
ILLINOIS COMMERCE COMMISSION

The Citizens Utility Board and the  
Environmental Law & Policy Center

Petition to Initiate Rulemaking With Notice  
and Comment for Approval of Certain  
Amendments to Illinois Administrative Code  
Parts 466 & 467 Concerning Interconnection  
Standards for Distributed Generation.

Docket No. 14-0135

AFFIDAVIT OF  
SKY C. STANFIELD

I, Sky C. Stanfield, affirm that I have personal knowledge of the contents of these  
*Verified Initial Comments of the Environmental Law and Policy Center, the Citizens Utility  
Board and the Interstate Renewable Energy Council, Inc.* and their attachments, which are to the  
best of my knowledge, true and accurate.

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FOR: INTERSTATE RENEWABLE  
ENERGY COUNCIL, INC

Notarized this 21 day of August, 2014

Notary Public

